VOL 10

Energy Strategy

Wexford County

Development Plan

2022 - 2028

Table of Contents

List of Tables

List of Figures

List of Maps

Chapter 1 - Introduction

1.1 Introduction

Renewable energy is defined as energy developed from sources that are constantly replenished through cycles of nature and, unlike fossil fuels, are not finite. Wexford has an abundance of renewable energy sources including wind, sun (solar energy), moving water (hydropower, wave and tidal), heat below the surface of the earth (geothermal energy) and biomass (wood, waste and energy crops). This Strategy seeks to put in place a framework to ensure that the County can maximise its significant renewable energy resource, to provide a degree of certainty to future investors and local communities and to inform and guide the planning process for future renewable energy development.

Positive impacts of renewable energy developments include:

- The development of renewable energy resources will enable County Wexford to contribute to national renewable energy targets as set out in the Renewables Directives 2009/28/EC and 2018/2001/EU and lead to the creation of a low-carbon economy.
- The development of renewable energy resources will ensure a secure supply of energy which is necessary to the functioning of society and the economy since renewable energy resources are continuously replenished and will not run out.
- Renewable energy projects will create job opportunities in rural and under-developed areas.
- Renewable energy resources are clean sources of energy. They can be harnessed without damaging the environment, unlike conventional energy such as fossil fuels, which release carbon dioxide and other harmful pollutants into the atmosphere.
- The use of renewable energy avoids greenhouse gas emissions contributing to climate change and associated habitat destruction and species displacement, and also displaces the environmentally damaging effects of fossil-fuel extraction and processing.

- Certain biomass energy projects, such as those using agricultural wastes, may result in avoided or reduced release of pollutants into the environment.
- The generation of energy from waste can increase diversion from landfill and thus help to meet Ireland's EU targets as prescribed in the Landfill Directive (1999).
- Renewable energy projects are, in some cases, at a smaller and more dispersed level than conventional fossil-fuelled projects. This can result in projects being located closer to demand and can distribute more evenly any jobs and related community gain arising from project development, and thus contribute to balanced regional development.

This Strategy sets out the renewable energy resource targets for County Wexford by 2027 and seeks to position the County as a national leader in renewable energy generation. The aim is that County Wexford will become a self-sustaining County meeting all of its energy needs from renewable resources. This will contribute to national renewable energy targets and will also transition the County to a low carbon economy. The Strategy recognises the importance of not only generating and supplying energy by renewable means but balancing this with more energy efficient practices.

The capacity to harness renewable energy resources and generate energy will need to be balanced with other considerations, including:

- Community acceptance of energy infrastructure - Key issues include community consultation at an early stage, raising awareness of renewable energy and linking to health, well being and social and economic development.
- Ecological and environmental impact - Impacts on the environment and requirements of Strategic Environmental Assessment, Appropriate Assessment and Water Framework Directive.
- Energy infrastructure - Capacity of the grid to accept the levels of electricity capable of being generated by renewable means.
- Landscape characteristics - established landscape character and potential impacts thereon, visual impact, mitigation and cumulative issues.

- Land use change - a growing demand for fuel to serve the renewable energy industry (e.g. woodland and energy crops as biomass) may change agricultural practices and create new demands on rural areas.
- Economic Impact and Job creation - Increased uptake of new renewable energy technologies can support job creation and further economic activity.

Overall, the energy expectation for Wexford up to 2027 is as follows:

- A reduction in demand for non-renewable energy sources, such as coal, oil and gas, and an increased demand for electricity from all sectors, leading to cleaner, more sustainable energy usage across the county.
- A significant increase in the demand for electricity is predicted resulting in a decrease in demand for fossil fuels. A major factor in this will be the Transport sector, as electric cars are developed and become more widespread, the oil usage contributed by the sector is projected to decrease.
- A significant reduction in the use of coal and peat for home heating is anticipated due to advances in home heating technology, improvements in home insulation and new laws restricting the burning of fossil fuels for home heating due to environmental and climate change obligations.
- The use of natural gas is predicted to remain steady for Wexford and New Ross, with Great Island CCGT providing security of supply up to 2030.

