

6. **POPULATION AND HUMAN HEALTH**

6.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) identifies, describes and assesses both the potential offshore and onshore effects of the Project on tourism and recreation, population and human health and has been completed in accordance with the EIAR guidance and legislation set out in Chapter 1: Introduction. The full description of the Project is provided in Chapter 5 of this EIAR.

As detailed in Section 1.1.1 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following reference: 'The Project'. The 'Offshore Site' refers to all offshore Project elements: the Offshore Array Area ('OAA), the Offshore Substation ('OSS'), the Offshore Export Cable ('OEC'), Offshore Export Cable Corridor('OECC') the 'Landfall', while the 'Onshore Site' refers to all onshore Project elements: the Onshore Landfall Location ('OLL'), Onshore Grid Connection ('OGC') and the Onshore Compensation Compound ('OCC).

One of the principal concerns in the development process is that human beings, as individuals or communities, should experience no significant diminution in their quality of life from the direct, indirect or cumulative effects arising from the construction, operation and maintenance and decommissioning of the Project. Ultimately, all the effects of a development impinge on human beings, directly and indirectly, positively and negatively. The key issues examined in this Population and Human Health assessment include population, employment and economic activity, sea use and land use, residential amenity (including visual amenity, marine traffic, noise for the Offshore Site and visual amenity, traffic, noise and dust for the Onshore Site), tourism, property values, human health, health and safety, air quality, water and traffic.

The Project proposes the development of a renewable energy development, an offshore wind farm, capable of offsetting carbon emissions associated with the burning of fossil fuels. The Maximum Export Capacity (MEC) of the Project is 450MW, displacing approximately 462,196 tonnes of CO2e emissions each year of operation, culminating to approximately 17.56 million tonnes of CO2e emissions over the proposed 38-year operational lifetime of the Project from traditional carbon-based electricity generation. The Project will have a long term, significant, positive effect on population and human health.

6.2 Statement of Authority

The offshore section of this Population and Human Health assessment has been prepared by Stephanie Blyth of Xodus Group Ltd (Xodus). Stephanie is an Environmental Consultant with Xodus, having joined the company in November 2021. Stephanie holds a BSc (Hons) in Marine Biology and an MSc (Merit) in Climate Change: Managing the Marine Environment from Heriot Watt University, Edinburgh. Stephanie has supported on a number of offshore environmental impact assessments for offshore wind, electrification and submarine cable scopes, acting as both technical lead and project manager.

The Onshore Site section of this Population and Human Health assessment has been prepared by Keelin Bourke of MKO. Keelin is an Environmental Scientist with MKO, with over 1 years' experience in private consultancy, having joined the company in September 2023. Keelin holds a BSc (Hons) in Environmental Science from University College Cork and an MSc (Dist) in Environmental Engineering from Trinity College Dublin. Prior to taking up her position with MKO, Keelin worked as an Environmental Health and Safey Officer in an EPA licensed Waste Transfer Facility in Cork City. Keelin's current key strengths and areas of expertise are in environmental surveying, report writing and environmental mapping. Since joining MKO, Keelin has become a member of the MKO Environmental Renewables Team and has been involved in preparing and managing Environmental Impact Assessments and in leading large multi-disciplinary teams in order to produce robust Environmental Impact Assessment Reports for large-scale onshore and offshore wind energy



developments. Keelin has completed a number of assessments of population and human health effects of renewable energy projects as part of wider EIAR assessment.

Both the offshore and onshore sections have been reviewed by Órla Murphy and Sean Creedon both of MKO. Órla Murphy is a Senior Environmental Scientist with MKO with over 8 years of experience in private consultancy. Orla holds BSc (Hons) in Geography from Queens University Belfast & an MSc in Environmental Protection and Management from the University of Edinburgh. Prior to taking up her position with MKO in January 2018, Orla worked as an Environmental Project Assistant with ITPEnergised in Scotland. Órla's key strengths and areas of expertise are in Environmental Protection and Management, EIA, Project Management, Renewable Energy and Peatland Management, where she has carried out research projects and site work relating to restoration and management of peatland sites in both Scotland and Northern Ireland. On joining MKO Órla has been involved on a range of renewable energy infrastructure projects. In her role as a project manager, Orla works with and coordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs. Within MKO, Órla plays a role in the management of and sharing of knowledge with junior members of staff and works as part of a large multi-disciplinary team to produce EIA Reports and has completed and been involved in numerous population and human health assessments in the production of EIARs.

Sean is an Associate Director in the Environment Team at MKO. He oversees a team of highly skilled environmental professionals working on EIAR for large-and medium scale Renewable Energy infrastructure. Sean has directed and overseen multiple renewable energy projects across wind, solar, battery and hydrogen as well as a range of thermal and other energy related developments. He has worked on the planning and environmental impact elements within all stages of wind farm project delivery. He is a member of the MKO senior management team responsible for developing the business, mentoring team members, fostering a positive culture and promoting continuous employee professional development. Sean has over 22 years' experience in program and project development, holds an MSc from NUI Galway and a Diploma in Project Management from Institute of Project Management Ireland.

6.3 Methodology

6.3.1 Legislation, Policy and Guidance

Effects were identified, described and assessed as per local, regional, State and European EIAR legislation, policy and guidance as described in Section 1.2 of Chapter 1 of this EIAR, along with further EIAR guidance surrounding offshore renewable energy developments. In addition to Directive 2011/92/EU as amended by Directive 2014/52/EU, the following guidelines, plans and reports have also influenced the preparation of this chapter:

- National Roads Authority/ Transport Infrastructure Ireland (2008). Environmental Impact Assessment of National Road Schemes- A practical Guide, Revision 1, November 2008;
- Fáilte Ireland, (2023), EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects
- > EPA, (2023), Good practice guidance on Strategic Environmental Assessment (SEA) for the Tourism Sector
- Department of Housing, Local Government and Heritage (2021)., *National Marine Planning Framework SEA Environmental Report*
- Health Impact Assessment Resource and Tool Compilation, United States Environmental Protection Agency 2016;
- > Health Impact Assessment Guidance, Institute of Public Health Ireland. 2009;



- Framework for Human Health Risk Assessment to Inform Decision Making developed by the United States Environmental Protection Agency (US EPA) 2014;
- Institute for Environmental Management and Assessment (2017) Health In Environmental Impact Assessment: A Primer for a Proportionate Assessment;
- Institute for Environmental Management and Assessment (2022) Determining Significance for Human Health in Environmental Impact Assessment;
- Central Statistics Office (CSO): Census of Ireland 2016; Census of Ireland 2022; Census of Agriculture 2020;
- The Northern and Western Regional Assembly (2020). *Regional Spatial and Economic Strategy.*
- The Southern Regional Assembly (2020). *Regional Spatial & Economic Strategy for the Southern Region*
- A Guide to the Safety, Health and Welfare at Work (Electromagnetic Fields) Regulations 2016
- Salway County Development Plan 2022-2028
- Clare County Development Plan 2023-2029
- Salway County Council (2023). County Galway Tourism Strategy 2023-2031
- Connemara Coast & Aran Islands Visitor Experience Development Plan (VEDP)
- Wild Atlantic Way Regional Tourism Development Strategy 2023-2027

6.3.2 **Population**

Human Receptors which have the potential to experience effects from both the offshore and onshore aspects of the Project, such as effects on population, land use and tourism are either largely or wholly based onshore. The approach towards the definition of the study areas for the Offshore Site and Onshore Site differs and is also largely dependent on the effect which is being assessed.

For the purpose of this chapter, the study areas, for the assessment of population and human health are defined in section 6.3.2.1 and 6.3.2.2 below for the Offshore Site and Onshore Site respectively.

Due to the large spatial scale and varying temporal scale of the project, and the distances between the locations of both the Offshore Site and Onshore Site of the Project, both aspects have been assessed separately of each other under similar potential effects.

The socio-economic study of the receiving environment included an examination of the population and employment characteristics of the area. Information regarding population and general socio-economic data were sourced from the Central Statistics Office (CSO), the Galway County Development Plan 2022-2028, the Clare County Development Plan 2023-2029, Fáilte Ireland and any other literature pertinent to the area. Marine Institute Open Access data was also used in order to inform the baseline regarding the offshore aspects of the Project. The study included an examination of the population and employment characteristics of the area. This information was sourced from the Census of Ireland 2022, which is the most recent census for which a complete dataset is available, also the Census of Ireland 2016, the Census of Agriculture 2010 and from the CSO website (www.cso.ie). Census information is divided into State, Provincial, County, Major Town and Electoral Division (ED) level.

In order to assess the Population and Socio-Economic Baseline in the vicinity of the Project, both the Offshore and Onshore Population Study Areas for the Population section of this EIAR were defined in terms of the Electoral Divisions (EDs) where the Project is located, and where relevant, nearby EDs, which have the potential to be affected by the Project.

Effect identification, assessment, and mitigation measures under all stages for both the offshore and onshore elements of the Project is clearly described.



6.3.2.1 Offshore Population Study Area

For the purposes of this assessment, the Offshore Site is defined as all generation infrastructure seawards of High-Water Mark (HWM) (i.e., WTGs and OSS, with associated GBS foundations and IAC, all within the OAA, and the OEC).

It is noted that whilst the Offshore Population Study Area assesses impacts to land based human receptors, there are sea-based activities within the Offshore Site that can also impact these same human populations. Therefore, within the Offshore Population Study Area, impacts from sea use within the Offshore Site is also considered. The Landfall is the interface between the Offshore Site and the Onshore Site, for clarity, the potential effects on human populations associated with the construction, operation and maintenance and decommissioning of the Landfall in this chapter have been considered as part of the Onshore Site assessment.

It is considered that any potential effects to population and human health receptors resulting from the Offshore Site will arise from the long-term physical presence of infrastructure above the water's surface (i.e., WTGs). It is therefore considered that the physical presence of the OEC will not result in any potential significant effects to population and human health receptors, with any potential effects associated with the construction, operation and maintenance and decommissioning of the OEC on human receptors considered within Chapter 13: Commercial Fisheries, Chapter 14: Shipping and Navigation, and Chapter 18: Other Sea Users. As such the potential effects of the OEC on population and human health receptors have not been considered further within this chapter.

The OAA, where the WTGs are to be located, is located between 5 kilometres (km) and 11.5 km off the coast of Connemara, Co. Galway. The closest settlement is Carna, Co. Galway. The receptors that have the potential to experience effects relevant to the socio-economics topic – such as businesses, workers, and other members of the local community, residents, households, and visitors – are either largely or wholly based onshore. Consideration of the scale and duration of potential effects, therefore, needs to account for, inter alia, the onshore spatial location of these receptors in connection to the Offshore Site and the onshore places where business and socio-economic activities relating to the Project are likely to occur.

This approach also justifies the use of a hierarchy of spatial areas in the assessment.

The Offshore Site lies closest to 11 EDs, as shown in Figure 6-1 and Table 6-1. These EDs therefore comprise the Offshore Population Study Area for the Population and Human Health section of this EIAR assessment. The Offshore Population Study Area has a population of 7,055 persons, as of 2022 and comprises a total land area of 591.3 km² (Source: CSO Census of the Population 2022).

Offshore Population Study Area EDs, Co. Galway					
Binn an Choire/Bencorr	Bun Abhann/ Bunowen				
Doire Liath/Doire Chunlaigh / Derrylea/Derrycunlagh	Dún Locháin / Doonloughan				
Iorras Fhlannáin/ Errislannan	Garmna/ Gorumna				
Inis Mór/ Inishmore	An Cnoc Buí/ Knockboy				
Leitir Móir/ Lettermore	Maíros/ Moyrus				
Abhainn Ghabhla/ Owengowla	Cloch na Rón/ Roundstone				

Table 6-1 Electoral Divisions (EDs) within the Offshore Study Area



Scainimh/ Skannive

The Offshore Population Study Area EDs were chosen through an iterative process which involved looking at a number of factors that may influence effects on Population and Human Health by the Offshore Site. In defining the equivalent to the Onshore Population Study for the Offshore Site, the emphasis was placed on the spatial scale at which the focus is and why, i.e. what are the onshore Population and Human Health receptors to the Offshore Site?

Three factors were used to define the Offshore Population Study Area;

- > The proximity of each ED to the OAA;
- > Coastal locations/Proximity of each ED to the coast;
- > Results of a Route Screening Analysis;

EDs which were identified within a 20km buffer of the OAA were first used to define the high-level study areas, followed by the proximity of each ED to the coast. Following this, the results of a Route Screening Analysis (RSA), further explained in Chapter 16: SLVIA, which considers the actual visibility of the Offshore Site from the roads in the surrounding areas was used to further define the Offshore Population Study Area. Route Screening Analysis considers actual visibility of the OAA from surrounding roads using recently captured, highly accurate Digital Surface Model (DSM) data that includes for all existing forms of land cover including vegetation. Route Screening Analysis bridges the gap between the bare-ground theoretical visibility modelling (e.g., ZTV maps) and the actual nature of visibility in a given area. EDs which were analysed as having a majority partial or open visibility to the OAA, acted as the final defining factor in the inclusion or exclusion of each ED in the Offshore Population Study Area.

The potential effects of the Offshore Site on human receptors have also been considered within the following chapters of the EIAR:

- > Chapter 8: Water and Sediment Quality
- Chapter 13: Commercial Fisheries;
- > Chapter 14: Shipping and Navigation;
- > Chapter 15: Civil and Military Aviation;
- > Chapter 16: Seascape, Landscape and Visual Amenity;
- > Chapter 18: Other Sea Users.
- > Chapter 19: Offshore Air Quality; and

Where appropriate, the conclusions of the above chapters have been drawn on to inform the assessment of potential effects from the Offshore Site on population and human health receptors. This chapter will seek to complement these chapters to provide a complete assessment of the potential effects of the Offshore Site on population and human health receptors.





6.3.2.2 **Onshore Population Study Area**

In order to assess the population in the vicinity of the Onshore Site, the Onshore Population Study Area for the population and human health assessment of this EIAR was defined in terms of EDs within which the Onshore Site is located. This includes EDs which the OLL, the OGC and OCC occur, in any capacity. The active construction area for the OGC will be small, with 2 crews undertaking construction in parallel working with a construction area of approximately 120m/crew a day, with a total of approximately 240m per day. Construction works will be transient in nature as it moves along the route, and thus there is no effect anticipated on population and human health outside of these EDs

The Onshore Population Study Area encompasses the OLL where the OEC will come ashore at Killard, Co. Clare. It is proposed that the OGC will run underground with the majority in the existing road network as well as some of the OGC being within third-party lands and connect to the national grid via the proposed OCC. to Moneypoint 220kV Substation, Co. Clare. The OGC route forms part of the Project and is assessed in this EIAR. The Onshore Site is further detailed in Chapter 5.

The Onshore Site lies within 7 EDs, as shown in Table 6-2 and Figure 6-2. The Onshore Population Study area was defined by the EDs within which any of the Onshore Site infrastructure (OLL TJB, OGC, OCC) is located within. It is not anticipated that there will be any potential for significant effects on population outside of this area. These EDs therefore comprise the Onshore Population Study Area for the Population and Human Health section of this EIAR. The Onshore Population Study Area has a population of 5,152 persons, as of 2022 and comprises a total land area of 168.64 km² (Source: CSO Census of the Population 2022).

Onshore Population Study Area EDs, Co. Clare				
Killard	Knocknagore			
Einagh	Kilrush Rural			
Kilrush Urban	Clooncoorha			
Kilimer				

Table 6-2 Electoral Divisions (EDs) within the Onshore Population Study Area





6.3.3 Human Health

This human health analysis section was assessed in accordance with the guidelines set out in section 6.3.2.1 below. The World Health Organisation's (WHO) defines health as:

"A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"¹

6.3.3.1 National Guidance

The EPA 2022 EIAR Guidelines² advise 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." Environmental Impacts from the Project which may also have an impact on population and human health are discussed in this chapter but addressed in more detail in the following chapters: Chapter 13: Commercial Fisheries, Chapter 14: Shipping and Navigation, Chapter 16: SLVIA, Chapter 18: Other Sea Users, Chapter 19: Offshore Air Quality and Airborne Noise, Chapter 23: Land, Soils and Geology, Chapter 24: Hydrology and Hydrogeology, Chapter 26: Air Quality, Chapter 27: Climate, Chapter 28: Onshore Noise and Vibration, Chapter 29: Landscape and Visual, Chapter 30: Material Assets and Chapter 31: Traffic and Transport.*

As referenced in the Department of Housing, Planning and Local Government (2018) *Guidelines for Planning Authorities and An Bord Pleanála*,³ (taken from the European Commission's Environmental Impact Assessment of Projects: *Guidance on the Preparation of the Environmental Impact Assessment Report* (2017)⁴, human health is, "*a very broad factor that would be highly project dependent.*" The report continues:

'*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.'

The EIAR Guidance (EPA, 2022) also states that "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, where paragraph f lists environmental factors such as soils, water, landscape, air etc. The Guidelines state that this approach is 'consistent with the approach set out in the 2002 EPA Guidelines where health was considered through assessment of the environmental pathways through which it could be affected, such as air, water or soil. The EIAR Guidelines (EPA, 2022) note that the above approach follows the 2002 EPA guidelines already in place which details the following:

'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

¹ WHO Constitution, (1948) << <u>https://apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf?ua=1</u> >>

² EPA (2022) << <u>https://www.epa.ie/publications/monitoring-assessment/assessment/EIAR_Guidelines_2022_Web.pdf</u> >>

³ Department of Housing, Local Government and Heritage (2018) << <u>https://www.gov.ie/en/publication/53aee9-guidelines-for-planning-authorities-and-an-bord-pleanala-on-carrying/</u>>>

⁴ European Commission (2017) << <u>https://data.europa.eu/doi/10.2779/41362</u> >>



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'.

6.3.3.2 **IEMA Guidance 2017**

The Institute for Environmental Management and Assessment (IEMA) published 'Health In Environmental Impact Assessment: A Primer for a Proportionate Assessment' in 2017 examining what a proportionate assessment of the impacts on health should be in Environmental Impact Assessments. The document states that Health Impact Assessment (HIA) and EIA are separate processes.

'HIA is defined as a combination of procedures, methods and tools that systematically judges the potential, and sometimes unintended, effects of a policy, plan, programme or project on both the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects... [...] ... HIA can inform EIA practice in relation to population and human health but conducting a HIA will not necessarily meet the EIA population and human health requirement. By the same token, conducting an EIA will not automatically meet the requirements of a HIA.'

The Primer Assessment Report acknowledges that 'disproportionate burdens maybe placed on developers if HIA is applied as a proxy for the consideration of population and human health in every future UK EIA'. The focus of EIA should be on predicting health and wellbeing outcomes, rather than focusing on changes in determinants of health e.g., expected changes in noise levels. Determining the significance of impacts on population and human health should include a professional judgement, scientific literature; consultation responses; comparison with baseline conditions; local health priorities; and national/international regulatory standards and guidelines. The primer report refers to the WHO 2014 which provides and overview of health in different types of assessment:

"The health sector, by crafting and promoting HIA, can be regarded as contributing to fragmentation among impact assessments. Health issues can, and need to, be included [in impact assessment] irrespective of levels of integration. At the same time, from a civic society perspective, it would be unacceptable for HIA to weaken other impact assessments. A prudent attitude suggests optimizing the coverage of health along all three avenues:

- better consideration of health in existing impact assessments other than HIA;
- dedicated HIA;
- and integrated forms of impact assessment."

As such, the WHO does not support a stand-alone HIA unless it could be demonstrated to be of advantage over an EIAR. Therefore, given that this human health assessment is part of the EIAR, it does not suggest that a specific HIA is required, and thus there is no stand-alone HIA.



6.3.3.3 EIA Significance Matrix for Human Health, IEMA Guidance 2022

The IEMA Working Group 2022 published *Determining Significance For Human Health In Environmental Impact Assessment* ⁵ in response to gaps and inconsistencies across existing guidance documents as to how health is assessed in EIA, particularly with regard to significance. The aim of this report is to assist and streamline discussions for consultants producing the assessments and for the decision makers who are reviewing the assessments. The report states that an EIA must identify, describe and assess the direct and indirect significant effects in an appropriate manner of a proposed development on human health. It must include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects, taking into account current knowledge and methods of assessment.

6.4 **Scoping and Consultation**

A scoping report, providing details of the Project, was prepared by MKO and Xodus and was circulated in September 2023. MKO requested the comments of the relevant personnel/bodies in their respective capacities as consultees with regards to the EIAR process. A full description of the scoping and consultation exercise is provided in Section 2.7 of Chapter 2 of this EIAR.

6.4.1 **Scoping Responses**

Table 2-6 of Chapter 2 of this EIAR lists the responses received to the scoping document circulated. Scoping Responses received in relation to Population and Human Health effects surrounding both the Offshore Site and Onshore Site of the Project have been described in Table 2-7 of Chapter 2 of this EIAR and further summarised in Table 6-3 below.

Consultee	Description	Addressed in Section
Clare County	Noted the reference to Cable routes, so an Outline Traffic Management Plan will be needed and any	Section 6.6.1, 6.6.3, 6.6.4
Environment Department	the Area Engineer in terms of trench location and reinstatement.	
	Also noted haulage routes/autotracking however only relevant if turbines are being transported on roads in Clare.	
	A second response to the scoping exercise was also received from an Environmental Officer within Clare	
	County Council in response to previous scoping follow ups stating that the photomontages which were released as part of the virtual consultation room	

Table 6.3 Scoping Responses

⁵ IEMA, (2022). Available at: <u>https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-</u> media.org/filer_public/30/09/30092d8c-08f2-4f57-9f67-

⁹⁴⁴⁶ac52daa5/cd3802 institute_of_environmental_management_and_assessment_guide_determining_significance_for_human_he_alth_in_eia.pdf



	were extremely useful, in particular the view from Inis Mór, and requested that a photomontage point from a selected location at the Cliffs of Moher or along the Cliffs of Moher pathway to allow the Cliffs of Moher Visitor Experience team to visualise the impact (if any) on this tourist site.	
	A Photomontage from the Cliffs of Moher was sent to Clare County Council on the 25/09/2024	
Failte Ireland	Failte Ireland noted the methodology approach along with the comprehensive baseline included within the scope of the EIAR Scoping Document. They advised that, from a tourism perspective it is considered that the following areas are of most relevance and importance:	Section 6.6.1 Appendix 6-1: Tourism Impact Assessment
	 Population and Human Health (including Socio-Economic, Tourism and Recreation). Coastal and Marine Infrastructure and Other Users. Seascape, Landscape and Visual Impacts. Shipping and Navigation; and Marine Archaeology 	
	Fáilte Ireland's response also noted that that beautiful scenery and natural attractions score highly as reasons for tourists visiting Ireland. These factors are environmental and relate particularly to the landscape, coastal and rural areas. They also made reference to specific tourist attractions and general tourism guidelines, including the below;	
	 Connemara Coast and Islands Wild Atlantic Way & EuroVelo 1 – Atlantic Coast Route Wild Atlantic Way Coastal Path Landscape & Visual 	
	The scoping response concluded that the inclusion of the assessment of tourism within the Population and Human Health chapter is noted, along with the tourism considerations referenced in the Seascape, Landscape and Visual Impact Assessment. However, given the sensitivities as outlined above in their submission it was requested that a standalone tourism impact assessment be undertaken to ensure the protection of "the wildness of the landscape" thereby aligning with the Overall Wild Atlantic Way Strategy.	
	A meeting was held with Fáilte Ireland on the 16/10/2024	



Health Service Executive (HSE)	The Scoping Report was referred to the National Environmental Health Services Network Support Unit of the HSE, who also referred it to Public Health, HSE Estates, Health Protection and the appropriate Community Health Organisations within the HSE (who did not provide comment). The National Environmental Health Services Unit advised that they would not be making any comments on the marine aspects of the Project. They did request further details of the OGC when further details were available. Further details were issued in April 2024. They also recommended that a	N/A
	planning documentation.	
Forum Connemara	FORUM Connemara, replied to Scoping Document requesting callback. When called, the representative expressed great support for the Project and is of the opinion that it will be extremely beneficial to the Connemara region. They stated they will respond to the Scoping Document via email to express the full support of FORUM Connemara (not received). Upon submission of the application to ABP, they will make a formal submission on behalf of FORUM Connemara to further demonstrate their support for the Project.	N/A



6.5 **Population and Socio-Economics**

Population and Socio-Economic baseline characterisation consider both the Offshore Site and Onshore Site of the Project separately, in order to provide a greater whole Project assessment, as stated in Section 6.3.1 above. Offshore and Onshore Population Study areas were defined based on factors associated with the Offshore and Onshore Sites which could influence potential effects This baseline characterisation comprises of data relevant to the following Population and Human Health factors;

- > Population Trends
- > Population Density
- > Household Statistics
- > Age Structure
- > Employment and Economic Activity

While the baseline characterisation of both the Offshore Population Study Area and Onshore Population Study Area are addressed alongside each other within the scope of Population and Human Health effects of the Project, they cannot be analysed together due to the large spatial difference of both the influencing effects of the Project components and the distance between the Offshore Site (specifically the OAA) and Onshore Site.

6.5.1 **Population Trends**

In the period between the 2016 and the 2022 Census, the population of Ireland increased by 8.1%. During this time, the population of County Galway grew by 7.8% to 193,323 while the population of Co. Clare grew by 7.7% to 127,938. Other population statistics for the State, County Galway, County Clare and the Study Area have been obtained from the Central Statistics Office (CSO) and are presented in Table 6-4.

Area	2016		2022
	2016	2022	2016-2022
State	4,761,865	5,149,139	8.1%
County Galway	179,390	193,323	7.8%
County Clare	118,817	127,938	7.7%
Offshore Population Study Area Population	7,055	7,387	4.7%
Onshore Population Study Area Population	4,961	5,152	3.9%

Table 6-4 Population Trends 2016 – 2022 (Source: CSO)

Table 6-4 shows that the population within the Offshore Population Study Area increased, although to a lesser extent than both a county and state level, in the period between the 2016 Census and the 2022 Census by 4.7%. The rate of population change between each ED is variable. Bencorr, Bunowen, Moyrus and Skannive saw population decreases of 3.1%, 1.7%, 5.6% and 1% respectively. Derrylea/Derrycunlagh, Errislannan, Gorumna, Inishmore, Knockboy, Lettermore and Roundstone saw varying population increases either side of the national and county average at 1.6%, 8.8%, 3.2%, 9.9%, 8%,



5.7% and 4.7% respectively. While Doonloughan and Owengowla saw high population increases at 18.3% and 14.6% respectively.

The data in Table 6-4 shows that the population of the Onshore Population Study Area increased, although similarly to the Offshore Population Study Area, to a lesser extent than both a county and state level, in the period between the 2016 Census and the 2022 Census by 3.9%. When the population data is examined in closer detail, it shows that the rate of population change within each ED varies. Killimer, Knocknagore and Einagh saw population decreases of 11.5%, 5.6% and 3.7% respectively. While Killard, Kilrush Urban, Clooncoorha and Kilrush Rural saw population increases to varying degrees at rates of 10.5%, 8.5%, 2.9% and 1.7% respectively.

6.5.2 **Population Density**

The population densities recorded within the State, County Galway, County Clare and the Offshore and Onshore Population Study Areas during the 2016 and 2022 Census are shown in Table 6-4.

Area	Population Density (Persons per square kilometre)	
	2016	2022
State	67.8	73.3
County Galway	29.7	32
County Clare	34.4	37.1
Offshore Population Study Area	11.9	12.5
Onshore Population Study Area	29.4	30.6

Table 6-5 Population density in 2016 and 2022 (Source: CSO)

Within the Offshore Population Study Area, the population density saw a slight increase from 11.9 persons per square kilometre to 12.5 persons per square kilometre from the 2016 Census to the 2022 Census. The population density of the Offshore Population Study Area is significantly lower than the State, and marked amount lower than the County population density, describing a sparsely populated area overall.

The population density within the Onshore Population Study Area saw a marginal increase between 2016 and 2022 from 29.4 to 30.6 persons per square kilometre. While this is in line with County trends and a notable amount higher than the Offshore Population Study Area, the population density of the Onshore Population Study Area is significantly lower than the State, describing a sparsely populated area overall.

6.5.3 Household Statistics

The number of households and average household size recorded within the State, County Galway, County Clare and the Onshore and Offshore Population Study Areas during the 2016 and 2022 Census are shown in Table 6-5.



Area	2016		2022		
	No. of Avg. Size Households (persons)		No. of Households	Avg. Size (persons)	
State	1,702,289	2.75	1,841,152	2.74	
County Galway	63,040	2.81	68,021	2.81	
County Clare	43,469	2.69	46,533	2.67	
Offshore Population Study Area	2,721	2.51	2,837	2.48	
Onshore Population Study Area	1,889	2.59	2,029	2.46	

Table 6-6 Number of Households and Average Household Size 2016 and 2022 (Source: CSO)

In general, the number of households within the State, County and both the Offshore and Onshore Population Study Areas has increased, while the average household size has decreased.

Within the Offshore Population Study Area, there were variations within each ED. A number of EDs saw a decrease in average household size, such as Bunowen, Derrylea/Derrycunlagh, Gorumna, Inishmore, Knockboy, Lettermore, Moyrus and Skannive, while other EDs saw an increase in household size in Bencorr, Coonlooughan, Errislannan, Owenegowla and Roundstone.

Similarly, there were variations with each ED of the Onshore Population Study Area, where Einagh, Kilrush Rural, Kilrush Urban and Killimer saw decreases, Knocknagore saw a slight increase and Killard and Clooncoorha saw no change in average household size.

6.5.4 **Age Structure**

Table 6-7 and Table 6-8 present the age structure of the State, County Galway, County Clare and the Onshore and Offshore Population Study Areas within different age groups as defined by the Central Statistics Office during the 2016 and 2022 Census respectively. This data is also displayed in Figure 6-3 and Figure 6-4.

Area	Age Category (2016)					
	0-14	15-24	25-44	45-64	65 +	
State	21.1%	12.1%	29.5%	23.8%	13.4%	
County Galway	22.7%	10.9%	26.3%	25.6%	14.5%	
County Clare	21.5%	11.5%	26.2%	26.0%	14.9%	
Offshore Population Study Area	17.0%	10.2%	22.0%	29.4%	21.4%	
Onshore Population Study Area	20.7%	10.3%	22.7%	26.6%	19.7%	

Table 6-7 Population per Age Category in 2016 (Source: CSO)



Area	Age Category (2022)					
	0-14	15-24	25-44	45-64	65 +	
State	19.7%	12.5%	27.6%	25.1%	15.1%	
County Galway	21%	11.6%	24.1%	26.7%	16.6%	
County Clare	19.5%	12.4%	24.0%	27.1%	16.9%	
Offshore Population Study Area	15.8%	10.4%	21.2%	27.6%	25%	
Onshore Population Study Area	17.9%	11.2%	21.0%	27.8%	22.2%	

Table 6-8 Population per Age Category in 2022 (Source: CSO)

In comparison to a State and County level, the Offshore Population Study Area contains an older population, with the highest population percentage occurring in the 45-64 range age category at 27.6%, compared with a state level with the highest population percentage occurring within the 25-44 age range category. The percentage of the population within the 45-64 range also decreased from the 2016 percentage of 29.4%, while the percentage of those in the, the 65+ age range category has a significantly higher percentage, 25%, than both at a State and County level, and has seen an increase from 21.4% of the total population of the Offshore Population Study Area in 2016. The percentage of those within the 0-14 age category, at 15.8%, is also much lower than both that of the State and county level, at 19.7% and 21%, the percentage of those within this age range has seen a decrease since its 2016 percentage of 17%.

