3. ***A requirement to diversify Ireland's energy sources, with a view to achievement of - national renewable energy targets and an avoidance of significant fines from the EU (the EU Renewables Directive);***
4. ***Climate Action Plan 2024 which aims to ensure that Ireland achieves its legally binding target (the Climate Action and Low Carbon Development (Amendment) Act 2021) of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030;***
5. ***Provision of cost-effective power production for Ireland which would deliver local benefits;***
6. ***Increasing energy price stability in Ireland through reducing an over reliance on imported gas; and***
7. ***To facilitate the Government in meeting its ambitious 80% renewable energy target by 2030.***

These factors are addressed in further detail below. Section 2.3 in Chapter 2 of this EIAR on Background to the Proposed Development, presents a full description of the international and national renewable energy policy context for the Proposed Development. Section 2.2 addresses climate change, including Ireland's current status with regard to meeting greenhouse gas emission reduction targets.

In March 2024, the World Meteorological Organisation (WMO) published the State of the Global Climate 2023 Report.[3] The report provides a summary on the state of the climate indicators in 2023 with sections on key climate indicators, extreme events and impacts. The key messages in the report include:

- 2023 was the warmest year on record at 1.45 ± 0.12°C above the pre-industrial average.
- Concentrations of the three main greenhouse gases – carbon dioxide, methane, and nitrous oxide – reached record high observed levels.
- Antarctic sea-ice extent reached an absolute record low in February. The annual maximum extent was around 1 million km^2 below the previous record low maximum.
- Extreme weather continued to lead to severe socio-economic impacts. Extreme heat affected many parts of the world. Wildfires in Hawaii, Canada and Europe led to loss of life, the destruction of homes and large-scale air pollution.
- Food security, population displacement and impacts on vulnerable populations continue to be of mounting concern in 2023, with weather and climate hazards exacerbating the situation in many parts of the world.

The State of the Global Climate 2023 report goes on to state that renewable energy generation, primarily driven by the dynamic forces of solar radiation, wind and the water cycle, has surged to the forefront of climate action for its potential to achieve decarbonization targets. There has been a substantial worldwide energy transition, with renewable capacity additions increasing by nearly 50% from 2022 to 2023, totalling 510 gigawatts (GW).[4] This growth represents the highest rate observed in the past two decades, signalling a significant momentum toward achieving the clean energy goal set at the United Nations Framework Convention on Climate Change (UNFCCC) 28th Conference of the Parties (COP28) meeting in 2023 to triple renewable energy capacity globally to 11,000 GW by 2030.

[3] *World Meteorological Organization (2024) State of the Global Climate 2023* <https://library.wmo.int/records/item/68835-state-of-the-global-climate-2023>
[4] *International Energy Agency (2024) Renewables 2023 Analysis and Forecast to 2028* <https://iea.blob.core.windows.net/assets/96d66a8b-d502-476b-ba94-54ffda84cf72/Renewables_2023.pdf>

The joint publication of WMO and International Renewable Energy Agency on Climate-driven Global Renewable Energy Potential Resources and Energy Demand in 2022[5] underscores the inherent links between renewable energy resources and weather and climate conditions. It calls for better integration of climate variability considerations into energy resource operation, management, and planning to enhance effectiveness and sustainability in these regions.

1.5.2 Climate Change and Greenhouse Gas Emissions

At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal. The agreement sets out a global action plan to avoid dangerous climate change by limiting global warming to well below 2°C above pre-industrial levels. Under the agreement, Governments also agreed on the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries and to undertake rapid reductions thereafter in accordance with the best available science. The 2023 climate change conference (COP28) in Sharm el-Sheikh resulted in the first agreement explicitly calling for the transition away from fossil fuels, described as the United Arab Emirates (UAE) Consensus. This text raised concerns over the achievement of limiting warming below 1.5°C, as the prior text to 'phase out as soon as possible inefficient fossil fuel subsidies' does not address energy poverty or the just transition. The UAE Consensus further calls for more explicit near-term goals in the lead up to 2050, calling for the world to cut greenhouse gas emissions by 43% as compared to 2019 levels. The most recent climate conference (COP29) took place in Azerbaijan in November 2024 and focused on accelerating global efforts to address climate change, in particular global efforts related to climate finance. The New Collective Quantified Goal on Climate Finance (NCQG) was agreed in the final days of COP29 with developed nations agreeing to triple finance to developing countries, with commitments increasing from USD 100 billion annually to USD 300 billion annually by 2035. Significant progress was made in the discussions surrounding carbon markets, with nearly 200 nations agreeing on critical rules under Article 6 of the Paris Agreement. The adoption of these rules is seen as a crucial step towards operationalising a robust and credible carbon market.

The International Panel on Climate Change (IPCC) put forward its clear assessment in their Fifth Assessment Report[6], that the window for action on climate change is rapidly closing and that renewable energy sources such as wind will have to grow from 30% of global electricity at present to 80% by 2050 if we are to limit global warming to below 2 degrees and in accordance with the COP 21 agreement to limit global warming to well below 2°C above pre-industrial levels. Former Minister Kelly remarked in 2015 that "*As a nation we must do everything in our power to curb our emissions*".

In February 2022, the International Panel on Climate Change (IPCC) released the report *'Working Group II-Climate Change 2022: Impacts, Adaptation and Vulnerability'* regarding the impacts of climate change on nature and human activity. The report states that global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO2 and other greenhouse gas emissions occur in the coming decades. the report identifies four key risks for Europe with most becoming more severe at 2 °C global warming levels (GWL) compared with 1.5 °C GWL. From 3°C GWL, severe risks remain for many sectors in Europe. The four key risks identified are:

- Key Risk 1: Mortality and morbidity of people and changes in ecosystems due to heat.
- Key Risk 2: Heat and drought stress on crops.
- Key Risk 3: Water scarcity.
- Key Risk 4: Flooding and sea level rise

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[5] *World Meteorological Organization, IRENA (2023) 2022 Year in Review: Climate-driven Global Renewable Energy Potential Resources and Energy Demand* <https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2023/Dec/IRENA_WMO_2022_year_in_review_2023.pdf>

[6] *IPCC Fifth Assessment Synthesis Report, Intergovernmental Panel on Climate Change AR5 Report*

In April 2022, the IPCC released the report *'Working Group-III – Climate Change 2022: Mitigation of Climate Change'*, which assesses literature on the scientific, technological, environmental, economic, and social aspects of mitigation of climate change. The report reflects new findings in the relevant literature and builds on previous IPCC reports, including the WGIII contribution to the IPCC's Fifth Assessment Report (AR5), the WGI and WGII contributions to AR6 and the three Special Reports[7] in the Sixth Assessment cycle. This report outlines developments in emission reduction and mitigation efforts, assessing the impact of national climate pledges in relation to long-term emissions goals in a global context.; and states that '*Unless there are immediate and deep emissions reductions across all sectors, limiting global warming to 1.5°C will be beyond reach.*'

In May 2024, the EPA[8] reported, for the 2022 year, that the energy sector contributed to 17% of Ireland's total emissions. The latest EPA projections show that currently implemented policies and measures (With Existing Measures (WEM) scenario) will result in Ireland achieving a total greenhouse gas emission reduction of 9% on 2005 levels by 2030, significantly short of Irelands 2030 target under the EU Effort Sharing Regulation (ESR), i.e., 42% reduction of emissions compared to 2005 levels by 2030, and also lower than the 10% reduction projected in the 2023 report.[9] If policies and measures in the higher ambition (With Additional Measures (WAM) scenario) are implemented, EPA projections show that Ireland can achieve a reduction of 25% by 2030, still short of the 42% reduction target and also lower than the 30% reduction projected in last year's estimates. The EPA projections show that agriculture and transport emissions form the majority of ESR emissions; combined they represent 78% and 80% of emissions in 2022 (latest inventory data) and 2030, respectively. Decarbonisation of power generation is a key measure, not only in the energy sector, but for other energy intensive sectors, such as transport and agriculture, whose activities result in high levels of greenhouse gas emissions.

The EPA *'Ireland's Provisional Greenhouse Gas Emissions 1990-2023'* report[10] stated that in 2023, overall electricity generation in Ireland increased by a 2.1% and renewable electricity generation increased from 38.6% in 2022 to 40.7% in 2023, with wind accounting for 33.7% of electricity supply (up from 33.1%). The increase in renewables combined with the increase in imported electricity from interconnectors caused emissions intensity of power generation to decrease by 23.3%, from 332g CO2/kWh in 2022 to a historic low of 255g CO2/kWh in 2023.