1.2 Vision of Energy Strategy

To maximise Wexford's renewable energy potential and its transition to becoming a more energy secure, low carbon county in line with national energy targets whilst balancing the need to protect the environmental, social and heritage assets of the county.

1.3 Strategic Aims of the Energy Strategy

The strategic aims of this Strategy are:

- To support the attainment of national renewable energy and carbon reduction targets and to position the County as a leader in renewable energy generation and energy efficiency.

- To identify opportunities for various renewable energy technologies and resources and identify broad areas suitable for their development in full compliance with the requirements of all environmental legislation including the requirements of the Strategic Environmental Assessment Directive, the Habitats Directive and the Water Framework Directive.
- To maximise the opportunities for renewable energy development whilst safeguarding the environment and existing residential amenities.
- To provide guidance on energy efficiency and conservation.
- To provide a clear development management framework.

1.4 Public Consultation

This Strategy forms Volume 10 of the Wexford County Development Plan 2022-2028 and was placed on public display as part of the statutory consultation process under Section 12 of the Planning and Development Act 2000 (as amended). A number of submissions in relation to renewable energy development were received at the pre-draft, draft and proposed material alterations stages and have been taken into consideration in the preparation of this Strategy.

1.5 Strategic Environmental Assessment and Appropriate Assessment

The Energy Strategy has been subject to Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) as part of the preparation of the Wexford County Development Plan 2022-2028. The full SEA and AA are contained in Volumes 12 and 13 of the Wexford County Development Plan 2022-2028.

Chapter 2 - Policy Context

2.1 Summary of EU and Irish Guidance and Policy Documents

EU Directives 2009/28/EC and 2018/2001/EU on the promotion of the use of energy from renewable sources

The 'Renewables Directive' (2009/28/EC) provides a requirement for 20% of the EU's total energy consumption across the electricity, transport and heat sectors to be from renewable sources by 2020. Under the terms of the Directive, each member state is set a target which will contribute to the overall EU goal. Ireland's target is that 16% of all energy consumed across the three sectors is to be from renewable sources by 2020. In addition, at least 10% of transport fuels must come from renewable sources by 2020.

In December 2018, the revised Renewable Energy Directive 2018/2001/EU came into force. The new directive establishes a new binding renewable energy target for the EU for 2030 of at least 32%, with a clause for a possible upwards revision by 2023. EU countries are required to draft 10-year National Energy and Climate Plans (NECPs) for 2021-2030, outlining how they will meet the new 2030 targets for renewable energy and for energy efficiency. Ireland submitted a Draft NECP in December 2018 and a final plan must be submitted to the European Commission by 31 December 2019.

National Renewable Energy Action Plan (NREAP)(Department of Communications, Energy and Natural Resources, 2010)

The National Renewable Energy Action Plan (NREAP) sets out Ireland's strategic approach and measures to achieve the 16% renewable energy target by 2020, which includes the following:

- 40% electricity consumption from renewable sources by 2020 (RES-E)
- 10% of transport energy from renewable sources by 2020 (RES-T)
- 12% of heat energy from renewable sources by 2020 (RES-H)

Member States are required to submit a progress report on the NREAP to the European Commission every two years. The Fourth Report, submitted by Ireland in February 2018, identifies the overall shares of energy produced from renewable sources in 2016. The overall renewable energy source share across the electricity, transport and heat sectors that year was 9.5% (RES-E 27.2%, RES-T 5.0%, RES-H 6.8%).