The age category results in the Offshore Population Study Area in particular correspond with the trend of younger generations migrating towards larger towns and cities for greater employment and education opportunities. The decrease in the already lower than national average in the percentage of those in the 0-14 age range and increase in those in the 65+ age range between 2016 and 2022 also further shows the aging population within the Offshore Population Study Area.



Figure 6-3 Offshore Population Study Area Population per Age Category in 2016 (Source: CSO)





Figure 6-4 Offshore Population Study Area Population per Age Category in 2022 (Source: CSO)

Similarly, the Onshore Population Study Area and County Clare contain a high percentage of the population within the older age range categories, which have also seen increases in their percentage age range of the population between 2016 and 2022. The percentage of the population within the Onshore Population Study Area in the 45-64 and 65+ age range categories is higher than both the County and State averages. Conversely, the percentage of the population within the 0-14, 15-24 and 25-44 age range categories in the Onshore Population Study Area is lower than both the State and County, with a decrease in the percentage of the population in the 0-14 and 25-44 age ranges from 2016-2022, from 20.7–17.9%, 22.7-21% respectively, while a slight increase is seen the 15-24 age from 10.3-11.2% from 2016 to 2022.



Figure 6-5 Onshore Population Study Area Population per Age Category in 2016 (Source: CSO)





Figure 6-6 Onshore Population Study Area Population per Age Category in 2022 (Source: CSO)

6.5.5 Employment and Economic Activity

6.5.5.1 Principal Economic Status of the Study Area

The labour force consists of those who are able to work, i.e. those who are aged 15+, out of full-time education and not performing duties that prevent them from working. In 2022, there were 2,531,099 persons in the labour force in the State. Table 6-9 and Table 6-10 show the percentage of the total population aged 15+ who were in the labour force in the State during the 2016 and 2022 Census respectively. This figure is further broken down into the percentages that were at work or unemployed. It also shows the percentage of the total population aged 15+ who were students, retired, unable to work or performing home duties. In Census 2022, for the first time, two categories of unemployment detail were included, Long-term Unemployment and Short-term Unemployment, for the purpose of this assessment, both categories have been grouped into one Unemployment group.

Status		State	County Galway	County Clare	Offshore Study Area	Onshore Population Study Area
% of pop 15+ who labour fo	ulation aged are in the orce	61.4%	61.3%	60.6%	53.6%	55.2%
% of which	At work	87.1%	87.9%	87.6%	76.9%	79.2%
are:	First time job seeker	1.4%	1.3%	1.2%	1.5%	1.2%
	Unemployed	11.5%	10.8%	11.2%	21.6%	19.6%

Table 6-9 Economic status of the Total Population Aged 15+ in 2016 (Source: CSO)



% of pop 15+ who labour fo	ulation aged are not in the rce	38.6%	38.7%	39.4%	46.4%	44.8%
% of which	Student	29.4%	33.0%	28.4%	19.0%	21.0%
are:	Home Duties	21.1%	19.9%	20.2%	23.6%	18.1%
	Retired	37.6%	36.2%	40.8%	44.1%	46.0%
	Unable to work	10.9%	10.0%	9.8%	12.3%	14.1%
	Other	1.0%	1.0%	0.9%	1.0%	0.8%

Table 6-10 Economic status of the Total Population Aged 15+ in 2022 (Source: CSO)

Status		State	County Galway	County Clare	Offshore Population Study Area	Onshore Population Study Area
% of population aged 15+ who are in the labour force		61.2%	60.6%	59.4%	51.5%	52.5%
% of which are:	At work	91.7%	92.8%	91.9%	86.2%	86.4%
	First time job seeker	1.4%	1.1%	1.3%	1.6%	2.8%
	Unemployed	7.0%	6.2%	6.8%	12.1%	10.9%
% of population aged 15+ who are not in the labour force		38.8%	39.4 %	40.6%	48.5 %	47.5%
% of which are:	Student	28.6%	27.7%	28.0%	19.1%	17.5%
	Home Duties	17.0%	16.8%	15.7%	16.7%	15.4%
	Retired	41.0%	43%	43.8%	49.7%	47.9%
	Unable to work	11.8%	10.8%	10.7%	11.9%	17.2%
	Other	1.7%	1.7%	1.8%	2.7%	1.9%



The principal economic status of those within the Offshore Population Study Area is overall lower than that of both the State and County for both the 2016 and 2022 Census years. There were marginal changes in the percentage of those in the Labour Force at State and County levels between 2016 and 2022, while a decrease was seen between 2016 and 2022 in the Offshore Population Study Area from 53.6% to 51.5%. Rates on unemployment within the Offshore Population Study Area are considerably higher, at 12.1% than that of the State of 7% and County Galway of 6.2% in 2022, but the drop in unemployment rates are similar at a State, County and Population Study Area level with drops in unemployment rates of 48.6%, 54.1% and 56.4% respectively. Of those who are not in the Labour Force, in 2022 the highest percentage occurs within the 'Retired' category at both a county level of 43% and an Offshore Population Study area of a significant 49.7%, which has increased from 44.1% in 2016. Along with the low percentage of the population within the 'Student' category at 19.1% in 2022 and 19% in 2016, lower than both the State and County, signifies an older population within the Offshore Population Study Area.

Overall, the principal economic status of those within the Onshore Population Study Area is lower than both that of the State and County levels. The rate of unemployment in 2022 is also higher in the Onshore Population Study Area, at 10.9% than at a State level of 7%, and County level of 6.8%. When compared with 2016, though one major change can be noticed in the decreases in rates of unemployment in the Onshore Population Study Area. In 2016 the rate of unemployment was 21.6%, with Kilrush Urban having one of the highest rates of unemployment (among towns with a population of at least 1,500 people)⁶ at 14%, which fell to 8% in 2022. Of those who were not in the Labour Force as of the 2022 census, the highest percentage occurred within the 'Retired' category, which is also seen at both a State and County level. The percentage rate of those in the 'Retired' category within both County Clare and the Onshore Population Study area was seen to increase, similar to trend seen in the Offshore Population Study area, from 2016 to 2022, while the rate of those within the 'Student' category was seen to decrease. There is also a high percentage of those with the 'Unable to work due to permanent sickness or disability' category, at 17.2%, in comparison to both State and County levels of 11.8% and 10.7% respectively.

6.5.5.2 Employment by Socio-Economic Group

Socio-economic grouping divides the population into categories depending on the level of skill or educational attainment required. The 'Higher Professional' category includes scientists, engineers, solicitors, town planners and psychologists. The 'Lower Professional' category includes teachers, lab technicians, nurses, journalists, actors and driving instructors. The 'Non-Manual' category occupations include photographers, civil service administrative workers, police officers, fire service officers and educational assistants. Skilled occupations are divided into manual skilled such as bricklayers and building contractors; semi-skilled such as roofers and gardeners; and unskilled, which includes construction labourers, refuse collectors and window cleaners. Figure 6-7 shows the percentages of those employed in each socio-economic group in the State, County Galway and the Offshore Population Study Area during 2022. Figure 6-8 shows the percentages of those employed in each socio-economic group in the Onshore Population Study Area during 2022.

The CSO employment figures grouped by socio-economic status includes the entire population for the Offshore Population Study Area, Onshore Population Study Area, Counties 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 force.

⁶ CSO.ie (2023). Press Statement Census 2022 Results Profile 7 - Employment, Occupations and Commuting Clare. Available at: << <u>https://www.cso.ie/en/csolatestnews/pressreleases/2023pressreleases/pressstatementcensus2022resultsprofile7-</u> employmentoccupationsandcommutingclare/ >>





Figure 6-7 Offshore Population Study Area Employment by Socio-Economic Group in 2022 (Source CSO)

The highest level of employment within the Offshore Population Study Area was recorded within the 'Non-Manual' category, which is a higher percentage than that of both the State and County level, along with the 'Own Account' category. This was followed by the 'Other' category, which was also higher than both the State and County Galway. The number of those employed within the 'Lower Professional' category is the only category which is lower in the Offshore Study Population Area than both the State and County Galway. Within the 'Employer/Manager', 'Higher Professional', 'Skilled Manual', 'Semi Skilled', 'Unskilled', 'Farmer' and 'Agricultural Worker' categories fall between the State and County Galway levels.



Figure 6-8 Onshore Population Study Area Employment by Socio-Economic Group in 2022 (Source: CSO)

The highest level of employment in the Onshore Population Study Area was recorded in the 'Non-Manual' category, followed by 'Other', which were higher than those recorded for both the State and County Clare. The levels of employment within the 'Lower Professional' category were lower than



those at both a state And county level, while those recorded within the 'Employer/Manager', 'Higher Professional', 'Skilled Manual', 'Semi-Skilled', 'Unskilled', 'Own Account', 'Farmer' and 'Agricultural Worker' fall between the State and County averages to varying degrees.

6.5.5.3 Employment and Investment Potential in the Irish Wind Energy Industry

6.5.5.3.1 Background

A report entitled 'Jobs and Investment in Irish Wind Energy – Powering Ireland's Economy' was published in 2009 by Deloitte, in conjunction with the Irish Wind Energy Association (IWEA) (as it then was, now Wind Energy Ireland). This report focused on the ability of the Irish wind energy industry to create investment and jobs. In terms of the overall economic benefit to be obtained from wind energy, the report states in its introduction:

"Ireland is fortunate to enjoy one of the best wind resources in the world. Developing this resource will reduce and stabilise energy prices in Ireland and boost our long-term competitiveness as an economy. It will also significantly reduce our dependence on imported fossil fuels."

More recently, a report published in 2014 by Siemens entitled 'An Enterprising Wind - An economic analysis of the job creation potential of the wind sector in Ireland', also in conjunction with the former Irish Wind Energy Association (IWEA), concluded that, 'a major programme of investment in wind could have a sizeable positive effect on the labour market, resulting in substantial growth in employment.' The report considers the three potential types of direct employment created, as a result of increased investment in wind energy, to be:

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

The Sustainable Energy Authority of Ireland⁷ demonstrates in their 'Wind Energy Roadmap 2011-2050', that 'the wind energy resource represents a significant value to Ireland by 2050. This value is presented in terms of its ability to contribute to our indigenous energy needs, the benefits of enhanced employment creation and investment potential, and the ability to significantly abate carbon emissions to 2050.'

The 2014 report *'The Value of Wind Energy to Ireland*^{\pounds}, published by Pőyry, stated that growth of the wind sector in Ireland could support 23,850 jobs (construction and operation and maintenance phases) by 2030. The report states that if Ireland instead chooses to not develop any more wind, then by 2030 the country will be reliant on natural gas for most of our electricity generation, at a cost of €671 million per annum in fuel import costs.

Internationally, a report issued by WindEurope in September 2017, entitled 'Wind energy in Europe: Scenarios for 2030' details various scenarios in Europe in respect to the EU target for renewable energy. According to WindEurope's High Scenario, which assumes favourable market and policy conditions

⁷ SEAI (2019), <u>https://www.seai.ie/publications/Wind_Energy_Roadmap_2011-2050.pdf</u>

⁸ Poyry (2014), https://windenergyireland.com/images/files/9660bd6b05ed16be59431aa0625855d5f7dca1.pdf



including the achievement of a 35% EU renewable energy target (slightly higher than the 32% EU target for renewables), '397 GW of wind energy capacity would be installed in the EU by 2030, 298.5 GW onshore and 99 GW offshore. In this scenario, the wind energy industry would invest €351bn by 2030, and it would create 716,000 jobs'.

Carbon Trust's March 2020 report 'Harnessing our potential – Investment and Jobs in Ireland's offshore wind industry ⁴⁰ highlighted the significant potential investment and increased opportunities surrounding the acceleration of Ireland's offshore wind energy development, while also outlining the major potential for missed opportunities due to lack of development infrastructure and supply chain issues. Ireland's current development pipeline includes 12.3GW of offshore wind energy, representing an approximate lifetime supply chain spend of over €60 billion. Under the 2019 Climate Action Plan, a minimum of 3.5GW of offshore renewable energy was appointed, later increased to 5GW under the 2020 Programme for Government, (which currently stands at at least 5GW under the most recent 2024 Climate Action Plan) The report estimated this would create over 20,000 employment opportunities over their lifetime, between all stages, with significant potential for Ireland to develop a successful floating offshore wind technology manufacturing industry with strategic investment. A key measure of the Renewable Energy Support Scheme (RESS) is that all projects must contribute a mandatory €2/MWh to a corresponding Community Benefit fund. These pre-established funds will ensure that RESS projects support sustainable community initiatives throughout their lifetimes. Carbon Trust have estimated that this will amount to over €30 million of community investment annually.

A 2020 study 'Economic and employment impacts of offshore wind for Ireland: A value chain analysis'¹⁰ estimated the domestic Gross Value Added (GVA) of the offshore wind sector in Ireland, to evaluate its economic and employment potential. The study suggested that "2.5-4.5GW of domestic offshore wind development could create between 11,424 and 20,563 supply chain jobs and generate between ℓ 763m and ℓ 1.4bn in gross value added". This analysis also estimated that, through timely investment in training and infrastructure improvements to accommodate offshore windfarm projects, Ireland could also act as a major player in the European or Global offshore market through exports. A report published by MaREI, the SFI Research Centre for Energy, Climate and Marine, hosted by University College Cork¹¹ (March 2021) details that in order to meet the government target of net-zero carbon emissions by 2050, at least 25,000 jobs will be created in the development of onshore and offshore wind to meet our zero carbon targets.

A more recent report which was issued by WindEurope in February 2022, titled '*Wind Energy in Europe: 2021 Statistics and the Outlook for 2022-2026*' details various scenarios in Europe in respect to the EU target for renewable energy. According to WindEurope's report, '*Europe installed 17GW (11 GW in the EU-27) of new wind capacity in 2021. This is not even half of what the EU should be building to be on track to deliver its 2030 Climate Energy Goals.*' The report continued on to state that 'We expect Europe to install 116 GW of new wind farms over the period from 2022-2026. Three quarters of these new capacity additions will be onshore wind.' The report also states that 'The European Commission modelling shows that we need at least 79 GW offshore wind but National Government have pledged to build at least 92 GW offshore wind capacity by 2030.'

A joint Wind Energy Ireland (WEI) and MaREI 2023 report, '*Ireland Offshore Wind Potential – From Net Zero to Net Exporter*¹² assessed the capacity of offshore wind in Ireland, based on '*what is required*' for Ireland to provide for future needs and meet climate targets. This report not only emphasised Irelands opportunity to achieve 'Net-Zero' by 2050 through the deployment of offshore wind, but to subsequently gain a position as a 'Net-Exporter' to *"a pan-European renewable energy generation and transmission system"*.

⁹ Carbon Trust (2020) <u>https://windenergyireland.com/images/files/final-harnessing-our-potential-report-may-2020.pdf</u>

¹⁰ Kandrot et al., (2020) <u>https://cora.ucc.ie/server/api/core/bitstreams/6a4d1b5a-cf82-4761-aec2-90e78166d401/content</u>

¹¹ MaREI (2021), https://www.marei.ie/wp-content/uploads/2021/03/Our-Climate-Neutral-Future-Zero-by-50-Skillnet-Report-March-2021-Final-2.pdf

¹² WEI and MaREI (2023) <u>https://windenergyireland.com/images/files/irelands-offshore-wind-potentialmareifinal120523.pdf</u>



More recently, a January 2024 joint WEI and Skillnet report was produced by BVG Associates, *Building our Potential – Ireland's Offshore Wind Skills and Talent Needs*^{3/3} which considered the challenges and opportunities which will be faced in reaching Ireland's 2030 and 2050 offshore wind energy targets. While the report highlights opportunities to expand the offshore wind industry within the country, due to the presence of successful parallel industries, it also states that there are a number of challenges, within both the Irish market and skills force, which need to be solved in order to meet capacity targets. The major emphasis of the report is the need to develop local skills in order to meet offshore wind targets within the country, which *'If achieved, and the country develops a local skills base able to meet this demand, Ireland will have the opportunity to export its expertise worldwide.'*

As of April 2024, there were 6,094.7 Megawatts (MW) of wind energy capacity installed on the island of Ireland¹⁴. Of this, 4,730.4 MW was installed in the Republic of Ireland, of which only 25 MW is from Offshore Wind Energy, at Arklow Bank Wind Park, Co. Wicklow. The majority of the Republic of Ireland's installed wind energy capacity is located in Counties Donegal, Galway, Cork, Clare and Kerry, contributing to employment potential on the Island of Ireland.

Appendix 6-2 Economic Impact Assessment

A standalone Economic Impact Assessment was conducted by Biggar Economics to assess the potential economic effect of the development, construction, operation and maintenance and decommissioning stages of the Project. The report assesses the potential economic impact of each stage of the project within the regions of County Galway, the Atlantic Region and Ireland, under different capacity scenarios within each region. The report estimates the direct and indirect impacts associated with all stages of the Project. In an Irish context, the Project would represent direct, indirect and induced impacts of an estimated €81 million Gross Value Added (GVA) and 837 full time equivalent jobs annually during the development and construction phase, €13 million annual (GVA) and support 174 full time equivalent jobs annually, totalling an estimated 5,095 full time equivalent jobs over the operational phase and an estimated €4 million GVA and support 69 full time equivalent jobs annually during the decommissioning phase, with Project lifetime GVA amounting to approximately €564 million The report also provides recommendations for maximising economic impacts from the Project, through the development of Irelands wider offshore wind supply chain.

6.5.5.3.2 Energy Targets

The Climate Action Plan 2024 (CAP 2024)¹⁵ was launched in December 2023. Following on from Climate Action Plans 2019, 2021 and 2023, CAP 2024 sets out the roadmap to deliver on Ireland's climate ambition. It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022 following the Climate Action and Low Carbon Development (Amendment) Act 2021, which commits Ireland to a *legally binding target of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030.* The CAP 2024 sets out indicative ranges of emissions reductions for each sector of the economy. Under this revised CAP, Ireland has set targets of 6 GW of onshore wind energy by 2025, to increase to 9 GW of onshore wind energy by 2030, with at least 5 GW of offshore wind energy by the end of 2030.

Further information on energy and climate change targets is detailed in Chapter 2 of this EIAR.

Irelands Offshore Wind Delivery Taskforce was established Apr 2022. The Taskforce is a crossgovernmental body who work in collaboration in order to deliver the Offshore Wind Energy

¹⁴EirGrid (2024), https://www.eirgrid.ie/grid/system-and-renewable-data-reports
 ¹⁵Government of Ireland - Climate Action Plan 2024. Available at:

¹³ WEI & Skillnet, BVG Associates (2024). Building our Potential – Irelands Offshore Wind Skills and Talent Needs. Available at: https://windenergyireland.com/images/files/web-bvg-report-jan-2024.pdf

https://www.gov.ie/pdf?file=https://assets.gov.ie/284675/70922dc5-1480-4c2e-830e-295afd0b5356.pdf#page=null



Programme, a system wide plan setting out the road map for offshore wind activities in the country. Their latest '*Annual Review 2023 and Key Actions for 2024* details progress which was made in 2022/2023, including the awarding of the first MACs to the Phase One offshore wind Projects, and the success of ORESS 1 in procuring over 3GW of offshore renewable energy.

The review details the establishment of MARA in July 2023 and the amendments made to the Maritime Area Planning Act 2021 and other associated Acts in aiding offshore wind in Ireland. The document also provides an indicative roadmap towards auction, and a further 20GW of ORE for delivery by 2040. The report highlights the progress which has been made by each of department within the workstreams under their remit, as defined in the Offshore Renewable Energy Programme, and the key actions due for completion.

6.5.5.3.3 Economic Value

A 2019 report by Baringa, 'Wind for a Euro: Cost-benefit analysis of wind energy in Ireland 2000-2020', has analysed the financial impact for end consumers of the deployment of wind generation in Ireland over the period 2000-2020. The report calculates how the costs and benefits for consumers would have differed if no wind farms had been built. The analysis indicated that the deployment of 4.1 GW of wind generation capacity in Ireland between 2000 and 2020 (2018-2020 results being projective) will result in a total net cost to consumers, over 20 years, of $\in 0.1$ bn ($\epsilon 63$ million to be exact), which equates to a cost of less than $\epsilon 1$ per person per year since 2000. Further cost benefit analysis noted that wind energy has delivered $\epsilon 2.3$ billion in savings in the wholesale electricity market. As such, the economic benefit of renewable energy to consumers is greater than what would have been if Ireland did not invest in wind power. This corresponds with the Deloitte report which indicates that more wind energy feeding into the national grid will result in lower and more stable energy costs for consumers.

The Project will, if consent is granted, continue to contribute to the economic value that renewable energy brings to Ireland by reducing the reliance of fossil fuels in Ireland and assist in meeting our renewable energy targets as set out by the EU.

6.5.5.3.4 Need for Improvements and Upgrades to Grid Infrastructure

The International Energy Agency (IEA) released a November 2023 report, *"Electricity Grids and Secure Energy Transitions"*¹⁶, which focused on the current standing of the world's electricity grids, in order to understand our existing energy grid systems capacity to enable the clean energy transition. In 2022, Ireland was found to have the highest level of renewable energy curtailment when compared with other countries with strong renewable energy markets. There is a significant link between the curtailment of renewable energy due to grid congestion and the lack of progression and improvements of grid infrastructure. As renewable energy generation and capacity continues to increase, so too will the share of renewable energy curtailment in areas where grid infrastructure investment does not keep pace with renewable energy development.

EirGrid and SONI released the all-island "*Shaping Our Electricity Future Roadmap*"¹⁷ in July 2023, which cited grid capacity as a macro level constraint within the challenge of meeting the Climate Action Plan targets, and in order to decarbonise the energy sector. The roadmap outlines the requirement of the continued development of grid infrastructure, including new transmission overhead lines, underground cables and substations and maximising the use of existing grid infrastructure in order to achieve the significant increases in capacity needed in areas which have high onshore and offshore wind generation availability, but limited grid capacity.

¹⁶ IEA, Electricity Grids and Secure Energy Transitions (2023), <u>https://iea.blob.core.windows.net/assets/ea2ff609-8180-4312-8de9-494bcf21696d/ElectricityGridsandSecureEnergyTransitions.pdf</u>

¹⁷ EirGrid and SONI, Shaping our Electricity Future Roadmap Version 1.1 (July 2023), <u>https://www.eirgridgroup.com/site-files/library/EirGrid/Shaping-Our-Electricity-Future-Roadmap_Version-1.1_07.23.pdf</u>



Increasing Irelands renewable energy infrastructure and ensuring that we can reach Energy Targets is reliant on the improvement of grid infrastructure throughout the country but in particular within the West and Mid-West regions. The need for grid reinforcements in western counties has been emphasised since the release of the National Spatial Strategy for Ireland 2022-2020¹⁸ and the National Development Plan 2021-2030¹⁹. A significant improvement of grid infrastructure associated with offshore renewable energy is required in order to achieve Irelands target of 5 GW installed offshore energy generation by 2030, along with providing energy security and independence. It should be noted, that due to the strength of the Project grid connection location, no deep reinforcement works are required to deliver 450 MW capacity onto the national grid system.

6.6 **Tourism and Recreation**

6.6.1 **Tourism**

Baseline tourism information for both the offshore and onshore aspects of the Project have been assessed based on both Overseas and Domestic Tourism and Revenue within both the Offshore and Onshore Population Study Areas. Further assessment of specific offshore and onshore tourist attractions is described in Section 6.6.1.3 and Section 6.6.1.4 respectively. A standalone Tourism Impact Assessment of the Project has also been completed and included in Appendix 6-1 of this EIAR.

Tourism is one of the major contributors to the national economy and is a significant source of full time and seasonal employment. Fáilte Ireland's *Tourism Barometer: Strategic Research and Insight*²⁰ document notes that 52% of the Irish businesses surveyed have reported an increase in tourism numbers and revenue in 2023 in comparison to 2022.

The Galway Tourism Strategy 2023-2031 outlines the importance of the tourism assets in County Galway, providing a holistic approach to the development of tourism sustainably in the county, within a wider county development context. The Offshore Population Study Area is within both Zone 5 and Zone 6 of the strategic tourism development zones. The tourism strategy highlights the strengths, challenges and opportunities which are of importance for these zones, which have been developed into an associated action plan as part of the tourism strategy. The tourism strategy also highlights the need to focus on environmentally sound growth of tourism, which aligns with national and local Climate Action Plans. The principles of sustainability and promotion of sustainable tourism growth are key factors of the strategy.

Tourism is a key economic sector within both the Offshore and Onshore Population Study Areas. Within the Atlantic Region, from Donegal to Clare, employment in tourism industry is above the average employment share than in Ireland as a whole. The Wild Atlantic Way, of which Connemara represents a significant destination along this route, is a key tourism focal point for both domestic and international visitors and represents a 39% share of international visitors to Ireland and 44% of domestic visitors. Appendix 6-1 further describes the key role that tourism plays in Connemara and the wider Wild Atlantic Way region.

Fáilte Ireland responded to the Scoping Document which was sent out to all relevant stakeholders in September 2023 with the main- focus of their responses regarding tourism, landscape and visual effects

¹⁹ National Development Plan (2021) Department of Public Expenditure, NDP Delivery and Reform https://www.gov.ie/pdf?file=https://assets.gov.ie/200358/a36dd274-736c-4d04-8879-b158e8b95029.pdf#page=null

²⁰ Tourism Barometer Strategic Research and Insight (September 2023) Fäilte Ireland https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/failte-ireland-tourism-barometerseptember-2023.pdf?ext=.pdf

¹⁸ National Spatial Strategy for Ireland 2022-2020 (2002) National Planning Framework <u>https://www.npf.ie/wp-content/uploads/Completea-1.pdf</u>



of the Project. Particular attention was requested to be paid to the effects on views from tourist locations and natural attractions, in particular regarding the offshore element of the Project.

Further consultation was held between Fáilte Ireland and the Project team in October 2024. A meeting was held online involving members of Project team and including visual and tourism specialists. An overview was provided on the Seascape and Landscape Visual Impact Assessment and associated photomontages. Further discussion was held on points which had been made by Fáilte Ireland during the initial scoping phase. Information on the draft Tourism Impact Assessment (Appendix 6-1) was presented and feedback from Fáilte Ireland regarding methodologies, and the provision of information with the assessment report was received. Further discussion was held between the Project team and Fáilte Ireland regarding tourism queries, and the potential effects of the Project on valuable tourism amenities along the west coast of Ireland. These concerns and suggestions raised by Fáilte Ireland following this meeting were taken into account within the EIAR for the Project.

6.6.1.1 **Overseas Tourism and Revenue**

The most recent Overseas Tourism and Revenue data available was published in 2021 by Fáilte Ireland²¹ which describes key overseas tourism performance data for 2019. During 2019, total tourism revenue generated in Ireland was approximately \notin 9.5 billion, an increase on the \notin 9.1 billion revenue recorded in 2018. Overseas tourist visits to Ireland in 2019 grew by 0.7% to 9.7 million.

Ireland is divided into seven tourism regions. Table 6-11 shows the total tourism revenue and breakdown of overseas tourist numbers to each region in Ireland during 2019.

Region	Total Revenue (€m)	Total No. of Overseas Tourists (000s)
Dublin	€2,305	6,927
Mid-East/Midlands	€400	1,124
South-East	€282	998
South-West	€995	2,373
Mid-West	€480	1,455
West	€701	2,056
Border	€411	1,365
Total	€5,574	16,298

Table 6-11 Overseas Tourists Revenue and Numbers 2019 (Source: Fáilte Ireland)

The Project site is located within both the West and Mid-West Tourism Regions. According to 'Regional tourism performance in 2019' (Fáilte Ireland, September 2019), the West Region, which comprises of Galway, Mayo and Roscommon, and includes the Offshore Population Study Area benefitted from approximately 12.6% of the total number of tourists and 12.6% of associated tourism revenue. The Mid-West Region, which comprises Counties Clare, Limerick and Tipperary and includes

²¹ Key Tourism Facts 2019 (March 2021) Fáilte Ireland,

https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/2022-key-tourism-facts.pdf?ext=.pdf



the Onshore Population Study area, benefitted from approximately 8.6% of the total number of tourists and 8.9% of associated tourism revenues generated in Ireland in 2019.

Although regional data for 2018 or more recent years are not available, Table 6-12 presents the most recent breakdown of overseas tourist numbers and revenue to the West and Mid-West Tourism Regions in 2017²². In the West Region, County Galway was host to 1,673,000 no. tourists in 2017, approximately 81.6% of all overseas tourists in the region. County Clare is observed to have the -highest tourist numbers within the Mid-West Region during 2017 with 749,000 visitors, approximately 51.7% of all visitors. While visitor numbers were higher, tourism revenue in County Clare was lower than neighbouring county Limerick, which received €261m in comparison to €158m in County Clare.

West Tourism Region	Total Revenue (€m)	Total No. of Overseas Tourists (000s)
Galway	€589	1,673
Мауо	€78	324
Roscommon	€27	54
Mid-West Tourism Region	Total Revenue (€m)	Total No. of Overseas Tourists (000s)
Clara		
Clare	€158	749
Limerick	€158 €261	749 647

Table 6-12 Overseas Tourism to West and Mid-West Tourism Regions during 2017 (Source: Fáilte Ireland)

6.6.1.2 **Domestic Tourism and Revenue**

Fáilte Irelands latest key tourism performance data was released in October 2023, which provides Domestic Tourism and Revenue data for 2022^{23} . During 2022, total domestic expenditure was approximately €2,930 million, an increase from €2,146.6 million in 2019 and €2,006 million in 2018.

Table 6-13 shows the total estimated expenditure and breakdown of domestic tourist trips numbers to each of Irelands seven tourist regions during 2022.

Region	Estimated Expenditure (€m)	Total No. Trips (000s)
Dublin	€419	1,861
Mid-East/Midlands	€395	1,957

Table 6-13 Domestic Tourism

²² 2017 Topline Tourism Performance by Region (August 2018) Fáilte Ireland,

<u>https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/2_Regional_SurveysReports/201</u> 7-topline-regional-tourism-performance.pdf?ext=.pdf

²³ Key Tourism Facts 2022 (October 2023) Fáilte Ireland, Available at:

https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/2022-key-tourism-facts.pdf?ext=.pdf



South-East	€381	1,899
South-West	€665	2,763
Mid-West	€261	1,322
West	€459	1,866
Border	€350	1,606
Total	€2,930	13,274

The offshore and onshore elements of the Project are located within both the West and Mid-West Tourism Regions. The West Region, which comprises of Galway, Mayo and Roscommon, and includes the Offshore Population Study Area benefitted from approximately 14% of total domestic trips and 15.6% of associated estimated expenditure. The Mid-West Region, which comprises Counties Clare, Limerick and Tipperary and includes the Onshore Population Study Area, benefitted from approximately 10% of total number of tourists and 8.9% of associated estimated expenditure in Ireland in 2022.

