15 AIR AND CLIMATE

15.1 INTRODUCTION

This chapter assesses the impacts of the Development (**Figure 1.2**) on air and climate. The Development refers to all elements of the application for the construction of Tullaghmore Wind Farm (**Chapter 2: Project Description**). Where negative effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment considers the potential effects during the following phases of the Development:

- Construction of the Development
- Operation of the Development
- Decommissioning of the Development

The most recent climate projection iteration Regional Climate Model Predictions for Ireland (2021-2060) has identified the following climatic trends as a result of climate change:

- Temperature: Mean monthly increase in temperatures typically between 1.25 and 1.5°C.
- Precipitation: Change in the frequency and distribution (June shows a decrease of c. 10%; December shows an increase between 10 and 25%) and intensity (increase in the frequency of extreme precipitation - events may exceed 20mm per day) of rainfall events and cyclones (increase by 15%) compared with the climate of 2005.
- River Flooding: Significant increase in more intense discharge episodes and an increase in the frequency of extreme discharges.

The predicted net increase in surface water runoff relative to the scale of the Site as a product of the Development is 0.38%, this is considered as imperceptible, and therefore any potential risk of increased flood risk arising as a product of the Development is considered imperceptible.

The increase of surface water runoff is considered to be a likely, negative, imperceptible or not significant, imperceptible weighted significance, permanent impact of the Development. There are minimal recorded or mapped flood risk areas associated with or directly down-gradient of the Site and this assessment concludes at the first stage. This is in accordance with relevant guidance relating to Flood Risk Management (OPW, 2009). (**Chapter 9: Hydrology and Hydrogeology**).

A Peat Slide Risk Assessment (PSRA) was carried out by EcoQuest Environmental Services between March 2020 and August 2022 as part of the geotechnical Site Investigations (**Appendix 8.1**). This assessment found that the risk of peat slide is generally

Negligible to Low across the Site. Areas with a safety factor of less than 1.0 will be avoided. and mitigation measures included in the PSRA will be implemented to reduce the risk of peat instability. The PSRA also outlines a number of mitigation measures to be followed to reduce the risk of peat slide.

The risk of mass movements or landslides occurring is negligible to low. However, there is an inherent risk associated with the excavation of peat, considering the structural qualities of the peat on site, i.e., peat with high von Post values, low fibre content, high water content or pore water pressure and corresponding low shear strength. Peat quality will also influence the actual safe angle of repose for open excavations (**Chapter 8: Soils and Geology**).

The main concern in relation to increased rates of rainfall and surface water runoff is the associated increase of erosion in already formed or newly formed natural surface water drainage features. Enhanced erosion has the potential to lead to peat degradation and localised stability issues, however this phenomenon conforms to baseline conditions (**Chapter 8: Soils and Geology and Chapter 9: Hydrology and Hydrogeology**).

The climate change trends listed above are considered unlikely to affect the Development; the Development's vulnerabilities and resilience to climate change is not considered further in the EIA. However, this section will assess the effect of the Development on air quality, given the potential for peat disturbance and dust emissions, and the likely CO_2 reduction effects of the Development in operation.

15.2 RELEVANT LEGISLATION

The Ambient Air Quality and Clean Air for Europe (CAFE) Directive (Directive 2008/50/EC) incorporates revised provisions for sulphur dioxide (SO_2), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), benzene (C_6H_6) and carbon monoxide (CO). This replaced the Air Quality Framework Directive (96/62/EC) and first three Daughter Directives (1999/30/EC, 2000/69/EC, 2002/3/EC). The Fourth Daughter Directive (2004/107/EC) will be incorporated into the CAFE Directive at a later date and stands alone as a separate EU Directive.

The Fourth Daughter Directive (2004/107/EC) relates to arsenic (As), cadmium (Cd), nickel (Ni), and mercury (Hg)_and polycyclic aromatic hydrocarbons (PAH) in ambient air and has been transposed into Irish legislation by the 'Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009)'.