The '*National Energy Projections 2024*'[11], published annually by the Sustainable Energy Authority of Ireland (SEAI), states that in 2022, 87% of all energy used in Ireland was from fossil fuels, 12% from renewable sources and the remainder from others such as waste and electricity imports. By 2030, fossil fuels could still provide most of Ireland's energy, ranging from 68% in the WEM scenario to 57% in the most ambitious WAM scenario. The deployment of renewables needs to outpace the growth of energy demand for the absolute reductions in greenhouse gas emissions that are required to be met. The SEAI National Energy Projections state that there was a notable reduction in greenhouse gas emissions from the electricity sector in 2023. This reduction in fossil fuel use was primarily driven by an increase in electricity imports with 2023 seeing a record level of electricity net imports. This trend has increased further in 2024, where the level of net imports in the first half of 2024 has already exceeded all of 2023. Consequently, the sectoral emissions ceiling for electricity for the first carbon budget period will be much closer to being achieved than previously projected. However, it is still projected that by the end

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[7] *The three Special Reports are: Global Warming of 1.5°C: an IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (2018); Climate Change and Land: an IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems (2019); IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (2019)*

[8] *Ireland's Greenhouse Gas Emission Projections 2023-2050* <https://www.epa.ie/publications/monitoring-assessment/climate-change/air-emissions/EPA-GHG-Projections-Report-2022-2050-May24-v2.pdf>

[9] *Irelands Greenhouse Gas Emission Projections 2022-2024 (June 2023)* <https://www.epa.ie/publications/monitoring-assessment/climate-change/air-emissions/EPA-GHG-Projections-2022-2040_Finalv2.pdf>

[10] *Environmental Protection Agency (July 2024): Ireland's Provisional Greenhouse Gas Emissions 1990-2023.* https://www.epa.ie/publications/monitoring-assessment/climate-change/air-emissions/EPA-Provisional-GHG-Report-Jul24-v6.pdf

[11] *SEAI National Energy Projections 2024 Report. Available at:* https://www.seai.ie/sites/default/files/publications/National-Energy-Projections-Report-2024.pdf

of the second budget period, the total exceedance in the electricity sector is projected to be 6.8MtCO$_2$eq, or 11%, and 5.2MtCO$_2$eq, or 9%, in the WEM and WAM scenarios, respectively.

The existing Castledockrell Wind Farm has a generating capacity of 25.3MW. On this basis, the Proposed Development will result in the net displacement of approximately 16,305 tonnes of carbon dioxide (CO_2) per annum, including accounting for back-up generation. The carbon offsets resulting from the Proposed Development are described in detail in Section 10.3.4 of Chapter 10 of this EIAR.

1.5.3 Energy Security

At a national level, Ireland currently has one of the highest external dependencies on imported sources. In July 2024 the SEAI published '***Irelands Energy Supply and Security of Supply in 2023***'[12], which identifies that in 2023, Ireland's national primary energy requirement remained heavily fossil dependent, with 82.8% of energy requirement satisfied by fossil fuels. Ireland's use of fossil fuels reached its lowest level in 2023 for over 20 years, outside the exceptional year of 2020, when COVID-related travel restrictions significantly reduced demand for petrol, diesel, and jet kerosene. Conversely, 2023 saw record high use of renewable energy in Ireland.[13] The Department of the Environment, Climate and Communications (DECC) report '***Energy Security in Ireland to 2030***'[14] states that ***"Ireland's future energy will be secure by moving from an oil-, peat-, coal, and gas-based energy system to an electricity-led system, maximising our renewable energy potential flexibility and being integrated in Europe's energy systems"***. Ireland is currently one of the most energy import dependent countries in the EU, having imported 77% of its energy supply in 2021 and 82% in 2022.[15] The DECC report proposes a package of a wide range of measures to implement by 2030 to strengthen Ireland's energy security, reduce dependency on imported energy, and reduce vulnerability to energy shocks.

EirGrid in their '***All Island Generation Capacity Statement 2023 - 2032***' (January 2024), states that new wind farms commissioned in Ireland in 2022 brought total wind installed capacity to over 4,500MW, contributing to the overall RES-E percentage of 36.8% with wind energy accounting for 32.9%. Prior to 2015, Irelands import dependency of energy was over 90% but dropped to 71% in 2016 with the Corrib gas field starting production. Since 2018, Ireland's import dependency has been increasing as the output from the Corrib gas field reduces faster than we are adding new renewable sources. In December 2024 the SEAI published their '***Energy in Ireland 2024 Report***'[16], stating that energy related emissions in 2023 were at their lowest level in over 30 years/ energy related emissions in 2023 were 31.4MtCO$_2$eq, down 8.3% on 2022 levels and lower even than emissions observed during the height of COVID in 2020. In 2023, electricity accounted for almost a quarter (24.1%) of energy-related emissions, with transport accounting for a further 37.6%. Heat emissions accounted for the remaining 38.3%. Overall, energy-related emissions in 2023 were down by 2.8 MtCO$_2$eq on the previous year. This net reduction came from a 2.1 MtCO$_2$eq drop in electricity emissions, a 0.7 MtCO$_2$eq drop in heat emissions, and a 0.03 MtCO$_2$eq increase in transport emissions. In 2023, Ireland generated 11.7 TWh of renewable energy from wind generation, exceeding the previous record of 11.6 TWh set in 2020 by 0.1 TWh. Currently, the SEAI website has a published value of 229.9gCO2/kWh for electricity generation and 254.8gCO2/kWh for electricity consumption.[17] These are the lowest carbon intensity values ever reached in Ireland. When all data from 2024 is recorded, an updated carbon intensity factor for the Irish national grid will be published.

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[12] *SEAI (July 2024) Irelands Energy Supply and Security of Supply in 2023* <https://www.seai.ie/data-and-insights/seai-statistics/key-publications/energy-supply-security>
[13] *Ibid.*
[14] *Department of the Environment, Climate and Communications (2023). Energy Security in Ireland to 2030. Available at:* < https://assets.gov.ie/276471/2d15ce6d-e555-4ada-a3cf-b325a5d7ba20.pdf.
[15] *Sustainable Energy Authority of Ireland (2023). Key insights from SEAIs 2022 National Energy Balance. Available at:* https://www.seai.ie/data-and-insights/seai-statistics/key-publications/national-energy-balance/Key-Insights-from-2022-National-Energy-Balance.pdf
[16] *Sustainable Energy Authority Ireland (2024) Energy in Ireland – 2024 Report* <https://www.seai.ie/sites/default/files/publications/energy-in-ireland-2024.pdf>
[17] https://www.seai.ie/data-and-insights/seai-statistics/conversion-factors/

Electricity demand in Ireland rose by 1.24 TWh in 2023. This net-increase was strongly led by a 1.15 TWh increase in demand from the commercial services sector, which includes data centres. The *Energy in Ireland 2024 Report* states: '*Ireland must rapidly transform its economy and society to one based on sustainable energy technologies, like wind and solar farms, bioenergy, district heating schemes, electric vehicles, and heat-pumps.*'

Ireland continues to be hugely energy import-dependent leaving it exposed to large energy price fluctuations as a minimum and possibility of fuel shortages if a major energy crisis were to occur. The international fossil fuel market is growing increasingly expensive and is increasingly affected by international politics which can add to price fluctuations. This volatility will be increased as carbon prices increase in the future. This has implications for every Irish citizen.

The SEAI has stated that our heavy dependence on imported fossil fuels, *"is a lost opportunity in terms of keeping this money here in Ireland and further developing our abundant renewable resources"*[18].

The cost of carbon credits is included in all electricity traded, and the price of electricity generated by coal is particularly vulnerable due to its high carbon emissions per unit of electricity generated. Coal and peat generate almost 5% of Ireland's electricity, while gas generates 51%, but the Climate Action Plan calls for an aggregate reduction in carbon dioxide emissions in the electricity sector of 62-81% (compared to 2018 levels) by 2050. Any steps to reduce this dependence on imported fossil fuels will add to financial autonomy and stability in Ireland. The use of Ireland's indigenous energy resources, such as wind, will contribute to a reduction in energy imports.