Tourism Ireland Red C Sentiment Tracker

An October 2024 Red C Tourism Sentiment Tracker²⁴ report, commissioned by Tourism Ireland was recently released, detailing the views of prospective visitors to Ireland, and the reasons as to why they would choose Ireland as a tourism destination. The main findings of the report provided the top reasons which compel overseas tourism.

- > For 81% of respondents', exploration is the key motivator for a holiday to any destination, with a desire to explore landscapes, culture and new places.
- > Ability to disconnect is the second most important motivator, with 71% wanting to unwind, disconnect and enjoy special moments with others.
- > Ireland is twice as likely to be seen as a long-stay destination (44% respondents) versus a short break destination (20% respondents).
- > 78% see the island of Ireland as a place to visit any time (peak or off-peak) showing our versatility as a tourist destination all year round.

The report also notes that in 2023, as the first full year of tourism trading post-pandemic, the estimated combined tourism revenue from tourism on the island of Ireland was $\in 6.4$ billion, ahead of 2019 levels.

6.6.1.2.2 Offshore Population Study Area

Tourist Attractions

Within Ireland, marine tourism is estimated to represent 10% of the overall tourist sector, with activities such as angling, diving, sailing, surfing and sea kayaking contributing to the \notin 1.94 billion annual spend by overseas visitors in Ireland's coastal areas²⁵.

²⁴ Red C and Tourism Ireland (2024). Available at: <u>https://www.tourismireland.com/docs/default-source/sentiment-tracker-research-july-2024.pdf?sfvrsn=84/8b64b_1</u>

research/sentiment-tracket-research/sentiment



Due to the nature of the Offshore Site and the distance from the Co. Galway coastline (5 km at the nearest point), it is considered that the OAA is unlikely to support significant tourist attractions. Chapter 16: SLVIA, addresses potential visual effects on tourist features within the wider Offshore SLVIA Study Area. The SLVIA features an assessment of a number of locations which are of significance at a national or international level in terms of heritage, recreation and tourism, including locations such as the Connemara coastline, which is popular with tourists and holiday makers and traversed by the Wild Atlantic Way tourist driving route There are however a number of tourist attractions along the Co. Galway coastline associated with the Offshore Population Study Area EDs (Table 6-1) and surrounding areas, such as those addressed below.

Key tourist attractions in County Galway include Connemara National Park, the Connemara coast and the Aran Islands. The Connemara coast, part of which comprises Ireland's largest Gaeltacht area, includes an array of tourist attractions which can be found in towns and villages such as Clifden, Ballyconneely, Roundstone, An Caiseal/ Cashel, Carna, Cill Chiaráin/ Kilkieran/, Leitir Meallain, An Cheathrú Rua, Ros an Mhíl and An Spidéal, many of which are within 25km of the Offshore Site.

An in-depth assessment of the potential effect that the Sceirde Rocks Offshore Wind Farm could potentially have on tourism in Connemara is included in Appendix 6-1 of this EIAR. This tourism Impact Assessment includes a survey conducted both with the local community and with a variety of tourists to the area, with a focus on the potential impacts due to the presence of the Project, and tourism development opportunities which may be represented by the development of the Project.

The Discover Ireland website (www.discoverireland.ie) lists the following attractions within the vicinity of the Offshore Site and more predominantly the OAA:

- St. Macdara's Island, a pilgrimage site, is located approximately 2.5 km from the Offshore Site at its closest point. St. Macdara's Island s a small granite island with a small stone church, founded by St. Macdara.
- > Inisnee Island, approximately 10 km north of the Offshore Site, in Roundstone Bay has scenic views and walks on offer, accessible to the mainland.
- Inis Mór, the largest of the Aran Islands, is located approximately 13 km southeast of the Offshore Site. The Aran Islands are an important historical, cultural and historical site, the landscape behind numerous stories and poems and songs. There are numerous tourism opportunities available between the islands, including boat trips, walks and cycling and a number of festivals held year round.
- Ballynahinch Castle is located approximately 20km north of the Offshore Site. The hotel and estate have a number of offerings such as fishing, boats trips estate walks and the activities such as the Ballynahinch Castle Islands and Lobster experience.
- Ionad Cultúrtha an Phiarsaigh Conamara/Pearse Cottage is approximately 23 km north of the Offshore Site. The Centre offerings an interactive exhibition surround 1916 Rising leader Padraig Pearse's legacy in the cottage he built.
- > The Twelve Bens, a sharp-peaked mountain range is approximately 25km north of the Offshore Site, offering climbing and hiking opportunities with views to all sides, towards both the County Mayo and Galway coasts.
- Connemara National Park is located over 30 km to the north of the Offshore Site,
- > To the east of the site, in Co. Clare and further described below, are the Cliffs of Moher and Doolin Village, which acts as a transport hub for the Aran Islands ferries.
- Connemara Airport, which acts as another transport hub to the Aerodromes on the Aran Islands, is located more than 23km from the OAA.



6.6.1.3 **Onshore Population Study Area**

Tourist Attractions

There are no key identified tourist attractions pertaining specifically to the location of the Onshore Site itself. The varied natural landscape and scenic amenity of this area provide many opportunities for general outdoor recreation within the wider area including walking, cycling and horse-riding, with some specific examples described below.

Key tourist attractions within County Clare include the Cliffs of Moher, the Burren National Park and Bunratty Castle and Folk Park. Within the north and west of the county, many additional tourist attractions are found in Ennis, Miltown Maybay and Spanish Point, Lahinch and Liscannor, Quilty, Kilkee, Kilrush, Lisdoonvarna, Kilfenora, Doonbeg and Cooraclare, many of which lie within 20 kilometres of the Onshore Site. The Discover Ireland website (www.discoverireland.ie) lists the following attractions within the close vicinity of the Onshore Site:

- > White Strand Beach at Doonbeg, is located approximately 1km northwest of the OLL
- Vandeleur Walled Garden and Visitor Centre and associated woodland walking routes are located approximately 1km southwest of the OGC route.
- > The Lahinch to Kilrush walking route where there is a walking and cycling trail along a dismantled railway stretching 40km from Lahinch to Kilrush, crosses over the OGC route at one point, approximately 2km from Moyasta village.
- Scattery Island, an uninhabited island is located just offshore of Kilrush, lies approximately 4.5km from the OGC route at its closest point. Sailings occur from Kilrush Marina between May and September with guided tours available during this season.
- The OGC proposed route passes through the Kilrush Golf Club for approximately 1.1km, predominantly through existing access roads and tracks within the Golf Club.

There are a number of caravan and mobile home parks in the area surrounding the Onshore Site. The Aylevarroo Caravan Park is located 2km west of the Onshore Substation and the Kilrush Marina Caravan Park is located approximately 2km southwest of the closest point of the OGC route. There are a number of campsites, Eco-Camping and glamping sites within the vicinity of the Onshore Site.

6.6.1.4 **Tourist Attitudes to Wind Farms**

Offshore Wind Farms and Tourism in the EU

'The Impacts of Offshore Wind Farms (OWFs) on Local Tourism and Recreation – Evolving Lessons from Practice' 2022 Study

A 2022 study on '*The Impacts of Offshore Wind Farms (OWFs) on Local Tourism and Recreation – Evolving Lessons from Practice*' ²⁶, following on from 2021 research described below, examined the nature of impacts of the offshore wind industry on tourism and recreational activities in coastal communities, predominantly in the UK. The findings of the study which examined available literature, offshore wind energy development Environmental Statements and reviews of actual impacts of recent offshore wind farms, allowed for the identification of overall tourism impacts and recommendations for future developments. The study also describes "*The Hidden Potential*' of *Community Benefits Schemes*" and the positive implications that these funds can have for local tourism and recreation.

²⁶ Glasson et al., (2022). Available at: <<

https://www.researchgate.net/publication/365426413 The Impacts of Offshore Wind Farms_OWFs_on_Local Tourism_and Re creation_-Evolving_Lessons_from_Practice_Keywords_Offshore_Wind_Farms_impacts_on_local_tourism_and_recreation >>>



Some key findings of the 2022 study are provided below:

"whilst impacts on tourism and recreation are important considerations in OWF planning/development, they are generally assessed as minor/negligible, relatively benign and in some cases positive.

indeed near coast OWFs can be a tourism attractant partly by virtue of their innovative nature, although the innovative attraction may decline as OWFs become more common.

most OWF projects include tourism/recreation mitigation and enhancement measures, but not all enhancement measures, such as visitor centres, survive.

OWF community benefits funds are becoming of increasing importance for tourism initiatives, especially in the UK, yet to date they have received little coverage in the literature and case studies.

there are data limitations on research on tourism/recreation impacts, including for example research gaps on variations in impacts between OWF construction and O&M stages".

Recommendations for offshore wind developments include the need for early engagement between stakeholders in order to mitigate any potential negative impacts and allow for the enhancement of potential positive tourism and recreational impacts, in particular the use of the offshore wind farm as a tourism and recreation factor itself, and the need for long-term monitoring of tourism impacts over the lifetime of the offshore wind farm.

'The Impacts of Offshore Wind Farms on Local Tourism and Recreation: A Research Study' 2021 Study

A 2021 Vattenfall research study '*The impacts of offshore wind farms on local tourism and recreation: a research study*⁴²⁷ assessed the effects on tourism from offshore windfarms in EU states and within the UK and US, and the mitigation and enhancement measures available for tourism regarding offshore wind farm developments. The study found that the overall effect due to the presence of offshore wind farms on tourism "*appear relatively benign, and in some cases positive*". There is also the possibility of the offshore windfarm becoming a tourist attraction in itself, with an emphasis on the success of offshore windfarm boat tours and onshore information centres. The study also suggests that the establishment of community benefit funds provides the potential to have a positive effect on local tourism and recreation, especially with regards to sustainable development initiatives.

Fáilte Ireland Surveys 2007 and 2012

In 2007, Fáilte Ireland in association with the Northern Ireland Tourist Board carried out a survey of domestic and overseas holidaymakers to Ireland in order to determine their attitudes to wind farms. The purpose of the survey was to assess whether the development of wind farms impacts on the enjoyment of the Irish scenery by holidaymakers. The survey involved face-to-face interviews with 1,300 tourists (25% domestic and 75% overseas). The results of the survey are presented in the Fáilte Ireland Newsletter 2008/No.3 entitled '*Visitor Attitudes on the Environment: Wind Farms*'.

The Fáilte Ireland survey results indicate that most visitors are broadly positive towards the idea of building wind farms in Ireland. There exists a sizeable minority (one in seven) however who are

²⁷ Vattenfall (2021) << <u>https://group.vattenfall.com/uk/contentassets/c66251dd969a437c878b5fec736c32aa/tourism-impact-of-offshore-wind-farms-final-report-jg-300921.pdf</u> >>



negative towards wind farms in any context. In terms of awareness of wind farms, the findings of the survey include the following:

- Almost half of those surveyed had seen at least one wind farm on their holiday to Ireland. Of these, two thirds had seen up to two wind farms during their holiday.
- > Typically, wind farms are encountered in the landscape while driving or being driven (74%), while few have experienced a wind farm up close.
- > Of the wind farms viewed, most contained less than ten turbines and 15% had less than five turbines.

Regarding the perceived impact of wind farms on sightseeing, the Fáilte Ireland report states:

"Despite the fact that almost half of the tourists interviewed had seen at least one wind farm on their holiday, most felt that their presence did not detract from the quality of their sightseeing, with the largest proportion (45%) saying that the presence of the wind farm had a positive impact on their enjoyment of sightseeing, with 15% claiming that they had a negative impact."

In assessing the perceived impact of wind farms on beauty, visitors were asked to rate the beauty of five different landscape types: Coastal, Mountain, Farmland, Bogland and Urban Industrial, and then rate on a scale of 1-5 the potential impact of a wind farm being sited in each landscape. The survey found that each potential wind farm must be assessed on its own merits. Overall, however, in looking at wind farm developments in different landscape types, the numbers claiming a positive impact on the landscape due to wind farms were greater than those claiming a negative impact, in all cases.

Regarding the perceived impact of wind farms on future visits to the area, the Fáilte Ireland survey states:

"Almost three quarters of respondents claim that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a strong or fairly strong positive impact on future visits to the island of Ireland. Of those who feel that a potentially greater number of wind farms would positively impact on their likelihood to visit, the key driver is their support for renewable energy and potential decreased carbon emissions."

The report goes on to state that while there is a generally positive disposition among tourists towards wind development in Ireland, it is important also to take account of the views of the one in seven tourists who are negatively disposed towards wind farms. This requires good planning on the part of the wind farm developer as well as the Local Authority. Good planning has been an integral component of the Project throughout the site design and assessment processes

The 2007 survey findings are further upheld by a more recent report carried out by Fáilte Ireland on tourism attitudes to wind farms in 2012. The results of the updated study were published in the 'Fáilte Ireland Newsletter 2012/No.1 entitled '*Visitor Attitudes on the Environment: Wind Farms – Update on 2007 Research*'. The updated survey found that of 1,000 domestic and foreign tourists who holidayed in Ireland during 2012, over half of tourists said that they had seen a wind turbine while travelling around the country. Of this number of tourists, 21% claimed wind turbines had a negative impact on the landscape. However, 32% said that it enhanced the surrounding landscape, while 47% said that it made no difference to the landscape. Almost three quarters of respondents claim that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a strong or fairly strong positive impact on future visits to the island of Ireland.

Further details regarding the general public perception of wind energy, including those living in the vicinity of a wind farm, are presented in Section 6.7 below.



Offshore Wind Farms and Sustainable Tourism in France

A 2013 French study, conducted following the launching of France's first national invitation to tender for offshore wind in 2011, analysed tourist responses to wind turbines at different distances from the shore, and provided recommendations on siting of offshore wind farms and suggest community benefits which could balance the impacts of the offshore wind farms. The general attitude of tourists interviewed was that the requirement for compensation for an offshore wind farm decreased as the distance the wind farm is sited from the coast increases. A significant trend among those surveyed was the importance placed on the presence of a coherent environmental policy within a tourist destination. The main findings of the report were that, if accompanied by a coherent environmental policy and wind farm associated recreational activities, offshore wind farms can be located 5km from the shore.

Sceirde Rocks Tourism Impact Assessment

Research based both in Ireland and internationally has suggested that the presence of offshore wind farms has very little impact on tourist destinations, and can, in some cases, have a positive impact on tourism. These positive impacts are illustrated by a number of offshore wind farms worldwide which have become a tourist attraction of themselves, through the provision of tours and visitor centres in local communities which are centred around the offshore wind farm. The establishment of a community benefit provides the tourism sector with opportunities to support and create new tourism and recreation facilities, and other sustainable tourism options. The full Tourism Impact Assessment is contained in Appendix 6-1.

6.6.2 **Recreation**

6.6.2.1 Offshore Population Study Area

Throughout the Offshore Population Study Area there is evidence of recreational boating associated with the Galway marina, Ros an Mhil marina and anchorages off the coast of the Aran Islands²⁸ (Marine Institute, 2024). Galway Bay also supports a series of local Galway Hooker sailing festivals and races organised by the Galway Hookers Association, around Galway, South Connemara and the Aran Islands. These festivals showcase unique Irish boats throughout Galway Bay, along the coast of Connemara, Galway and North Clare^{29,30}. Over the past two years, Fuinneamh Sceirde Teoranta (FST) has been a key sponsor of the Galway Hooker Association and their races, helping to ensure their future while promoting the tradition and culture of the local area³¹.

The Blue Flag award for beaches, marinas and boats promotes environmental education, sustainable tourism, environmental management and safety for all beach users³². There are eleven blue flag beaches along the coastlines of County Galway and County Clare. Blue Flag beaches are largely associated with recreational swimming within coastal waters.

Along the coast of County Clare there are seven snorkelling and scuba diving sites located at: Doolin Point, Illaunabaha, George's Head, Myles Creek, Newfee, H.M.S Martin Wreck and Bishop's Island³³. Recreational snorkelling and diving associated with these sites are largely focused on maritime wrecks and geological features within coastal waters.

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²⁸ Marine Institute (2024), << <u>https://atlas.marine.ie/#?c=53.2352:-9.6680:10</u> >>

²⁹ Galway Hooker Association (2024). << <u>https://www.galwayhookerassociation.ie/</u>>>>

³⁰ Galway Tourism (2024), << <u>https://www.galwaytourism.ie/event/feile-an-tsruthain-carraroe-co-galway/</u>>>>

³¹ Galway Bay FM (2023). Offshore wind project links up with Galway Hooker Association to boost boat racing. Available at: << https://galwaybayfm.ie/galway-bay-fm-news-desk/offshore-wind-project-links-up-with-galway-hooker-association-to-boost-boat-racing/

³² Blue Flag (2023), << <u>https://beachawards.ie/blue-flag</u>/>>

³³ Zentacle (2024). << <u>https://www.zentacle.com/loc/ie/ce</u> >>



A detailed description of marine recreation within the Offshore Population Study Area and the extent of their interaction with offshore Project Infrastructure is presented in Chapter 18: Other Sea Users.

6.6.2.2 Onshore Population Study Area

Kilrush Creek Marina is located along the Shannon Estuary in Kilrush Town, approximately 2km southwest of the OGC route. The Marina is open daily year-round, with longer hours during the Summer months of July to August. Nevsail Watersports & Rock Climbing in Kilkee, approximately 7.5km southwest of the Onshore Site at its closest point, offers a number of summer watersport activities including kayaking, surfing and sailing off the coast of Clare.

6.6.3 Sea Use and Land Use

6.6.3.1 Offshore Population Study Area

The Offshore Site supports a diverse range of marine users, namely fishing, commercial transport, recreation, aquaculture sites, and submarine cables. Although not considered in the Offshore Population Study Area, they have the potential to be affected by the Offshore Site and are therefore considered and assessed for potential effects within Chapter 14: Commercial Fisheries, Chapter 14: Shipping and Navigation and Chapter 18: Other Sea Users. Nonetheless, although direct impacts on these marine users are not assessed within this chapter, in-direct impacts from services these marine users provide to human populations within the Offshore Population Study Area are considered, as detailed in Section 6.6.4.1.1 below.

6.6.3.2 **Onshore Population Study Area**

Current use along the OGC comprises of public road corridor, discontinuous urban fabric and agriculture. The predominant surrounding land use within the Onshore Population Study Area is pastural agriculture, with data shown below in Table 6-14.

The total area of farmland within the EDs around the Onshore Site measures approximately 9,295.6 hectares, comprising approximately 55.12% of the Onshore Population Study Area land mass, according to the CSO Census of Agriculture 2020. There are 302 no. farms located within the Onshore Population Study Area, with an average farm size of 31.32 hectares.

Characteristic	Value
Median Age of Holder	57.8 years
Size of Study Area	16,864 ha
Total Area Farmed within Study Area	9,295.6 ha
Farmland as % of Study Area	55.12%
Breakdown of Farmed Land	Area (hectares)
Total Grassland	9,244.2
Total Cereals	51.41
Total Cattle Herd (Beef)	17,939

Table 6-14 Farm Size and Classification within the Onshore Population Study Area in 2020 (Source: CSO)


Total Dairy Cows	4,212
Other Cows	2,542*
Live Stock Units (LSU)	12,828

*Data suppressed for confidentiality reasons

Grid infrastructure within the area of the Onshore Site includes the Moneypoint 110, 220 and 400kV substations, Kilrush 38kV Substation, Moanmore 38kV Substation, Tullabrack 110kV Substation, Tullabrack Wind Farm 38kV Substation and overhead lines and underground cables associated with these.

6.6.4 **Services**

6.6.4.1.1 Offshore Population Study Area

For the assessment of potential impacts arising from the Offshore Site on population and human health receptors, services within the Offshore Population Study Area are defined as offshore infrastructure and utilities which provide a service to human receptors, including aquaculture and finfish sites, marine dredge disposal, submarine cables and pipelines, oil and gas activities, offshore wind farms and shipping routes. A detailed description of all listed activities is presented within Chapter 14: Shipping and Navigation and Chapter 18: Other Sea Users.

There are no aquaculture sites that directly interact with the OAA or OECC, however there are 23 no. active finfish and 11 no. licenced shellfish aquaculture sites located within proximity to the Offshore Site. All of these finfish and shellfish aquaculture sites are located along the coastline of Co. Galway and the Aran Islands

There are a total of 16 licenced marine dredge disposal sites along the west coast of Ireland, with a further 15 located within the Shannon Estuary (EMODnet, 2024). There are no active or disused marine dredge disposal sites located within the Offshore Site.

Currently, there are no offshore renewable energy developments within the Offshore Site or on the west coast of Ireland. A number of planned offshore renewable developments (at various levels of inception) were proposed to be developed off the western coast of Ireland before the State's policy changed to a plan-led regime. Current policy is such that none of these projects are permitted to seek a MAC or make a planning application. However, whether any of them may progress in the future is entirely dependent on future policy decisions. The operational IRIS submarine cable, a 1,700 km long cable which connects southwest Iceland to Ballyloughane Strand in Galway, directly interacts with Offshore Site.

There are no oil and gas exploration wells, active leases or pipelines that directly interact with the Offshore Site.

A total of three main commercial shipping routes were identified within proximity to the Offshore Site. Services from ports and harbours are discussed below in Section 6.6.4.3.1.

6.6.4.1.2 Onshore Population Study Area

The Onshore Site is located approximately 40km southwest of Ennis Town, Co. Clare and 54km west of Limerick City, Co. Limerick at its closest point. Access to the varying Onshore Site infrastructural components is via a number of existing farm access tracks and Local Roads.



Kilrush town is located approximately 5 kilometres to the northwest of the OCC. The OGC will then traverse a further 3km before entering the existing Moneypoint 220kV Substation, approximately 5.5km from the town of Kilrush.

The main services for the Onshore Population Study Area are located within Kilrush Town, approximately 500 metres southwest of the OGC at its closest point. Other major settlement centres in the wider region which provide retail, recreational, educational, and religious services include Ennis, Co. Clare, 40 kilometres to the northeast of the Onshore Site, and Limerick City, Co. Limerick, 55 kilometres to the east of the Onshore Site.

There are no major services which will be disrupted by the construction, operation and maintenance or potential decommissioning of the Onshore Site, except for potential short-term impacts on traffic. Where the OGC lies within the road network, diversions will be required. Further information regarding potential effects on traffic services can be found in Chapter 29 Traffic and Transportation

6.6.4.2 Education

6.6.4.2.1 Offshore Population Study Area

Within the Offshore Population Study Area, the closest Primary Schools are Scoil Naisiúnta Cholmain Mhuighnis located approximately 6.2km north from the closest turbine (T30) and Scoil an Aird located approximately 6.9km north of the closest turbine (T21). Other primary schools in the wider Offshore Population Study Area include Scoil Carna, approximately 9.2km northeast of the closest turbine (T30), Scoil Naisiúnta na hAirde Mór, approximately 9.9km northeast of the closest turbine T30), Scoil Náisiúnta Leitir Meallain, approximately 11.5 km from the closest turbine (T30), Scoil Naisiúnta Leitir Meallain, approximately 11.5 km from the closest turbine (T30), Scoil Naisiúnta Chill Chiarain approximately 13.5km northeast of the closest turbine (T30), Ballyconneely National School approximately 16.2km from the Offshore Site (T2) Aille Breack National School approximately 16.4km northwest of the nearest turbine (T28), and Scoil Náisiúnta Tír an Fhiaidh 16.4km east of the closest turbine (T30).

The nearest Secondary School to the Offshore Site is Scoil Phobail Mhic Dara, which is located approximately 9.3km northeast of the closest turbine (T19), Clifden Scoil Phobail, approximately 20km northwest of the Offshore Site (T2) and Coláiste na bPiarsach located approximately 24.2km northeast of the nearest turbine (T30). The closest third level education institute is University of Galway (UG) approximately 56km west of the Offshore Site and Atlantic Technical University Galway City approximately 59km west of the Offshore Site.

6.6.4.2.2 Onshore Population Study Area

The closest Primary Schools within the Onshore Population Study Area and along the OGC are Saint Senan's Primary School and Gaelscoil Uí Choimín in Kilrush, approximately 1.1km southwest at its closest point, with Doonbeg National School approximately 1.9 km east and Moyasta National School, 2.1 km west at their closest points. The nearest secondary school is Kilrush Community School, 700m southwest at its closest point. The College of Further Education Training Ennis is located 38km northeast of the Onshore Site, the closest third level education centre, with the University of Limerick is located 60km east.

6.6.4.3 Access and Public Transport

6.6.4.3.1 Offshore Population Study Area

There are four national passenger ferry routes within the Offshore Population Study Area that connect the Aran Islands with County Galway and County Clare, with each route operating between one and two ferries per route. These routes are Ros an Mhíl - Inis Mór, Ros an Mhíl - Inis Meáin, Ros an Mhíl -



Inis Oírr and Doolin-Aran Islands (Aranislands.ie, 2024). In addition to transporting recreational visitors to the Aran Islands, they also act as primary access routes for Island residents to the mainland.

Further information on potential effects on access to local ports and harbours during construction, operation and maintenance, and decommissioning activities, and due to the presence of surface structures within the OAA has been addressed in Section 14.6.2.3 of Chapter 14 of this EIAR, Shipping and Navigation.

6.6.4.3.2 Onshore Population Study Area

Access to the varying Onshore Site infrastructural components is via a number of existing farm access tracks and Local Roads. The OGC is located primarily within the public road corridor.

The Killimer Ferry services runs from Killimer, approximately 7km east of Kilrush, across the Shannon estuary to Tarbert Co. Kerry year-round, for foot passengers to coaches.

Bus Éireann route 336 serves Doonbeg, Kilkee and Kilrush to Ennis 6 times daily. The nearest train station is located in Ennis, Co. Clare, approximately 37km from the Onshore Site, with services to Dublin Heuston, Limerick, Galway and Waterford.

6.6.4.4 Amenities and Community Facilities

6.6.4.4.1 Offshore Population Study Area

The towns of Clifden and City of Galway offer a range of services and amenities. There are a number of amenities and community facilities within the Offshore Population Study Area, including but not limited to GAA and LGFA clubs such as An Naomh Anna Leitir Mór GAA & LGFA, Carna Caiseal GAA & LGFA, Cheathrua Rua GAA & LGFA, FORUM Connemara CLG, Grainne Mhaoils LGFA, Na Piarsaigh GAA & LGFA, Naomh Feichin GAA, Cumann Peile Naomh Anna. Other sports Clubs include Connemara Rugby Football Club, Gaeltacht Rugby Club, Connemara Golf Club, Conamara Isles Golf Club, Connemara Athletics Club, Club Mara Conamara Láir, Connemara Boxing Club, and MacDara Soccer Club.

There are a number of community centres including Cuimhneacháin na n Imirceach Carna (The Emigrants Commemorative Center Carna), FORUM Connemara CLG FORUM (Clifden & Conamara Sports Complex), Ballyconneely Village Park & Pitch (village Community Hall),). Roundstone Community Hall (playground and picnic and public amenity area), Comhairle Mhuintir an Chaisil Teoranta (Community Hall and facilities), Teach an Údarás, Carna (Conamara Láir Dev Co-op Centre), Ionad Phobail Chill Chiarain (Community Hall & facilities), Páirc Spraói agus Páirc Astro Chill Chiaráin (public sports facility), Páirc a Mhaimeain, Leitir Mór & Ioand Phobail na nOileann (community hall and facility), Ros an Mhíl Community Hall, Comhar Cumann Mhic Dara An Cheathrua, An Crumpan Centre. There are also a number of community facilities which offer remote working hubs including Ionad Fiontar Charna, Gteic @ An Cheathrua Rua and Ionad Pobail Inis Meáin.

6.6.4.4.2 Onshore Population Study Area

There are a number of amenities and community facilities, including sports clubs, youth clubs, recreational areas, retail and personal services located in the nearby villages of Kilrush, and Kilkee. The town of Ennis and Limerick City also offer a large selection of amenities and community facilities. There are a number of GAA clubs in the surrounding area, including Doonbeg GAA Club, Kilrush Shamrocks GAA Club, Cooraclare GAA Club and Killimer GAA Club. Moneypoint FC and Kilrush RFC are also within the vicinity of the Onshore Site.



Kilkee Community Centre, and Coorclare Community Centre are in the wider area surrounding the Onshore Site.

6.6.5 **Commercial Fisheries**

6.6.5.1 Offshore Population Study Area

As detailed in full within Chapter 13: Commercial Fisheries, the Offshore Site is predominantly used for:

- > Demersal trawlers and seines frequently target Nephrops, monkfish, and megrim, especially along the OECC, with limited presence in the OAA.
- Static gear such as pots, nets, and traps are predominantly used in the OAA for lobster, various crabs, crayfish, wrasse and shrimp, but to a lesser extent in the OECC.
- > Pelagic trawlers, which target mackerel and horse mackerel, operate mainly further offshore, with some potential overlap in the OECC.

The Offshore Site also overlaps with the Aran, Galway Bay and Slyne Head *Nephrops* (*Nephrops norvegicus*) Grounds, Functional Unit (FU) 17. However, there is no overlap with the OAA. According to the 2023 survey report for these *Nephrops* Grounds, the area of overlap with the OECC is within a region of low density for *Nephrops* burrows (Aristegui *et al.*, 2023). It is acknowledged that these *Nephrops* grounds are a core component on the commercial fisheries within the region.

Indirect effects on human receptors within the Offshore Population Study Area from the food source provided from these activities on human receptors are not significant. A full assessment of impact on the commercial fishing industry is provided in Chapter 13.

6.7 Public Perception of Wind Energy

This section relates to both the offshore and onshore elements of the Project.

6.7.1 WEI Interactions Opinion Poll on Wind Energy 2019

Published in January 2020, Wind Energy Ireland (WEI) undertook a national opinion poll on Wind Energy November 2019 with the objective to "*measure and track public perceptions and attitudes around wind energy amongst Irish adults.*" Between November 20th – 30th 2019, a nationally representative sample of 1,019 adults and a booster sample of 200 rural residents participated in an online survey.

The 2019 results indicate that 79% of both the nationally representative sample and rural sample strongly favour or favour wind power while 16% of both samples neither favour or oppose it. Amongst those in favour of wind power, the majority cited environmental and climate concerns as their main reasons for supporting such developments. Other reasons cited for supporting wind energy developments include: "economic benefits," "reliable/efficient," "positive experience with wind energy" and recognise it as a "safe resource." When questioned about wind developments in their local area, 55% of nationally represented sample favour or tend to favour such proposals and 51% of the rural population reported the same. Reasons cited for supporting wind developments in their local area include: "good for the environment," "social responsibility," "create jobs," "good for the community."