The CAFE Directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) as amended by the Air Quality Standards (Amendments) and Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations, 2016 (S.I. 659 2016).

The Clean Air for Europe (CAFE) Directive (Directive 2008/50/EC on ambient air quality), (as amended by Directive EU 2015/1480) encompasses the following elements:

- The merging of most of the existing legislation into a single Directive (except for the Fourth Daughter Directive) with no change to existing air quality objectives.
- New air quality objectives for $PM_{2.5}$ (fine particulate matters) including the limit value and exposure concentration reduction target
- The possibility to discount natural sources of pollution when assessing compliance against limit values
- The possibility for time extensions of three years (for particulate matter PM10) or up to five years (nitrogen dioxide, benzene) for complying with limit values, based on conditions and the assessment by the European Commission.

15.3 CONSULTATION

Consultation with the relevant organisations was undertaken during the scoping stage of the EIA to identify any potential effects that could be attributable to the Development. A summary of the responses is detailed in **Table 15.1**.

Table 15.1: Summary of Consultation Response on Air Quality and Human Health

Consultee	Type and Date	Summary of Consultee Response
Environmental Health Service	Letter in Response to Scoping Report received 12/01/2021	***Air Quality*** *Due to the nature of the proposed construction works, generation of airborne dust has the potential to have significant impacts on sensitive receptors. An Outline Construction Environmental Management Plan (CEMP) should be included in the EIAR which details dust control and mitigation measures.*

15.4 ASSESSMENT METHODOLOGY

This assessment of air quality involved the following:

- A desk study of the air quality baseline in the area of the Development and nationally
- Evaluation of potential effects
- Evaluation of the significance of effects
- Identification of measures to avoid and mitigate potential effects

15.5 BASELINE CLIMATE

The Köppen climate classification divides regions of the globe based on seasonal precipitation and temperature patterns. The five main groups are tropical, dry, temperate, continental, and polar. The Irish climate is defined as a temperate oceanic climate on the Köppen climate classification system[1]. Ireland's climate is mild, moist and changeable with abundant rainfall and a lack of temperature extremes. The country generally receives cool summers and mild winters and is considerably warmer than other areas on the same latitude. Ireland's land mass is warmed by the North Atlantic Current all year and as a result does not experience a great annual range of air temperatures.

Nationally, the mean air temperature is generally between 9 and 11 degrees. Annual rainfall totals on the West coast generally average between 1,000 and 1,400mm with the wettest months being December and January and April being the driest month. The prevailing wind direction is between South and West. Average wind speed ranges from 3m/s in South Leinster to 8m/s in the extreme North of the country.

'Mace Head' is located approximately 32km south-west of the Development and has the closest Met Éireann climate station to the Development. The mean annual air temperature between January 2004 and December 2021 was 10.7°C. Mean monthly temperatures ranged from 6.8°C in January to 15.2°C in July. Mean annual rainfall over this period was 90.7mm, with a maximum monthly mean rainfall of 121.4mm in December and a minimum monthly mean rainfall of 54.7mm in April.

15.6 BASELINE AIR QUALITY

World Health Organisation (WHO) air quality guideline values for 2018 were exceeded at several monitoring sites in Ireland for fine Particulate Matter (PM_{10} and $PM_{2.5}$), nitrogen oxides (NO_X) and ozone. According to the EPA (2020)[2] PM from solid fuel burning remains the greatest threat to good quality air in Ireland. This is closely followed by nitrogen dioxide (NO_2) from transport emissions in urban areas. The European Environment Agency reference level for atmospheric Polycyclic Aromatic Hydrocarbon (PAH – chemicals formed mainly by anthropogenic processes, especially the combustion of organic fuels) has also been exceeded. The EU Commission has imposed targets on Ireland's emissions. Ireland's long-term energy policy framework is set out in the Climate Action Plan 2021 (**Chapter 4: Planning Policy, Section 4.5.2**).