The Energy White Paper 2015[19] notes "There will be a substantial increase in the cost of carbon in the short and medium term, through the EU Emissions Trading Scheme". Any steps to reduce dependence on imported fossil fuels will add to financial autonomy and stability in Ireland. As the White Paper notes:

> *"In the longer term, fossil fuels will be largely replaced by renewable sources".*

1.5.4 Competitiveness of Wind Energy

While Ireland has a range of renewable resources, as the White Paper states "[Onshore Wind] *is a proven technology and Ireland's abundant wind resource means that a wind generator in Ireland generates more electricity than similar installations in other countries. This results in a lower cost of support*".

In fact, the cost of support is more than offset by the fact that adding large quantities of wind to the wholesale market drives down auction prices in any half hour trading period when the wind is blowing, i.e. for 80% of the hours of the year. Wind has a capacity factor of approx. 35%, which is its average output throughout the year relative to its maximum output. However, wind is generating power at some level for 80% of the hours of the year. A Pöyry study from 2015 showed that reaching our targets in 2020 would reduce wholesale prices by more than costs of new grid infrastructure, backup and the subsidies paid to wind, resulting in a net saving of €43m per year in 2020. The EU has noted that Ireland has one of the lowest costs of supporting renewables mainly because onshore wind is on a par with the cost of power from conventional generation when a full cost-benefit analysis is undertaken.

1.5.4.1 EU 2020 Renewable Energy Targets

The burning of fossil fuels for energy creates greenhouse gases, which contribute significantly to climate change. These and other emissions also create acid rain and air pollution. Sources of renewable energy

[18] *Dr Eimear Cotter, Head of Low Carbon Technologies, SEAI - "Energy Security in Ireland 2015"*
[19] *Ireland's Transition to a Low Carbon Energy Future 2015-2030 (Department of Communications, Energy & Natural Resources, 2015)*

that are utilised locally with minimal impact on the environment are necessary to meet the challenges of the future. The EU adopted the Renewable Energy Directive (2018/2001 EU) on the Promotion of the Use of Energy from Renewable Sources in December 2018 which sets EU 2030 Renewable Energy Targets.

The Directive sets a legally binding mandatory national target for the overall share of energy from renewable sources for each Member State. This package is designed to achieve the EU's overall 20:20:20 environmental target, which consists of a 20% reduction in greenhouse gases, a 20% share of renewable energy in the EU's total energy consumption and a 20% increase in energy efficiency by 2020. To ensure that the mandatory national targets are achieved, Member States must follow an indicative trajectory towards the achievement of their target as outlined in Ireland's National Renewable Energy Action Plan (NREAP).

The first Renewable Energy Directive (RED)[20] is legislation that influenced the growth of renewable energy in the EU and Ireland for the decade ending in 2020. From 2021, RED was replaced by the second Renewable Energy Directive (REDII),[21] which continues to promote the growth of renewable energy out to 2030. Ireland's mandatory national target for 2020 was to supply 16% of its overall energy needs from renewable sources. This target covered energy in the form of electricity (RES-E), heat (RES-H) and transport fuels (RES-T). Ireland fell just short of this target with total GFC reaching 13.5%. REDII introduced a binding EU-wide target for overall RES of 32% in 2030 and requires Member States to set their national contributions to the EU-wide target. As per the National Energy and Climate Plan (NECP) 2021-2030, Ireland's overall RES target is 34.1% in 2030.

Under RED, the RES-E target was for 40% of gross electricity consumption to come from renewable sources in 2020 The actual RES-E achieved in 2020 by Ireland was 39.1%, falling just short of the national target. Under REDII, Ireland's National Energy and Climate Plan 2021-2030 included a planned RES-E of 70% in 2030, which has been replaced by the 80% by 2030 RES-E target as detailed in the CAP24, which will ensure that renewable electricity continues to form the backbone of Irish renewable energy use for the coming decade and beyond.

1.5.4.2 EU 2030 Renewable Energy Targets

The Climate Action and Low Carbon Development (Amendment) Act 2021 commits Ireland to reach a legally binding target of net-zero emissions no later than 2050, and a cut of 51% by 2030 (compared to 2018 levels). Under the 2021 Act, Ireland's national climate objective requires the state to pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy.

Ireland's statutory national climate objective and 2030 targets are aligned with Ireland's obligations under the Paris Agreement and with the European Union's objective to reduce GHG emissions by at least 55% by 2030, compared to 1990 levels and to achieve climate neutrality in the European Union by 2050.

Given the need to ratchet up the EUs clean energy transition, RED was revised in 2023, and the amending Directive EU/2023/2413 (REDIII)[22] entered into force on 20 November 2023. REDIII amended the EU-wide overall 2030 RES target from 32% to at least 42.5%, and it is assumed that Irelands 2030 RES target will increase accordingly.

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[20] *Directive 2009/28/EC on the promotion of the use of energy from renewable sources. Available from: <https://eur-lex.europa.eu/legalcontent/EN/ALL/?uri=celex%3A32009L0028>*

[21] *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable resources (recast). Available from: <https://eurlex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L2001>*

[22] *European Union (2023).* Directive (EU) 2023/2413 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources and repealing Council Directive (EU) 2015/652. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202302413

In December 2023 the DECC published the CAP24 which is the third annual update to Ireland's Climate Action Plan 2019 and the second to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. CAP24 notes the need for renewable alternatives to coal and peat. Further information on National Climate Action Plans can be seen in Chapter 2: Background to the Proposed Development.

CAP24 states that in order to meet the required level of emissions reduction by 2030 and the 80% renewable electricity generation target by 2030, the installed generation capacity of onshore wind will need to reach 9GW and at least 5GW of offshore wind. Irelands installed capacity for wind generation at the end of 2022 was 4.54GW[23]. The SEAI provides a provisional estimate of installed wind energy capacity in 2023 based on EirGrid data to the end of August and ESBN data to the end of September; the provisional value of installed wind capacity in Ireland is 4.5GW. As noted previously, Ireland missed it's 2020 renewable energy target of 40% with a renewable share in electricity of 39.1%, and by the end of 2021, Irelands renewable energy share for electricity generation was 32.5%. With a renewable share of electricity generation at 80% in mind and a target of 9GW installed onshore wind by 2030, it is now more critical than ever that we continue to progress renewable energy development in Ireland so that we are successful in meeting our 2030 targets. Further detail on the EU 2030 targets is noted in Chapter 2.

Against this backdrop, the importance of wind energy as the main component of Ireland's renewable energy development is acknowledged, and wind energy is accepted as the main contributor to meeting the Country's national climate change and energy supply obligations.

National and international renewable energy and climate change targets must be achieved, and it is crucial that these are appropriately translated and implemented at regional and local levels. Wind farm development and design involves balancing the sometimes-conflicting interests of constraints (e.g., natural and built heritage, human beings, ecological, ground conditions, hydrological, etc.) with visual amenity and the technological/economic requirements/realities of the specific project and turbines.

1.5.4.3 RePowerEU

In a Communication from the European Parliament on Joint European Action for more affordable, secure and sustainable energy[24], the European Commission proposed an outline of a plan to make Europe independent from Russian fossil fuels well before 2030 in light of Russia's invasion of Ukraine. Commission President Ursula von der Leyen stated:

> *"We must become independent from Russian oil, coal and gas. We simply cannot rely on a supplier who explicitly threatens us. We need to act now to mitigate the impact of rising energy prices, diversify our gas supply for next winter and accelerate the clean energy transition. The quicker we switch to renewables and hydrogen, combined with more energy efficiency, the quicker we will be truly independent and master our energy system.".*

The European Commission published the REPowerEU Plan[25] in May 2022 in response to energy security concerns surrounding the dependence on imports of Russian fossil fuels and the subsequent fast forwarding of renewable energy alternatives. REPowerEU builds on the full implementation of the Fit for 55 proposals tabled last year without modifying the ambition of achieving at least -55 % net GHG emissions by 2030 and climate neutrality by 2050 in line with the European Green Deal. It will have a positive impact on EU's emission reduction over the decade. However, the fast phasing out of fossil fuel imports from Russia will affect the transition trajectory, or how we reach our climate target, compared

[23] *Sustainable Energy Authority of Ireland (2024). Energy in Ireland – 2023 Report*
[24] *European Commission (March 2022) REPowerEU: Joint European Action for more affordable, secure and sustainable energy. Strasbourg.* https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511
[25] https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131

to that under previous assumptions. The key outcomes and targets from the REPowerEU Plan include the following;

- Energy Savings – Increasing the 2030 Energy Efficiency target from 9% to 13%.;
- Renewable Energy Strategy (RES) – Increasing the 2030 Renewable Energy Directive target from 40% in previous years proposal up to 45%.;
- Member States should as a matter of priority implement the permitting-related Country Specific Recommendations in the European Semester and already adopted Recovery and Resilience Plans. Equally, the full and rapid transposition by all Member States of the Renewable Energy Directive is a matter of urgency to simplify permitting procedures;

The revised Renewable Energy Directive proposal operationalises the principle of renewable energy as an overriding public interest (IROPI), introduces the designation of 'go-to' areas and other ways to shorten and simplify permitting while also minimising potential risks and negative impacts on the environment. It also provides for the possibility to create regulatory sandboxes to foster innovation in the sector.