National Energy Efficiency Action Plan #4 2017-2020 (Department of Communications, Climate Action and Environment)

The fourth National Energy Efficiency Action Plan (NEEAP) provides an update on the progress to date on the achievement of the national renewable energy targets. The Plan notes that just under 12% of the national renewable energy target of 20% was achieved by the end of 2016 and it is anticipated that 16.23% will be achieved by 2020 based on the measures currently in place. The Plan outlines the various Initiatives, funding and support mechanisms in place across six areas: Public Sector, Residential, Business, Transport, Energy Supply and Cross-Sectoral. There is also a commitment to achieving a 33% reduction in public sector energy use by 2020. Public sector bodies reported 21% improved efficiency at the end of 2015.

National Energy and Climate Plan 2021-2030 (Department of Communications, Climate Action and Environment)

The National Energy and Climate Plan 2021-2030 (NECP) uses modelling to forecast Ireland's overall renewable energy share of gross final energy consumption across the electricity, heat and transport sectors for 2020 and 2030 (and 2040). The Plan sets out two different scenarios using baselines (With Existing Measures) and an advanced policies and measures scenario (With Additional Measures) with low oil prices as variants.

Climate Action Plan 2019 (Government of Ireland, June 2019)

The Climate Action Plan puts in place a decarbonisation pathway to 2030 which would be consistent with the adoption of a net zero target in Ireland by 2050. The Plan outlines 180 actions across various sectors which include: increasing reliance on renewables from 30% to 70%; implementing stricter requirements for new

buildings and upgrade existing homes to B2 BER standard; 100% of all new cars and vans to be EVs by 2030; delivering substantial greenhouse gas abatement through adoption of a specified range of improvements in farming practice and increasing forestry plantation; embedding energy efficiency and adoption of low carbon technologies in the enterprise and services industry; and reducing waste and eliminating non-recyclable plastics.

The 70% target for electricity from renewables is indicatively comprised of:

- at least 3.5 GW of offshore renewable energy
- up to 1.5 GW of grid-scale solar energy
- up to 8.2 GW total of increased onshore wind capacity

The Plan recognises that increased levels of renewable generation will require very substantial new infrastructure, including wind and solar farms, grid reinforcement, storage developments and interconnection. Renewable generation is intermittent, which creates the need for a range of technology solutions which may include large-scale interconnection, storage, and dispatchable capacity (e.g., natural gas plants that can generate electricity at times where there is no wind).

In relation to electricity the key objectives are:

- Increase reliance on renewables from 30% to 70%
- Deliver the Renewable Electricity Support Scheme (RESS) which will provide support for renewable electricity projects in Ireland
- Put in place a coherent support scheme for micro-generation
- Open up opportunity for community participation in renewable generation as well as community gain arrangements
- Streamline the consent system, the connection arrangements and the funding supports for the new technologies both onshore and off shore

First Renewable Electricity Support Scheme (RESS) auction

The Department of Communications, Climate Action and Environment announced details of the first Renewable Electricity Support Scheme (RESS) auction. The RESS is an auction-based scheme which invites renewable electricity projects to bid for

capacity and receive a guaranteed price for the electricity they generate with the first auction set to open in mid 2020 and will deliver up to a 3,000GWh increase in renewable electricity generation by the end of 2022. It is envisaged that a minimum of four auctions will occur between 2020 and 2027 to deliver on the 2030 targets.

The proposed elements of the Scheme, which subject to state aid approval are:

- **Increasing Technology Diversity:** The Scheme will be open to a range of technologies that will broaden the renewable energy mix and enhance security of supply;
- **Solar** The Government has approved the inclusion of a solar category, subject to state aid approval, which would represent approximately 10% of the overall auction;
- **Community led category** The Government has approved the inclusion of a community category within the auction, subject to state aid approval of up to 30 GWh;
- **Community Participation:** An obligatory community benefit fund scheme will provide opportunities for communities to play their part in Ireland's renewable energy transition.