The WEI November 2019 survey follows previous national opinion polls on wind energy undertaken in October 2017 and November 2018. The 2019 survey results are consistent with the 2017 and 2018 figures and thus indicate that approximately 4 out of 5 Irish adults have continued to support wind energy.



6.7.2 Sustainable Energy Authority Ireland Survey 2017

A survey carried out by Interactions in October 2017, published by the SEAI, showed 47% of Irish adults polled said they were strongly in favour of wind power in Ireland while a further 38% favour it. Overall, this is a 4% increase in favourable attitudes towards wind power compared with similar research in 2013.

The SEAI survey found that the overall attitude to wind farms is very positive, with 84% of respondents in favour of the use of wind energy in Ireland. Approximately two thirds of respondents (70%) would prefer to power their home with renewable energy over fossil fuels, and 45% would be in favour of a wind farm development in their area.

The survey also captured the perceived benefits of wind power among the public. Of those surveyed three quarters selected good for the environment and reduced Carbon Dioxide emissions while fewer people, just over two in three, cited cheaper electricity.

The main findings of the SEAI survey in 2017 indicate that the overall attitude to wind farms is "*almost entirely positive*". The study highlights that two-thirds of Irish adults are either very favourable or fairly favourable to having a wind farm built in their locality, with little evidence of a "Not In My Back Yard" (NIMBY) effect.

The final section of the 2017 report states:

"The overwhelming indication from this study is that wind energy enjoys great support and, more specifically, that the development of wind farms is supported and welcomed. The single most powerful indicator of this is to be found among those living in proximity to an existing wind farm: over 60% would be in favour of a second wind farm or an extension of the existing one. This represents a strong vote in favour of wind farm developments — especially important since it is voiced by those who know from direct experience about the impact of such developments on their communities."

6.7.3 Public Perceptions of Wind Power in Scotland and Ireland Survey 2005

6.7.3.1 Background

A survey of the public perception of wind power in Scotland and Ireland was carried out in 2003/2004 by researchers at the School of Geography & Geosciences, University of St. Andrews, Fife and The Macaulay Institute, Aberdeen ('*Green on Green: Public Perceptions of Wind Power in Scotland and Ireland*', Journal of Environmental Planning and Management, November 2005). The aims of the study were to ascertain the extent to which people support or oppose wind power, to investigate the reasons for these attitudes and to establish how public attitudes relate to factors such as personal experience of operational wind farms and their proximity to them.

6.7.3.2 Study Area

Surveys were carried out at two localities in the Scottish Borders region, one surrounding an existing wind farm and one around a site at which a wind farm had received planning permission but had not yet been built. Surveys were also carried out in Ireland, at two sites in Counties Cork and Kerry, each of which had two wind farms in proximity to each other.



6.7.3.3 Findings

The survey of public attitudes at both the Scottish and Irish study sites concluded that large majorities of people are strongly in favour of their local wind farm, their personal experience having engendered positive attitudes. Attitudes towards the concept of wind energy were described as "overwhelmingly positive" at both study sites in Scotland, while the Irish survey results showed almost full support for renewable energy and 92% support for the development of wind energy in Ireland.

The results of the survey were found to agree with the findings of previous research, which show that positive attitudes to wind power increase through time and with proximity to wind farms. With regards to the NIMBY effect, the report states that where NIMBY-ism does occur, it is much more pronounced in relation to proposed wind farms than actual wind farms. The Scottish survey found that while positive attitudes towards wind power were observed among those living in proximity to both the proposed and existing wind farm sites, people around the proposed site were less convinced than those living in proximity to the existing site. Retrospective questioning regarding pre- and post-construction attitudes at the existing site found that attitudes remained unchanged for 65% of respondents. Of the 24% of people who altered their attitudes following experience of the wind farm, all but one became more positive. The report states:

"These results support earlier work which has found that opposition to wind farms arises in part from exaggerated perceptions of likely impact, and that the experience of living near a wind farm frequently dispels these fears. Prior to construction, locals typically expect the landscape impacts to be negative, whereas, once in operation, many people regard them as an attractive addition."

The reasons that people gave for their positive attitude to the local wind farm were predominantly of a global kind, i.e. environmental protection and the promotion of renewable energy, together with opposition to a reliance on fossil fuels and nuclear power. Problems that are often cited as negative impacts of wind farms, such as interference with telecommunications and shadow flicker were not mentioned at either site. With regards to those who changed to a more positive attitude following construction of the wind farm, the reasons given were that the wind farm is "*not unattractive (62%), that there was no noise (15%), that community funding had been forthcoming (15%) and that it could be a tourist attraction (8%)*".

The findings of the Irish survey reinforce those obtained at the Scottish sites with regards to the increase in positive attitudes to wind power through time and proximity to wind farms. The survey of public attitudes at the sites in Cork and Kerry found that the highest levels of support for wind power were recorded in the innermost study zone (0 - 5 kilometres from a point in between the pair of wind farms). The data also suggests that "those who see the wind farms most often are most accepting of the visual impact". The report also states that a previous Irish survey found that most of those with direct experience of wind farms do not consider that they have had any adverse effect on the scenic beauty of the area, or on wildlife, tourism or property values. Overall, the study data reveals "a clear pattern of public attitudes becoming significantly more positive following personal experience of operational wind farms".

With regards to wind farm size, the report notes that it is evident from this and previous research that wind farms with small numbers of large turbines are generally preferred to those with large numbers of smaller turbines.



6.7.3.4 **Conclusions**

The overall conclusions drawn from the survey findings and from the authors' review of previous studies show that local people become more favourable towards wind farms after construction, that the degree of acceptance increases with proximity to them, and that the NIMBY effect does not adequately explain variations in public attitudes due to the degree of subjectivity involved.

6.7.4 Wind Energy Ireland Public Attitudes Monitor 2022

More recently, published in December 2022, IWEA again undertook a national opinion poll on Wind Energy in Q4 of 2022 with the objective 'to measures & track the perceptions and attitudes around wind energy amongst Irish adults'. Between November 23rd and December 8th 2022, a nationally represented sample of 1,017 and a booster sample of 201 rural dwellers participated in the survey. The 2022 results indicate that 80% of the nationally representative sample and 85% of the rural sample strongly favour or favour wind power. Almost half (45%) of those surveyed ranked cheaper electricity as the top wind energy benefit. Amongst rural residents, the percentage of people producing negative feedback is reducing year on year. Nationally, 58% of people said that they would be in favour of a wind farm in their area, which is the highest number in favour since tracking began. Amongst rural residents, just 1 in 10 people registered being opposed to having a wind farm in their local area.

The IWEA December 2022 survey follows previous national opinion polls on wind energy undertaken by IWEA in November 2019 and November 2018. The 2022 survey results are consistent with the 2019 and 2018 figures and thus indicate that 4 out of 5 Irish adults have continued to support wind energy in recent years.

6.7.5 SEAI Survey of Households near Commercial Wind and Solar Farms 2023

Background

In May 2023 the Sustainable Energy Authority of Ireland (SEAI) published a report on the national survey they commissioned of people's opinions of new commercial solar or wind farm projects in Ireland.³⁴ In 2022, surveyors conducted in-person interviews on the doorstep across rural Ireland. The survey included 1,764 households which included 1,116 households within 5km of a new commercial wind or solar project sites, of which 219 live within 1km of a project site.

Findings

The results of this survey revealed that 67% of respondents hold positive or very positive views towards wind energy, while 73% of respondents who live less than 1km away from a Renewable Electricity Support Scheme (RESS) wind project hold positive or very positive attitudes towards wind energy, while 70% of those in the control group hold such views.

The attitude of the residents toward wind energy showed that 59% of all respondents, and 65% of respondents living less than 1km away from a RESS wind project, felt Ireland has too few wind farms, the same proportion as the control group. A few respondents feel Ireland has too many wind farms, regardless of how close they live to a new wind farm.

³⁴ SEAI Irish national survey of households near new commercial wind and solar farms. Available at:

<https://www.seai.ie/publications/SEAI-RESS-National-Survey.pdf>



The results of this survey will form part of a long-term study to understand the effects of government policies under the RESS on the public's support for Irelands energy transition.

6.7.6 Wind Energy Ireland Public Attitudes Monitor 2024

In early 2024, Wind Energy Ireland (WEI) published the results of their most recent nationwide annual poll on attitudes to wind energy³⁵. The objective of the poll was to 'measure and track public perceptions and attitudes around wind energy amongst Irish adults.'

Between 17th November and 1st December 2023, a nationally representative sample of 1,017 Irish adults together with a booster sample of 221 rural residents participated in the survey. The 2023 results reported that 4 in 5 (80%) are now in favour of wind power, a 6% increase on the 2021 results (54% of those in favour were 'strongly in favour'). The survey has been run annually since 2017 and while there has been a marginal decrease in those in favour of wind power nationally during this time (from 85% to 80%) there has been an increase in those in favour from the rural population (from 79% to 85%). The 2023 surveys results are largely in line with those of 2022, showing a consistent level of support and a positive attitude toward wind energy in Ireland.

Amongst those in favour of wind power, the majority cited cheaper electricity, reduced carbon emissions and environmental and climate concerns as their main reasons for supporting such developments. Other reasons cited for supporting wind energy developments include: 'Support energy independence', 'Creates employment', and that it is 'Good for local communities nearby'.

When polled on opinions surrounding the offshore wind energy sector, 78% of those surveyed said that they are in favour of the use of offshore wind energy in Ireland, with 80% acknowledging the importance of offshore wind energy in providing energy security to Ireland.

When questioned about wind energy developments in their local area, 3 in 5 (60%) of those surveyed would support such proposals, compared to 58% of the nationally representative sample and 56% of the rural population surveyed in 2022 reporting the same.

The Wind Energy Ireland 2023 survey follows the structure of previous national opinion polls on wind energy undertaken since 2017. The 2023 survey results are consistent with previous year's figures and thus indicate that approximately 4 out of 5 Irish adults have continued to support wind energy in recent years.

6.7.7 **Public Perception of Offshore Wind Farms in Ireland**

Published in 2021 following a 2019 survey, the MaREI study³⁶ focused on investigating public attitudes towards offshore wind farms in Ireland. A nationally representative sample of 1,154 participants participated in the survey between May and June 2019, with a focus group involving five members of the public who have regular interaction with the Arklow Bank Wind Park, Irelands only existing offshore wind farm. The main findings of the survey indicated overall support towards the development of offshore wind farms in Ireland, stating that;

"Eighty-seven percent of respondents would facilitate development of an offshore wind farm in their locality, either through active support or not objecting.

³⁵ WEI Latest News – National Poll. Available at: << https://windenergyireland.com/latest-news/7660-national-poll-4-in-5-people-support-irish-wind-energy-development-with-3-in-5-backing-local-wind-farms#:~:text=we%20love%20wind!-

[,]National%20poll%3A%204%20in%205%20people%20support%20Irish%20wind%20energy,5%20backing%20local%20wind%20farms.&tex t=4%20in%205%20people%20in,towards%20wind%20energy%20in%20Ireland.>>

³⁶ Cronin et al (2021) https://cora.ucc.ie/server/api/core/bitstreams/3/7/9449-839c-4114-ac4f-a82929cb7a84/content



Ninety-three percent of respondents would facilitate development of an offshore wind farm outside of their locality, either through active support or not objecting."

Another significant point within the survey focus group of those who have regular exposure to Arklow Bank Wind Park was the either benign or positive sentiment which was expressed towards both the existing turbines and its further development. As the survey was conducted in 2019, it also allows for an insight into the Irish publics perception of offshore wind energy developments prior to the effects of the 2021 energy crisis.

6.7.8 **Public Perceptions of Offshore Wind Farms in Scotland Survey**

A February 2021 survey was conducted by the Scottish Government³⁷, in order to gain insight into the perceptions and experiences of offshore wind developments in Scotland, and the difference of opinion between the national population of Scotland and those who lives near a coastal sea border. A total of 2,065 surveys were completed between both groups, with 1,000 representative of the Scottish national population, and 1,065 representative of those who live near a coastal sea border. The general attitude received from the survey was that that most of the population surveyed, both of the national and coastal samples, approve of offshore wind farms, regardless of other population demographic characteristics. The survey also cited the likelihood of positive impacts on tourism due to the presence of offshore windfarms, and the benefits to the local economy through "*jobs created through the construction, development and maintenance of offshore wind farms and other industries in the supply chain.*"

Overall, the survey concluded that the Scottish public holds a widespread positive attitude towards offshore wind farms and acknowledges their significant role within the climate change and net-zero agenda.

6.8 Health Effects of Wind Farms

6.8.1 Introduction

The 2022 Census of Ireland as carried out by the Central Statistics Office provides the general health conditions of the population of the EDs which make up the Offshore and Onshore Population Study Areas for the Project. The vast majority of those within both the Offshore and Onshore Population Study Areas marked their general health as being 'very good' across all EDs.

6.8.2 Wind Farm Health Effects Studies

While there are anecdotal reports of negative health effects on people who live very close to wind turbines, peer-reviewed research largely does not support these statements. There is currently no published credible scientific evidence to positively link wind turbines with adverse health effects.

As the Offshore Site is located between 5km and 11.5km off the coast of Connemara, Co. Galway there are a number these anecdotal negative health effects which are immediately mitigated due to the large distance from dwellings.

³⁷ Scottish Government (2022) <u>https://www.gov.scot/binaries/content/documents/govscot/publications/research-and-analysis/2022/06/public-perceptions-offshore-wind-farm-developments-scotland/documents/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocument/public-perceptions-offshore-wind-farm-developments-scotland/govscot%3Adocuments-g</u>



The main publications supporting the view that there is no evidence of any direct link between wind turbines and health are summarised below.

1. 'Wind Turbine Sound and Health Effects – An Expert Panel Review', American Wind Energy Association and Canadian Wind Energy Association, December 2009

This expert panel undertook extensive review, analysis and discussion of the large body of peerreviewed literature on sound and health effects in general, and on sound produced by wind turbines in particular. The panel assessed the plausible biological effects of exposure to wind turbine sound. Following review, analysis, and discussion of current knowledge, the panel reached consensus on the following conclusions:

- > "There is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects.
- > The ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans.
- > The sounds emitted by wind turbines are not unique. There is no reason to believe, based on the levels and frequencies of the sounds and the panel's experience with sound exposures in occupational settings, that the sounds from wind turbines could plausibly have direct adverse health consequences."

The report found, amongst other things, that:

- > "Wind Turbine Syndrome" symptoms are the same as those seen in the general population due to stresses of daily life. They include headaches, insomnia, anxiety, dizziness, etc.
- Low frequency and very low-frequency 'infrasound' produced by wind turbines are the same as those produced by vehicular traffic and home appliances, even by the beating of people's hearts. Such 'infrasounds' are not special and convey no risk factors;
- > The power of suggestion, as conveyed by news media coverage of perceived 'windturbine sickness', might have triggered 'anticipatory fear' in those close to turbine installations."

2. 'Wind Turbine Syndrome – An independent review of the state of knowledge about the alleged health condition', Expert Panel on behalf of Renewable UK, July 2010

This report consists of three reviews carried out by independent experts to update and understand the available knowledge of the science relating to infrasound generated by wind turbines. This report was prepared following the publication of a book entitled 'Wind Turbine Syndrome', in 2009 by Dr. Pierpont, which received significant media attention at the time. The report discusses the methodology and assessment carried out in the 2009 publication and assessed the impact of low-frequency noise from wind turbines on humans. The independent review found that:

- > "The scientific and epidemiological methodology and conclusions drawn (in the 2009 book) are fundamentally flawed;
- > The scientific and audiological assumptions presented by Dr Pierpont relating infrasound to WTD are wrong; and
- Noise from Wind Turbines cannot contribute to the symptoms reported by Dr. Pierpont's respondents by the mechanisms proposed."

Accordingly, the consistent and scientifically robust conclusion remains that there is no evidence to demonstrate any significant health effects in humans arising from noise at the levels of that generated by wind turbines.



3. 'The Health Effects of 72 Hours of Simulated Wind Turbine Infrasound: A Double-Blind Randomized Crossover Study in Noise-Sensitive Health Adults' Woolcock Institute for Medical Research, New South Wales Australia, March 2023

The purpose of this study was to examine the potential health effects of audible sound and inaudible infrasound has on noise sensitive adults over a period of 72 hours. Sufferers of wind turbine syndrome (WTS) have attributed their ill-health and particularly their sleep disturbance to the signature of infrasound. On this basis, the objectives of the study were to test the effects of 72 hours of infrasound exposure on human physiology, particularly sleep. The results of the study are outlined below:

- > All staff and participants were asked whether they were able to differentiate in any way between infrasound and sham infrasound (the control), and none of them were able to.
- The study found that 72 hours of the simulated wind turbine infrasound (\sim 90dB pk re 20 μ Pa) in controlled laboratory conditions did not worsen any measure of sleep quality compared with the same speakers being present but not generating infrasound (sham infrasound).
- The study found no evidence of that 72 hours of exposure to a sound level of ~90dB pk re 20 μPa of simulated wind turbine infrasound in double-blind conditions perturbed any physiological or psychological variable.
- > None of the participants in the study who were exposed to infrasound developed what could be described as Wind Turbine Syndrome.
- > This study suggests that the infrasound component of Wind Turbine Syndrome is unlikely to be a cause of any ill-health or sleep disruption, although this observation should be independently replicated.

4. **'A Rapid Review of the Evidence'**, Australian Government National Health and Medical Research Council (NHMRC) Wind Turbines & Health, July 2010

The purpose of this paper was to review evidence from current literature on the issue of wind turbines and potential effects on human health and to validate the finding of the 'Wind Turbine Sound and Health Effects - An Expert Panel Review' (see Item 1 above) that:

- > "There are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines."
- > There is currently no published scientific evidence to positively link wind turbines with adverse health effects.
- * This review of the available evidence, including journal articles, surveys, literature reviews and government reports, supports the statement that: There are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines."

5. 'Position Statement on Health and Wind Turbines', Climate and Health Alliance, February 2012

The Climate and Health Alliance (CAHA) was established in August 2010 and is a coalition of health care stakeholders who wish to see the threat to human health from climate change and ecological degradation addressed through prompt policy action. In its Position Statement in February 2012, CAHA states that:

"To date, there is no credible peer reviewed scientific evidence that demonstrates a direct causal link between wind turbines and adverse health impacts in people living in proximity to them. There is no evidence for any adverse health effects from wind turbine shadow flicker or electromagnetic frequency. There is no evidence in the peer reviewed published scientific



literature that suggests that there are any adverse health effects from infrasound (a component of low frequency sound) at the low levels that may be emitted by wind turbines."

The Position Statement explores human perceptions of wind energy and notes that some people may be predisposed to some form of negative perception that itself may cause annoyance. It states that:

"Fear and anxious anticipation of potential negative impacts of wind farms can also contribute to stress responses, and result in physical and psychological stress symptoms... Local concerns about wind farms can be related to perceived threats from changes to their place and can be considered a form of "place-protection action", recognised in psychological research about the importance of place and people's sense of identity."

CAHA notes the existence of "misinformation about wind power" and, in particular, states that:

"Some of the anxiety and concern in the community stems originally from a self-published book by an anti-wind farm activist in the United States which invented a syndrome, the socalled "wind turbine syndrome". This is not a recognised medical syndrome in any international index of disease, nor has this publication been subjected to peer review."

CAHA notes that:

"Large scale commercial wind farms however have been in operation internationally for many decades, often in close proximity to thousands of people, and there has been no evidence of any significant rise in disease rates."

This, it states, contrasts with the health impacts of fossil fuel energy generation.

6. 'Wind Turbine Health Impact Study -Report of Independent Expert Panel' – Massachusetts Departments of Environmental Protection and Public Health (2012)

An expert panel was established with the objective to, inter alia, evaluate information from peerreviewed scientific studies, other reports, popular media and public comments and to assess the magnitude and frequency of any potential impacts and risks to human health associated with the design and operation of wind energy turbines. In its final report, the expert panel set out its conclusions under several headings, including noise and shadow flicker.

In relation to noise, the panel concluded that there was limited or no evidence to indicate any causal link between noise from wind turbines and health effects, including the following conclusions:

"There is no evidence for a set of health effects, from exposure to wind turbines that could be characterized as a "Wind Turbine Syndrome."

The strongest epidemiological study suggests that there is not an association between noise from wind turbines and measures of psychological distress or mental health problems. There were two smaller, weaker, studies: one did note an association, one did not. Therefore, we conclude the weight of the evidence suggests no association between noise from wind turbines and measures of psychological distress or mental health problems.

None of the limited epidemiological evidence reviewed suggests an association between noise from wind turbines and pain and stiffness, diabetes, high blood pressure, tinnitus, hearing impairment, cardiovascular disease, and headache/migraine."

In relation to shadow flicker, the expert panel found the following:



"Scientific evidence suggests that shadow flicker does not pose a risk for eliciting seizures as a result of photic stimulation.

There is limited scientific evidence of an association between annoyance from prolonged shadow flicker (exceeding 30 minutes per day) and potential transitory cognitive and physical health effects."

7. Wind Turbines and Health, A Critical Review of the Scientific Literature, Massachusetts Institute of Technology (Journal of Occupational and Environmental Medicine Vol. 56, Number 11, November 2014)

This review assessed the peer-reviewed literature regarding evaluations of potential health effects among people living in the vicinity of wind turbines. The review posed a number of questions around the effect of turbines on human health, with the aim of determining if stress, annoyance or sleep disturbance occur as a result of living in proximity to wind turbines, and whether specific aspects of wind turbine noise have unique potential health effects. The review concluded the following with regard to the above questions:

- Measurements of low-frequency sound, infrasound, tonal sound emission, and amplitude-modulated sound show that infrasound is emitted by wind turbines. The levels of infrasound at customary distances to homes are typically well below audibility thresholds.
- No cohort or case-control studies were located in this updated review of the peerreviewed literature. Nevertheless, among the cross-sectional studies of better quality, no clear or consistent association is seen between wind turbine noise and any reported disease or other indicator of harm to human health.
- Components of wind turbine sound, including infrasound and low frequency sound, have not been shown to present unique health risks to people living near wind turbines.
- Annoyance associated with living near wind turbines is a complex phenomenon related to personal factors. Noise from turbines plays a minor role in comparison with other factors in leading people to report annoyance in the context of wind turbines.
- 8. Summary of main conclusions reached in 25 reviews of the research literature on wind farms and health. Simon Chapman and Teresa Simonetti, Sydney University. September 2015.³⁸

This study contains a further 25 reviews of the scientific evidence that universally concludes that exposure to wind farms and the sound emanating from wind farms does not trigger adverse health effects, were compiled by Professor Simon Chapman, of the School of Public Health and Sydney University Medical School, Australia. The paper assesses several aspects of the potential effects of wind turbines and health including effects from noise, annoyance, infrasound, shadow flicker and community and social response to wind turbines.

Another recent publication by Chapman and Crichton (2017) entitled '*Wind turbine syndrome; A communicated disease*' critically discusses why certain health impacts might often be incorrectly attributed to wind turbines.

9. **Position Paper on Wind Turbines and Public Health**: HSE Public Health Medicine Environment and Health Group, February 2017

³⁸ Chapman, S., & Simonetti, T. (2015). Summary of main conclusions reached in 25 reviews of the research literature on wind farms and health.



The Health Service Executive (HSE) position paper on wind turbines and public health was published in February 2017 to address the rise in wind farm development and concerns regarding potential impacts on public health. The paper discusses previous observations and case studies which describe a broad range of health effects that are associated with wind turbine noise, shadow flicker and electromagnetic radiation.

A number of comprehensive reviews conducted in recent years to examine whether these health effects are proven has highlighted the lack of published and high-quality scientific evidence to support adverse effects of wind turbines on health.

The HSE position paper determines that current scientific evidence on adverse effects of wind farms on health is weak or absent. Further research and investigative processes are required at a larger scale in order to be more informative for identifying potential health effects of exposure to wind turbine effects. They advise developers on making use of the most up to date best practice guidelines as a means of setting noise limits and set back distances from the nearest dwellings.

10. Environmental Noise Guidelines for the European Region: World Health Organisation Regional Office for Europe, 2018.

The WHO Environmental Noise Guidelines provide recommendations for protecting human health from exposure to environmental noise originating from various sources such as transportation noise, wind turbine noise and leisure noise. The Guideline Development Group (GDG) defined priority health outcomes and from this were able to produce guideline exposure levels for noise exposure.

For average noise exposure, the GDG conditionally recommends reducing noise levels produced by wind turbines below 45 dB L_{den} . The GDG recognise the potential for increased risk of annoyance at levels below this value but cannot determine whether this increased risk can impact health. Wind turbine noise above this level is associated with adverse health effects.

The GDG points out that evidence on health effects from wind turbine noise (apart from annoyance) is either absent or rated low/very low quality. Furthermore, public perception towards wind turbines are hard to differentiate from reported effects related to noise and the two may be inextricably linked. The GDG also recognises that the percentage of people exposed to noise from wind turbines is far lower than other sources such as road traffic and state that any benefit from specifically reducing population exposure to wind turbine noise in all situations remains unclear.

That being said, the GDG recommends renewable energy policies include provisions to ensure noise levels from wind farm developments do not rise above the guideline values for average noise exposure. The GDG also provides a conditional recommendation for the implementation of suitable measures to reduce noise exposure, however, it states that no evidence is available to facilitate the recommendation of one type of intervention over another.

11. Infrasound Does Not Explain Symptoms Related to Wind Turbines: Finnish Government's Analysis, Assessment and Research Activities (VN TEAS), 2020

The study investigated the adverse health effects of wind turbine infrasound and was funded by the Finnish Government's Analysis, Assessment and Research Activities (VN TEAS).

It was found that the low-frequency, inaudible sounds made by wind turbines are not damaging to human health despite fears that they cause unpleasant symptoms. The project, which was carried out over two years, examined the impact of low-frequency—or infrasound—emissions which cannot be picked up by the human ear.

People in many countries have blamed the infrasound waves for symptoms ranging from headaches and nausea to tinnitus and cardiovascular problems, researchers said.



Interviews, sound recordings and laboratory tests were used to explore possible health effects on people living within 20 kilometres (12 miles) of the generators.

The report notes:

"...the behavioural findings of the current study suggest that wind turbine infrasound cannot be reliably perceived and it does not result in increased annoyance. Participants that showed health effects did not show signs of increased infrasound sensitivity and did not rate wind turbine sounds more annoying.

As a result:

'These findings do not support the hypothesis that infrasound is the element in turbine sound that causes annoyance. Instead, they suggest that people who have health symptoms which they associate with wind turbine sound are not likely to have these symptoms because they perceive turbine sound more annoying than controls, at least in laboratory settings. It is more likely that these symptoms are triggered by other factors such as symptom expectancy'.

6.8.3 **Offshore**

6.8.3.1 Shadow Flicker

The term 'shadow flicker' refers to the flickering effects caused by rotating turbine blades periodically casting shadows over residential receptors (such as homes and businesses) (DECC UK, 2011). Shadow flicker is an indoor phenomenon, which may be experienced by an occupant sitting in an enclosed room when sunlight reaching the window is momentarily interrupted by a shadow of a wind turbine's blade. Outside in the open, light reaches a viewer (person) from a much less focused source than it would through a window of an enclosed room, and therefore shadow flicker assessments are typically undertaken for the nearby adjacent properties around a proposed wind farm site.³⁹

The current best practice guidance for onshore shadow flicker in Ireland is derived from the '*Wind Energy Development Guidelines for Planning Authorities 2006*' (DoEHLG), the 'Guidelines', and the '*Best Practice Guidelines for the Irish Wind Energy Industry*' (Irish Wind Energy Association, 2012). The Guidelines sets out a threshold of 30 hours per year or 30 minutes per day of shadow flicker at dwellings within 500 metres of a proposed turbine location and states that there is a low probability of any shadow flicker effects occurring beyond 10 rotor diameters. The rotor diameter proposed for this project is 292m which would assume a shadow flicker study area of 2.92km.

However, the Guidelines only pertain to issues which are related to onshore wind, and there are no offshore specific guidelines. The closest full time occupied residential receptor is over 5.5km from the nearest turbine (T30). There are a few occasional residences which exist on Mason Island, to the southwest of Mweenish Island, which are not full-time residences and are only occupied for a number of weeks in the Summer months. These occasional residences are all located over 4km from the nearest turbine (T19). Considering that the Offshore Project WTG infrastructure is located between 5 kilometres (km) and 11.5 km off the coast of Connemara, Co. Galway), it is predicted that there is no potential for shadow flicker to occur and is not considered further in this assessment.

³⁹ Parsons Brinckerhoff (2010) Update of UK Shadow Flicker Evidence Base Department of Energy and Climate Change. Department of Energy and Climate Change. Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48052/1416-update-uk-shadow-flicker-evidence-base.pdf



6.8.3.2 **Turbine Safety**

The safety of offshore infrastructure is fundamental to the success of the offshore wind industry. Some key examples of hazards associated with the development of an offshore wind farm include:

- Mechanical hazards (including contact with moving blades);
- > Blade failure;
- > Ice throws;
- > Third-party collision with infrastructure;
- > Electrical hazards; and
- > Fire or explosions of the turbine.

There is no national health and safety guidance specifically surrounding offshore wind energy industry in Ireland. The design and construction of all renewable energy projects is governed by the Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005) and the Safety, Health and Welfare at Work (Construction) Regulations 2013 legislation. This legislation provides protection to workers involved in any sort of employment, and within construction employment, and an overarching framework within which the Health and Safety of workers must be considered.

A June 2023 analysis by BlueWise Marine⁴⁰ considered existing UK Offshore Wind and Marine Energy Guidelines as the principal benchmark for health and safety guidance in their gap analysis, due to both the sharded border and proximity of both countries. The report, an offshore safety guidelines gap analysis, was produced due to the lack of national offshore health and safety guidance in an Irish context. The gap analysis was undertaken in order to identify any shortcomings or gaps in the Irish health and safety framework specific to offshore renewable energy, through an analysis of health and safety frameworks in similar jurisdictions, including the UK. The study found that substantial legislation and guidance already exists at international, European and national levels. Building upon this existing legislation could enable the development of a much-needed overarching health and safety guidance document to inform and provide clarity to operators in the Irish offshore renewables sector.

Within the UK, several studies have been published investigating the number of offshore wind turbine accidents per year, with the RenewableUK 2011 study considered the most comprehensive. This study reported that "*around 1,500 accidents and other incidents had taken place on wind farms between 2007 and 2011*", with four deaths and a further 300 injuries to workers included in these accidents⁴¹ (Wifa, 2016).