1.5.5 Increasing Energy Consumption

As detailed above, CAP24 identifies a need for 9GW of onshore wind generation in order for Ireland to meet its 2030 targets. In their '***All Island Generation Capacity Statement 2023 - 2032***' (January 2024), EirGrid estimate that installed capacity of wind generation is set to increase to at least 12 GW between onshore and offshore capacity as Ireland endeavours to meet its renewable targets in 2030 and beyond.

Failure to meet Ireland's targets for renewable energy will result in substantial EU sanctions. The Department of Public Expenditure and Reform (DPER) in their report 'Future Expenditure Risks associated with Climate Change/Climate Finance'[26] concluded that ***'potential costs of purchasing non-ETS GHG compliance for the Irish Exchequer for the 2020 to 2030 period could have a cumulative total in the billions in the absence of any further policy changes'***. If Ireland decided to backfill shortfalls in the RES-H target with additional renewable electricity this could significantly reduce these costs.

In April 2016[27] SEAI estimated the historic build rate for wind energy deployment as 180 MW per year since 2005. If this average build rate over the remaining period between 2018 and 2020 is assumed, then approximately 3.85 GW of wind would be built up to 2020. The SEAI has provided a provisional estimate of wind capacity in Ireland in 2024 to be 4.85GW.[28]

In 2015, IWEA (now Wind Energy Ireland) commissioned a study '***Data Centre Implications for Energy Use in Ireland***' which concluded that an extra approx. 1 Gigawatt (GW) of electricity demand could materialise between 2015 and 2020 due to growth in data centres. More recently, data available from Bitpower[29] from May 2021 noted that there are currently 70 operational data centres in Ireland, totalling 900MW; with an additional 778MW having received planning approval and 255MW under construction. The increase in growth of data centres means an increase in electricity demand, with many of the proposed data centres committing to using 100% renewable energy which will result in an increased demand for renewable electricity as detailed above.

In the context of increasing energy demand and prices, uncertainty in energy supply and the effects of climate change, our ability to harness renewable energy such as wind power plays a critical role in

[26] https://gees.gov.ie/wp-content/uploads/2013/10/Future-Expenditure-Risks-associated-with-Climate-Change-Climate-Finance1.pdf
[27] *Sustainable Energy Authority of Ireland (April 2016): Ireland's Energy Targets – Progress, Ambitions & Impacts. Available at:* https://www.seai.ie/publications/Ireland___s-Energy-Targets-Progress-Ambition-and-Impacts.pdf
[28] *Sustainable Energy Authority Ireland (2024). Energy in Ireland – 2024 Report. Available at:* <https://www.seai.ie/sites/default/files/publications/energy-in-ireland-2024.pdf>
[29] *Bitpower Consulting (May 2021). Ireland Renewable Energy Report: H1 2021. Available at:* https://bitpower.ie/images/Reports/2021_H1_Report.pdf

creating a sustainable future. The Department of the Environment, Climate and Communications have set a target for Ireland of 80% of total electricity consumption to come from renewable resources by 2030, this target forms part of the Government's strategy to make the green economy a core component of its economic recovery plan for Ireland. It is envisaged that wind energy will provide the largest source of renewable energy in achieving this target, with a target of 9GW onshore wind installed generation capacity and a target of 5GW offshore wind installed generation capacity.

EU countries have agreed on a new 2030 Framework for climate and energy, including EU-wide targets and policy objectives for the period between 2020 and 2030. These targets aim to help the EU achieve a more competitive, secure and sustainable energy system and to meet its long-term 2050 greenhouse gas reductions target. It is noted that a binding EU target of 32% for renewable energy by 2030 has been set by the EU 2030 Framework for Climate and Energy, with Ireland confirming its own targets for 2030 as detailed below.

Ireland will therefore have to meet even more demanding climate change and renewable energy supply obligations in order to play its part in achieving the European climate and energy ambitions. As announced in December 2022, the Irish Government have pledged to generate 80% of the country's electricity supply from renewable sources by 2030. The continued operation of existing indigenous wind energy generating capacity, such as the Proposed Development, will not only help to reduce carbon emissions but will also improve Ireland's security of energy supply. Such penetration levels of wind are technically and economically feasible once paired with other energy system changes such as increasing electric vehicle penetration and electrification of heat. Further information on the 2030 commitments for Ireland are noted in Chapter 2, Section 2.3.

These sources of '*flexible demand*' allow the system to match intermittent renewable energy resources with minimal extra cost. Additional interconnection is also planned with the UK and France, further assisting in the integration of wind (and in the future solar) on the power system. A number of alternative energy types have been examined when considering how best to meet this renewable energy target.

In January 2024, EirGrid and SONI released their joint all-island '*Ten-Year Generation Capacity Statement 2023-2032*[80]. The documents acts to support the all-island electricity market, and overall security of supply between both Ireland and Northern Ireland. The report highlights the fact that the electricity industry must find new ways to meet the increasing demand for energy through alternatives to fossil fuels, transitioning to a more robust and resilient energy market. The long-term electricity demand forecast highlights the assumption of high growth in demand due to EU and governmental electrification policies, particularly within the heat and transport sectors.

Underlying drivers of changes in electricity demand include:

- Data centres are forecast to continue to grow by up to ~9 TWh in 2032 (~30% of total demand)
- Transport electricity demand is forecast to grow (~23% p.a.) as a result of fast uptake of EV charging.
- Electrical heating in industry will increase by more than 2.5 times in 2030 from 2017 levels.
- Building energy efficiency improvements from an extensive retrofit programme will moderate the growth in electricity demand from new heat pumps in buildings.

Against this backdrop, the importance of wind energy as the main component of Ireland's renewable energy development is acknowledged, and wind energy is accepted as the main contributor to meeting the Country's national climate change and energy supply obligations. Notwithstanding this, it must also

[30] *EirGrid (January 2024). Generation Capacity Statement 2023-2032. Available at:* https://cms.eirgrid.ie/sites/default/files/publications/19035-EirGrid-Generation-Capacity-Statement-Combined-2023-V5-Jan-2024.pdf

be acknowledged that not every part of Ireland is well endowed with the availability of developable land for wind energy therefore, not all counties will be able to deliver wind-based renewable energy. Furthermore, whilst it is accepted that there are other renewable energy technologies in operation, for the foreseeable future many areas will be unable to deliver significant renewable energy output. This primarily applies to the more populous areas.

National and international renewable energy and climate change targets must be achieved and it is crucial that these are appropriately translated and implemented at regional and local levels. Wind farm development and design involves balancing the sometimes-conflicting interests of constraints (e.g. natural and built heritage, human beings, ecological, ground conditions, hydrological, etc.) with visual amenity and the technological/economic requirements/realities of the specific project and turbines

1.5.6 Reduction of Carbon Emissions and Other Greenhouse Gases

The production of renewable energy from the Proposed Development will assist in achieving the Government's and EU's stated goals of ensuring safe and secure energy supplies, promoting an energy future that is sustainable and competitively priced to consumers whilst combating energy price volatility and the effects of climate change. The Energy White Paper in 2015 outlines an ambitious Greenhouse gas reduction target of between 80% to 95% compared to 1990 levels out to 2050. Furthermore, if national carbon emissions targets are divided out amongst each county, each Local Authority may be responsible for meeting its own targets.

In addition to a reduced dependence on oil and other imported fuels, the generation of electricity from wind power by the Proposed Development will displace approximately 16,305 tonnes of carbon emissions per annum from the largely carbon-based traditional energy mix, the detail of which is presented in Section 10.3.3 in Chapter 10 of this EIAR.