Strategy for Renewable Energy: 2012-2020 (Department of Communications, Energy and Natural Resources, May 2012)

This document recognises Ireland’s potential to become a renewable energy exporter and sets out the following five strategic goals:

- increasing onshore and offshore wind power for the domestic and export markets
- building a sustainable bioenergy sector
- fostering research and development in renewables such as wave and tidal
- growing sustainable transport through biofuels and electrification
- building a robust and efficient energy networks system

The strategy recognises that the achievement of the strategic goals and delivery of the key actions on renewable energy requires a fully integrated cohesive approach across many Departments, Agencies, the Commission for Energy Regulation,

EirGrid, ESB Networks, the renewable energy sector, local authorities and local communities.

EU Energy Roadmap 2050

The EU has set a long-term goal of reducing greenhouse gas emissions by 80-95%, when compared to 1990 levels, by 2050. The European Commission's 2011 Energy Roadmap sets out four main routes to a more sustainable, competitive and secure energy system in 2050: energy efficiency, renewable energy, nuclear energy, and carbon capture and storage.

The White Paper - Ireland's Transition to a Low Carbon Energy Future 2015-2030 (Department of Communications, Energy and Natural Resources, 2015)

This paper sets out three core objectives for Ireland's energy policy: sustainability, security of supply and competitiveness. The government's vision of a low carbon energy system means that greenhouse gas (GHG) emissions from the energy sector will be reduced by between 80% and 95%, compared to 1990 levels, by 2050, and will fall to zero or below by 2100. The energy system will change from one that is almost exclusively Government and utility led, to one where citizens and communities will increasingly be participants in energy efficiency and in renewable energy generation and distribution. Citizen participation will be encouraged, for example, by providing funding and supports for community-led projects, providing a new support scheme for renewable electricity from 2016 and examining shared ownership opportunities for renewable energy projects in local communities.

National Adaptation Framework: Planning for a Climate Resilient Ireland (Department of Communications, Climate Action & Environment, January 2018)

The National Adaptation Framework (NAF) was developed under the Climate Action and Low Carbon Development Act 2015. The Framework sets the context for local adaptation strategies which will be prepared in 2019 and should be used to inform development plans and other statutory plans of the local authority. Examples of adaptation measures might include using scarce water resources more efficiently; adapting building or planning codes to future climate conditions and extreme weather events; building new or raising the level of existing flood defences; choosing tree

species and forestry practices less vulnerable to storms; and setting aside land corridors to help species migrate. Renewable energy is identified as an opportunity having regard to Ireland's location which provides a favourable setting for the generation of wind and wave energy.

Offshore Renewable Energy Development Plan (Department of Communications, Energy and Natural Resources, 2014)

The Government is looking beyond 2020 in terms of the significant opportunities to develop Ireland's abundant offshore renewable energy resources, including offshore wind, wave and tidal energy. The Offshore Renewable Energy Development Plan (OREDP) recognises the opportunities presented by offshore renewable energy in terms of contributing to our national renewable energy targets as well as achieving economic development (export potential), growth and jobs and enhancing security of supply, while also ensuring such developments do not adversely impact our rich marine environment. The Plan identifies the South Coast as suitable for wind development and the East Coast – South as suitable for wind and tidal development.

Draft Bioenergy Plan (Department of Communications, Energy and Natural Resources, October 2014)

The Draft Bioenergy Plan recognises that bioenergy will be an essential element in contributing to Ireland's future energy needs, and has the potential to provide significant economic and environmental benefits. The development of the bioenergy resource – derived from forests, wood processing by-products, purpose grown energy crops, animal by-products, and waste – is central to overall energy policy in Ireland. It can assist Ireland in meeting its renewable energy targets to 2020 and beyond, making a contribution across the three sectors of electricity, heat and transport, and enhance security of supply through the displacement of imported fossil fuels. Greenhouse gas emissions will be reduced, while growth and jobs are delivered to the economy. Developing the bioenergy sector can also help in achieving wider policy objectives in areas such as waste recovery.