The latest G+ Global Offshore Wind Health and Safety Organisation '2023 incident data report'⁴² provides a global review of health and safety incidents which have occurred in 2023 across all aspects of the development, construction and operation of windfarms. In 2023, a substantial increase was seen in the number of hours worked as part of the development, construction and operation of offshore wind farms of 39% from 44.6 million hours in 2022, to 61.9 million hours in 2023, an all time high. Similarly, the number of incidents reported rose from 867 in 2022 to 1,679, an increase of 94%. A substantial increase in more serious injuries was seen, such as medical injuries, with one fatality occurring while an individual was working on turbine assembly onshore. The overall consensus from the 2023 incident report is that, while there were improvements in some areas and decreases in others, there is the possibility that this could be attributed to the increase in offshore wind projects which, in 2023 are in development, construction and operation, but these figures should encourage the need for increased vigilance and improvements of safety standards.

⁴⁰ BlueWise Marine (2023). Available at: << <u>https://windenergyireland.com/images/files/offshore-safety-report-june-2023-final-</u> updated-design.pdf >>

⁴¹ Wifa. E., (2016). Available at https://www.abdn.ac.uk/law/blog/the-health-and-safety-implications-of-offshore-wind-energydevelopment-more-to-it-than-meets-the-eye/

⁴² G+ Global Offshore Wind Health and Safety Organisation (2024). Available at: << https://www.gplusoffshorewind.com/?a=1538335 >>



The availability of data on wind turbine accidents is not comprehensive and remains difficult to define, however recent advances in technology and safety protocols associated with the development of offshore wind infrastructure since the RenewableUK 2011 study, with the energy institute reporting a decrease in the total recordable injury rate and lost time injury frequency for 16% and 11% respectively⁴³ (Energy Institute, 2022).

In terms of health and safety matters, detailed assessments relating to the Offshore Site are provided within Chapter 14: Shipping and Navigation and Chapter 15: Civil and Military Aviation. Appendix 5-4: Emergency Response and Coordination Plan also provides further information on health and safety procedures at the Offshore Site, while Appendix 5-9: Lighting and Marking plan outlines details of lighting and marking for marine and air navigation safety at the Offshore Site.

6.8.4 **Onshore**

6.8.4.1 Electromagnetic Interference

The provision of underground electric cables such as those associated with the Project 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 and maintenance 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 properties (residential or other uses) as the ICNIRP guidelines will not be exceeded at any distances even directly above the cables.

The ESB document '*EMF* & You'⁴⁴ provides further practical information on EMF.

In regard to the Onshore Site, it is proposed to install the OGC cable as an underground cable in trenches along the onshore cable route between the Onshore Landfall Location and the OCC, and from there onto the national grid at Moneypoint. No overhead lines are planned for the Project. As no overhead lines will be used as part of the Project, no adverse human health effects from electromagnetic field (EMF) exposure are expected. Further details on the potential effects of electromagnetic interference to telecommunications and aviation are presented in Chapter 31: Material Assets.

6.8.5 Assessment of Effects on Human Health of the Project

As set out in the Department of Housing, Planning, Community and Local Government '*Key Issues Consultation Paper on the Transposition of the EIA Directive 2017*' and the guidance listed in Section 1.2 of Chapter 1: Introduction, 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.

Chapter 13: Commercial Fisheries, Chapter 14: Shipping and Navigation, Chapter 15: Civil and Military Aviation, Chapter 16: SLVIA, Chapter 18: Other Sea Users, Chapter 19: Offshore Air Quality and Airborne Noise, provide an assessment of the potential population and human health effects of the Offshore Site.

⁴³ Energy Institute (2022). Available at: <u>https://www.energyinst.org/exploring-energy/resources/news-centre/media-releases/number-of-incidents-remains-low-despite-record-global-offshore-wind-activity</u>

⁴⁴ EMF & You: Information about Electric & Magnetic Fields and the electricity network in Ireland Available at: https://esb.ie/docs/default-source/default-document-library/emf-public-information_booklet_v9.pdf?sfvrsn=0



Chapter 22: Land, Soils and Geology, Chapter 23: Water, Chapter 25: Onshore Air Quality, Chapter 26: Onshore Noise and Vibration, Chapter 27: LVIA, Chapter 28: Material Assets, Chapter 29: Traffic and Transport and Chapter 30: Climate provide an assessment of the potential population and human health effects of the Onshore Site on these areas of consideration.

There is the potential for negative effects on human health during the construction, operation and maintenance and decommissioning phases of the Project related to potential emissions to air of dust, potential emissions to land and water of hydrocarbons, release of potentially silt-laden runoff into watercourses, noise emissions and other potential effects which are addressed within this EIAR. There are also potential effects on services, navigation, access to areas within the vicinity of the Project during various stages of construction, operation and maintenance, and decommissioning activities. The assessments show that the residual effects are not significant and will not lead to significant effects on any environmental media with the potential to lead to health effects for humans.

The proposed site design and mitigation measures outlined in the above chapters ensures that any potential for effects on population and human health is significantly reduced.

During the operation and maintenance phase, the Project is not a recognised source of pollution. It is not an activity which requires Environmental Protection Agency licensing under the Environmental Protection Agency Act 1992, as amended. As such, a wind farm is not considered to have ongoing significant emissions to environmental media and the subsequent potential for human health effects.

Consultation was held with the HSA regarding the proposed OGC at Moneypoint 220kV Substation, which is classed as a SEVESO Upper Tier Site, due to the presence of hazardous substances. The HSA were contacted in order to confirmation if the OGC, which is proposed to connect from the OCC into Moneypoint 220kV Substation, is considered a modification to a Seveso Site under Article 13 of the Planning and Development Regulations 2001 (as amended).

The HSA clarified that it is the ESBs responsibility as the operators of the SEVESO site, to complete a 'preliminary assessment' of the proposed works, in order to confirm if it would be considered a significant modification. The ESB then confirmed that the connection of the Project to Moneypoint 220kV Substation site is not considered a significant modification to the establishment.

The Project is for the development of a renewable energy development, an offshore wind farm, capable of offsetting carbon emissions associated with the burning of fossil fuels. During the operation and maintenance phase of the Project will have a no significant negative effect on air quality as set out in Chapter 19: Offshore Air Quality and Airborne Noise which will contribute to positive effects on human health.

The provision of aviation lighting on permitted turbines is a standard and accepted part of any wind farm development. This is a safety requirement of the Irish Aviation Authority (IAA). The standard lighting required by the IAA are medium intensity lights. Such lighting is designed specifically for aviation safety and is not intended to be overbearing or dominant when viewed from the ground thus striking a reasonable balance between aviation safety and visual effect. The IAA has advised in their scoping response, that in the event the Project is granted planning consent, there should be a condition attached requiring the IAA to be contacted to ensure an aeronautical obstacle warning light scheme for the Offshore WTGs be agreed.

A provisional lighting scheme has been proposed by the relevant experts, which can be found in Appendix 5-9: Lighting and Marking Plan.

It is considered that aviation and marine navigation lighting on the proposed turbines will have no significant effect on human health, beyond increasing aircraft and vessel safety in the context of the Project. The applicant will continue its engagement with IAA and Irish Lights as required in relation to aviation and marine navigation lighting.



The assessments within this chapter, and within the other chapters mentioned above show that the residual effects following the implementation of associated mitigation measures is imperceptible and do not have the potential to cause negative health effects for human beings.

6.8.6 **Vulnerability of the Project to Natural Disasters and Major Accidents**

As part of the construction phase of the Project, dredging may be required at some WTG locations to remove soft seabed material from locations where stonebed material is to be added, with potentially suitable disposal locations identified. The relevant Dumping at Sea permits, as required by the Dumping at Sea Act 1996, will be obtained prior to any dredging and discharging activity.

During the operation and maintenance phase, the Project is not a recognised source of pollution. It is not subject to Industrial Emissions Directive regulation or any other Environmental Protection Agency environmental regulatory consent. It is not an activity which requires Environmental Protection Agency licensing under the Environmental Protection Agency Act 1992, as amended. Should a major accident or natural disaster occur the potential sources of pollution onsite during the operation and maintenance and decommissioning phases are limited and of low environmental risk. Should a major accident or natural disaster occur, the potential sources of pollution onsite during the operational and maintenance, and decommissioning phases, are limited. Sources of pollution with the potential to cause significant environmental pollution and associated negative effects on health, such as bulk storage of hydrocarbons or chemicals, storage of wastes etc., are limited. A complete assessment of the vulnerability of the Project has been completed in Chapter 31: Major Accidents and Natural Disasters.

Ireland is a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited. The potential vulnerability issues are limited to severe weather conditions, sea level rise/coastal erosion, flooding, contamination, fire and traffic accidents.

It is considered that the risk of significant fire occurring, affecting the Project, and causing the Project to have significant environmental effects is limited and therefore a significant effect on human health is similarly limited. The potential vulnerability of the Project to severe weather conditions, and associated flooding and sea level rise/coastal erosion risk is minor, and the effect on population and human health is considered not significant. As described earlier, there are no sources of pollution in the Project with the potential to cause significant 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 Project is proposed to connect to the national grid via the Moneypoint 220kV Substation, Carrowdotia South, Co. Clare, which is regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations as an Upper Tier SEVESO site. The ESB has confirmed the Project is not considered a significant modification to establishment, and thus will not increase the current consequences of the major accident hazards at or outside the establishment.

6.9 **Property and Land Values**

6.9.1 Offshore Population Study Area

In the absence of any studies on the effect of offshore wind farms on property values, this section provides a summary of the largest and most recent studies on onshore wind and property values from the UK, Scotland and the United States and also provides a summary of an Irish working paper by the Centre for Economic Research on Inclusivity and Sustainable (CERIS).



In 2023 CERIS published a working paper entitled 'Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach'.⁴⁵ This paper looked at wind turbine developments in Donegal, Leitrim, Sligo, Mayo, Galway, Kerry and Cork and associated property values. This working paper utilised satellite imagery to identify individual turbines and sourced its housing data from <u>www.daft.ie</u>; while the published price on Daft is not equivalent to the final agreed sale price, it was assumed that the listing and transaction prices are correlated. The findings of this research revealed a potential decrease in property values of -14.7% within a 0-1km radius of a wind turbine. However, the sample size of only 225 houses within this range does not adequately represent the broader landscape of Irish rural housing and the distribution of wind turbines. The author states that there are 'no significant reductions in house prices beyond 1km' and that the effects seen within the 1km band were not persistent and diminished over the operational lifetime of the turbines.

Considering that this is a working paper, based on a small sample size where local conditions have the potential to disproportionately impact on the local housing market, further research is required before relying on its findings.

A study was commissioned by RenewableUK and carried out by the Centre for Economics and Business Research (Cebr) in March 2014. The findings of the study relating to onshore wind farms were produced in a report titled '*The effect of wind farms on house prices*'.⁴⁶ Its main conclusions are:

- > Overall, the analysis found that the county-wide property market drives local house prices, not the presence or absence of wind farms.
- > The econometric analysis established that construction of wind farms at the five sites examined across England and Wales has not had a detectable negative impact on house price growth within a five-kilometre radius of the sites.

A study relating to onshore wind issued in October 2016 '*Impact of wind Turbines on House Prices in Scotland*⁴⁷ (2016) was published by Climate Exchange. Climate Exchange is Scotland's independent centre of expertise on climate change which exists to support the Scottish Governments policy development on climate and the transition to a low carbon economy.

The report presents the main findings of a research project estimating the impact on house prices from wind farm developments. It is based on analysis of over 500,000 property sales in Scotland between 1990 and 2014. The key findings from the study are:

- No evidence of a consistent negative effect on house prices: Across a very wide range of analyses, including results that replicate and improve on the approach used by Gibbons (2014⁴⁸), we do not find a consistent negative effect of wind turbines or wind farms when averaging across the entire sample of Scottish wind turbines and their surrounding houses. Most results either show no significant effect on the change in price of properties within 2km or 3km or find the effect to be positive.
- Results vary across areas: The results vary across different regions of Scotland. Our data does not provide sufficient information to enable us to rigorously measure and test the underlying causes of these differences, which may be interconnected and complex.

⁴⁵ Centre for Economic Research on Inclusivity and Sustainability (2023) Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach. <<u>https://www.universityofgalway.ie/media/researchsites/ceris/files/WP-2023-01.pdf</u>
⁴⁶ RenewableUK and Cebr, (2014). Available at << <u>https://www.renewableuk.com/news/304411/RenewableUK-Cebr-Study-The-effect-of-wind-farms-on-house-prices.htm</u> >>

⁴⁷ Heblich S., et al., (2016) Available at: << <u>https://www.climatexchange.org.uk/wp-</u> content/uploads/2023/09/cxc_wind_farms_impact_on_house_prices_final_17_oct_2016.pdf >>

 <u>content/uploads/2023/k9/cxc_wind_tarms_impact_on_nouse_prices_imat_i7_occ_2010.pci</u>
 ⁴⁸ Stephen Gibbons, 2014. "Gone with the Wind: Valuing the Visual Impacts of Wind Turbines through House Prices," SERC Discussion Papers 0159, Spatial Economics Research Centre, LSE.



The literature described above demonstrates that at an Irish and international level, wind farms have not impacted property values in the local areas. It is a reasonable assumption based on the available international literature, that the provision of an offshore wind farm at the proposed location would not impact on the property values in the area, particularly considering that the nearest full time occupied residential property is located at a distance of over 5.5km from the nearest turbine.

One of the largest studies of the impact of wind farms on property values has been carried out in the United States. '*The Impact of Wind Power Projects on Residential Property Values in the United States:* A multi-Site Hedonic Analysis⁴⁹, December 2009, was carried out by the Lawrence Berkley National Laboratory (LBNL) for the U.S Department of Energy. This study collected data on almost 7,500 sales of single-family homes situated within ten miles of 24 existing wind farms in nine different American states over a period of approximately ten years. The conclusions of the study are drawn from eight different pricing models including repeat sales and volume sales models. Each of the homes included in the study was visited to demonstrate the degree to which the wind facility was visible at the time of the sale, and the conclusions of the report state that "The result is the most comprehensive and data rich analysis to date on the potential impacts of wind energy projects on nearby property values."

The main conclusion of this study (as detailed on Page XVII) is as follows:

"Based on the data and analysis presented in this report, no evidence is found that home prices surrounding wind facilities are consistently, measurably, and significantly affected by either the view of wind facilities or the distance of the home to those facilities. Although the analysis cannot dismiss the possibility that individual or small numbers of homes have been or could be negatively impacted, if these impacts do exist, they are either too small and/or too infrequent to result in any widespread and consistent statistically observable impact."

This study has been updated by LBNL who published a further paper entitled 'A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States', in August 2013. This study analysed more than 50,000 home sales near 67 wind farms in 27 counties across nine U.S. states yet was unable to uncover any effects to nearby home property values. The homes were all within 10 miles of the wind energy facilities - about 1,100 homes were within 1 mile, with 331 within half a mile. The report is therefore based on a very large sample and represents an extremely robust assessment of the effects of wind farm development on property prices. It concludes that:

"Across all model Specifications, we find no statistical evidence that home prices near wind turbines were affected in either the post-construction or post announcement/pre-construction periods."

Both LBNL studies note that their results do not mean that there will never be a case of an individual home whose value goes down due to its proximity to a wind farm – however if these situations do exist, they are considered to be statistically insignificant. Therefore, although there have been claims of significant property value effects near operating wind turbines that regularly surface in the press or in local communities, strong evidence to support those claims has failed to materialise in all the major U.S. studies conducted thus far.

The absence of studies which specifically focus on the effects of offshore wind farms on property prices means that there is some uncertainty in this area. However, based on the conclusions which have been reached in the literature described above which relate to impacts associated with onshore wind turbines which are often located in much closer proximity to residential dwellings, it demonstrates that there is insufficient evidence from the scientific literature and studies conducted to determine that there is the potential for a significant effect on property values as a result of the Project. The likelihood for a

⁴⁹ Hoen B., et al., (2009). Available at: << https://emp.lbl.gov/publications/impact-wind-power-projects >>



significant effect on property prices, considering the minimum distance to the nearest full time occupied residential property is on the mainland, at a distance of over 5.5km from the nearest turbine is very unlikely.

6.9.2 **Onshore Population Study Area**

Property values are not likely to be affected by the OGC or the OLL as both are located underground. The proposed OCC is located approximately 220m south of the closest dwelling house. Landscaping in the form of planted screen berms is proposed around the perimeter of the compound and a woodland mix is proposed on the eastern part of the site where there is the most potential for views into the site with further information detailed in Section 27.6.2 of Chapter 27 – Landscape and Visual Assessment.

In February 2016, EirGrid conducted an '*Investigation into the Potential Relationship between Property Values and High Voltage Overhead Transmission Lines in Ireland.*⁵⁰*The* purpose of the study is to present a framework to better assess the potential impact, if any, of High Voltage Overhead Transmission Lines (HVOTLs) on the value of properties in close proximity to overhead electricity transmission infrastructure. A review of the existing literature on this topic reveals that the preferred methodology for quantifying impacts on sales values is by using a 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
 built) and,
- > the property address/location, which is used to determine the distance from the
- > property to nearby lines and support structures.

A dataset of this sort was not publicly available in Ireland and, therefore, primary research was required. The approach followed in this study involved gathering transaction data directly from estate agents. The data collection and subsequent statistical regression analysis was limited to residential properties and agricultural land. However, the results from the regression analysis were supplemented by the findings of a survey of estate agents. The survey of estate agents was designed to obtain their professional opinion on the impact of HVOTLs on property values. The estate agent survey also included different types of commercial property i.e., retail, offices and industrial.

The results showed 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 growth likely contributing to this decrease.
- > There is evidence that properties close to HVOTL Rights of Way appreciate at the same rate as properties located away from HVOTLs.

There was considerable variation in the opinions of estate agent on changes in the value of residential properties and agricultural land in close proximity to HVOTLs.

⁵⁰ EirGrid (2016). Available at: << <u>https://cms.eirgrid.ie/sites/default/files/publications/FINAL-Part-1-Property-Valuation-Report-</u> Doc.-Version-1.0-23.02.16.pdf >>



- 41% of estate agents indicated that there was no effect on residential property from 110 kV lines, with the number decreasing with the higher voltages, such that only 2% indicated there was no effect from 400kV lines.
- 55% of estate agents indicated that there was no effect on agricultural land values from 110kV lines, with this numbering decreasing similar as above, but to a lesser extent, to 27% indicting no effect on values from 400kV lines.

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. The results of the study also indicate that, any drop in value is influenced by the size of the infrastructure above ground, such that, as the voltage of the HVOTL increases, the likelihood that it will affect property values increases.

In May 2016, Eirgrid conducted a literature review and evidence-based field study on the effects of high voltage transmission development on patterns of settlement and land use. The objectives of *EirGrid Evidence Based Environmental Studies Study 9: Settlement and land use*⁵¹ were:

- > 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.

A literature review of transmission projects from around the world was carried out, including review of Environmental Impact Assessments (EIAs). To investigate effects of transmission projects on patterns of land use and settlement, 31 case studies were chosen; 17 with existing overhead line (OHL) circuits, 10 with substations and 4 in construction. Sites were located in rural, rural/urban and urban areas. Land uses included agricultural, commercial and amenity. Four control Sites had no infrastructure. Coexistence, development density, planning policy and planning application history were all investigated. Planning and land use policy over the last twenty years was reviewed to see if it has influenced, or been influenced, by recent programmes of transmission infrastructure development. This study has established no evidence of any significant impact arising from the construction or existence of transmission infrastructure in terms of patterns of settlement and land use; however, transmission infrastructure can be a local physical constraint on development. The study also found that there were recommendations in a number of county development plans and policy documents promoting the use of underground cabling in new developments, and seeking to place existing overhead transmission lines underground, due to perceived lesser impact on residential amenity or to facilitate development.

The Onshore Site, in supporting the Project connecting the Offshore Site to the Irish grid network, consists of infrastructure which is primarily underground, with the exception of the OCC. Based on the conclusions which have been reached in the above studies, that grid connection infrastructure does not have a significant effect on property values and residential amenity, the added use of underground grid connection infrastructure has a lesser perceived effect than that of above ground grid connection infrastructure.

⁵¹ EirGrid (May 2016). Available at: << <u>https://cms.eirgrid.ie/sites/default/files/publications/EirGrid-Evidence-Based-Environmental-</u> Study-9-Settlement-and-Landuse.pdf >>



6.10 **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.

6.10.1 Offshore Site

When considering the amenity of residents in the context of the Offshore Site, there are three main potential effects of relevance: 1) Noise, 2) Visual Amenity and 3) Marine Traffic. Effects on human beings during the construction, operation and maintenance, and decommissioning phases of the Offshore Site is assessed in relation to each of these key potential effects; see Likely Significant Effects in Section 6.12 below. Noise is a quantifiable aspect of residential amenity while visual amenity is more subjective. Detailed noise modelling has been completed., Chapter 19 addresses Offshore Noise). A comprehensive landscape and visual impact assessment has also been carried out, as presented in Chapter 16: SLVIA of this EIAR.

The impact on residential amenity is then derived from an overall judgement of the combination of effects due to changes to use of the marine environment.

6.10.2 Onshore Site

As noted previously, the current land use for the Onshore Site is public road corridor, discontinuous urban fabric and agriculture, with third-party dwellings located adjacent to the road corridor.

When considering the amenity of residents in the context of the Onshore Site, there are four main potential effects of relevance: 1) Noise, 2) Visual Amenity, 3) Traffic and 4) Dust. As stated above, noise is a quantifiable aspect of residential amenity while visual amenity is more subjective. A detailed noise assessment has been completed as part of this EIAR and is discussed further in Chapter 26: Onshore Noise and Vibration. A comprehensive landscape and visual impact assessment have also been carried out, as presented in Chapter 27: LVIA of this EIAR. The potential impact of the Onshore Site in facilitating the Project on traffic and transport has been assessed within Chapter 29: Traffic and transportation. Chapter 25: Onshore Air Quality contains a thorough assessment of the potential effect of dust from the Onshore Site.

Effects on human beings during the construction, operation and maintenance, and decommissioning phases of the Onshore Site is assessed in relation to these environmental factors; see Likely Significant Effects in Section 6.11 below. The effect on residential amenity is then derived from an overall judgement of the combination of effects due to visual amenity, noise, traffic and dust.



6.11 Likely Significant Effects and Associated Mitigation Measures

6.11.1 'Do Nothing' Scenario

If the Project doesn't proceed, the opportunity to capture the available renewable energy resource and connect it to Ireland's electricity grid would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.

The opportunity to generate local employment and long-term financial investment in the local community would also be lost. It is likely that the trends of low population density, aging population dynamics and rural deprivation that have been discussed above within the Offshore and Onshore Population Study Areas would continue in the absence of investment. The opportunity for increased local employment, alongside an increase in local spending, which would result in an increase in the socio-economic status of the area, would be lost if the Project does not proceed.

A comparison of the potential environmental effects of the 'Do-Nothing' Alternative when compared against the chosen option of developing a renewable energy project at this site are presented in Table 3-1 of Chapter 3: Site Selection and Alternatives of this EIAR.

Offshore Site

If the Offshore Site, as part of the Project, were not to proceed, there would be no increase in local employment and no long-term financial contributions towards the local community within the Offshore Population Study area. This would likely mean that the trends seen within the area of outward migration leading to rural population decline, where, as discussed above, the population of the Offshore Population Study Area is trending towards higher percentages of older populations and percentages of the population who are retirees, in comparison to both County and State trends. This is likely to continue if no significant changes are seen in investment and opportunities within the area.

Further information on the induced impact of the Project on the socio-economic status of the Offshore Population Study Area can be found in Appendix 6-2: Economic Impact Assessment.

The existing marine uses and shipping and navigation operations would continue, including no change to existing commercial and/or recreational vessel activities and no change to existing civil and military aviation operations within the marine environment. There would be no potential for noise to affect sensitive receptors.

The opportunity for the Offshore Site to facilitate the production of renewable energy and reduce consumption of natural resources would be lost if the Project were not to proceed. This would mean that Ireland could be at a risk of not achieving our renewable energy targets, and the opportunity to displace 17.56 million tonnes of carbon dioxide over the 38-year operational lifetime of the Project would be lost.

Onshore Site

If the Onshore Site, in facilitating the Project, were not to proceed, the opportunity to generate local employment would be lost. The opportunity to increase local spending which would result in an increase in the socio-economic status of the area, would be lost if the Project does not proceed. The largest opportunity for securing contracts and other opportunities will be linked with the development and construction of onshore infrastructure. This would likely mean that the trends seen in the Onshore



Population Study Area of low population increases, higher percentages of older populations and percentages of the population who are retirees would continue due to lack of investment and employment opportunities.

Further information on the induced impact of the Project on the socio-economic status of the wider Atlantic Region, within which Co. Clare is included can be found in Appendix 6-2: Economic Impact Assessment.

Land use of public road corridor, with some portions of agricultural land and recreational land would continue within the Onshore Site. There would be no potential for noise or dust to affect sensitive receptors.

The opportunity for the Onshore Site, in facilitating the Project, to aid in the delivery of renewable energy to the national grid and reduce the consumption of natural resources would be lost if the Project were not to proceed. Future Climate Change predictions for the Irish agricultural sector include reduced crop yield and increased vulnerability of crops and livestock to pests and diseases. Sea level rise and coastal erosion at the Landfall site, in particular the coast to the east and southwest is currently experiencing coastal erosion. Further information regarding current evidence and future predictions for coastal and terrestrial climate change can be found in Chapter 30: Climate.

6.11.2 **Construction Phase**

Within this section, the Project i.e. both the Offshore Site and the Onshore Site will be considered as a whole. Where the Offshore Site and the Onshore Site are required to be considered separately, this is identified within the assessment.

6.11.2.1 Population

Those working on the construction phase of the Project will travel daily to the site from the wider area, with some workers being based on vessels, allowing them to rotate on and off the site. Based on approximately 160 workers working within the site at the peak of construction, there may be a short-term effect with an increase of the population. The construction phase will have no effect on the population of the area in terms of changes to the population trends or density, household size or age structure.

6.11.2.1.1 Population Levels

Pre-Mitigation Impacts

Offshore Site

Those working on the construction phase of the Offshore Site will travel daily to the site from the wider area. The construction phase will have no significant effect on the population of the area in terms of changes to population trends or density, household size or age structure.

Onshore Site

Those working on the construction phase of the Onshore Site will travel daily to the site from the wider area. The construction phase will have no significant effect on the population of the area in terms of changes to population trends or density, household size or age structure.



Mitigation Measures

There are no mitigation measures proposed as part of the construction phase of the Project, as no negative effects on population are predicted.

Residual Effect

Based on the above, it can be concluded that there would be no significant effects on population levels from the construction phase of the Project.

Significance of Effects

The effects on population levels during the construction phase of the Project will Not be Significant.

6.11.2.1.2 Employment and Investment

Pre-Mitigation Impacts

The design, construction and operation and maintenance of the Project will provide employment for technical consultants, contractors and maintenance staff. Up to approximately 160 jobs will be created during the development and construction, phases of the Project. The construction phase of the Project will last approximately 40 months.

Where possible construction workers will be sourced locally, thereby helping to sustain employment in the construction trade. A diverse range of skills will be required during the construction of the Project. This will include both the need for workers with basic construction skills but also the need for many highly specialised workers. This will have a short-term significant positive effect on the local community due to the construction of the Project.

The Project will result in an influx of skilled people into the area, bringing specialist skills for both the construction and operation and maintenance phases that could result in the transfer of these skills into the local workforce, thereby having a long-term positive effect on the local skills base. Up-skilling and training of local staff in the particular requirements of the wind energy industry is likely to lead to additional opportunities for those staff as additional offshore (and onshore) wind farms are constructed in Ireland. This will have a long-term moderate positive indirect effect on the local area. According to Wind Energy Ireland there are over 5,130 jobs related to onshore wind energy in Ireland in 2021, a figure which is projected to grow to 7,000 by 2030⁵². An analysis by Dublin Offshore consultants and BiGGAR Economics estimated that the offshore wind sector has the potential to support between 2,100 and 5,400 jobs within the Atlantic Region, between Co. Donegal and Co. Limerick by 2037⁵³.

The injection of money in the form of salaries and wages to those employed during the construction phase of the Project 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.

The Project will also directly contribute to local communities via the Community Benefit Fund, which will represent of fund of approximately \notin 3.5 million per year for the operational life of the Project (based on a contribution of \notin 2/MWhr, which is a condition of the ORESS1 scheme). During the

⁵² Wind Energy Ireland (2021). Available at: << <u>https://windenergyireland.com/latest-news/5401-onshore-wind-to-deliver-huge-rural-jobs-boost-over-next-decade-and-generate-billions-in-investment</u> >>

⁵³ Dublin Offshore Consultants (2022). Available at: << <u>https://westerndevelopment.ie/wp-content/uploads/2022/10/Growth-of-Onshore-to-Offshore-Wind-Atlantic-Region-Full-Report.pdf</u> >>



construction phase, following the commencement date of the Project, an increasing percentage of the Community Benefit Fund's expected value will be provided to the Fund over the first three years of construction, and 100% of the Community Benefit Fund's expected value for any further Early Contribution Years until the commencement of operation of the Project.

The largest opportunity for securing contracts in Ireland will be linked with the development and construction of onshore infrastructure, including the substation and cable route. It is estimated that companies in Ireland will be able to secure contracts worth up to \notin 21 million in this area.

Further information on the potential effect of the construction phase of the Project on employment and investment can be found in Appendix 6-2: Economic Impact Assessment. This will have a **short-term significant positive indirect effect** on employment and investment.

Mitigation Measures

There are no mitigation measures proposed as part of the construction phase of the Project, as no negative effects on employment and investment are predicted.

Residual Effect

The injection of money in the form of salaries and wages to those employed during the construction phase of the Project has the potential to result in an increase in household spending and demand for goods and services in the local area. As per the Economic Impact Assessment of the Project, capital investment of an estimated €43 million will be secured within the Atlantic Region, with €25 million of this expected to be in Co. Galway during the development and construction phase. This would result in local retailers and businesses experiencing a short to medium-term significant positive effect on their cash flow. The financial investment by way of the Community Benefit Fund, which will begin from the commencement date of the Project, will represent a significant increase in the value of funding which is available to the communities with the Offshore Population Study Area. This will have a **short-term significant positive indirect effect**.

Significance of Effects

The significance of effects on employment levels and local investment during the construction phase will be **a significant positive effect**.

6.11.2.1.3 Land Use/ Sea Use

Pre-Mitigation Impacts

Offshore Site

During the construction phase, there will be a small increase in localised vessel traffic associated with the Offshore Site. As such there is the potential for obstruction to marine recreational users and aquaculture operations as a result of the physical presence of Project vessels and associated advisory safe clearance ranges. Chapter 18: Other Sea Users, provides an assessment of the potential impacts of the construction phase on recreational users and aquaculture operations of the Offshore Site. Given the coastal nature of the recreational users identified, it is considered that works associated with the construction of the OEC have the greatest potential to result in an impact to marine recreational users. The closest aquaculture operations to the Offshore Site are approximately 6.3 km, and construction impacts will be highly localised to the construction area. This will have a **moderate short-term, not significant negative effect**



Onshore Site

Current land-use along the OGC route, comprises of public road corridor, discontinuous urban fabric, agriculture and recreational amenity. The OLL and OCC sites are currently used for agriculture. Land use in the wider landscape of the Onshore Site also comprises primarily of farmland and one-off rural housing.