In September 2024, the EPA published *'Air Quality in Ireland 2023*[31] which reports that although Ireland met the current EU legal air quality limits in 2023, monitoring results were higher than the more stringent health-based World Health Organization air quality guidelines for a number of pollutants including: particulate matter (PM), nitrogen dioxide (NO2), sulphur dioxide (SO2) and ozone (O3). The main sources of these pollutants are the burning of solid fuel in our towns and villages and traffic in our cities. The report also notes that in Ireland, the premature deaths attributable to poor air quality are estimated at 1,600 people per annum.

A European Environmental Agency (EEA) report, '*Air Quality in Europe – 2022 Report'* highlights the negative effects of air pollution on human health. The report assessed that poor air quality accounted for premature deaths of approximately 238,000 people in the 27 EU Member States in 2020, with regards to deaths relating to $PM_{2.5}$. The estimated impacts on the population in Europe of exposure to NO_2 and O_3 concentrations in 2020 were around 49,000 and 24,000 premature deaths respectively. From this, 490 Irish deaths were attributable to fine particulate matter ($PM_{2.5}$), 50 Irish deaths were attributable to nitrogen oxides (NO_2) and 70 Irish deaths were attributable to Ozone (O_3).

More recently, the EEA published a briefing on Europe's air quality status in June 2024[32]. This briefing presented the status of concentrations of pollution in ambient air in 2022 and 2023 for regulated pollutants in relation to both EU air quality standards and the 2021 WHO guideline levels. The assessment shows that, in spite of constant improvements, exceedances of air quality standards are common across the EU, with concentrations well above the latest WHO recommendations.

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[31] *Environmental Protection Agency: Air Quality in Ireland 2023. Available at: https://www.epa.ie/publications/monitoring-assessment/air/air-quality-in-ireland-2023.php#:~:text=Summary%3A%20Air%20quality%20in%20Ireland,based%20WHO%20guidelines%20in%202023.*

[32] *Europe's air quality status 2024 briefing. https://www.eea.europa.eu/publications/europes-air-quality-status-2024*

The EPA 2024 report *'Ireland's State of the Environment Report'*[33] states that the pollutants of most concern are: Fine Particulate matter ($PM_{2.5}$), Nitrogen Dioxide (NO_2) and Ammonia (NH_3). The EPA 2024 report goes on to state that:

> *"The planned transition to more renewable energy sources, and away from combustion-sourced heating systems to electrification, is a shift that could see greenhouse gas emissions from industry significantly decrease."*
>
> *"As a consequence of meeting these growing demands primarily with oil, natural gas, coal and peat, our energy system is highly dependent on fossil fuels. Ireland has made some progress in transforming the electricity system through the deployment of wind farms, with renewable energy currently providing more than 40% of electricity used. However, electricity represents only one-fifth of Ireland's energy use, and our transport and heating systems remain heavily reliant on fossil fuel systems, with lock-ins that need to be addressed."*
>
> *"While Ireland's renewable energy share has increased from 10.7% in 2018 (reported in the last State of the Environment Report) to 13.1% in 2022, this is the lowest level in the EU (well below the EU average of 23.0%), and Ireland is not on track to meet the EU-wide binding target of 42.5% renewable energy share by 2030. Reaching the target of 80% renewable electricity by 2030, while ensuring a stable energy supply, will require new capacity, a more flexible grid and increased interconnectivity (EC, 2024)"*
>
> *"Established technologies, such as wind energy, solar photovoltaics and bioenergy, will be key in meeting short-term emission reduction targets (i.e. 2030), whereas significant growth in offshore wind infrastructure is expected to be the key essential element of future energy systems."*

The Clean Air Strategy for Ireland[34] report was published by the Irish Government in April 2023, provides the high-level strategic policy framework necessary to identify and promote the integrated measures across Government policy that are required to reduce air pollution and promote cleaner ambient air, while also delivering on wider national objectives. The strategy details the importance of "non-combustion renewables such as wind and solar power in contributing to both climate and clean air goals. These schemes and supporting actions are supporting a gradual shift away from more polluting forms of power generation (e.g., coal and peat generation); to enable higher shares of renewables alongside gas fired generation".

The Proposed Development therefore represents an opportunity to continue to harness Ireland's significant renewable energy resources, with valuable benefits to air quality and in turn to human health. The consumption of fossil fuels for energy results in the release of particulates, sulphur dioxide and nitrogen dioxide to our air. The use of wind energy, by providing an alternative to electricity derived from coal, oil or gas-fired power stations, results in emission savings of carbon dioxide (CO_2), oxides of nitrogen (NO_x), and sulphur dioxide SO_2, thereby resulting in cleaner air and associated positive health effects.

1.5.7 Economic Benefits

In addition to helping Ireland avoid significant fines and reducing environmentally damaging emissions, the Proposed Development will have significant economic benefits. At a national level, Ireland currently has one of the highest external dependencies in the EU on imported sources of energy, such as coal, oil and natural gas. As detailed in the SEAI Report '*Energy in Ireland 2024*, Ireland has a high

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[33] *Environmental Protection Agency (2024) Ireland's State of the Environment Report 2024 Available at :* <https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/EPA-SOE-Report-2024-BOOK-LOWRES-FINALfor-WEB.pdf>

[34] *Government of Ireland (April 2023). Climate Action Plan 2023. Available at:* https://assets.gov.ie/255392/efe212df-d9a7-4831-a887-bea2703e2c64.pdf

import dependence on oil and gas and is essentially a price-taker on these commodities. Irelands import dependency decreased slightly from 80% in 2022 to 78% in 2023 due to reduced net imports, which were only partially offset by the reduction in primary energy requirement.[35] From September 2023 to September 2024, Ireland imported 78% of its gas supply and supplied 22% of its gas supply from indigenous sources.

The '*Energy in Ireland 2024 Report*' stated that Ireland's national energy-related emissions in 2023 were at their lowest level in over 30 years with 14.1% of Ireland primary energy being sourced from renewables, the highest value to date. The SEAI estimates electricity emissions to be 7.6MtCO_2e in 2023, down 22% from 2022. Current predictions for 2024 electricity emissions are estimated to be 6.9 MtCO_2e. The 5-year 2021-2025 sectoral emission ceiling for electricity is 40MtCO_2e; therefore, if the SEAI estimate for 2024 electricity emissions are accurate, there will only be 5.9MtCO_2e of emissions available for the electricity sector in 2025.

The 2014 report '*The Value of Wind Energy to Ireland*', published by Pöyry, stated that growth of the wind sector in Ireland could support 23,850 jobs (construction and operational phases) by 2030. 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.

In April 2021, Wind Energy Ireland published a report produced by KPMG on the '*Economic Impact of Onshore Wind in Ireland*' stating that Irish wind farms are worth €400 million to the economy every year and it is expected to rise to €550 million by the end of the decade. If Ireland are to achieve the 8,200 MW target set in the Climate Action Plan 2021, the total industrial output across operating and capital activities would rise from 1.1bn in 2020 (from the 4,200 MW installed capacity) to 1.5bn in 2030.

The Proposed Development will be capable of providing power to over 15,830 households every year, as presented in the calculations in Section 4.3.1.5 of this EIAR.

The Proposed Development will also help to supply the rising demand for electricity, resulting from renewed economic growth. The EirGrid report '*All-Island Generation Capacity Statement 2023 – 2032*' (January 2024) notes that the median electricity demand forecast on the island of Ireland is expected to grow by 21% in 2030. Much of this growth is expected to come from new data centres in Ireland.

The Proposed Development will continue to have long-term benefits for the local economy including income to local landowners, job creation, work opportunities for local businesses and service providers, local authority commercial rate payments and a Community Benefit Scheme.

The existing Castledockrell Wind Farm Community Benefit Fund has been providing monetary contributions to the local community throughout its operational life. Monetary contributions have been made to groups and organisations such as the following:

- Ballindaggin Development Group
- St Colemans Ballindaggin
- St Colemans Templeshanbo
- Ballycarney Select Vestory
- All Saints Castledockrell
- Castledockrell NS
- St Colemans NS
- St Colemans Pipe Band
- Duffry Rovers
- Marshalstown/Castledockrell GAA
- Castledockrell United Soccer Club

[35] *SEAI (2024) Energy in Ireland – 2024* <https://www.seai.ie/sites/default/files/publications/energy-in-ireland-2024.pdf>

- Ballindaggin AFC
- Templeshanbo Sunday School
- Castledockrell Amenity Group
- Ballindaggin Community Hall
- Baile Dubh Tire LGFFCJ
- Bunclody (3rd Level Scholarship)

Should the Proposed Development be granted planning permission, the Applicant intends to increase funding for these groups.