National Policy Framework: Alternative Fuels Infrastructure for Transport in Ireland 2017 to 2030 (Department of Transport, Tourism and Sport)

This framework sets a target that by 2030 all new cars and vans sold in Ireland will be zero emissions (or zero emissions capable) with the use of fossil fuel vehicles rapidly receding. The Framework outlines the main fuel options that could provide alternatives to oil in transport, namely: electricity, hydrogen, biofuels, and natural gas, in the forms of compressed natural gas (CNG), liquefied natural gas (LNG), and liquefied petroleum gas (LPG). It is likely that electricity will fuel the majority of passenger cars, commuter rail and taxis, while natural gas and biofuels will play an increasingly important role for larger vehicles such as heavy goods vehicles and buses. Hydrogen use is also anticipated to increase its penetration across the entire fleet spectrum in the coming decades.

Energy Performance of Buildings Directives 2010/31/EU and 2018/844

The main aim of this Directive is to promote the reduction of building energy consumption. The Directive requires Member States to establish and apply minimum energy performance requirements to new and existing buildings and to ensure the certification of building energy performance. The EPBD was revised in 2018 as part of the Clean energy for all Europeans package. The new Directive includes measures that will accelerate the rate of building renovation towards more energy efficient systems and strengthen the energy performance of new buildings, making them smarter.

Public Sector Energy Efficiency Strategy (Department of Communications, Climate Action and Environment, January 2017)

The aim of this Strategy is to drive the level of effort required to achieve the target of achieving a 33% reduction in public sector energy use by 2020.

Ireland 2040 Our Plan: National Planning Framework

The National Planning Framework (NPF) is a national policy document which will guide the strategic planning and development of the country over the next 20 years. The Framework sets out a number of objectives to achieve a more effective balance of growth between Ireland's three Regions. Of relevance to this Strategy is the vision

“to tackle Ireland’s higher than average carbon-intensity per capita and enable a national transition to a competitive low carbon, climate resilient and environmentally sustainable economy by 2050, through harnessing our country’s prodigious renewable energy potential.” National Policy Objective 55 is to “promote renewable energy use and generation at appropriate locations within the built and natural environment to meet the objectives towards achieving a low carbon economy by 2050.”

National Development Plan 2018-2027

The National Development Plan (NDP) 2018-2027 sets out investment priorities of €21.8 billion for climate action for the 10 year period of which €7.6 billion is to come from the Exchequer. The remaining investment is to be made by Ireland’s semi-state companies and by the private sector. In addition, some €8.6 billion funding has been made available for sustainable mobility projects, mostly in public transport. The funding will support the implementation of energy efficiency and renewable measures in the electricity, transport and built environment, especially for heating and cooling. In addition, the NDP contains a commitment to establish a new €500m Climate Action Fund to leverage investment by public and private bodies to contribute to the achievement of Ireland’s energy and climate targets.

Draft Renewable Electricity Policy and Development Framework Draft Scoping Report

The Scoping Report notes that the Renewable Electricity Policy and Development Framework will be primarily for the guidance of An Bord Pleanála, planning authorities, other statutory authorities, the general public and persons seeking development consent in relation to large scale projects for the generation of renewable electricity on land. It is understood that the Department of Communications, Climate Action and Environment (DCCAE) is currently preparing a revised Renewable Electricity Policy Development Framework (REPDF) which is due to go for public consultation in Quarter 1, 2020.

It will set out policy in respect of environmental considerations, community engagement and also in relation to potential, future export of renewable electricity. It

will seek to broadly identify suitable areas in the State, where large scale renewable electricity projects can be developed in a sustainable manner. The scale of developments to come within the provisions of the Renewable Electricity Policy and Development Framework is 50MW and upwards. Cognisance would be taken of existing local authority policies in relation to renewable energy.

Food Harvest 2020 (Department of Agriculture, Fisheries and Food, 2010)
This document recognises the opportunities for renewable energy in the areas of bio-energy, wind and solar but states that care is required to ensure no conflicts with environmental sustainability requirements, food security, and with other industries.