[1] https://www.britannica.com/science/Koppen-climate-classification/World-distribution-of-major-climatic-types, [Accessed 03/03/2022]
[2] Environmental Protection Agency (2020). *Air Quality in Ireland 2019*. Available online at http://www.epa.ie/pubs/reports/air/quality/ [Accessed on 3 March 2022]

The latest figures from the Central Statistics Office (CSO) outlined Ireland as the third highest producer of greenhouse gases (GHG) per capita in Europe as of 2018, behind Estonia and Luxembourg. The Environmental Indicators Ireland 2019 report[3] examined a number of factors relating to the environment and the country; key findings relating to GHG showed that Ireland produced 60.9m tonnes of CO_2 equivalent for 2018, which marked an increase of 9.9% compared with the 1990 figure of 55.5m tonnes. The most recent published report on air quality in Ireland is the 'Air Quality in Ireland 2019' report published by the EPA in 2020. The closest air monitoring station to the Development is Mace Head. Results from the monitoring campaign during 2019, show no levels above EU limit values were recorded from the ambient air quality monitoring site in Mace Head.

The EPA's Air Quality Index for Health (AQIH)[4] provides live information about the air quality at each air quality monitoring station. The data, which comes from automated monitoring stations (AMS) is updated at least once daily for each station. The AQIH mapping system shows that Air Quality at Mace Head is rated Index 3, representing good air quality (Index 1-3). The breakdown of the air quality classifications as used by the AQIH is shown in **Table 15.2**.

Table 15.2: Air Quality Index for Health Classifications[5]

Four Bands of Air Quality	**Index (1-10)**	Ozone (µg/m³) 8 Hour Mean	Nitrogen Dioxide (µg/m³) 1 Hour Mean	Sulphur Dioxide (µg/m³) 1 Hour Mean	PM2.5 (µg/m³) 24 Hour Mean	PM10 (µg/m³) 24 Hour Mean
Good Air Quality	1	0 - 33	0 - 67	0 - 29	0 - 11	0 - 16
	2	34 - 66	68 - 134	30 - 59	Dec-23	17 - 33
	3	67 - 100	135 - 200	60 - 89	24 - 35	34 - 50
Fair Air Quality	4	101 - 120	201 - 267	90 - 119	36 - 41	51 - 58
	5	121 - 140	268 - 334	120 - 149	42 - 47	59 - 66
	6	141 - 160	335 - 400	150 - 179	48 - 53	67 - 75
Poor Air Quality	7	161 - 187	401 - 467	180 - 236	54 - 58	76 - 83
	8	188 - 213	468 - 534	237 - 295	59 - 64	84 - 91
	9	214 - 240	535 - 600	296 - 354	65 - 70	92 - 100
Very Poor Air Quality	10	241 or more	601 or more	355 or more	71 or more	101 or more

[3] Central Statistics Office. Environmental Indicators Ireland 2019. Available online at: https://cso.ie/en/releasesandpublications/ep/p-eii/eii19/ [Accessed on 3 March 2022]
[4] https://airquality.ie/ [Accessed 03 March 2022]
[5] https://airquality.ie/information/air-quality-index-for-health [Accessed 03 March 2022]

15.7 ASSESSMENT OF POTENTIAL EFFECTS

The main potential source of impacts on air quality during the Construction and Decommissioning phases is dust. Mitigation measures for dust are outlined in **Chapter 14: Traffic and Transport**, **Section 14.6**. These measures are in accordance with Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes (NRA, 2011)[6]. The nearest inhabited residential dwelling is located 740m from the nearest turbine (southwest of the Site). After (standard practice) mitigation, the residual effects have been assessed as ***imperceptible/ slight, negative and short-term*** in nature. During the Decommissioning phase, the potential impact from dust becoming friable and being a nuisance to workers, residents and local road users is considered**, a slight, negative, short-term, direct** impact.