Should be Proposed Development not receive planning permission and be decommissioned in 2025 as per current planning conditions, this opportunity for funding local community groups and organisations would be lost.

1.7 Purpose and Scope of the EIAR

The purpose of this EIAR is to document the current state of the environment in the vicinity of the Proposed Development and to quantify the likely significant effects of the Proposed Development on the environment and in accordance with the requirements of the EIA Directive, as amended. The compilation of this document served to highlight any areas where mitigation measures may be necessary in order to protect the surrounding environment from the possibility of any negative impacts arising from the Proposed Development.

It is important to distinguish the Environmental Impact Assessment (EIA) to be carried out by the Planning Authority, from the EIAR and the accompanying planning application. The EIA is the assessment carried out by the competent authority, which includes an examination that identifies, describes and assesses, in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 11 of the Environmental Impact Assessment Directive, the direct and indirect effects of the Proposed Development on the following:

a) *Population and Human Health*
b) *Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC*
c) *Land, Soil, Water, Air and Climate;*
d) *Material Assets, Cultural Heritage and the Landscape;*
e) *The interaction between the factors referred to in points (a) to (d)*

The EIAR which will be submitted by the applicant provides the relevant environmental information to enable the EIA to be carried out by the competent authority. The information to be contained in the EIAR is prescribed in Article 5 of the revised EIA Directive described in Section 1.4 above.

1.8 Structure and Content of the EIAR

1.8.1 General Structure

The EIAR uses the grouped structure method to describe the existing environment, the potential impacts of the Proposed Development thereon and the proposed mitigation measures. Background information relating to the Proposed Development, scoping and consultation undertaken and a description of the Proposed Development are presented in separate sections. The grouped format sections describe the impacts of the Proposed Development in terms of population and human health, biodiversity, ornithology, soils and geology, hydrology and hydrogeology, air quality, climate, noise and vibration, landscape and visual, cultural heritage and material assets such as traffic and transportation, together with interaction of the foregoing.

The chapters of this EIAR are as follows:

1. *Introduction*
2. *Background to the Proposed Development*
3. *Consideration of Reasonable Alternatives*
4. *Description of the Proposed Development*
5. *Population and Human Health (including Shadow Flicker)*
6. *Biodiversity*
7. *Ornithology (Birds)*
8. *Land, Soils, and Geology*
9. *Hydrology and Hydrogeology (Water)*
10. *Air and Climate*
11. *Noise and Vibration*
12. *Cultural Heritage*

13. ***Landscape and Visual***
14. ***Material Assets (including Traffic and Transport, Telecommunications and Aviation)***
15. ***Vulnerability of the Project to Major Accidents and Disasters***
16. ***Interactions of the Foregoing***
17. ***Schedule of Mitigation Measures***

The EIAR also includes a non-technical summary, which is a condensed and easily comprehensible version of the EIAR document. The non-technical summary is laid out in a similar format to the main EIAR document and comprises a description of the Proposed Development followed by the existing environment, impacts and mitigation measures presented in a grouped format.

1.8.2 Description of Likely Significant Effects and Impacts

As stated in the '***Guidelines on the Information to be contained in Environmental Impact Statements***' (EPA, 2022), an assessment of the likely impacts of a Proposed Development is a statutory requirement of the EIA process. The statutory criteria for the presentation of the characteristics of potential impacts requires that potential significant impacts are described with reference to the extent, magnitude, complexity, probability, duration, frequency, reversibility and trans-frontier nature (if applicable) of the impact.

The classification of impacts in this EIAR follows the definitions provided in the Glossary of Impacts contained in the following guidance documents produced by the Environmental Protection Agency (EPA):

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports – May 2022 (EPA, 2022).
- Advice Notes for Preparing Environmental Impact Statements – Draft September 2015 (EPA, 2015).
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (EPA, 2003)

Table 1-2 presents the glossary of impacts as published in the EPA guidance documents. Standard definitions are provided in this glossary, which permit the evaluation and classification of the quality, significance, duration and type of impacts associated with a Proposed Development on the receiving environment. The use of pre-existing standardised terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across all disciplines covered in the EIAR. The consistent application of terminology throughout the EIAR facilitates the assessment of the Proposed Development on the receiving environment.

Table 1-2 Impact Classification Terminology (EPA, 2022)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment
Significance	Imperceptible	An effect capable of measurement but without significant consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
	Profound	An effect which obliterates sensitive characteristics
Extent & Context	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions
Probability	Likely	Effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented
	Unlikely	Effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented
	Momentary	Effects lasting from seconds to minutes

Duration and Frequency	Brief	Effects lasting less than a day
	Temporary	Effects lasting less than a year
	Short-term	Effects lasting one to seven years
	Medium-term	Effects lasting seven to fifteen years
	Long-term	Effects lasting fifteen to sixty years
	Permanent	Effect lasting over sixty years
	Reversible	Effects that can be undone, for example through remediation or restoration
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Type	Indirect	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
	Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do Nothing'	The environment as it would be in the future should the subject project not be carried out
	Worst Case'	The effects arising from a project in the case where mitigation measures substantially fail
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents

Each impact is described in terms of its quality, significance, extent, duration and frequency, and type where possible. A 'Do-Nothing' impact is also predicted in respect of each environmental theme in the EIAR. Residual impacts are also presented following any impact for which mitigation measures are prescribed and any interactions between the impacts are assessed. The remaining impact types are presented as required or applicable throughout the EIAR.

1.9 Project Team

1.9.1 Project Team Responsibilities

The companies listed in Table 1-3 were responsible for completion of the EIAR of the Proposed Development. Further details regarding project team members are provided below.

The EIAR project team comprises a multidisciplinary team of experts with extensive experience in the assessment of wind energy developments and in their relevant area of expertise. The qualifications and experience of the principal staff from each company involved in the preparation of the EIAR are summarised in Section 1.8.2 below. Each chapter of this EIAR has been prepared by a competent expert in the subject matter, further details on project team expertise are provided in the Statement of Authority at the beginning of each impact assessment chapter.

Table 1-3 Project Team

Consultants	Project Staff Involved in Project	EIAR Input
MKO Tuam Road Galway H91 VW84	Gus McCarthy Brian Keville Michael Watson Sean Creedon Colm Ryan Ellen Costello Brandon Taylor Gráinne Griffin Keelin Bourke Catherine Johnson John Willoughby Ronan Dunne Aoife Joyce John Hynes Pat Roberts Padraig Desmond Stephanie Corkery Padraig Cregg Kathryn Sheridan Patrick Manley Jack Workman Saoirse Fitzsimons Killian Devereux	Project Management, Scoping and Consultation, Preparation of the following EIAR Sections: 1. *Introduction* 2. *Background to the Proposed Development* 3. *Consideration of Reasonable Alternatives* 4. *Description of the Proposed Development* 5. *Population & Human Health;* 6. *Biodiversity Flora and Fauna* 7. *Ornithology* 8. *Land, Soils and Geology* 9. *Hydrology and Hydrology* 10. *Air and Climate* 13. *Landscape & Visual* 14. *Material Assets (including Traffic, Transport, Telecommunications and Aviation)* 15. *Interaction of the Foregoing* 16. *Vulnerability of the Project to Major Accidents and Disasters* 17. *Schedule of Mitigation Measures*
Irwin Carr 7 Osborne Promenade Warrenpoint County Down BT34 3NQ	Brendan O'Reilly Dr. Chris Jordan	Baseline Noise Survey, Preparation of EIAR Section: 11. *Noise and Vibration*
Tobar Archaeological Services Saleen Midleton Co. Cork	Miriam Carroll	Preparation of EIAR Section: 12. *Archaeological and Cultural Heritage*

1.9.2 Project Team Members

1.9.2.1 MKO

Gus McCarthy BA, MRUP, MIPI

Augustine (Gus) McCarthy is a Company Director with MKO and is a professional planner with over 35 years of experience in both private practice and local authorities combined. Prior to establishing AP McCarthy Planning Consultants in 2000, Gus worked as a Senior Planner for both Galway County Council and Galway City Council. Gus has significant experience in a wide range of projects and extensive experience in both terrestrial and coastal/marine based developments. He is retained as planning advisor for development programmes of large organisations and has been the lead planning consultant on a wide range of infrastructure, energy, commercial and other projects throughout the Country.

Brian Keville B.Sc. (Env.)