National Landscape Strategy 2015-2025
The National Landscape Strategy aims to implement the European Landscape Convention in Ireland by providing for specific measures to promote the protection, management and planning of the landscape. The objectives of the Strategy are to establish and implement through a series of actions, policies aimed at understanding, protecting, managing and planning our landscape. It sets out specific measures to integrate and embed landscape considerations in all sectors which influence the landscape and improve and enhance the quality of decision-making by those who have an impact on it. A key action is to develop a National Landscape Character Assessment, which will be followed by the publication of statutory planning guidelines.

Draft Revised Wind Energy Guidelines Update December 2019
Following on from the Wind Energy Development Guidelines 2006 and the Interim Guidelines for Planning Authorities on Statutory Plans, Renewable Energy and Climate Change July 2017, the new draft wind energy guidelines are currently out for public consultation. This review of the Guidelines has been undertaken to reflect technological developments in the wind energy sector and to strike a balance between the concerns of local communities and the need to invest in indigenous energy projects.

The draft revised guidelines contain specific planning policy requirements, pursuant to Section 28(1C) of the Planning and Development Act 2000, as amended, that, in

making, reviewing, varying or amending a development plan or a local area plan with policies or objectives that relate to wind energy developments, the relevant planning authority shall:

- acknowledge and document national policy on renewable energy in the relevant development plan or local area plan;
- indicate how the plan will contribute to realising overall national targets on renewable energy (particularly in any proposal to introduce or vary a mandatory setback distance or distances for wind turbines);
- demonstrate compliance with setback requirement.

2.2 Summary of Regional and Local Policy and Action Plans

Regional Spatial and Economic Strategy for the Southern Region

The Strategy seeks to implement national policy in relation to transitioning to a low carbon economy. Objectives are included to reduce Greenhouse Gas emissions, improve energy efficiency and increase the use of renewable energy sources across the electricity, heating, transport and agricultural sectors. Specific objectives are included in relation to decarbonisation in the transport and agricultural sectors, conversion of power stations in the Region to use energy efficient and renewable energy sources, development of onshore and offshore wind farms and the development and upgrading of the electricity and gas network to integrate renewable energy sources. There are also objectives to support the development of a Regional Renewable Energy Strategy, support initiatives for energy research funding, support the development of an interconnector between Ireland and France, support initiatives in energy storage and carbon capture and support investment in initiatives to improve energy efficiency in our building stock. A Bio-Energy Implementation Plan for the Region will also be supported (to replace the current 2013-2020 Plan).

South East Region's Bio-Energy Implementation Plan 2013 to 2020

This document sets a target of 7.3% contribution of bioenergy to total final consumption in the South-East Region by 2020. Individual sectoral targets for heat (8.5%), electricity (2.9%) and transport (8.2%) are established, with the emphasis on

bioenergy consumption for heating and transport purposes. The targets reflect the sectoral modelling provided in the NREAP and the fact that a large proportion of the bioenergy resource from wood and fuel and associated technologies are widely available within the Region. A second high growth scenario of 9.9% of bioenergy contribution to total final consumption is proposed to reflect the potential development of the bioenergy sector within the South-East Region should further bioenergy incentives be introduced.

Southern Region Waste Management Plan 2015-2021

The Waste Management Plan (WMP) contains policies and measures to improve the way wastes are managed in the Region, while also introducing new steps to help realise the full potential of our waste as a resource. The Plan focuses on prevention, recycling and recovery and generation of energy from materials and residual wastes. By doing so the Plan seeks to reduce the role of landfilling in favour of higher value recovery options. The Plan contains three strategic targets in the areas of prevention, recycling and landfilling. A number of measures are set out to achieve these targets including: to grow the biological treatment sector, in particular composting and anaerobic digestion, by supporting the development of new facilities.