Emissions from plant and machinery, including trucks, during the Construction and Decommissioning phases of the Development are a potential impact. The engines of these machines produce emissions such as carbon dioxide (CO_2), carbon monoxide (CO), NO_x, and PM (PM_{10} and $PM_{2.5}$). This phase is likely to lead to small, localised increases in these emission levels, which is likely to lead to a **temporary imperceptible** effect. There are no such emissions associated with the operational phase of wind turbines. The decommissioning/removal phase is assessed as smaller in scale than the Construction and therefore impacts are assessed as less significant.

The manufacture, installation and operation of turbines, such as the Development will result in lower environmental levels of harmful emissions and consequential benefits on human health, where they are offsetting electricity generation that would otherwise come from fossil fuel sources. The CO_2 'payback time', which is the period of windfarm operation required until there is a net saving of CO_2 (until achieved savings equal whole-lifetime emissions) can be calculated as the total CO_2 offset associated with the Development divided by its carbon footprint.

The Development would result in a total installed capacity of 40.8 Megawatts (MW), with an estimated generation capacity of 125,092,800kWh / year[7]. GHG emissions released during the manufacture and installation of Wind Turbines is currently estimated as 0.015KgCO_2e/kWh.[8] Therefore, the Development will have a carbon footprint of

[6] National Roads Authority (2011) Guidelines-for-the-Treatment-of-Air-Quality-during-the-Planning-and-Construction-of-National-Road-Schemes. Available online at: https://www.tii.ie/technical-services/environment/planning/Guidelines-for-the-Treatment-of-Air-Quality-during-the-Planning-and-Construction-of-National-Road-Schemes.pdf [Accessed on 3 March 2022]
[7] 40.8MW x 35% assumed maximum energy output (https://www.croaghwindfarm.ie/media/2020/07/Ch.-10-Air-and-Climate-F-2020.07.06-180511.pdf) = 14.28MW or 14280kW. 14280kW x 8760 hours per year = 125,092,800kWh/year.
[8] Thomson, R.C. and Harrison, G. P. (2015) *Life Cycle Costs and Carbon Emissions of Onshore Wind Power.* A ClimateXChange Report. Available online at: https://www.climatexchange.org.uk/media/1463/main_report_-

approximately 1,876.4 tCO_2eq/year or 75,056 tCO_2eq over a 40-year period (40 years taken as the proposed lifetime of the windfarm; 40.8MW = 75,056 tCO_2eq/ 40 years).

The Development design layout has considered the reuse of the existing infrastructure, i.e. the site entrance on the N59 and the existing access track, as much as possible to minimise disturbance of peatland habitats. The selection of breaking new ground at chosen sites, impacting on natural habitat has been kept to a minimum; thus greatly influencing the overall volume of peat loss.

Site investigations were carried out by EcoQuest Environmental Services throughout the Site in locations where excavations may be undertaken. Cumulative peat depths were calculated, and it has been estimated that approximately 136,786m^3 of peat is required to be excavated for the Development. This volume equates to approximately 274t of dry peat fuel[9]. If this amount of peat were to be combusted, in a worst-case scenario (considering not all carbon may be released where peat is reinstated), this equates to 368.8tCO_2eq[10]. Indicative figures have been applied to the Development to estimate the annual CO_2 offset of the Development for an output of 40.8MW. The CO_2 offset is estimated to be 37,027.5 tCO_2/yr[11] or 1,481,100 tCO_2 over 40 years. The estimated carbon footprint of the Development is approximately 5.09% of this volume[12], meaning that the time it would take to displace emissions equivalent to those used in the manufacture and installation of the Development is approximately 24 months.