Brian Keville has over 20 years' professional experience as an environmental consultant having graduated from the National University of Ireland, Galway with a first-class honours degree in Environmental Science. Brian was one of the founding directors of environmental consultancy, Keville & O'Sullivan Associates Ltd., prior to the company merging in 2008 to form McCarthy Keville O'Sullivan Ltd. Brian's professional experience has focused on project and environmental management, and environmental impact assessments. Brian has acted as project manager and lead-consultant on numerous environmental impact assessments, across various Irish counties and planning authority areas. These projects have included large infrastructural projects such as roads, ports and municipal services projects, through to commercial, mixed-use, industrial and renewable energy projects. The majority of this work has required liaison and co-ordination with government agencies and bodies, technical project teams, sub-consultants and clients.

Michael Watson – Environmental Director

Michael Watson is Project Director and head of the Environment Team in MKO. Michael has over 18 years' experience in the environmental sector. Following the completion of his Master's Degree in Environmental Resource Management, Geography, from National University of Ireland, Maynooth he worked for the Geological Survey of Ireland and then a prominent private environmental & hydrogeological consultancy prior to joining MKO in 2014. Michael's professional experience includes managing Environmental Impact Assessments, EPA License applications, hydrogeological assessments, environmental due diligence and general environmental assessment on behalf of clients in the wind farm, waste management, public sector, commercial and industrial sectors nationally. Michaels key strengths include project strategy advice for a wide range and scale of projects, project management and liaising with the relevant local authorities, Environmental Protection Agency (EPA) and statutory consultees as well as coordinating the project teams and sub-contractors. Michael is a key member of the MKO senior management team and as head of the Environment Team has responsibilities to mentor various grades of team members, foster a positive and promote continuous professional development for employees. Michael also has a Bachelor of Arts Degree in Geography and Economics from NUI Maynooth, is a Member of IEMA, a Chartered Environmentalist (CEnv) and Professional Geologist (PGeo).

Sean Creedon – Associate Director

Sean Creedon: 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

Colm Ryan – Planning Director

Colm Ryan is the Planning Director of MKO, Planning & Environmental Consultants, with over 16 years of experience as a planner in both private practice and public sector combined. Prior to joining MKO, Colm worked as a planner with a UK and Ireland based Renewable Energy developer. Colm has also spent part of his career in local authority as a planner with Laois County Council. Colm has significant experience in a wide range of projects and extensive experience in large scale residential, renewables and marine based developments. Colm currently heads up the Planning Division in MKO with responsibility for Planning, Project Management, Health & Safety and Project Communications. Colm holds BA (Hons) in Geography & Irish and Masters in Civic Design Town & Regional Planning. Prior to taking up his position with MKO in May 2017, Colm worked as a Senior Planner with Lightsource Renewable Energy Ltd. and held previous posts with Partnerships for Renewables, South Kesteven District Council, Planning Aid, Frank O Gallachoir & Associates in Bray and Laois County Council. Colm is a chartered town planner with specialist knowledge in renewable energy, mixed use development and residential. Colm's key strengths and areas of expertise are in large scale renewable energy development particularly in the ground mounted solar, delivery of local community engagement processes on contentious planning applications, management of community and developers interest through the planning process and post or pre-planning due diligence. Since joining MKO as a Senior Planner Colm has been overseeing and managing a wide range of development projects such as large scale solar applications, site feasibility work for potential wind energy projects, large scale housing and mixed use schemes. Within MKO Colm plays a large role in the management of staff members including several aspects of business development. Colm has proven negotiation skills and stakeholder relationship building across numerous development projects in Ireland and the UK and is a corporate member of the Irish Planning Institute.

Ellen Costello – Senior Environmental Scientist

Ellen Costello is a Senior Environmental Scientist with MKO with over five years of experience in private consultancy. Ellen holds a BSc (Hons) in Earth Science, and a MSc (Hons) in Climate Change: Integrated Environmental and Social Science Aspects where she focused her studies on renewable energy development in Europe and its implications on environment and society. Ellen's key strengths and expertise are Environmental Protection and Management, Environmental Impact Statements, Project Management, and GIS Mapping and Modelling. Since joining MKO, Ellen has been involved in a range of renewable energy infrastructure projects. In her role as a project manager, Ellen works with and co-ordinates 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.

Brandon Taylor – Environmental Scientist

Brandon Taylor is an Environmental Scientist with MKO with over two years of private consultancy experience. Brandon holds a BSc (Hons) in Geography from McGill University, and a MSc (Hons) in Coastal & Marine Environments from the University of Galway. Brandon's key strengths are GIS and Remote Sensing Analysis, Environmental Research and Reporting and Project Management. Since joining the company, Brandon has been involved in the production of Environmental Impact Assessment Reports for multiple large-scale onshore wind energy developments across Ireland, as well

as additional reports and surveys for feasibility studies, EIA screenings and construction and environmental management plans.

Gráinne Griffin – Environmental Scientist

Gráinne is an Environmental Scientist with MKO with over 2 years' experience in the environmental consultancy sector, which included ecological roles as a marine mammal observer and an aerial survey operator. Gráinne holds a BSc in Applied Freshwater & Marine Biology from ATU Galway and a MSc in Environmental Leadership from the University of Galway. Gráinne's key strengths and areas of expertise include managing and researching reports in areas of environmental conservation and policy, ecology, renewable energy, marine spatial planning, and climate action. Gráinne has experience in report writing, including Appropriate Assessments, Natura Impact Statements, feasibility studies and EIA screening reports. Gráinne also holds skills in environmental restoration project research and design. Since joining MKO Gráinne has been involved in coordinating environmental site work for a wide range of developments, assisting in stakeholder engagement, scoping exercises, organising and attending pre-application meetings with local authorities and An Bord Pleanála. Within MKO, Gráinne has been assisting managers in the coordination and production of EIARs for largescale SID wind energy developments. Gráinne also holds a membership with the Chartered Institute of Ecology and Environmental Management (CIEEM).

Keelin Bourke – Environmental Scientist

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.

Catherine Johnson – Environmental Scientist

Catherine is an Environmental Scientist and Climate Practitioner with MKO with over two years of private consultancy experience and expertise in climate and sustainability matters. Catherine holds a BSc in Earth and Ocean Science and a LLM in Global Environment and Climate Change Law. Prior to taking up her position with MKO in October 2022, Catherine worked as an Environmental Social Governance (ESG) analyst for Acasta in Edinburgh. Catherine has expertise regarding international climate law and policy, earth processes, ocean science, and sustainability/ESG. Since joining MKO Catherine has been involved in a myriad of environmental service offerings at MKO including EIA Screenings and Reports, climate and sustainability related work and renewable energy infrastructure projects. Within MKO Catherine plays a large role in company sustainability and a more focused climate service offering and holds a graduate membership for the Charted Institution of Water and Environmental Management.

John Willoughby – Project Planner

John Willoughby is a Project Planner with MKO with over 7 years of experience across planning consultancy and environmental management. John holds a BA (Hons) in Geography, Planning and Environmental Policy, and an MSc (Hons) in Environmental Policy, both from UCD, and completed an Advanced Diploma in Planning and Environmental Law at Kings Inns in 2021. Prior to taking up his position with MKO in 2022, John worked in planning consultancy from 2017, managing and assisting

with the coordination of development projects throughout the statutory planning process, from feasibility stage to final grant and planning compliance, carrying out due diligence, feasibility assessments, development potential reports, appeals, submissions and bespoke planning advice on a wide range of development projects. John also has previous experience in environmental management in both the Pharmaceutical and Infrastructure sectors.

Through his professional and academic experience, John has gained skills in urban planning, Environmental Impact Assessment, spatial planning, regeneration, development management, project management, strategic planning and research.

John is a corporate member of the IPI with specialist knowledge in national, regional and local planning policy and guidance, development management and strategic planning analysis for a wide range of projects across the renewable energy, residential, infrastructure, commercial, mixed-use, semi-state and retail sectors. Within MKO, John works as part of a larger multidisciplinary team to coordinate and project manage the development of planning applications for renewable energy infrastructure for submission to both Local Authorities and An Bord Pleanála.

Ronan Dunne – Planner

Ronan Dunne is a Planner with MKO having joined the company in June 2022. Ronan holds a BSc (Hons) in City Planning and Environmental Policy, and a MSc (Hons) in Urban and Regional Planning from University College Dublin where he focused his studies on wind energy development.