Within sections of agricultural land, the OGC will follow along existing agricultural tracks, During the construction phase there may be slight interference with agricultural practices where farm practises may be redirected to other fields temporarily. There is no potential for impact on residential and commercial land use in the area.

The existing land use of road networks will continue on the OGC route. During the construction phase there will be slight disruptions to road networks, which will be rolling in nature. Potential impacts related to traffic and transport during the construction phase are assessed in Chapter 29: Traffic and Transport. There will be no change to existing land uses in the wider area as a result of the Onshore Site.

This will have a slight short-term, not significant negative effect

Offshore Mitigation Measures

Chapter 18: Other Sea Users provides a full list of mitigation measures relating to the construction phase of the Offshore Site. Please refer to Chapter 33: Schedule of Mitigation and Monitoring Measures for a full list of measures for the Offshore Site.

Onshore Mitigation Measures

Chapter 29: Traffic and Transport provides a full list of mitigation measures which will be adhered to during the construction phase of the Onshore Site. Please refer to Chapter 33: Schedule of Mitigation and Monitoring Measures for a full list of measures for the Onshore Site.

- The construction of the OGC will initially see installation of the ducts and joint bays, before the contractors return to pull the cables through from joint bay to joint bay. Cable laying will be undertaken by a rolling construction method with 120m of cable laid per crew, per day, with two crews, providing access in the evenings and night hours along the route.
- > A Traffic Management Plan, to be agreed with the Local Authority, will be in place for the construction phase. The Traffic Management Plan is included as Appendix 29-2 to this EIAR.
- Local access for residents living along the OGC will not be closed for the construction phase, along the N67 and N68 National Roads the road carriageway is wide enough to have access solutions in place, and there are also alternative access roads into the area.

Residual Effect

Offshore Site

Due to the short-term nature of the construction works at the Offshore Site, and with consideration given to the embedded mitigation measures identified in Chapter 18, significant effects associated with the obstruction to marine users within the marine environment are not anticipated. Therefore, the residual effect is likely a slight short-term, not significant negative effect.



Onshore Site

Due to the small footprint of the above-ground elements of the Onshore Site infrastructure, on a site scale and even more so on a local scale, the residual effect is considered, direct, permanent, imperceptible, negative effect on land use and, direct, imperceptible short-term negative effects on activities.

Significance of Effects

The significance of effects on sea and land use during the construction phase of the Project will be **Not** Significant.

6.11.2.1.4 Residential Amenity

Pre-Mitigation Impact

Offshore Site

The factors for which potential impacts on residential amenity could be incurred due to construction of the Offshore Site are discussed in Section 6.10.1 above. There is the potential for impacts on residential amenity during the construction phase of the Offshore Site due to visual impacts, marine traffic, and noise with the presence of additional infrastructure in the marine environment.

Chapter 16: SLVIA provides a detailed assessment of the potential impact of the construction phase of the Project on visual amenity. During the construction phase, operations and machinery movements associated with the Offshore Site will be visible, with the most noticeable impacts near the end of the construction phase when all turbines are in place in addition to concentrations of activity in the form of turbine installation vessels and cable laying vessels. The Project will introduce a number of offshore lights in the night time sea view. The worst-case magnitude of visual change during the latter part of the construction phase, when turbines are in place along with construction activity, is assessed as High for receptors within 10km of the Offshore Site WTGs that have open views of the sea, while other receptors within 10km that are of a lesser sensitivity or have less open sea views the predicted construction phase visual effect is not considered to exceed Major-moderate, which is not deemed to be a significant impact. Outside of this area, the significance of construction phase effects will generally range from Major Moderate to Imperceptible, reducing with increasing separation distance and visibility of the scheme and is Not Significant.

During the construction phase, there will be a small increase in localised vessel traffic associated with the Offshore Site. As such there is the potential for short term, slight negative effects on marine traffic as a result of the physical presence of Project vessels and associated advisory safe clearance ranges.

Installation of the OSS, GBS foundations and WTGs may also generate airborne noise through the presence of vessels and Project specific machinery on the vessels. These construction activities will have a likely, short-term adverse effect on noise receptors. Chapter 19: Offshore Air Quality and Airborne Noise provides an assessment of the potential noise impacts on sensitive receptors due to the construction of the Offshore Site. Significant effects due to airborne noise from construction activities are not anticipated on receptors during the construction phase of the Project.

Therefore, any effects are assessed as negative and Not Significant.

Onshore Site

The factors for which potential impacts on residential amenity could be incurred due to the construction of the Onshore Site is discussed in Section 6.10.2 above. There is the potential for impacts



on residential amenity during the construction phase of the Onshore Site due to dust, traffic, noise and vibration emissions due to the presence of additional traffic and plant machinery and visual amenity.

There is potential for temporary/short-term, slight negative effects on residential amenity due to the construction of the OGC. The OGC will, for the majority, be located within the local road network, with a total length of 15.5km on Local Roads, 0.7m within the road verge and 6.1km within third-party ands. This has the potential to give rise to dust emissions, traffic disruptions, noise and vibration emissions within the vicinity of the construction works. Construction of the OGC will require a rolling construction site which will be generally approximately 240m of the OGC per day (with 2 no. crews working in parallel and completing 120m per day). Any effects on residential amenity due to the construction phase of the Onshore Site are **Not Significant**.

Mitigation and Monitoring Measures

All mitigation with regards to the above which can be found in the corresponding chapters: Chapter 14: Shipping and Navigation, Chapter 18: Other Sea Users, Chapter 19: Offshore Air Quality and Airborne Noise, Chapter 25: Onshore Air Quality, Chapter 26: Onshore Noise and Vibration, and Chapter 28: Material Assets and Chapter 29: Traffic and Transport will be implemented in order to reduce insofar as possible, potential effects on residential amenity at properties located in the vicinity of the Project construction works.

Please refer to Chapter 33: Schedule of Mitigation and Monitoring Measures for a full list of measures.

Residual Impact

Based on the above it is concluded that there would be a temporary/short-term, negative, slight effect on residential amenity due to the construction phase of the Project.

Significance of Effects

The effect on residential amenity due to construction phase the Project is slight and is Not Significant.

6.11.2.1.5 **Tourism**

Pre-Mitigation Effect

Offshore Site

The seascape is strongly associated with tourism and attracts high number of visitors within the area surrounding the Offshore Site. The Wild Atlantic Way coastal driving route is an important tourist route which runs along Ireland's west coast from Donegal to Cork. There are a number of sensitive coastal landscapes within the areas surrounding the Offshore Site, which are addressed more in-depth in Chapter 16: SLVIA. The highest level of impact will occur when construction machinery and vessels are present within the OAA and travelling frequently to shore. This has potential for a short term, slight negative effect on tourism during construction.

Further consultation has been held with tourism industry stakeholders and the local community in the area, with insight provided on the potential effects of the construction of the Project. South Connemara currently experiences tourism accommodation supply challenges. The construction phase of the Project has the potential to stimulate local confidence in investment in the local accommodation product, with the potential to grow available accommodation in the area to accommodate construction workers and over time allow for more tourism focused accommodation, leading to a long-term moderate positive



effect on tourism. Further information can be found in Appendix 6-1: Tourism Impact Assessment. This effect is **Not Significant**.

Onshore Site

While the OGC will avoid tourist towns and villages for the most part, for a short length, (approximately 1100m) it will pass through Kilrush Golf Club, the majority of which is along existing access tracks within the club. Any impacts will be limited to the active construction area (approximately 2 crews @ 120m/crew/day = 240m/day) and will be temporary in nature. Construction will be sectional in nature, where once works in one section are completed, the works are repeated at the next appropriate sections of the route. Further information on grid construction methodologies can be found in Chapter 5: Description of the Project and Appendix 5-17. Construction within Kilrush Golf Club has the potential to have temporary imperceptible negative effects on tourism, due to the partial loss of access for a short period if construction works overlap with the tourist season.

With regard to tourist attractions and amenity use around the Onshore Site, described in Section 6.6, traffic management safety measures will be in place. Please see traffic effects below for further details on proposed mitigation measures.

The majority of the OGC route will be located within the public road network, which does not pass through or nearby to any nationally important tourist attractions, however as mentioned above, it does however pass through the Kilrush Golf Club. As there will be some traffic restrictions in place through the construction phase of the OGC, there will be a short-term slight negative effect to local tourism and amenity. See traffic effects below for further details on proposed mitigation measures. This is a **Not Significant effect**.

Mitigation Measures

Due to the temporary nature of the construction phase effects on tourism, there are no mitigation measures proposed for the construction phase of the Project regarding Tourism. A Traffic Management Plan has been prepared for the construction phase of the Onshore Site in order to reduce disruption to traffic within the area.

Residual Effect

Based on the above it is concluded that there would be a short-term, negative, imperceptible impact on tourism and the wider landscape due to the construction phase of the Project.

Significance of Effects

The effect on tourism in the wider area due to construction phase the Project is Not Significant.

6.11.2.1.6 Property Values

Pre-Mitigation Impacts

Offshore Site

As noted in Section 6.9.1 above, the absence of studies which specifically focus on the effects of offshore wind farms on property prices means that there is some uncertainty in this area. However, based on the conclusions which have been reached in the literature which relate to impacts associated with onshore wind turbines, which are often located in much closer proximity to residential dwellings, it demonstrates that there is insufficient evidence from the scientific literature and studies conducted to



determine that there is the potential for a significant effect on property values as a result of the Project. The Community Benefit Fund will begin on the date of commencement of construction of the Project, this has the potential to support the economic development of the area, thus making the area more attractive to potential buyers due to the increase in community facilities and job opportunities both directly and indirectly associated with the construction of the Project. This has the potential to have short term, imperceptible positive effects on property prices during the construction phase of the Project. This is a **Not Significant** effect

Onshore Site

Construction of the OGC route will be temporary and localised in nature, and occur in sections along the route

As noted in Section 6.9.2 above, the conclusion from available international literature indicates that property values (residential and agricultural) show no correlation with the presence of overhead grid infrastructure in an area, with opinions on nearby grid infrastructure diminishing over time. This literature was all based on above ground grid infrastructure, while it has been stated that underground grid connections are both supported and favoured. It is both favourable, and recommended, that new and existing grid infrastructure is situated underground. At the Onshore Site, the OGC will be underground from the OLL to Moneypoint 220kV Substation. There is no potential for impacts on property values in the area surrounding the Onshore Site during the Construction phase of the Project. This effect is **Not Significant**.

Mitigation Measures

There are no mitigation measures proposed as part of the construction phase of the Project, as no negative effects on property value are predicted.

Residual Effect

It is on the above basis that it can be concluded that there would be potential for short term negative imperceptible effects on property prices from the construction phase of the Project.

Significance of Effects

The effect on property values due to the construction of the Project is Not Significant.

6.11.2.2 **Health**

6.11.2.2.1 Health and Safety

Project Pre-Mitigation Effects

Construction of the Project will necessitate the presence of construction sites in different locations, for each offshore and onshore element of the Project, as detailed in Chapter 5, as well as travel on the public road network to and from each construction site. Construction sites and the machinery used on them pose a potential health and safety hazard to construction workers if site rules are not properly implemented.

The Project has been designed with embedded health and safety mitigation measures in order to reduce the potential for health and safety effects. Section 14.4.7 of Chapter 14: Shipping and Navigation provides a list of embedded mitigation measures which have been incorporated during the design process of the Project. There is potential need for unexploded ordnance (UXO) clearance. Based on



pre-construction surveys which have been carried out to date, and a UXO risk assessment the requirement for UXO clearance within the Offshore Site is unlikely. Further information on UXO, and clearance procedures in the unlikely event that subsequent surveys lead to the identification of any possible or confirmed UXO can be found in Chapter 5: Description of the Project and Chapter 12: Marine Mammals and Other Megafauna. Appendix 5-4: Emergency Response and Coordination Plan outlines further instructions to be followed in the event of interaction between the Project and a UXO.

The construction of the Onshore Site will include working under a number of existing overhead powerlines, and within public road corridors which have a number of services within them, 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 a potential health and safety hazard for construction workers. This has the potential to have short term, significant negative effects on human health during the construction phase of the Project. This is a **Significant** effect

Project Mitigation Measures

The Project will be constructed, operated and decommissioned 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) Regulations 2007 (S.I. No. 299 of 2007), as amended;
- Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and
- Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).

During construction of the Project 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) Regulations 2006'. This will encompass the use of all necessary Personal Protective Equipment, Risk Assessment and Method Statements and adherence to the site Health and Safety Plan.

Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will also be erected on this fencing and at locations around the site. At the Offshore Site a guard vessel will be used where necessary to ensure that passing vessels observe the recommended safety distances. Communication with local sea users will also be undertaken regularly through regular channels to ensure that there is wide awareness of the works as they progress.

Health and Safety Guidelines for working within and around electrical substations and underground cables will be adhered to onsite.

Compliance with all relevant health and safety legislation, guidelines, industry best practice and associated risk assessments, method statements, and standards will be adhered to during all aspects of the construction phase of the Project.

Residual Effect

With the implementation of the above, there will be a short-term potential slight negative residual effect on health and safety during the construction phase of the Project due to the nature of the construction activities proposed.



Significance of Effects

Based on the assessment above there will be **No Significant effects** on health and safety during the construction phase of the Project.

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

Potential dust emissions arising during the Construction Phase are only relevant for the Onshore Site and therefore the dust has not been considered within the Offshore Site section. Potential water and sediment quality effects associated with the construction of the Offshore Site are detailed in Section 6.11.2.2.3 below.

Pre-Mitigation Effect

Offshore Site

Potential exhaust emission sources during the construction phase of the Offshore Site include transportation and installation of turbines and all other offshore infrastructure including offshore support vessels.

An increase in vessel traffic which could result in an increase in emissions has the potential to affect sensitive receptors in the immediate vicinity of the Offshore Site due to the decrease in air quality. The majority of the construction phase works will be conducted within the Offshore Site, with some transport of vessels from ports and harbours. However, the transport of infrastructure and stone to the Offshore Site has the potential to also generate exhaust emissions, which could affect nearby sensitive receptors. These effects on air quality will have a short-term, slight, negative impact on human health.

Further detailed information in relation to the potential effects may occur due to exhaust emissions during the construction phase of the Offshore Site are described in Chapter 19: Offshore Air Quality and Airborne Noise. This effect is considered **Not Significant**.

Onshore Site

Potential dust and exhaust emission sources during the construction phase of the Onshore Site include construction of a temporary construction compound, laying of approximately 22.3km of underground cabling (OGC) upgrading of existing access tracks and construction of new access tracks and installation of the OCC.

An increase in dust and exhaust emissions has the potential to cause a negative effect on sensitive receptors in the immediate vicinity of the Onshore Site. The entry and exit of construction vehicles from the site may result in the transfer of mud to the public road, particularly if the weather is wet, which on drying can be dispersed as dust. This may potentially cause negative health effects to residents and other road users.

These effects will not be significant and will be relatively short-term in duration. The potential effects of dust and exhaust emissions that may occur during the construction phase of the Project are further considered in Chapter 25: Onshore Air Quality. Based on the assessment in this chapter, and following the proposed mitigation measures, it is determined that there will be a short-term, imperceptible negative effect from air quality on human health. This effect is considered **Not Significant**.



Offshore Mitigation Measures

No measures are proposed to mitigate the effects of dust and pollutants from construction activities at the Offshore Site, because it is highly unlikely that any dust or pollutants from these activities occurring offshore would be detected at onshore sensitive receptors, including residential properties.

Onshore Mitigation Measures

The following mitigation measures will be implemented during the construction of the Onshore Site. Please refer to Chapter 26: Onshore Air Quality and Chapter 32 Schedule of Mitigation and Monitoring Measures 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 negative effect on human health. 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 vehicles will be transported to the site on specified haul routes only.
- Construction materials for the Onshore Site 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 or 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
- An Onshore Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see).

The active construction area along the OGC route will be small, ranging from approximately 240m of the OGC per day (with 2 no. crews working in parallel and completing 120m per day). All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise.

Residual Effect

Offshore Site

There will be a short-term potential slight negative residual effect on air quality during the construction phase of the Offshore Site due to the nature of the construction activities proposed.

Onshore Site

With the implementation of the above, there will be a short-term potential imperceptible negative residual effect on air quality during the construction phase of the Onshore Site due to the nature of the construction activities proposed.

Significance of Effects

The effects on population and human health due to changes in air quality from exhaust emissions and dust during the construction phase of the Project are considered to be not significant. Based on the


assessment in this chapter, and following the proposed mitigation measures, it is determined that there will be a temporary to short term, slight, negative effect from air quality on human health. This is a **Not Significant** effect.

6.11.2.2.3 **Water Quality**

Pre-Mitigation Impacts

Offshore Site

The construction phase works and use of plant in the marine environment, may give rise to the potential release of wastewater, pollutants, contaminated sediments, suspended solids and hydrocarbons into marine waters. There are a number of bathing waters which are protected under the Bathing Waters Directive within a 20km area surrounding the Offshore Site. All bathing waters have been assessed as having an "Excellent" water quality status and the Kilkieran Bay shellfish water harvested for oysters, mussels and salmon has shown no harmful biotoxin levels above regulatory levels since 2010 noting this was the most recent occasion the levels were measured. Effects on designated waters from increased suspended sediment concentrations and/or disturbance of sediments characterised as having very low contamination potential from construction activities is assessed as a moderate negative effect which is Not Significant. Effects on designated waters from pollution events caused by vessel discharges or accidental vessel releases during the construction phase is assessed as a significant negative effect which is Significant. Chapter 8: Water and Sediment Quality assesses the potential for impact on these receptors during the construction phase. The pre-mitigation impact on water quality is assessed as negative, moderate, temporary, likely effect. This effect is **Not Significant**.

Onshore Site

There are a number of Group Water Schemes located within and in close proximity to the Onshore Site. The OGC trench depth will only be approximately 1.2m in depth, the excavation will be temporary and sectional in nature, and the cable trench will be backfilled with appropriately engineered backfill. There are 27 no. total watercourse crossings located along the OGC, 11 of which are EPA WFD mapped watercourses. Releases of hydrocarbons to groundwater and surface waterbodies during the construction phase of the Onshore site has the potential to cause indirect, negative, significant, short term, unlikely effects on human health. The potential sources of suspended sediment include runoff from spoil excavated from the OLL, OGC and OCC infrastructure, and entering surface or groundwater systems. Potential sources of hydrocarbons include the accidental spillage during construction activities. The pre-mitigation effect on water quality is assessed as indirect, negative, significant, temporary, likely effect. This effect is considered **Significant**.

Offshore Mitigation Measures

Mitigation by design has been incorporated throughout the Offshore Site. The construction phase will operate in accordance with best practice and maritime conventions including the MARPOL and BWM conventions. Adherence to these conventions seek to avoid, prevent and reduce the likelihood that vessel operations result in pollution events to the marine environment. Further information relating to the mitigation measures for control of hydrocarbons and the protection of water quality during offshore construction works as described in Chapter 8: Water and Sediment Quality, Appendix 5-3: Marine Pollution Contingency Plan- and Appendix 5-4: Emergency Response Co-ordination Plan.



Onshore Mitigation Measures

It is proposed that all rock needed to construct the Onshore Site will be imported to the site from local quarries. The Onshore Site has been designed to avoid sensitive hydrological features, insofar as possible. A bespoke drainage design which includes but is not limited interceptor drains, vee-drains and sediment traps will be implemented on the Site. Chapter 23 of this EIAR details all best practice and mitigation measures to minimise the potential for entrainment of suspended sediment or potential hydrocarbon leak. Please see Chapter 23: Water for details and Chapter 30 for a full list of mitigation and monitoring measures for the Onshore Site.

Residual Effect

Offshore Site

Given the designed in mitigations to be adopted, potential effects on water quality due to accidental release of pollutants and potentially contaminated sediments will be reduced, as such the residual effect will be a slight negative effect.

Onshore Site

With the implementation of the drainage design and all mitigation measures listed in Chapter 23: Water (separation distances, prevailing geology, topography and groundwater flow directions), it is considered that the residual effects are to be short-term, imperceptible, negative effect on human health due to impacts on water quality.

Significance of Effects

Human health effects due to potential impact on water quality during the construction phase of the Project are considered to be **Not Significant**.

6.11.2.2.4 **Noise**

There will be an increase in noise levels in the vicinity of the Project site during the construction phase, as a result of heavy machinery and construction work, which has the potential to cause negative effects to sensitive receptors located closest to both the Offshore and Onshore Sites, impact human health due to disruption from noise. These effects will be short-term in duration.

Construction noise at any given noise sensitive location will be variable throughout the construction phase, depending on the activities underway and the distance from the main construction activities to the receiving sensitive receptors. The assessment of all potential noise effects that will occur during the construction phase of the Project are described further in Chapter 19 Offshore Air Quality and Airborne Noise and Chapter 28: Onshore Noise and Vibration.

Pre-Mitigation Effects

Offshore Site

Significant effects due to airborne noise from construction activities at the Offshore Site are not anticipated on receptors during the construction phase of the Project. Therefore, any effects are assessed as short-term, imperceptible, negative and not significant. The potential noise impacts that will occur during the construction phase of the Offshore Site are further described in Chapter 19: Offshore Air Quality and Airborne Noise. This effect is **Not Significant**.

Onshore Site



With regard to the Onshore Site, underground OGC construction works may give rise to noise effects on sensitive receptors in the area, however, these noise effects will be transient in nature as the works move along the underground electrical cabling route. Construction works at the OLL and OCC, which are 230m and 220m from the nearest sensitive receptor respectively, have the potential to cause negative, slight to moderate and temporary not significant human health effects due to the increase in noise levels.

There will be an increase in noise levels in the vicinity of the Onshore Site during the construction phase, as a result of heavy machinery and construction work which has the potential to cause negative effects to sensitive receptors located closest to the Onshore Site. These impacts will be temporary to short-term in duration. This effect is **Not Significant**.

Construction noise at any given noise sensitive location will be variable throughout the construction phase, depending on the activities underway and the distance from the main construction activities to the receiving sensitive receptors. The potential noise impacts that will occur during the construction phase of the Onshore Site are further described in Chapter 26: Onshore Noise and Vibration.

Offshore Mitigation Measures

No measures are proposed to mitigate the effects of airborne noise from cable installation and vessels at the Offshore Site, because it is highly unlikely that any sound from these activities occurring offshore would affect onshore receptors, including residential properties.

Onshore Mitigation Measures

Typical construction noise thresholds are not expected to be exceeded during the majority of Project construction works therefore no specific mitigation measures are proposed. The exception to this statement is when the OGC works are taking place within 40m of the closest sensitive receptors along the route. As the works are linear and the plant may only be in close proximity to the sensitive receptors for a few days, localised screening may be the most appropriate form of noise mitigation. Chapter 26: Onshore Noise and Vibration furthers assesses the potential effects of onshore noise on sensitive receptors.

Residual Effect

Offshore Site

There will be a short-term, imperceptible, negative effect on noise during the construction phase of the Offshore Site due to the nature of the construction activities proposed and based on the distances of sensitive receptors from potential noise sources.

Onshore Site

With the implementation of the above mitigation, there will be a negative, slight, temporary to shortterm residual effect on noise during the construction phase of the Onshore Site due to the nature of the construction activities proposed and based on the distances of sensitive receptors from potential noise sources.

Significance of Effects

Based on the assessment above, and further assessments provided in Chapter 19: Offshore Air Quality and Airborne Noise and Chapter 26: Onshore Noise and Vibration, there will be **No Significant** direct or indirect effects on human health associated with noise during the construction phase of the Project.



6.11.2.2.5 **Traffic**

Pre-Mitigation Effects

Offshore Site

Activities associated with the construction of the Offshore Site may displace existing routes/activity and increase encounters and collision risk with other third-party vessels due to an increase in marine traffic. The presence of marine structures and increased vessel activity may also reduce emergency response capabilities due to increased potential for incidents, increased consequences of incidents or reduced access to emergency responders. These effects will be short-term, negative and **Not Significant**.

There is also potential that, the presence of project vessels will have a positive effect on emergency response, possibly serving as first responder under International Convention for the Safety of Life at Sea (SOLAS) obligations should an incident occur

Onshore Site

Additional Traffic will be generated during the construction of the Onshore Site by both staff travelling to / from the location of the construction, and by materials being transported to / from the point of construction along the OGC. Construction of the OGC will require a rolling construction site which will be generally approximately 240m of the OGC per day (with 2 no. crews working in parallel and completing 120m per day). OGC construction within public roads will require traffic management measures in the areas of active construction. Material to construct the OCC will be delivered to site via the N68. This could have a short-term, slight, negative effect on road users

Traffic impacts include increased travel distance and time as a result of diversions during the construction of the OGC, and traffic impacts due to increased traffic volumes during the construction of the OGC and OCC. These effects will be short-term, slight negative and **Not Significant**.

Offshore Mitigation Measures

Mitigation by design as a means to reduce the significance of effect of marine traffic and its associated human health risk are as follows:

- Compliance with UK's Marine Guidance Note (MGN) 654 (Maritime and Coastguard Agency (MCA), 2021 and its annexes;
- Guard vessel(s);
- > Marine coordination for project vessels;
- > Pollution planning; and
- > Project vessel compliance with international marine regulations.

Chapter 14: Shipping and Navigation provides a detailed assessments of the potential impacts of construction of the Offshore Site on marine traffic.

Onshore Mitigation Measures

A complete Traffic and Transportation Assessment has been completed for the Onshore Site by Alan Lipscombe Traffic and Transport Consultants. The full results of this assessment are presented in Chapter 29: Traffic and Transportation. A Traffic Management Plan (TMP) has also been developed (Appendix 29-2) in order to minimise any potential effect on the local population during the construction phase of the Proposed Project due to traffic. The TMP contains details which are to be finalised prior to the commencement of any works at the Onshore Site. Local access to all properties located along the OGC will be maintained at all times in order to ensure that disruption is kept to a



minimum. Please refer to Chapter 33: Schedule of Mitigation and Monitoring Measures for a full list of measures.

Residual Effect

Offshore Site

On implementation of mitigations measures, as described in Chapter 14: Shipping and Navigation and Appendix 5-10: Vessel Management Plan, there will be a short term imperceptible, negative significant effect on traffic due to the construction of the Offshore Site.

Onshore Site

Once a traffic management plan is implemented for the construction phase of the Project, there will be a temporary slight negative residual effect on local road users.

Significance of Effects

Based on the assessment above there will be **No Significant Effects** on traffic due to the construction of the Project.

6.11.2.2.6 Major Accidents and Natural Disasters

Pre-Mitigation Impacts

A risk register has been developed which contains all potentially relevant risks identified during the construction phase of the Project. Seven risks (Critical Infrastructure Emergencies, Severe Weather, Sea Level Rise/Erosion, Utility Emergencies, Traffic/Vessel Incident, , Fire/Gas Explosion and Collapse/Damage to Structures) specific to the construction phase have been identified and are presented in Chapter 31: Major Accidents and Natural Disasters. As outlined in 31.4.1 of this EIAR, the scenarios with the highest risk score in terms of the occurrence of major accident and/or disaster during the construction is identified as Severe Weather, and Fire/Gas Explosion.

The risk register concludes that there is low potential for natural disaster and/or major accident to occur at the Project site, and the effect is considered **Not Significant**.

Mitigation Measures

The Project has been designed and will be 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' (EC, 2017), a Risk Management Plan will be prepared and implemented to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures

Residual Effect

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



Significance of Effects

Based on the above risk assessment in Chapter 31, the effects to/from Major Accidents and Natural Disasters during the construction phase of the Project is **Not Significant**

6.11.3 **Operation and Maintenance Phase**

Within this section, the Project i.e. both the Offshore Site and the Onshore Site will be considered as a whole. Where the Offshore Site and the Onshore Site are required to be considered separately, this is identified within the assessment.

6.11.3.1 Population

As discussed in Section 6.5, both the Offshore and Onshore Population Study Areas have been seen to be subject to outward economic migration and have seen an increase in older populations. There is potential for the increased investment due to the Project to have direct and indirect effects on the population of the area. The increase in job opportunities which may be associated with the operation and maintenance phase of the Project, along with the increased investment associated with the Community Benefit Fund, the increase in jobs in the area and other potential investment could result in long term positive effects on the population of the area.

6.11.3.1.1 Population Levels

Pre-Mitigation Impacts

Offshore Site

The operation and maintenance phase of the Offshore Site will have no negative impact on the population of the area with regard to changes to trends, population density, household size or age structure.

There is potential for positive effects on population levels due to increased investment and job opportunities, both directly and indirectly influenced by the Project, which is **Not Significant**.

Onshore Site

The operation and maintenance phase of the Onshore Site will have no impact on the population of the area with regard to changes to trends, population density, household size or age structure, which is **Not Significant**

Mitigation Measures

There are no mitigation measures proposed as part of the operation and maintenance phase of the Project, as no negative effects on population are predicted.

Residual Effect

There are no residual effects on population levels due to the operation and maintenance of the Project

Significance of Effects

There are **No Significant** effects on population due to the operation and maintenance of the Project.



6.11.3.1.2 Employment and Investment

Pre-Mitigation Impacts

The operation and maintenance phase will present an opportunity for mechanical-electrical contractors and craftspeople to become involved with the maintenance and operation of the Project. On a long-term scale, the Project will create up to approximately 174 jobs annually during the operation and maintenance phase relating to the maintenance and control of the Project, having a long-term significant positive effect, which is **Significant**.

Over the operational lifetime, the long-term employment potential is representative of the greatest economic opportunity from the Project. There is also the potential for increased economic investment and development in the area, as experience gained by local contractors, and the development of more specialised skills can provide confidence in the investment potential of the region. Appendix 6-2: Economic Impact Assessment further describes the potential socio-economic impacts of the Project. The Project has the potential to have a long-term, significant positive effect on employment and investment during its operation and maintenance phase, which is **Significant**.

Proposed Community Benefit Scheme

Should the Project receive planning permission, there are substantial opportunities available for the local area in the form of Community Benefit Funds. The value of this fund will be directly proportional to the installed capacity and/or energy produced at the site, and at an estimated value of €3.5 million per annum for 20 years, will support and facilitate projects and initiatives including youth, sport and community facilities, schools, educational and training initiatives, and wider amenity heritage and environmental projects. The fund will represent a significant increase in investment in the sustainable development of the area surrounding the Offshore Site, including key sectors and economics drivers such as tourism. Further details on the proposed Community Benefit Fund are presented in Appendix 2-3: Community Report and Section 5.9.3 of Chapter 5: Project Description of this EIAR.

Mitigation Measures

There are no mitigation measures proposed as part of the operational and maintenance phase of the Project, as no negative effects on employment and investment are predicted.