CO_2 emission savings for the operational lifetime beyond this 'payback time' would see a net positive benefit of the Development in reducing climate change. The Development will have a beneficial effect on carbon emission savings which increases proportionally with the duration of the operational phase of 40 years.

life_cycle_costs_and_carbon_emissions_of_onshore_wind_power.pdf [Accessed on 3 March 2022] (0.015kg CO_2eq/kWh x 125,092,800kWh/year = 1,876.4tCO2eq/year for a 40.8 MW installation)

[9] Environmental Protection Agency (2007) *Measurements of soil bulk density across differing soil types and land uses in Ireland*. A soil bulk density of 0.2g /cm^3 derived from this study was used (i.e. 0.2g/cm^3 = 2kg/m^3 x 136,786m^3 = 274t of dry peat fuel).

[10] *Bigeosciences* (2015) *Derivation of greenhouse gas emission factors for peatlands managed for extraction in the Republic of Ireland and the United Kingdom*, Eds. D. Wilson, S. D. Dixon, R. R. E. Artz, T. E. L. Smith, C. D. Evans, H. J. F. Owen, E. Archer, and F. Renou-Wilson Volume 12, 5291-5308. (1.346 CO^2 x 274t = 368.8 tCO_2eq).

[11] Sustainable Energy Authority of Ireland (2020) '*Energy in Ireland 2021 Report*' page 42 highlights *"The CO_2 intensity of electricity generation fell to 296 gCO_2/kWh in 2020, which is a historic low for Ireland. For perspective, this is 39% lower than in 2016 (481 gCO_2/kWh)"* (Pg. 42). The carbon intensity of grid electricity was calculated as 296gCO_2. The expected windfarm generation (125,092,800kWh) is multiplied by 0.296 to calculate the kg of CO_2 equivalent saved per year. (114,055,200kWh x 0.296)/1000 = 37,027.5tonnes/annum CO_2 equivalent.

[12] For a wind farm with 40.8MW output: 75,056tCO_2eq (carbon footprint) over a 40-year lifetime (1876.4tCO_2eq x 40) + 368.8 tCO_2eq combusted peat = 75,424.8tCO_2eq / (divide by the offset) CO_2 offset of 1,481,100 tCO2 (37,027.5x 40) over a 40-year lifetime = 5.09% or c. 24months (40 years = 480 months. 5.09% of 480 months = 24.4 months or c. 24 months).

15.8 EVALUATION OF THE REDUCTION IN CLIMATE CHANGE EMISSIONS

The Development does not contain any element, which will produce GHG emissions or odorous emissions during operation. Indeed, the Development will contribute to a net national reduction in the emissions of greenhouse and other gases resulting from the combustion of fossil fuels.

The gases of main concern are those that contribute to an increase of the Greenhouse Effect (carbon dioxide, methane, nitrous oxide and other nitrogen oxides) and those that contribute to acid rain (principally sulphur dioxide). The degree to which wind energy reduces levels of emissions depends on the method of electricity generation which it is replacing. This assessment assumes the following scenario; the maximum potential output of 40.8MW from a 6 no. 6.8MW turbine. Even taking into account the peat soils displaced by the Turbine Foundations and Turbine Hardstands, the calculated carbon footprint of the Development represents a relatively small percentage of the predicted overall CO_2 offset.

Table 15.3 shows the approximate emission savings that can be achieved each year through running at assumed 35% capacity for the turbine model, based on a report issued by Wind Europe regarding wind energy statistics and trends which states *"capacity factors for new onshore wind farms are estimated at between 30-35%"*[13].

Table 15.3: Statistics relating to Emissions Avoidance of the Development (per annum)

Factor	Contribution based on 37.2 MW Capacity
Energy Produced (MWh per annum)	125,092.8[14]
Number of Homes Powered (per annum)	25,776[15]
CO_2 offset (tonnes per annum)	37,027.5 [16]
Nitrous oxides offset (tonnes per annum)	375.3[17]
Sulphur dioxide offset (tonnes per annum)	1250.9[18]

[13] Wind Europe: *Wind energy in Europe: 2021 Statistics and the outlook for 2022-2026.* "Capacity factors for new onshore wind farms are estimated at between 30-35%". Available at: https://windeurope.org/intelligence-platform/product/wind-energy-in-europe-2021-statistics-and-the-outlook-for-2022-2026/