Wexford Local Economic and Community Plan 2016-2021

The Local Economic and Community Plan (LECP) is based on six high level goals to drive economic, social and community development in the county over the next six years. A number of specific objectives are identified under each of the six high level goals and indicators are outlined to measure the success of each specific objective. Of relevance to this Strategy are the specific objectives to:

- promote sustainable energy usage in business (develop up to four new or existing renewable energy related businesses);
- promote energy conservation programmes to SMEs in an attempt to cut down on resource wastage and costs;
- conduct a series of funded workshops in schools on the themes of biodiversity, energy, recycling, etc;
- provide quality designed energy efficiency housing;

- support up to 20 community centres to upgrade or improve energy efficiency;
- increase overall energy efficiency at Irish Water Facilities; and
- reduce the County Council's emissions of greenhouse gases.

Climate Change Adaptation Strategy 2019-2024

This Strategy identifies a number of adaptation actions to enhance the capacity of Wexford County Council to adapt to climate change impacts and to address priority climate risks. Several key objectives have been identified that frame the compilation of the adaptation actions including a reduction in energy related CO2 emissions of Wexford County Council; an increase of renewable energy produced in council operations; and an improvement in energy efficiency in social housing. The Strategy also includes a key theme to integrate climate action considerations into land use planning policy.

Chapter 3 – Energy Balance & Renewable Energy Targets

3.1 Energy Demand

The Energy Balance has been provided by the 3 Counties Energy Agency (3CEA) and is based on national energy balance data published by the Sustainable Energy Authority of Ireland (SEAI).[1] For County Wexford each sector is broken down based on data from the Central Statistics Office (CSO) or SEAI monitoring and reporting data. An increase in the total final consumption is estimated up to 2030. Table No. 1 below shows energy consumption by mode of application, while Table No. 2 shows energy consumption by sector. Currently, transport is the largest energy demand sector for County Wexford. The residential sector energy usage is expected to decrease due to improvements in energy efficiency and a decline in the use of fossil fuels for home heating.

Table 1: Wexford energy consumption (GWh) by mode of application

Mode of Application	2006	2019	2020	2025	2030
Transport	1,596	1,593	1,621	1,758	1,908
Electricity	893	941	984	1,229	**1,536**
Heat	2,191	1,872	1,844	1,735	1,693
Total Final Energy Consumption (GWh)	**4,680**	**4,407**	**4,449**	**4,723**	**5,136**

[1] https://www.seai.ie/resources/seai-statistics/key-statistics/energy-data/

Table 2: Wexford energy consumption by sector, 2006-2030

Energy Consumption by Sector (GWh)	2006	2019	2020	2025	2030
Industry	1,060	955	940	866	799
Transport	1,596	1,594	1,621	1,758	1,908
Residential	1,318	1,148	1,137	1,086	1,037
Commercial/Public Services	543	628	674	952	1,346
Agricultural	151	76	72	57	45
Fisheries	11	5	5	3	2
Total Final Energy Consumption (GWh)	**4,680**	**4,407**	**4,449**	**4,723**	**5,136**

Sources of data are as follows:

- Industrial energy figures are based on Central Statistics Office (2016), Industrial Local Units NACE Rev 2.
- Transport energy figures are based on Central Statistics Office (2019), Road Traffic Volumes
- Residential energy figures are based Central Statistics Office (2016), Private Households in Permanent Housing Units 2011 to 2016 and Sustainable Energy Authority of Ireland (2020), National BER Research Tool.
- Commercial energy figures are based on Central Statistics Office (2019), Business Demography NACE Rev 2.
- Public Services energy figures are based on Monitoring and reporting data from SEAI.
- Agricultural energy figures are based on Central Statistics Office (2011), Area of Selected Crops
- Fisheries energy data based on Sea Fisheries Protection Authorities (2020), 2019 Statistics: Number of landings per county (tonnage)

3.2 Renewable Energy

Table No. 3 outlines the renewable energy installed capacity in County Wexford in 2021. Onshore wind is the main source of renewable energy for the County with 182.5MW installed energy. However, there is a high renewable energy resource potential which has not yet been exploited.