Residual Effect

There are no residual effects on employment and investment due to the operation and maintenance of the Project

Significance of Effect

The Project will result in an increase in jobs and greater potential investment during the operation and maintenance phase. This effect is considered **Significant**.

6.11.3.1.3 Sea Use and Land use

Pre-Mitigation Impacts

Offshore Site

During the operation and maintenance phase, the physical presence of offshore infrastructure within the marine environment. has the potential to result in obstruction to other sea uses, such as marine



recreational users and aquaculture sites. Furthermore, there will be a small increase in localised vessel traffic associated with the operation and maintenance of the Offshore Site resulting in the potential long-term obstruction to other sea users. As part of this assessment of likely significant effects, obstruction is defined as any loss of access to a marine site, or the restriction of marine based activities or operations.

Prior to mitigation, due to the distance of the Offshore Site from other sea uses such as aquaculture sites, marine recreational sites, the highly localised nature of the effects from obstruction to such sites, as a result of the physical presence of offshore infrastructure and advisory safe clearance ranges around vessels are unlikely to result in any adverse effect due to the highly localised nature of the impact, therefore the effect is assessed as a neutral effect. This effect is **Not Significant**.

The Offshore Site of the Project will have no operational effect on other sea uses within the wider marine environment.

Onshore Site

The OGC's footprint is limited to a small percentage of the Onshore Site and overall Onshore Population Study Area. During the operation and maintenance phase, farming practices will resume around the OLL and OGC, and traffic movements on the public roads will resume as normal. The small scale of the OCC relative to the Onshore Site and Onshore Population Study Area, its ability to coexist with ongoing site activities and activities within the landscape indicate that the Onshore Site infrastructure will have no significant effect on other land-uses within the site and the wider area.

The Onshore Site of the Project will have no operational effect on other land uses within the wider area. This effect is **Not Significant**.

Mitigation Measures

Offshore Site

As part of the development of the Project, a number of mitigation by design measures have been adopted in order to reduce likely effects to the receiving environment. Table 18-8 of Chapter 18: Other Sea Users. Marine recreational users will be informed in advance of any routine maintenance or ad-hoc repair works required for the Offshore Site prior to the commencement of any works. Throughout the operation and maintenance phase, ongoing engagement will be undertaken with key stakeholders (including scuba diving and snorkelling centres, Blue Flag beach operators and local ports and marina) to ensure that any activities associated with the operation and maintenance of the Offshore Site, is clearly conveyed prior to the commencement of any maintenance activities.

All installed infrastructure within the marine environment will be detailed on nautical and admiralty charts and within relevant publications. Further details on charting requirements can be found in Appendix 5-10: Vessel Management Plan.

Onshore Site

There are no mitigation measures proposed as part of the operational and maintenance phase of the Project, as no negative effects on sea use and land use are predicted.

Residual Effect

Offshore Site

Significant effects associated with the obstruction to sea use as a result of advisory safe clearance ranges around Project vessels and the presence of offshore infrastructure are not anticipated. Vessel presence



will be temporary and localised, and whilst the presence of infrastructure will be long-term, the intervening distance between the Offshore Site will ensure a negligible magnitude of impact. Therefore, the residual effect is considered to be an imperceptible negative effect.

Onshore Site

Due to the small footprint of the Onshore Site infrastructure, the residual effect is considered Negative, direct, not significant, permanent effect on land use and activities during the operation and maintenance phase of the Project.

Significance of Effects

The effect on land use and sea use due to the operation and maintenance phase of the Project will be **Not Significant**.

6.11.3.1.4 Residential Amenity

Pre-Mitigation Impacts

Offshore Site

Factors for which impacts on residential amenity during the operational and maintenance phase of the Offshore Site could arise primarily due to changes to visual amenity, marine traffic and operational noise with the presence of additional infrastructure in the marine environment., as detailed in Section 6.10.1 above.

Chapter 16: SLVIA provides a detailed assessment of the potential impact of the operation and maintenance phase of the Project on visual amenity. During the operation and maintenance phase, SLVIA effects will relate to the long-term presence of the proposed WTGs and OSS, but no impacts will arise from the OEC as this is below the water line and not visible. The worst-case magnitude of visual impact during the operation and maintenance phase, when turbines are in place, is assessed as High for receptors within 10km of the Offshore Site WTGs that have open views of the sea, while other receptors within 15km that are of a lesser sensitivity or have less open sea views the operation and maintenance phase visual effect is not considered to exceed -moderate, which is not deemed to be a significant effect. Outside of this area, the significance of operation and maintenance phase effects will generally range from moderate to slight, reducing with increasing separation distance and visibility of the scheme.

There will be a low level of vessel traffic associated with maintenance activities, and this will have a negligible impact on residential amenity due to its scale, nature and frequency, that is not significant. Based on the combined assessments in relation to seascape sensitivity and seascape impact magnitude, the significance of operation and maintenance phase seascape effects are long-term, negative, moderate and not significant. The low level of vessel traffic during the operation and maintenance phase of the Offshore Site will have a long term, imperceptible negative effect on residential amenity due to increased vessels within the area.

Detailed noise modelling has been carried out as part of this EIAR, described in Chapter 19: Offshore Air Quality and Airborne Noise. Human health effects due to offshore noise have been assessed as long-term, negative, imperceptible and not significant. The effect is considered to occur almost continuously, although not all WTGs may be operational at the same time, or for 24 hours per day.

Based on the results of the noise assessment further detailed in Chapter 19: Offshore Air Quality and Airborne Noise, any effects are assessed as an imperceptible negative effect which is Not Significant.



The Community Benefit Fund has the opportunity to provide a significant increase in the residential amenity of the area, due to increased investment opportunities, resulting in positive effects on residential amenity.

The effect is defined as being a long-term slight negative effect on residential amenity. Therefore, any effects on residential amenity are assessed as negative and **Not Significant**.

Onshore Site

Potential impacts on residential amenity during the operation and maintenance phase of the Onshore Site could arise primarily due to noise, changes to visual amenity and potential impact of dust and traffic.

A detailed noise assessment has been carried out in Chapter 28: Onshore Noise and Vibration has assessed that that operation and maintenance phase of the Onshore Site, in particular the OCC, will have potential long-term, slight negative noise effects on sensitive receptors.

The visual impact of the Onshore Site is addressed comprehensively in Chapter 24: Landscape and Visual. There is potential for long-term, moderate negative effects on visual amenity due to the presence of the OCC.

Once the Onshore Site is operational, there will be no activities that will give rise to dust emissions as detailed in Chapter 29: Traffic and Transportation.

There is potential for long-term, slight negative effects on residential amenity resulting from the Onshore Site during the operation and maintenance phase, this effect is **Not Significant**.

Mitigation Measures

All mitigation as outlined under visual amenity, traffic, noise and vibration and dust 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 Project.

Residual Effect

With the implementation of the mitigation measures outlined in relation to visual amenity, traffic, noise and vibration and dust, the Project will have an imperceptible negative effect on residential amenity during the operation and maintenance phase.

Significance of Effects

Based on the assessment above there will be No Significant Effects on residential amenity.

6.11.3.1.5 **Tourism**

Pre-Mitigation Effect

Offshore Site

The seascape is strongly associated with tourism and attracts high number of visitors within the area surrounding the Offshore Site. The Wild Atlantic Way coastal driving route is an important tourist route which runs along Ireland's west coast from Donegal to Cork. There are a number of sensitive



coastal landscapes within the areas surrounding the Offshore Site, which are described further in Chapter 16: SLVIA.

Further consultation has been held with tourism industry stakeholders and the local community in the area, with insight provided on the potential effects of the operation and maintenance of the Project, which is further described in Appendix 6-1: Tourism Impact Assessment (TIA).

The potential increase in accommodation availability following from construction of the Offshore Site has a potential long-term, moderate positive effect on tourism. The TIA highlights a number of opportunities which could be prompted following on from the construction of the Offshore Site, including eco-tourism opportunities and the development of walking trails and other infrastructure.

The TIA also assesses that the presence of the Offshore Site would not have an impact on a visitors decision to visit Connemara. The visitor research and secondary research to examine the visitor demand perspective provides clear evidence that the presence of the Offshore Site WTGs is not a deterrent for visitors to visit the area. The majority of visitors felt the presence of WTGs would have neither a negative or positive impact on the local tourism industry.

The Community Benefit Fund has the opportunity to provide a significant increase in the development of sustainable tourism in the area, stimulating new opportunities within the tourism sector, with information on the CBF available in Chapter 5: Description of the Project and Appendix 2-3: Community Report. The TIA also outlines the potential benefits for local tourism that the CBF can provide.

There is potential for long-term, moderate positive effects on tourism resulting from the Offshore Site during the operation and maintenance phase due to increased funding and tourism opportunities, the effect is **Not Significant**.

Onshore Site

There are no anticipated operation and maintenance phase effects associated with the OGC in relation to tourism and amenity, as the cable route will be located fully underground, primarily within the public road corridor, and full road access will be restored.

The area affected by the OCC is located nearby to the existing Moneypoint Power Station, an area which already possess similar characteristics to those associated with the OCC.

There are no tourism attractions within or adjacent to the site that could be affected by the operation and maintenance of the Onshore Site, therefore the effect is **Not Significant**.

Mitigation Measures

There is no mitigation measures proposed as part of the operational and maintenance phase of the Project, as no negative effects on tourism are predicted.

Residual Effect

Based on the literature review in Section 6.8, the majority of studies indicate that wind farm developments do not deter visitors to tourist attractions or scenic landscapes where turbines are visually evident. Appendix 6-1: Tourism Impact Assessment provides further evidence that there will be no negative tourism effects due to the operation and maintenance of the Offshore Site. Due to the nature of the Onshore Site, there is no potential for significant effects on tourism in the area. As such, it is considered that the Project will have no significant negative impact on tourism during the operation and maintenance phase.



Significance of Effects

The effect on tourism in the wider landscape due to the operation and maintenance phase of the Project will be **Not Significant**.

6.11.3.1.6 **Property Values**

Pre-Mitigation Impacts

Offshore Site

As noted in Section 6.9 above, the absence of studies which specifically focus on the effects of offshore wind farms on property prices means that there is some uncertainty in this area. However, based on the conclusions which have been reached in the literature described above which relate to impacts associated with onshore wind turbines which are often located in much closer proximity to residential dwellings, it demonstrates that there is insufficient evidence from the scientific literature and studies conducted to determine that there is the potential for a significant effect on property values as a result of the Project. This is considered a **Not Significant** Effect.

Onshore Site

As noted in Section 6.10, the conclusions from available Eirgrid studies indicate that 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. While this literature was based on above ground grid infrastructure, it has been stated that underground grid connections are both supported and favoured and it is both favourable, and recommended, that new and existing grid infrastructure is situated underground. As part of the Onshore Site, it is proposed that the OGC will be underground from the OLL to Moneypoint 220kV Substation. As stated above, the OCC is located in an area which already hold similar characteristics, due to its proximity to Moneypoint Powerstation. There is no potential for impacts on property values in the area surround the Onshore Site during the operation and maintenance phase of the Project. This is considered a **Not Significant** Effect.

Mitigation Measures

There are no mitigation measures proposed as part of the operational and maintenance phase of the Project, as no negative effects on property values are predicted.

Residual Effect

It is on this basis that it can be reasonably concluded that there would be a no significant effect on property price values from the operation and maintenance of the Project. There is potential that, increased investment due to the establishment of the Community Benefit Fund and other economic activity in the area as a direct and indirect effect of the Project, may result in improved property prices in the area, which would result in a long-term, slight positive effect on property values.

Significance of Effects

The effect on property values due to the Project is Not Significant.



6.11.3.2 **Health**

6.11.3.2.1 Health and Safety

Pre-Mitigation Impact

The Project will be 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) Regulations 2007 (S.I. No. 299 of 2007), as amended;
- Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and
- Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).

During operation and maintenance of the Project 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) Regulations 2006'. This will encompass the use of all necessary Personal Protective Equipment, Risk Assessment and Method Statements and adherence to the site Health and Safety Plan.

Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will also be erected on this fencing and at locations around the site.

Health and Safety Guidelines for working within and around electrical substations and underground cables will be adhered to onsite.

Compliance with all relevant health and safety legislation, guidelines, industry best practice and associated risk assessments, method statements, and standards will be adhered to during all aspects of the construction phase of the Project. **No Significant Effects** on Health & Safety are anticipated.

Project Mitigation Measures

Notwithstanding the above, all activities will be conducted in accordance with relevant health and safety legislation, guidance and industry best practice will be implemented during the operation and maintenance of the Project to ensure that the risks posed to staff, the public and landowners remain negligible throughout the operational life of the Project.

Access to areas which pose any risk to health and safety will be appropriately fenced off. Continuous remote monitoring and frequent maintenance inspections will be conducted on all infrastructure as appropriate to ensure it is functioning correctly and does not pose a health and safety risk. Appropriate signage will also be erected at suitable locations across the Onshore Site as required for the ease and safety of operation and maintenance of the Project. These measures will ensure the health and safety of all staff and of the general public.

An operation and maintenance phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation and maintenance of the Project and providing for access for emergency services at all times.



With the implementation of the above mitigation measures, there will be a long-term, imperceptible negative residual impact on health and safety during the operational life of the Project due to the nature of the operational and maintenance activities proposed.

Significance of Effects

Based on the assessment above there will be No Significant effects on health and safety.

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

Pre-Mitigation Effect

Offshore Site

The Offshore Site will require daily visits of maintenance staff in boats and the generation of exhaust emissions. There are potential impacts which may occur to human health as a result of a decrease in air quality and increase in exhaust emissions associated with the Project vessels. The potential effects on human health due to changes in air quality from the presence of Project vessels at the Offshore Site are temporary, occasional, negative and not significant.

The Project will generate electricity from a renewable source, contributing to a positive impact on air quality. Over the envisaged 38-year lifespan of the Project it is expected to effectively reduce carbon dioxide and other emissions that would have occurred if the same energy were generated by traditional fossil fuel plants. This is a long-term significant positive effect on human health, which is **Significant**.

Onshore Site

The sources of dust and other emissions generated during the operation and maintenance phase of the Onshore Site will be from infrequent visits for maintenance to the OCC, of staff in light good vehicles (LGVs) with approximately one or two visits per day, and private LGVs. Maintenance of the OCC infrastructure may, on occasion, generate exhaust emissions. The addition of several LGVs and HGVs intermittently to the Onshore Site will have a potential long-term, imperceptible negative effect on human health during the operation and maintenance phase which is **Not Significant**.

Renewable Energy Production and Reduction in Greenhouse Gas Emissions

In July 2022, the EPA published 'Ireland's Provisional Greenhouse Gas Emissions 1990-2022' which indicates that Irelands emissions have decreased by 11.4% from 1990 to 2021. Electricity generated from wind increased by 15.3% in 2020, the increase of which contributed to the 8.1% decrease in the emissions intensity of power generation in 2020 to 295g CO2/kWh. The Climate Action Plan 2024⁵⁴ stated that electricity generation from renewable sources provides the most effective way of reducing the contribution of power generation to Ireland's greenhouse gas emissions, even as demand has increased. The Project will offer significant benefits in terms of renewable energy production and reductions in greenhouse gas emissions. In this regard, it will have a long-term significant positive effect. The carbon loss and savings due to the Project are discussed in Chapter 30: Climate of this EIAR. All carbon losses associated with the Project will be 'paid back' by the operational phase of the Project after approximately three years of operation. the Project will displace approximately 17.56 million tonnes of CO_{2e} emissions over the proposed 38-year operational lifetime of the Project from traditional carbon-

⁵⁴ Climate Action Plan (CAP) 2024 – Government of Ireland <u>https://www.gov.ie/pdf/?file=https://assets.gov.ie/284675/70922dc5-</u>1480-4c2e-830e-295afd0b5356.pdf#page=null



based electricity which will serve to assist the Irish Government's ability to meet any individual future carbon budget.

Mitigation Measures

There is no mitigation measures proposed as part of the operational and maintenance phase of the Project, as no negative effects on air quality are predicted.

Residual Effect

Impacts from dust and other emissions to air from maintenance vessels and vehicles on sensitive receptors during the operation and maintenance phase of the Project is considered to be temporary, occasional, negative and not significant. As such, there will be a long-term overall significant positive effect on human health due to improvements in air quality due to the displacement of fossil fuel generated electricity with that of renewable energy generated by the Project.

Significance of Effects

The overall effect on air quality through the offsetting of Dust, NO_2 , PM_{10} and PM_{25} and CO_2 Emissions from fossil fuels is considered have a **Significant Effect**.

6.11.3.2.3 *Water Quality*

Pre-Mitigation Effect

Offshore Site

During the operation and maintenance phase of the Project, maintenance or repairs may be required if unplanned events occur. Additionally, large scale maintenance and repairs are not planned but are likely, over the lifetime of the project. These works may potentially give rise to the release of wastewater, pollutants, contaminated sediments, suspended solids and hydrocarbons into marine waters. the activities associated with the operation and maintenance phase will likely be less than those in the construction phase due to the reduced frequency and intensity of these maintenance activities.

Prior to mitigation, effects on designated waters from pollution events occurring during the operation and maintenance activities is assessed as a moderate negative effect which is **Not Significant**.

Onshore Site

During the operation and maintenance phase of the Onshore Site, 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 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 operation and maintenance phase. There will be a long-term imperceptible impact on human health due to water quality, that is considered **Not Significant**.



Mitigation and Monitoring Measures

Offshore Site

Mitigation by design has been incorporated into the Offshore Site. These measures include vessels adhering to MARPOL and BWM conventions during the operations and maintenance phase of the Offshore Site. The Project will develop and adhere to plans including a MPCP (Appendix 5-3) an ERCP (Appendix 5-4) and an INNS (Appendix 5-8) in order to reduce the likelihood of pollution events and to ensure procedures are in place to safeguard biosecurity. An emergency response procedure will also be in place for the Offshore Site, should an emergent situation occur, including any large-scale pollution incidents.

Chapter 8: Water and Sediment Quality provides detailed mitigation for the protection of water quality within the vicinity of the Offshore Site

Onshore Site

The mitigation measures detailed in Chapter 24: Water, will ensure all surface water runoff will be captured and treated prior to discharge/release. Please see Chapters 5 and 24 for details. The full list of mitigation and monitoring measures for the Onshore Site are detailed in Chapter 33.

Residual Effect

With the implementation of the Offshore Site mitigation by design measures and the Onshore Site drainage design and mitigation measures the residual effects are considered to be long term imperceptible negative effects on human health due to water quality.

Significance of Effects

Based on the assessment above, the effects on water quality over the operation and maintenance phase of the Project will be **Not Significant**.

6.11.3.2.4 **Noise**

Detailed noise assessments for both the Onshore Site and the Offshore Site as part of the Project have been carried out in Chapter 19: Offshore Air Quality and Airborne Noise and Chapter 29: Onshore Noise and Vibration, as part of this EIAR, which shows that the once operation and maintenance, the Project will be capable of meeting all required guidelines in relation to noise thresholds.

Pre-Mitigation Effect

Offshore Site

Significant effects due to airborne noise and vibration from Project vessels during maintenance works are not anticipated on sensitive receptors during the operation and maintenance phase of the Project. The operational noise of the WTGs will have a likely, long-term, negative effect on sensitive receptors across the entirety of the operation and maintenance phase. The effect is considered to occur almost continuously, although not all WTGs may be operational at the same time, or for 24 hours per day. Based on the results of the noise assessment further detailed in Chapter 19: Offshore Air Quality and Airborne Noise, which detailed potential effects on sensitive receptors, any effects are assessed as an imperceptible negative effect which is Not Significant. Therefore, any potential effects due to noise during the operation and maintenance phase of the Offshore Site are negative and **Not Significant**.



Onshore Site

The primary sources of outward noise from the Onshore Site in the operational context are deemed long term and will involve the fixed plant at the OCC. There are a number of plant items associated with the operation and maintenance of the Onshore Site. Most of this plant will be capable of generating noise to some degree. Noisy plant items located externally will potentially have the greatest impact on the receiving environment. An assessment of the operational noise levels has been undertaken in accordance with best practice guidelines and procedures as outlined in Chapter 29: Onshore Noise and Vibration. The predicted noise levels associated with the OCC will be within best practice noise criteria curves, except for one location north of the OCC, which, in the absence of mitigation is marginally above EPA nighttime criterion for low background noise, therefore, this effect is considered **Significant**.

Proposed Mitigation Measures

Offshore Site

No mitigation measures are required for noise effects due to the operation and maintenance phase of the Offshore Site.

Onshore Site

For the OCC plant to achieve the EPA NG4 criteria for areas of low background noise of 35 dB LAeq,T at night time at the one location above best practice noise criteria, mitigation measures will be implemented in respect of OCC plant items and these are detailed in Chapter 26 Onshore Noise and Vibration and are included in the design of the Onshore Site.

Residual Effect

Offshore Site

The residual effect will be likely, long-term and continuous (although variable with changing wind conditions), imperceptible, negative effect which is **Not Significant**.

Onshore Site

The residual effect from building services and plant noise is predicted to be negative, not significant to moderate and long-term, which is **Not Significant**.

Significance of Effects

Based on the assessment above, and the respective offshore and onshore noise chapters of this EIAR, the effects on population and human health due to noise over the operation and maintenance phase of the Project will be **Not Significant**.

6.11.3.2.5 **Traffic**

Pre-Mitigation Effect

Offshore Site

Activities associated with the operation and maintenance of structures and cables may displace existing routes/activity and increase encounters and collision risk with other third-party vessels, with an average



of two operations and maintenance vessels on site on any one day. During the operation and maintenance phase, the minimum spacing between WTGs (1,017 m) is sufficient to ensure the view of other vessels will not be blocked or hindered, again reducing the likelihood of an encounter occurring in proximity to the OAA. The effect is considered **Not Significant**.

Onshore Site

A Traffic and Transportation Assessment (TTA) of the Project has been completed by Alan Lipscombe Traffic and Transport Consultants, the results of which are presented in Chapter 31 of this EIAR. The TTA found that there will be a minimal number of traffic movements generated by maintenance staff of the Onshore Site with a maximum total of one maintenance site visit a day, with a potential long term negative imperceptible effect. While the requirement for maintenance activities along the OGC will be infrequent, here is potential for a slight, brief, negative effect on traffic created during the operation and maintenance phase of the Onshore Site, which is **Not Significant**.

Mitigation and Monitoring Measures

Offshore Site

Relevant mitigation measures which are relevant in reducing the risk of increased marine traffic include:

- > Advisory safe passing distances;
- Compliance with MGN 654;
- > Lighting and marking;
- > Marine coordination for project vessels;
- Marking on nautical charts;
- Minimum blade clearance;
- > Pollution planning; and
- > Promulgation of information.

Please see Chapter 14: Shipping and Navigation, and the associated Appendix 14-1: Navigational Risk Assessment for a detailed list of mitigation measures relating to the Offshore Site

Onshore Site

On occasions when maintenance of the OGC is required, short-term road closures with traffic management in place may occur. Should this occur, traffic management mitigation measures, similar to those described during the construction phase, to a much lesser extent, will be implemented as needed.

Residual Effect

Offshore Site

Chapter 14 Shipping and Navigation provides a detailed, post mitigation summary of the residual effects of increased marine traffic within the Offshore Site. No significant adverse residual effects on the Offshore Site are predicted,

Onshore Site

Effects on local road users during the operation and maintenance phase of the Onshore Site are considered to be a long term negative imperceptible effect.



Significance of Effects

Based on the assessment above, the effects on traffic of the operation and maintenance phase of the Project will be imperceptible and **Not Significant**.

6.11.3.2.6 Major Accidents and Natural Disasters

Pre-Mitigation Effects

A risk register has been developed which contains all potentially relevant risks identified during the operation and maintenance phase of the Offshore Site. Seven risks (Critical Infrastructure Emergencies, Severe Weather, Seal Level Rise/Erosion, Utility Emergencies, Traffic/Vessel Incident, Fire/Gas Explosion and Collapse/Damage to Structures) specific to the operation and maintenance phase have been identified and are presented in Chapter 31: Major Accidents and Natural Disasters. As outlined in Section 31.4.1, the scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during operation and maintenance is identified as 'Severe Weather and 'Fire/Gas Explosion' during operation. The effect is considered **Not Significant**.

Mitigation and Monitoring Measures

The Project has been designed and will be 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 onsite to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures.

The Project 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 onsite, and mitigation of the same during operation.

Please refer to and Chapter 33: Schedule of Mitigation and Monitoring Measures, which detail all proposed mitigation and monitoring measures for the operation and maintenance of the Project.

Residual Effect

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

Significance of Effects

Based on the above and the risk assessment in Chapter 31, the effects to/from Major Accidents and Natural Disasters during the operation and maintenance phase of the Project are **Not Significant**.

6.11.4 **Decommissioning Phase**

The works required during the decommissioning phase of the Project are described in Section 5.8 and 5.9 in Chapter 5: Project Description and Appendix 5-18: Rehabilitation Schedule.

Any effect 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 the mitigation measures outlined above will be implemented during the decommissioning phase also. A Rehabilitation Schedule



have been prepared for the Project (Appendix 5-18) which will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and any proposed changes will be agreed with the competent authority at that time.

It is intended that the decommissioning process will remove all the remaining elements i.e., WTGs, GBS, OSS, exposed IAC and OECC, OGC from OLL to Moneypoint 220kV Substation (ducts left insitu) and OCC from the Project and reinstate areas where infrastructure is removed. The following elements will be decommissioned:

- > Offshore WTG dismantling and removal off site;
- > Turbine GBS foundations (stone bed rock left in-situ);
- > Exposed Inter-array underground cabling removal (buried and inaccessible inter-array cabling left in-situ);
- > Exposed OEC (buried and inaccessible OEC and HDD left in-situ);
- > OSS and GBS foundation (stone bed rock left in-situ);
- OGC cables from OLL to OCC and OCC to Moneypoint (ducts and joint bays left insitu);
- > OCC building and electrical infrastructure (below ground infrastructure left in- situ)

The principles that will inform the final decommissioning plan are contained in the Rehabilitation Schedule (Appendix 5-18).

The decommissioning phase will have no significant impact on employment, tourism or health & safety once all standard construction phase mitigation measures described above are implemented.

Offshore

The WTGs proposed as part of the Project are expected to have a lifespan of approximately 38 years. Upon decommissioning the WTGs will be disassembled in reverse order to how they were erected. The WTGs will be disassembled with a similar model of shipping vessel that was used for their erection. The WTG will likely be removed from site using the same transport methodology adopted for delivery to site initially and will require the same accommodation works as was done during the construction phase. On dismantling of WTG and OSS, the turbine GBS foundations will be deballasted and floated for towing off-site. The IAC connecting the WTGs to the OSS, and the OEC connecting the OSS to the OLL TJB will be de-energised. Cables that are buried or inaccessible will be cut at the ends and left in situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and seabed disturbance. All exposed cabling will be removed via offshore DPII vessel utilising a remotely operated vehicle and offshore lifting grab, transported to port for disposal, reuse and recycling of materials where possible.

Onshore

Prior to the commencement of any decommissioning activities, a full risk assessment will be undertaken for all elements of the rehabilitation and in line with the agreed rehabilitation schedule. Decommissioning of the Onshore Site infrastructure includes for the decommissioning of the OLL, OGC and the OCC. The buried OEC cables at the Landfall will be cut at the TJB and left in situ, the TJB will remain in situ as this will be buried below ground., and the OGC will be cut within the TJB to allow for the cable to be pulled through.

The joint bays along the OGC route will be opened up and the cables will be cut. Once cut, the cables are pulled through the ducting and removed. The joint bays are then backfilled and reinstated to the relevant road standards, or to original condition for those located on private lands. The ducts and joint bay infrastructure will remain in situ and can be used for future cable burial installation if required. To remove this infrastructure would be more disruptive as it would require digging out the infrastructure.



The above ground components of the OCC building and compound will be removed fully from site. For the underground components, such as the foundations and non-electrical infrastructure, the least disruptive option would be for these to remain in situ. The OCC site will be reinstated with the biodiversity enhancement planting remining insitu.

6.11.4.2 **Population**

6.11.4.2.1 **Population Levels**

Pre-Mitigation Impacts

Offshore Site

Those working on the decommissioning phase of the Offshore Site will travel daily to the site from the wider area, with some workers being based on vessels, allowing them to rotate on and off the site. The decommissioning phase will have no significant impact on the population of the area in terms of changes to population trends or density, household size or age structure.

Onshore Site

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

Mitigation Measures

There are no mitigation measures proposed as part of the decommissioning phase of the Project, as no negative effects on population are predicted.

Residual Impact

Based on the above, it can be concluded that there would be no significant effects on population levels from the construction phase of the Project.

Significance of Effects

There is **No Significant** effect on population levels during the decommissioning of the Project

6.11.4.2.2 **Employment and Investment**

Pre-Mitigation Impacts

The decommissioning of the Project will provide employment for technical consultants, contractors and maintenance staff. Up to approximately 40 jobs will be created during the decommissioning phases of the Project. The decommissioning phase of the Project will last approximately 2 years. This is a short term, moderate positive effect on employment, which is **Not Significant**.

Mitigation Measures

There are no mitigation measures proposed as part of the decommissioning phase of the Project, as no negative effects on employment and investment are predicted.



Residual Impact

The injection of money in the form of salaries and wages to those employed during the decommissioning phase of the Project has the potential to result in an increase in household spending and demand for goods and services in the local area. Appendix 6-2: Socio-economic Impact Assessment addresses the high level of uncertainty regarding the capacity to provide for decommissioning activities in the future. The development of port facilities and the of local capacity in offshore decommissioning work will dictate the investment potential for decommissioning. Depending on these developments over the lifetime of the Project, this will have a short- term moderate positive indirect effect.

Significance of Effects

The significance of effects on employment levels and local investment during the construction phase will be short term moderate positive effect, which is **Not Significant**.

6.11.4.2.3 Sea Use and Land Use

Pre-Mitigation Impacts

Offshore Site

During the decommissioning phase, there will be a small increase in localised vessel traffic associated with the Offshore Site, similar to what is seen during the construction phase. As such there is the potential for obstruction to marine recreational users and aquaculture operations as a result of the physical presence of decommissioning vessels and associated advisory safe clearance ranges. Chapter 18: Other Sea Users, provides an assessment of the potential impacts of the decommissioning phase on recreational users and aquaculture operations of the Offshore Site. Potential effects associated with the decommissioning of the Project will be no worse than the slight to moderate negative effects anticipated during the construction phase and will be **Not Significant**.

Onshore Site

Decommissioning works in the Onshore Site will involve the removal of all above ground infrastructure at the OCC and removal of cables from ducts at the OCC and return of the Onshore Site to its original conditions but leaving the biodiversity enhancement area and landscaping at the OCC. This is a long-term, imperceptible positive effect which is **Not Significant**.

Mitigation Measures

Mitigation measures as outlined above in Section 6.11.2.1.4 will be adhered to during the decommissioning phase of the Project. Best practice measures, as of the time of decommissioning, will also be taken into account.