[14] 40.8MW x 0.35 x 365 x 24 (40.8 MW turbines x 0.35 (35% capacity factor average) x no. of days x no. of hours) = 125,092.8MWh per annum

[15] Sustainable Energy Authority of Ireland (2020) *Energy in Ireland 2021 Report*. Page 87, Table 33 shows *"In 2020, the average dwelling consumed a total of 20,205kWh of energy, 7.8% higher than in 2019. This comprised 15,352kWh (76%) of direct fuels and 4,853kWh (24%) of electricity".* Therefore, the Development can be expected to meet the average electricity consumption of (125,092.8MWh x 1000 =125,092,800kWh / 4853kWh) = approximately 25,776.4 homes for one year.

[16] Sustainable Energy Authority of Ireland (2020) '*Energy in Ireland 2021 Report*'. Page 42 highlights the carbon intensity of electricity in Ireland. In 2020 the carbon intensity of grid electricity was calculated as *296g CO_2/kWh* (Figure 26, Pg. 42). The expected generation (125,092,800kWh) is multiplied by 0.296 to calculate the kg of CO_2 equivalent saved per year. (125,092,800kWh x 0.296)/1000 = 37,027.5 tonnes/annum CO_2 equivalent.

[17] 125,092,800kWh x 0.003kg / 1000 = 375.3tCo_2e/kWh (based on British Wind Energy Association figure of 3g NO_x/kW/h http://www.bwea.org/edu/calcs.html).

[18] 125,092,800kWh x 0.010kg / 1000 =1,250.9t Co_2e/kWh (based on British Wind Energy Association figure of 10g SO_2/kW/h (http://www.bwea.org/edu/calcs.html)

The relative reductions in GHG emissions in the energy sector will serve to reduce the effects of climate change on a national and global level, albeit at a small scale. This will be a **small positive impact** in the medium term in helping Ireland reduce its GHG emissions and meet its international obligations.

15.9 MITIGATION MEASURES

During construction in dry weather there is the potential for a certain amount of dust to be generated. Mitigation measures relating to dust emissions that will be implemented on site may include, but will not be limited to the following:

- Adherence to the speed limit on site in order to reduce the dust generated from transport on site roads
- Water bowsers – Spraying with water to dampen dust down
- Road sweepers – remove silt from the road surface to reduce the potential for dust on the public road, if required
- Materials with the potential to produce dust must be stored accordingly to prevent dust generation e.g., materials stored out of the wind and covered
- Transport of dust generating material will be covered
- Wheel cleaning equipment will be used on the Site Access Track near the near the public road junction to prevent any mud and/or stones being transferred from Site to the public road network. All drivers will be required to see that their vehicle is free from dirt and stones prior to departure from the construction site.
- In addition, any dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise the creation of dust. Where conditions exist for dust to become friable, techniques such as damping down of the potentially affected areas may be employed.
- To reduce dust emissions, vehicle containers/loads will be covered during both entrance and egress to the Site where required.

15.10 RESIDUAL IMPACTS OF THE DEVELOPMENT

The production of energy from the Development will have no direct emissions at the point of generation, unlike typical fossil fuel-based power stations. Harnessing energy by means of Tullaghmore Windfarm will result in a reduction in harmful emissions that can be damaging to human health and the environment.

15.11 CUMULATIVE EFFECTS

In Ireland, 180MW of wind-generation capacity was installed in 2020[19]. The estimated amount of CO_2 avoided through the use of renewable energy for the period 2005 to 2020 reached 6.6MtCO_2 in 2020, with 4.5 MtCO_2 avoided by wind energy alone. In 2020 energy related CO_2 emissions, including international aviation, were down 11.4% from 2019 figures. Due to the Covid-19 pandemic, throughout 2020 there were significant restrictions on mobility during 2020 which had direct effects on transport energy use, especially on international aviation. Despite restrictions and the reduction in transport energy use, transport was still responsible for the largest share of energy-related CO_2 emissions in 2020. In 2020, energy related CO_2 emissions, excluding international aviation, decreased by 6.3% (2.15 million tonnes), which is less than the amount that will need to be achieved on average every year from 2021 to 2030 to meet Irelands long-term decarbonisation goals.