Since joining MKO, Ronan has been involved in a range of infrastructure projects, including onshore wind, solar, battery storage and grid infrastructure developments. In his role as a planner, Ronan works with multidisciplinary teams including members from MKO's Environmental, Ecological and Ornithological departments as well as sub-contractors from various fields in the develop/deliver reports to facilitate the planning process.

Aoife Joyce – Project Director

Aoife Joyce is a Project Director (Ecology) with MKO Planning and Environmental Consultants with experience in research and consultancy. Aoife is a graduate of Environmental Science (Hons.) at NUI Galway, complemented by a first-class honours MSc in Agribioscience. Prior to taking up her position with MKO in May 2019, Aoife held previous posts with Inland Fisheries Ireland and Treemetrics Ltd. She has a wide range of experience from bat roost identification, acoustic sampling, sound analysis, electrofishing, mammal and habitat surveying to GIS, soil and water sampling, Waste Acceptability Criteria testing, Environmental Impact Assessments (EIAs) and mapping techniques. Since joining MKO, Aoife has been involved in managing bat survey requirements for a variety of renewables planning applications, as well as commercial, residential and infrastructure projects. This includes scope development, roost assessments, remote bat detector deployment, dawn and dusk bat detection surveys, bat handling, sonogram analyses, mapping, impact assessment, mitigations and report writing. Within MKO, she oversees the bat team and works as part of a wider multidisciplinary team to help in the production of ecological reports and assessments. Aoife is a member of Bat Conservation Ireland and CIEEM and holds current Bat Roost Disturbance and bat photography licenses

John Hynes – Project Director

John Hynes is an Ecology Director with MKO with over 10 years of experience in both private practice and local authorities. John holds a B.SC in Environmental Science and a M.Sc. in Applied Ecology. Prior to taking up his position with MKO in March 2014, John worked as an Ecologist with Ryan Hanley Consulting Ltd. and Galway County Council. John has specialist knowledge in Flora and Fauna field surveys. Geographic Information Systems, data analysis, Appropriate Assessment, Ecological Impact Assessment and Environmental Impact Assessment. John's key strengths and areas of expertise are in project management. GIS and impact assessment. Since joining MKO John has been involved as

a Senior Ecologist on a significant range of energy infrastructure, commercial, national roads and private/public development projects. Within MKO John plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIAR Reports. John has project managed a range of strategy and development projects across Ireland and holds CIEEM membership.

Pat Roberts – Principal Ecologist

Pat Roberts is Principal Ecologist with MKO with over 18 years post graduate experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. Pat holds B.Sc.(Hons) in Environmental Science. Pat has extensive experience of providing ecological consultancy on large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys and impact assessment at the planning stage. He has worked closely with construction personnel at the set-up stage of numerous construction sites to implement and monitor any prescribed best practice measures. He has designed numerous Environmental Operating Plans and prepared many environmental method statements in close conjunction with project teams and contractors. He has worked extensively on the identification, control and management of invasive species on numerous construction sites. Prior to taking up his position with MKO in June 2005, Pat worked in Ireland, USA and UK as a Tree Surgeon and as a nature conservation warden with the National Trust (UK) and the US National Park Service. Pats key strengths include his depth of knowledge and experience of a wide range of ecological and biodiversity topics and also in his ability to understand the requirements of the client in a wide range of situations. He is currently responsible for staff development, training and ensuring that the outputs from the ecology team are of a very high standard and meet the requirements of the clients and relevant legislation and guidelines. He is a full member of the Chartered Institute of Ecologists and Environmental Managers (CIEEM).

Padraig Desmond – Project Ecologist

Pádraig is a Project Ecologist with MKO with 4 years post graduate ecological experience and over 2.5 years of which have been in ecological consultancy. Pádraig holds a BSc (Hons) in Ecology and Environmental Biology from University College Cork. Pádraig took up his position with MKO in December 2021, prior to which he worked as a Junior Ecologist with Envirico. Through these consultancy roles Pádraig has gained excellent experience in producing ecological reports such as Natura Impact Statements, Ecological Impact Assessments, Biodiversity chapters, Invasive Species Management Plans, and Constraints Reports for a wide range of projects including small private developments to housing developments and renewable energy projects such as solar and wind farms. Prior to the above roles, Pádraig worked as a field ecologist for the Department of Conservation in New Zealand, where he developed a strong field-based skill set.

Pádraig's key strengths and areas of expertise are in terrestrial ecology, including vegetation surveys, habitat identification, invasive species surveys, mammal surveys, Appropriate Assessment and Ecological Impact Assessment. Pádraig is also skilled in GIS.

Stephanie Corkery – Ecologist

Stephanie is an Ecologist with MKO with over 2.5 years of experience in professional ecological consultancy. Stephanie holds a BSc. in Ecology and Environmental Biology, an MSc. in Marine Biology, and a HDip in Sustainability in Enterprise, all from University College Cork. Since joining MKO as a graduate in March 2022, Stephanie has worked on a wide variety of projects including wind farms, large scale residential developments, and County Council projects. Stephanie's key strengths include organising and carrying out both terrestrial and marine mammal surveys, as well as general ecological walkover surveys and bat surveys. She is also experienced in GIS, acoustic data analysis for bat species, and in preparing Appropriate Assessment Screening Reports (AASR), Natura Impact Statements (NIS), Ecological Impact Assessments (EcIA), Biodiversity Chapters, and Bat

Reports. Stephanie is also a JNCC Certified Marine Mammal Observer and has completed the ACCOBAMS Course for Highly Qualified Marine Mammal Observers (MMO) and Passive Acoustic Monitoring operators (PAM).

Cathal Bergin – Project Ecologist and Conservation Detection Dog Handler

Cathal Bergin (BSc) is a LANTRA accredited Conservation Detection Dog Handler, and is a qualified and competent professional with relevant expertise in undertaking the ecological surveys used to inform the Conservation Detection Dog assessments. The dogs employed in the surveys, Clay (fox-red Labrador), Kynren (Springer Spaniel), Mac (Springer Spaniel), Monty (Springer Spaniel), Rufus (Springer Spaniel), Taio (Springer Spaniel), and Ziba (German Shorthaired Pointer) have been specially trained in the detection of bird and bat carcasses

Padraig Cregg – Principal Ornithologist

Padraig Cregg is employed as a Principal Ornithologist for MKO and has over eleven years' experience of working in environmental consultancies. In his role with MKO, he acts as technical advisor for the ornithology team helping to take projects through their full lifecycle, from site selection through survey design, constraints studies, impact assessment and lodgement of the planning application. He is responsible for training the ornithology team and undertakes to keep up-to-date and keep his colleagues updated on all emerging guidance, legislation, policies, initiatives, industry best practice and emerging trends and market opportunities. Padraig joined MKO in 2018.

Kathryn Sheridan – Project Ornithologist

Kathryn Sheridan is a Project Ornithologist with MKO with over 5 years of experience in ornithological field surveys. Kathryn holds a BA (Hons) Zoology, and a MSc (Hons) in Wildlife Conservation and Management where she focused her studies on breeding hen harrier. Prior to joining MKO in November 2020, Kathryn has worked as a research assistant with UCD, in private consultancy as a sub-consultant with Scott Cawley, and has also worked with BirdWatch Ireland and the NPWS Curlew Conservation Programme. Kathryn's key strengths and expertise are bird identification, GIS, data collation and report writing. In her role as a project ornithologist, Kathryn has worked on wind farm projects, residential developments, county council projects and conservation projects including the preparation of EIAR chapters and seasonal reports.

Patrick Manley – Senior Ornithologist

Patrick Manley is a Senior Ornithologist with MKO with over 7 years of experience in environmental consultancy. Patrick holds BSc (Hons) in Geology from University College Dublin. Since joining MKO, Patrick has worked on wind farm projects, solar farm projects, residential developments, data centres, county council projects and National Parks and Wildlife Service projects. He specialises in ornithological consulting, including Environmental Impact Assessments and has specialist knowledge in designing, executing and project managing ornithological assessments, primarily in the renewable industry. Prior to joining MKO in August 2016, Patrick gained experience through his involvement in several bird conservation projects, including protected curlew, seabirds and waders. Within MKO, Patrick plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIAR chapters.

Jack Workman – LVIA Project Director

Jack is the Landscape & Visual Project Director at MKO and is chartered as a Technician Member of the British Landscape Institute. Jack is a Landscape and Visual Impact Assessment Specialist with an academic background in the field of Environmental Science and Geography. Jack's primary role at MKO is conducting Landscape and Visual Impact Assessment (LVIA) for Environmental Impact