Residual Effect

Offshore Site

Due to the short-term nature of the decommissioning works at the Offshore Site, and with consideration given to the mitigation by design measures identified in Chapter 18: Other Sea Users, significant effects associated with the obstruction to the marine environment are not anticipated. Therefore, the residual effect is likely a short-term, slight negative effect.



Onshore Site

Due to the small footprint of the above-ground elements of the Onshore Site infrastructure, on a site scale and even more so on a local scale, the residual effect is considered, direct, permanent, imperceptible, positive effect on land use and, direct, imperceptible short-term positive effects on activities.

Significance of Effects

The effects on sea and land use during the decommissioning phase of the Project will be **Not** Significant.

6.11.4.2.4 **Residential Amenity**

Pre-Mitigation Impacts

Offshore Site

The factors for which potential impacts on residential amenity could be incurred due to decommissioning of the Offshore Site is discussed in Section 6.10.1 above.

Chapter 16: SLVIA provides a detailed assessment of the potential impact of the decommissioning phase of the Project on visual amenity. The highest level of visual impact will occur when decommissioning machinery and vessels are present within the OAA and travelling frequently to shore, but with the WTGs still substantially in place. Effects will reduce as the Turbines are incrementally removed.

There is the potential for impacts on residential amenity during the decommissioning phase of the Offshore Site due to additional marine traffic, with the removal of additional infrastructure in the marine environment, noise and visual impacts.

The decommissioning phase will involve a temporary increase in vessels and subsequent increase in airborne noise It is considered that the effects on airborne noise during decommissioning will be akin to or of a lower magnitude than those assessed as part of the construction phase, As such, decommissioning effects due to noise are considered to be Not Significant.

Potential impacts on residential amenity during the decommissioning phase of the Project due to will be similar to, or less than, those of the construction stage, except in reverse and with a slightly lesser duration, as described in Chapter 16 SLVIA, Chapter 18 Other Sea Users and Chapter 19: Offshore Air Quality and Airborne Noise.

There is the potential for short term/temporary slight negative effects on residential amenity during the decommissioning of the Offshore Site, and permanent positive effects on residential amenity on the end of the decommissioning phase, due to the removal of infrastructure, a reduction in marine traffic and the removal of infrastructure which has the potential to create noise. This effect is **Not Significant**.

Onshore Site

The factors for which potential impacts on residential amenity could be incurred due to the decommissioning of the Onshore Site is discussed in Section 6.10.2 above. There is the potential for impacts on residential amenity during the decommissioning phase of the Onshore Site due to dust, traffic, noise and vibration emissions due to the presence of additional traffic and plant machinery and visual amenity. There is potential for temporary negative effects on residential amenity due to the decommissioning of the OGC and OCC. This has the potential to give rise to short term dust



emissions, traffic disruptions, noise and vibration emissions in the vicinity of the Onshore Site decommissioning activities. As with the Construction Phase, Decommissioning Phase effects are deemed to be moderate, negative and short-term, which is **Not Significant**.

Mitigation Measures

All mitigation measures as described in Section 6.11.2.1.4 above will be adhered to during the decommissioning phase of the Project.

Residual Effect

Based on the above it is concluded that there would be a temporary/short-term, negative, slight effect on residential amenity, followed by a permanent slight, positive effect, due to the decommissioning of the Project

Significance of Effects

The effect on residential amenity due to decommissioning phase the Project is Not Significant.

6.11.4.2.5 **Tourism**

Pre-Mitigation Impacts

The Irish tourism industry is highly exposed to physical climate change risks given the dependence on the natural environment and weather. Low-lying or geologically soft areas are particularly vulnerable to damage from sea surges, coastal flooding and coastal erosion. Further information on the vulnerability of the tourism industry to climate change can be found in Section 30.3.1 of Chapter 30: Climate of this EIAR.

Offshore Site

During the decommissioning phase of the WTGs, OSS and offshore infrastructure, seascape effects will be very similar in scale and nature to those described in Chapter 16: SLVIA for the construction phase except in reverse and with a slightly lesser duration. The highest level of impact will occur when decommissioning machinery and vessels are present within the OAA and travelling frequently to shore, but with the WTG still substantially in place and potential permanent neutral effects on tourism on the end of the decommissioning phase, due to the removal of the Offshore Site infrastructure. There may be potential for permanent slight negative effects on tourism on decommissioning of the Offshore Site, which will depend on the level of integration of the Offshore Site into tourism activities in the area. This effect is considered **Not Significant**

Onshore Site

The majority of the OGC route will be located within the public road network, which does not pass through or nearby to any nationally important tourist attractions, however, for a short length, the OGC will pass through Kilrush Golf Club. Any impacts will be limited to the active decommissioning area within the vicinity of the joints bays and will be temporary in nature. As there will be some traffic restrictions in place through the construction phase of the OGC there may be a short-term slight negative effect to local tourism and amenity which is **Not Significant**.



Mitigation Measures

There are no specific tourism mitigation measures proposed as part of the decommissioning phase of the Project, as the potential effects of decommissioning predicted will be short term. Mitigation by design was identified in order to reduce the significance of effect of marine traffic and its associated human health risk as detailed in Chapter 14: Shipping and Navigation. A traffic management plan will be implemented for the decommissioning phase of the Onshore Site in order to reduce the effect of decommissioning traffic.

Residual Effect

Based on the above it is concluded that there would be a short-term/temporary, negative, imperceptible impact on tourism and the wider landscape due to the decommissioning phase of the Project, and a permanent slight positive effect on tourism following the decommissioning phase of the Offshore Site due to the removal of infrastructure. There is also the potential for permanent slight negative effects on tourism activities which may depend on the Offshore Site as a tourist attraction. Increased investment from the Community Benefit Fund and other economic activity in the area as a direct and indirect effect of the Project, may result in improved tourism infrastructure in the area, which will last past the operational lifetime of the Project.

Significance of Effects

The effect on tourism in the wider landscape due to decommissioning phase the Project is **Not** Significant.

6.11.4.2.6 **Property Values**

Pre-Mitigation Impacts

Offshore Site

As noted in Section 6.9.1 above, the absence of studies which specifically focus on the effects of offshore wind farms on property prices means that there is some uncertainty in this area. However, based on the conclusions which have been reached in the literature described above which relate to impacts associated with onshore wind turbines which are often located in much closer proximity to residential dwellings, it demonstrates that there is insufficient evidence from the scientific literature and studies conducted to determine that there is the potential for a significant effect on property values as a result of the Project.

On decommissioning of the Offshore Site, all infrastructure will be removed, and any potential negative effects on property values due to the presence of the offshore wind farm will no longer occur, this effect is **Not Significant**.

Onshore Site

Decommissioning of the Onshore Site will be temporary and localised in nature, and only occur in sections along the Onshore Site. On decommissioning of the Onshore Site, all above ground infrastructure will be removed, and although not predicted any potential negative effects on property values due to the presence of the OCC will no longer occur, which is considered **Not Significant**.



Mitigation Measures

There are no mitigation measures proposed as part of the decommissioning phase of the Project, as no negative effects on property values are predicted.

Residual Impact

There is no potential for negative effects on property values due to the decommissioning of the Project.

Significance of Effects

The effect on property values due to the decommissioning of the Project is Not Significant.

6.11.4.3 **Health**

6.11.4.3.1 Health and Safety

Pre-Mitigation Effects

The Project will be decommissioned in accordance with all relevant Health and Safety Legislation, including the below, and any further health and safety legislation which is produced over the lifetime of the Project:

- Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);
- Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended;
- Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and
- Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).

A Rehabilitation Plan has been prepared for the Project (Appendix 5-18). The Rehabilitation Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and any proposed changes will be agreed with the competent authority at that time.

During decommissioning of the Project 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) Regulations 2006'. This will encompass the use of all necessary Personal Protective Equipment, Risk Assessment and Method Statements and adherence to the site Health and Safety Plan.

Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will also be erected on this fencing and at locations around the site.

Health and Safety Guidelines for working within and around electrical substations and underground cables will be adhered to onsite.

Compliance with all relevant health and safety legislation, guidelines, industry best practice and associated risk assessments, method statements, and standards will be adhered to during all aspects of the decommissioning phase of the Project.



With the implementation of the above, there will be a short-term potential slight negative residual effect on health and safety during the decommissioning phase of the Project due to the nature of the decommissioning activities proposed.

Significance of Effects

Based on the assessment above there will be no significant direct or indirect effects on health and safety during the decommissioning phase of the Project.

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

Pre-Mitigation Impacts

Potential dust emissions arising during the decommissioning phase are only relevant for the Onshore Site and therefore the dust has not been considered within the Offshore Site section. Potential water and sediment quality effects during the decommissioning of the Offshore Site due to the production of dust emissions are detailed in Section 6.11.4.3.3 below.

Offshore Site

Potential exhaust emission sources during the decommissioning phase of the Offshore Site include the removal and transportation of turbines and all other offshore infrastructure from offshore support vessels. It is considered that all methods of decommissioning and associated impacts for the Project are comparable to those assessed as part of the construction phase and that any potential impacts on human health due to air quality during the decommissioning phase of the Project will be similar to, or less than, those of the construction stage. Effects on human health due to reductions in air quality during the decommissioning phase of the Significant. These air quality effects will have a short-term slight, negative Not Significant effect on human health.

Onshore Site

Potential dust and exhaust emission sources during the decommissioning phase of the Onshore Site include the decommissioning of the OLL, the OGC and the OCC.

An increase in dust and exhaust emissions has the potential to cause a negative effect on sensitive receptors in the immediate vicinity of the Onshore Site. The travelling of decommissioning vehicles from the site may result in the transfer of mud to the public road, particularly if the weather is wet, which on drying can be dispersed as dust, and an increase in exhaust emissions. This may potentially cause negative health effects to residents and other road users.

These effects will not be significant and will be relatively short-term in duration. The potential effects of dust and exhaust emissions that may occur during the decommissioning phase of the Project are further considered in Chapter 25: Onshore Air Quality. These air quality effects will have a short-term slight, negative **Not Significant** effect on human health.

Mitigation Measures

Mitigation measures associated with decommissioning of the Onshore Site will be similar to those which will be applied during the construction phase of the Project as described in Section 6.11.2.2.2 above. Chapter 19: Offshore Air Quality and Airborne Noise and Chapter 26: Onshore Air Quality contain a full list of mitigation measures which may be applied during the decommissioning phase of the Project.



Following implementation of the mitigation measures, residual effects for the decommissioning phase of the Project will have a Temporary, Imperceptible Negative Effect on air quality and emissions.

Significance of Effects

Based on the above there will be **No Significant Effects** on human health due to reductions air quality during the decommissioning phase of the Onshore Site.

6.11.4.3.3 Water Quality

Pre-Mitigation Impacts

Offshore Site

Potential effects on water quality due to the decommissioning of the Offshore Site will be similar, but to a lesser extent, than those which have been assessed as part of the construction phase in Section 6.10.4.2.3 above. A number of different aspects of the Offshore Site have the potential to have an effect on water quality during decommissioning activities. This effect relates to short-term and localised increases in suspended sediment concentrations, potential release of wastewater, pollutants, disturbance of contaminated sediments, suspended solids and hydrocarbons into marine waters during the decommissioning phase of the Offshore Site. This effect is assessed as **Not Significant**.

Onshore Site

The potential effects associated with decommissioning of the Onshore Site will be similar to those associated with construction, as addressed in Section 6.10.4.2.3 and Chapter 24: Water, but of a significantly reduced magnitude. Some potential effects will be avoided by leaving elements of the Onshore Site in place where appropriate. This includes the removal of the OGC cable through the opening of the joint bays and pulling through of the cable but leaving the ducts and the OCC in place. There will be no HDD activity, or any significant works occurring at watercourse crossings. Potential impacts to water quality during Onshore Site decommissioning will be **Not Significant**.

Offshore Proposed Mitigation Measures

The decommissioning phase will operate in accordance with best practice and maritime conventions including the MARPOL and BWM conventions. Adherence to these conventions seek to avoid, prevent and reduce the likelihood that vessel operations result in pollution events to the marine environment. Further information relating to the mitigation measures for control of hydrocarbons and the protection of water quality during offshore decommissioning works are described in Chapter 8: Water and Sediment Quality, Appendix 5-3: Marine Pollution Contingency Plan- and Appendix 5-4: Emergency Response Co-ordination Plan.

Onshore Proposed Mitigation Measures

The Onshore Site has been designed to avoid sensitive hydrological features, insofar as possible. Chapter 24 of this EIAR details all best practice and mitigation measures to minimise the potential for effects on water quality which may impact human health during the decommissioning phase of the Onshore Site. Please see Chapter 33 for a full list of mitigation and monitoring measures for the Onshore Site.



Offshore Site

Given the designed in mitigations to be adopted, potential effects from on water quality due to accidental release of pollutants and potentially contaminated sediments will be reduced, as such the residual effect will be an imperceptible negative effect.

Onshore Site

No significant effects on the hydrological and hydrogeological environment will occur during the decommissioning phase of the Onshore Site.

Significance of Effects

Human health effects due to impacts to water quality during the decommissioning phase of the Project are considered to be **Not Significant**.

6.11.4.3.4 **Noise**

Pre-Mitigation Impacts

Offshore Site

There is the potential for additional noise during decommissioning as a result of the presence of decommissioning vessels and decommissioning activities. It is considered that the temporary additional noise during decommissioning will be akin to or of a lower magnitude than those anticipated as part of the construction phase. It is considered that all methods of decommissioning and associated impacts for the Offshore Site are comparable to those assessed as part of the construction phase and is considered **Not Significant**.

Onshore Site

The potential noise levels associated with decommissioning of the Onshore Site will be similar to those associated with construction, as addressed in Section 6.10.4.2.4 and Chapter 28: Onshore Noise and Vibration, as similar tools will be used, but to a much greater extent than that of the construction phase. Some potential effects will be avoided by leaving elements of the Onshore Site in place where appropriate. This includes the removal of the OGC cable through the opening of the joint bays and pulling through of the cable but leaving the ducts and the OCC in place. This potential effect is **Not Significant**.

Offshore Mitigation Measures

No measures are proposed to mitigate the effects of airborne noise from decommissioning of the Offshore Site, because it is highly unlikely that any sound from these activities occurring offshore would affect onshore sensitive receptors, including residential properties.

Onshore Mitigation Measures

There are no mitigation measures proposed as part of the decommissioning phase of the Project, as no negative effects on population are predicted.



The total decommissioning nose levels will be below the recommended noise and vibration criteria as set out in Chapter 19: Offshore Noise and Vibration and Chapter 28: Onshore Noise and Vibration and a significant effect is not predicted in relation to the nearest noise sensitive receptors during the decommissioning phase. The potential worst case associated effect on a noise sensitive receptor during the decommissioning phase of the Project is expected to be Negative, Moderate and Temporary and Not Significant.

Significance of Effects

Based on the assessment above, and further assessments provided in Chapter 19 and Chapter 28 there will be **No Significant Effects** on human health during the decommissioning phase of the Project due to noise.

6.11.4.3.5 **Traffic**

Pre-Mitigation Impacts

Offshore Site

Activities associated with the decommissioning of the Offshore Site may displace existing routes/activity and increase encounters and collision risk with other third-party vessels due to an increase in marine traffic. The presence of marine structures and increased vessel activity may also reduce emergency response capabilities due to increased potential for incidents, increased consequences of incidents or reduced access to emergency responders. These effects will be short-term, negative and therefore **Not Significant**.

There is also potential that, the presence of additional Project vessels will have a positive effect on emergency response, possibly serving as first responder under SOLAS obligations should an incident occur.

Onshore Site

Additional Traffic will be generated during the decommissioning of the Onshore Site by both staff travelling to / from the location of the decommissioning along the Onshore Site, and by materials being transported to / from the point of construction along the OGC, and from the OCC. OGC decommissioning within public roads will require traffic management measures in the areas of active construction, limited to the locations of the joint bays. The impacts and associated effects will be materially less than during the cable installation works for this section of the OGC. Similarly the removal of all OCC buildings and electrical infrastructure above ground level will generate less traffic than is estimated during the construction phase.

This has the potential to have a short-term, slight, negative effect on road users.

Traffic impacts include increased travel distance and time as a result of diversions during the decommissioning of the OGC, and traffic impacts due to increased traffic volumes during the decommissioning of the OGC and OCC, to a reduced magnitude to that of the construction phase. These effects will be short-term, slight negative and **Not Significan**t.

Proposed Mitigation Measures

Offshore Site



Mitigation by design was identified in order to reduce the significance of effect of marine traffic and its associated human health risk are as follows:

- Compliance with MGN 654 and its annexes (or relevant guidance in place at the time) ;
- Guard vessel(s);
- Marine coordination for project vessels;
- > Pollution planning; and
- > Project vessel compliance with international marine regulations.

Chapter 14: Shipping and Navigation provides a detailed assessment of the potential impacts of decommissioning of the Offshore Site, and further decommissioning stage mitigation measures.

Onshore Site

A traffic management plan will be implemented for the decommissioning phase of the Onshore Site in order to reduce the effect of decommissioning traffic.

Residual Effect

Offshore Site

On implementation of mitigations measures, as described in Chapter 14: Shipping and Navigation and Appendix 5-10: Vessel Management Plan, there will be no significant effect on marine traffic due to the decommissioning of the Offshore Site.

Onshore Site

On implementation of a traffic management plan for the decommissioning phase of the Project, there will be a short-term imperceptible negative, not significant residual effect on local road users.

Significance of Effects

Based on the assessment above there will be **No Significant Effects** on traffic due to the decommissioning of the Project.

6.11.4.3.6 Major Accidents and Natural Disasters

Pre-Mitigation Impacts

A risk register has been developed which contains all potentially relevant risks identified during the decommissioning phase of the Project. Nine risks (Critical Infrastructure Emergencies, Severe Weather, Sea Level Rise/Erosion, Utility Emergencies, Traffic/Vessel Incident, Fire/Gas Explosion and Collapse/Damage to Structures) specific to the construction phase have been identified and are presented in Chapter 33: Major Accidents and Natural Disasters. As outlined in 31.4.1 of this EIAR, the scenarios with the highest risk score in terms of the occurrence of major accident and/or disaster during the decommissioning are identified as Critical Infrastructure Emergencies and Fire/Gas Explosion.

The risk register concludes that there is low potential for natural disaster and/or major accident to occur at the Project site, and the effect is considered **Not Significant**.



Mitigation Measures

The Project has been designed and will be 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' (EC, 2017), a Risk Management Plan will be prepared and implemented to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures. All mitigation measures proposed as part of the Project are also listed in Chapter 33: Schedule of Mitigation.

Residual Effect

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

Significance of Effects

Based on the above risk assessment in Chapter 31, the effects to/from Major Accidents and Natural Disasters during the decommissioning phase of the Project is **Not Significant**.

6.11.5 **Cumulative and In-Combination Effects**

The potential cumulative effect of the Project and other relevant developments (existing, permitted or proposed) has been carried out with the purpose of identifying potential effects that the Project will have on the surrounding environment when considered cumulatively and in combination with relevant existing, permitted or proposed projects and plans in the vicinity of the Project.

Within this section, the Project i.e. both the Offshore Site and the Onshore Site will be considered as a whole. Where the Offshore Site and the Onshore Site are required to be considered separately, this is identified within the assessment.

As demonstrated above, there are no significant effects on population and human heath arising from the construction, operation and maintenance or decommissioning of the Project. An assessment of the potential cumulative impact of the Project combined with the potential impact of other projects and/or plans has been carried out with the purpose of identifying what influence the Project will have on the environment when considered collectively with proposed, permitted and existing plans and projects as set out in Chapter 4 Section 4.1.

Further information on plans and projects considered as part of the cumulative assessment are given in Chapter 4: Environmental Impact Assessment Methodology and Appendix 4-1. The plans and projects with the potential to have cumulative effects on population and human health are discussed below and in more detail in the relevant chapters: Offshore Air Quality and Airborne Noise (Chapter 19), SLVIA (Chapter 16), Water (Chapter 23) Onshore Nosie and Vibration (Chapter 28), LVIA (Chapter 27) and Traffic and Transportation (Chapter 29).

6.11.5.1 Large Scale Projects

Moneypoint Generating Station, Moneypoint, Co. Clare.

Moneypoint Power Station application (ABP Pl. Ref: PA03.319080) was granted permission by An Board Pleanála



"Proposed transition and conversion of the existing 900MW electricity generating station from coal to heavy fuel oil and associated ancillary development at Moneypoint Generating Station, Moneypoint, Co. Clare. <u>www.moneypointsecurityofsupply.ie</u>"

Moneypoint Power Station is within the EIAR Site Boundary of the Onshore Site due the OGC connecting into the Moneypoint 220kV Substation, and there is potential for cumulative short term negative effects during the construction stage if both projects construction timelines overlap. Potential short term negative cumulative effects on air quality, noise, residential amenity water quality and traffic have the potential to occur if there is an overlap of construction timelines of the projects. There is potential for short term slight positive cumulative effects on employment and investment in the area, due to the influx of workers in the area during the construction of the projects. Once both projects are operational, they will have a cumulative long-term, positive effect on human health, due to improvements in air quality. The recently granted permission for the change of fuel use at this site will facilitate a conversion from its primary fuel source (coal) to Heavy Fuel Oil and a change to its operation to a generator of last resort, with limited run hours from 2024, up until the end of 2029, where the ESB intends to transform the site to and Offshore Renewable Energy (ORE) Hub. Decommissioning of the Project and the proposed change of use of Moneypoint Generating Station to an ORE Hub do not have potential to overlap based on current timelines. There is no potential for cumulative effects on air quality, noise, residential amenity water quality and traffic due to overlap occurs between project decommissioning timelines.

Ballykett Wind Farm

The Proposed Ballykett Wind Farm located approximately 1.8km east of the Onshore Site at its closest point. There is potential for short term negative cumulative effects during the construction stage if both projects construction timelines overlap. There is potential for positive cumulative effects on employment and investment in the area, due to an influx of workers and increased construction employment opportunities in the area during the construction of the projects. Once both projects are operational, they will have a cumulative long-term, positive effect on population and human health, due to improvements in air quality, and the injection of money into local services though the establishment of community benefit funds is also expected to be a long-term positive cumulative effect. Decommissioning of the Project and the Proposed Ballykett Wind Farm have the potential to have short term negative not significant cumulative effects on air quality, noise, residential amenity water quality and traffic, short-term slight positive effects on employment, if overlap occurs between project decommissioning timelines.

Ballykett Wind Farm and the Project will provide the potential for long-term employment resulting from maintenance operations. This results in a long-term, moderate positive impact. The nature of the Project and other renewable energy developments, wind energy or otherwise are such that, once operational, they will have a cumulative long-term, significant, positive effect on the air quality, due to improvement in air quality resulting from the transition away from fossil fuels

Moanmore Lower Green Energy

The proposed Moanmore Lower Green Energy project site, a 3 no. turbine wind farm located approximately 1.1km south west of the Onshore Site at its closest point, is still in early phases of development (pre-planning). There is potential for short term negative cumulative effects during the construction stage if both projects (the Onshore Site and Moanmore Lower Green Energy, or Ballykett Wind Farm, Moanmore Lower Green Energy and the Onshore Site) construction timelines overlap. Potential short term negative cumulative effects on air quality, noise, residential amenity water quality and traffic may potentially occur if overlap occurs between project construction timelines. There is potential for short term slight positive cumulative effects on employment and investment in the area, due to an influx of workers and increased construction employment opportunities in the area during the construction of the projects. Once both or all projects are operational, they will have a cumulative long-



term, positive effect on population and human health, due to improvements in air quality, and the injection of money into local services though the establishment of community benefit funds is also expected to be a long-term positive cumulative effect. Decommissioning of the Project and the Moanmore Lower Green Energy project have the potential to have short term negative cumulative effects on air quality, noise, residential amenity water quality and traffic, and short-term slight positive effects on employment if overlap occurs between project decommissioning timelines.

The Moanmore Lower Green Energy project and the Project will provide the potential for long-term employment resulting from maintenance operations. This results in a long-term, moderate positive impact. The nature of the Project and other renewable energy developments, wind energy or otherwise are such that, once operational, they will have a cumulative long-term, significant, positive effect on the air quality, due to improvement in air quality resulting from the transition away from fossil fuels

6.11.5.2 Other Projects

Other Projects, as part of the Population and Human Health cumulative impact assessment, considers any other plans and projects, which are not considered in the above large-scale infrastructural developments, whose effects due to their construction, operation and maintenance and / or decommissioning have the potential to have any spatial or temporal overlap with the effects of the Project.

6.11.5.2.1 Employment and Economic Activity

There are a number of small-scale developments within the cumulative study area. Developments considered as part of the cumulative project list that are proposed, permitted, or already existing contribute to short-term employment during the construction stages. This results in a short-term moderate positive cumulative effect on employment and investment.

6.11.5.2.2 **Tourism**

Offshore

There are no identified tourism attractions which pertain specifically to the Offshore Site or that are known to be developed within the vicinity of the Offshore Site which could have a cumulative impact on tourism experience of the seascape. The seascape is strongly associated with tourism and attracts high number of visitors within the area surrounding the Offshore Site. The Wild Atlantic Way coastal driving route is an important tourist route which runs along Ireland's west coast from Donegal to Cork. There are no other projects proposed which would have a cumulative effect on tourism due to changing of the seascape.

Onshore

There is one key identified tourist attraction pertaining specifically to the Onshore Site, the Kilrush Golf Club, which has been considered as part of the baseline of this assessment of population and human health There are no other projects proposed which would have a cumulative effect on tourism due to Onshore Site.

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

The nature of the Project is such that, once operational, it will have a long-term, significant positive effect on the air quality.



During the construction phase of the Project, and the construction phase of the existing, permitted and proposed projects and plans (wind energy or otherwise), as set out in Chapter 4 of this EIAR, that are yet to be constructed, there will be minor emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, once the mitigation proposals, as outlined in Chapter 19: Offshore Air Quality and Airborne Noise and Chapter 25: Onshore Air Quality are implemented during the construction phase of the Project, there will be no significant cumulative negative effect on population and human health due to changes in air quality.

6.11.5.2.4 Health and Safety

The Project will have a short-term potential slight negative residual effect on health and safety during the construction phase of the Project, and a long-term, imperceptible residual effect on health and safety during the operational life of the Project. All other existing, permitted or proposed projects and plans), as set out in Chapter 4 of this EIAR, would be expected to follow all relevant Health and Safety Legislation during their construction, operation and maintenance and decommissioning phases.

It is on this basis that it can be concluded that there would be a long-term imperceptible negative cumulative effect from the Project and other developments in the area.

6.11.5.2.5 **Property Values**

As noted in Section 6.9 above, the available scientific literature, the absence of studies which specifically focus on the effects of offshore wind farms on property prices means that there is some uncertainty in this area. However, based on the conclusions which have been reached in the literature described above which relate to impacts associated with onshore wind turbines which are often located in much closer proximity to residential dwellings, it demonstrates that there is insufficient evidence from the scientific literature and studies conducted to determine that there is the potential for a significant effect on property values as a result of the Project.. The majority of Onshore Site infrastructure is situated underground, apart from the OCC. There is no significant potential for cumulative impacts on property values in the area surrounding the Onshore Site during the operation and maintenance phase of the Project.

On that basis it is concluded that there is no potential for cumulative effects on property values to arise.

6.11.5.3 **Noise**

Offshore

Potential effects from the Project have the potential to interact with those from other projects (developments), plans and activities, resulting in cumulative effects on noise receptors. There are no projects/developments of an equivalent scale or type to the Offshore Site within 30 km. To date, there has been little large-scale construction on the west coast of Ireland generally. Therefore, many of the relevant cumulative plans or projects represent short-term, localised activities which are not generally associated with any long-term infrastructure presence. Effects associated with airborne noise during construction as a result of the project alone were considered to be imperceptible, negative effect which is Not Significant. There is a very low likelihood for a cumulative impact.

Onshore

There is potential for short term slight negative cumulative effects on population and human health due to noise, in the event that construction timelines overlap between the Project and other small-scale developments such as one-off residential developments.



Chapter 26 contains detailed cumulative impact assessment of the Onshore Site and other planned, permitted or proposed projects. Provided the construction works take place within the proposed criteria thresholds and the DMRB document guidance for linear OGC works does not exceed a period of ten or more days or night in any 15 consecutive day or nights; and a total number of days exceeding 40 in any six consecutive months, no significant cumulative noise and vibration residual effects are predicted during the construction, operation and maintenance or decommissioning phases of the Onshore Site.

6.11.5.3.2 **Residential Amenity**

Pre-Mitigation Effects

In the extremely unlikely event that all permitted and proposed projects as described in the cumulative assessment in Chapter 4 are constructed at the same time, there is the potential for a resulting short term, moderate, cumulative, negative effects to occur on residential amenity, in relation to noise and vibration, dust, traffic and visual amenity.

Proposed Mitigation Measures

The closest full time occupied residential receptor is over 5.5km from the nearest WTG. All mitigation as outlined under noise and vibration, shipping and navigation, other sea users, dust, traffic, visual amenity and telecommunications in this EIAR will be implemented in order to reduce insofar as possible effects on residential amenity at properties located in the vicinity of the Project works, including along the proposed construction materials haul route, and Onshore Site construction works. It is assumed also that all mitigation measures in relation to the other cumulative projects will also be implemented.

Residual Effects

The Project will have a short-term, slight negative effect on residential amenity during construction and decommissioning works. During the operational phase, noise and traffic from proposed and permitted projects will be limited resulting in a long-term, not significant residual cumulative effect on residential amenity.

Significance of Effects

Based on the assessment above there will be no significant direct or indirect cumulative effects.

6.11.5.4 **Summary of Cumulative and In-Combination effects**

As assessed above, there will be no significant negative effects arising from the construction, operation and maintenance or decommissioning of the Project with any existing, permitted or proposed project/plans listed in Appendix 4-2: Onshore CIA. Furthermore, the nature of the Project and other large-scale projects such as wind energy developments are such that, once operational, they will have a cumulative long-term, significant, positive effect on the air quality and climate.


6.11.6 **Conclusion**

Following consideration of the residual effects (post-mitigation) it is noted that the Project will not result in any significant effects on human beings in the area surrounding the both the Offshore and Onshore Site of the Project.

Provided that the Project is constructed, operated and decommissioned in accordance with the design, best practice and mitigation that is described within this application, no negative significant effects on population and human health through effects on population, employment and economic activity, sea use and land use, residential amenity, community facilities and services, tourism, air quality, water quality, noise, traffic property values and health and safety are not anticipated at any scale or when taking into consideration any cumulative development within the vicinity of the Project. The Project, an offshore wind farm and associated infrastructure, with a MEC of 450MW is capable of offsetting carbon emissions associated with the burning of fossil fuels, therefore having a positive effect on climate. This in turn will have a long term, significant, positive effect on population and human health, due to the provision of renewable energy in place of traditional carbon-based electricity generation.