The SEAI *Energy in Ireland 2021 Update Report* states that Ireland did not meet its EU 2020 overall renewable energy target. The overall share of renewable energy was 13.5%, compared to the target of 16%, with wind energy providing 59% of all renewable energy in 2020. Energy from renewable sources only grew by 8.9% between 2019 and 2020.

The CO_2 intensity of electricity generation fell to 296 gCO2/kWh in 2021, which is a historic low for Ireland. For perspective, this is 39% lower than in 2016 (481 gCO2/kWh) and 53% lower than in 2005 (636 gCO2/kWh). The reduction in the carbon intensity of electricity generation in 2020 can largely be attributed to a 51% reduction peat used for electricity generation, and a 15% increase in wind generation. However, countering these positive trends in carbon intensity were relative increases in electricity generation from coal and oil by 33% and 38%, respectively. Ireland was a net exporter of electricity between 2019 and 2020 but it returned to high levels of imports in early 2021, where the first ten months of 2021 saw net electricity imports at their highest since 2014 as a result of a shortfall in wind and gas generated electricity in Ireland. The shortfall has been made up by a combination of large increases in both generation from coal and electricity imports from the UK.

Ireland's 2030 target is to reduce greenhouse emissions by a minimum of 51% as against 2018 levels, with the 2050 target to reach net zero greenhouse emissions. The Climate Action Plan 2021 (CAP21)[20] has set a new target of 80% renewable electricity by 2030. In terms of installed renewable capacity, the CAP21 commits to an 15GW of new renewable capacity, of which 8GW is expected to come from onshore wind. The target of 15GW

[19]Sustainable Energy Authority of Ireland (2020) *Renewable Energy in Ireland 2021 Update - https://www.seai.ie/publications/Energy-in-Ireland-2021_Final.pdf*
[20] https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/

represents more than a quadrupling of current renewable capacity. According to the SEAI *'Energy in Ireland 2021 Report'*, in 2020, 42% (1,159 ktoe) of all electricity generated came from renewable sources, however this is far from Irelands 2030 target to have 80% of all electricity generated coming from renewable sources.

The Development will contribute up to 40.8MW of installed capacity. Therefore, the cumulative effect of the Development along with other Irish renewable generation is considered to be a fundamental change in the climate effects of Ireland's energy supply, which is considered a **major, positive effect,** that is significant under the EIA Regulations and will contribute to Ireland's binding emission reduction targets.

The construction and decommissioning phases are short-term activities, so the potential cumulative impact could be predicted to be **slight, negative, temporary/short-term, direct** given the extended distance of over 740m of the Development to sensitive receptors in terms of dust nuisance.

15.12 SUMMARY OF SIGNIFICANT EFFECTS

This assessment has identified no significant negative effects, given the mitigation measures embedded in the design and recommended for the implementation of the Development. In isolation, the Development will have a significant positive effect on carbon savings and cumulatively, a significant positive effect when considered with Ireland's renewable energy deployment.

15.13 STATEMENT OF SIGNIFICANCE

This Section has assessed the significance of potential effects of the Development on air quality and climate. The Development has been assessed as having the potential to result in slight, negative, temporary/short-term effects during construction/decommissioning phases, and a significant, **positive, long-term effect** during operation and in terms of helping Ireland meet its international obligations to reduce GHG emissions.

Given that only effects of significant impact or greater are considered "significant" in terms of the EIA Regulations, the potential effects of the Development on air quality and climate are considered **significantly positive**.