Table 3: Installed capacity in 2021

Wexford - Renewable Energy - installed capacities (MW)	2021
Hydro	0.14
Biodegradable Municipal Solid Waste	0.0
Biogas	0.35
Biomass CHP & Co-firing	3.52
Onshore wind	182.4
Offshore wind	0.0
Solar PV	2.51
Ocean	0.0

Sources of data for installed renewable energy capacity are as follows:

- Hydro– ESB Connected and Contracted Generators. Source: https://www.esbnetworks.ie/docs/default-source/publications/dso-connected-energised-non-wind-generators-q3-2021.pdf
- Biodegradable – no power plants in County Wexford.
- Biogas– IrBEA bioenergy installation. Source: http://www.irbea.org/wp-content/uploads/2017/06/Bioenergy-Installations- Map-Ireland2017.pdf
- Biomass CHP & Co-firing - NECP Installed capacity detail x Wexford population share
- Onshore wind – ESB and EirGrid's Connected and Contracted Generators Lists. Source: https://www.esbnetworks.ie/docs/default-source/publications/dso-connected-energised-wind-generators-q3-2021.pdf and http://www.eirgridgroup.com/site-files/library/EirGrid/TSO-Connected-Renewable-Generation.pdf

- Offshore wind – No offshore installed capacity in Wexford in 2021
- Ocean – No ocean energy developments installed in County Wexford.

3.3 Renewable Energy Targets

The revised Renewables Directive establishes a binding renewable energy target for the EU for 2030 of at least 32% with a clause for a possible upwards revision by 2023. EU countries are required to draft 10-year National Energy and Climate Plans (NECPs) for 2021-2030 outlining how they will meet the new 2030 targets for renewable energy and for energy efficiency. Ireland has submitted the NECP 2021-2030 which sets out two scenarios for renewable energy up to 2030 based on low oil prices with existing measures and with additional measures. Table No. 4 below gives an overview of the two different scenarios.

Table 4: Overview of the NECP scenarios

	NECP1 With Existing Measures (WEM) (Low oil price with fixed carbon tax)	NECP2 With Additional Measures (WAM) (Low oil price with variable carbon tax)
	2030	2030
RES-E %	54.9	70
RES-H %	14	24
RES-T % (regulation)	7.2	13.4
Overall RES %	**21.2**	**34.1**

For scenario 1, the existing energy measures are maintained up to 2030. With scenario 2, additional measures are implemented, which lead in 2030 to less fossil fuel and more renewable energy compared to scenario 1.

The energy balance for County Wexford has been developed based on Scenario 2, as this is considered the most likely of the two scenarios to meet national and EU

policy and targets for renewable energy. Based on this scenario, renewable energy installed capacity and energy production for additional energy measures and low oil prices were analysed up to 2030. Installed capacity in 2021 and future projects installation up to 2030 in County Wexford are outlined in Table No. 5. Table No. 6 shows the renewable energy generated in County Wexford in 2021 and the projection up to 2030. The last column shows the renewable energy production limited to 70% RES-E in 2030[2] at county scale. Based on this analysis, the generation of renewable energy will increase by 200% up to 2030.

Table 5: Wexford - Renewable Energy - Installed capacities

Wexford - Renewable Energy - installed capacities (MW)	2021	2025	2030 to achieve 70% RES-E
Hydro	0.14	0.14	0.14
Biodegradable Municipal Solid Waste	0.0	0.0	0.0
Biogas	0.35	0.35	0.35
Biomass CHP & Co-firing	3.52	1.90	1.90
Onshore wind	182.46	193.09	244.22
Offshore wind	0.0	31.72	111.01
Solar PV	2.51	197.41	205.59
Ocean	0.0	0.22	0.73

The following assumptions have been used for the projections of renewable energy installed capacity in Wexford:

- Hydro power generation remains consistent with 2021 figures.
- Electricity generation from biogas remains consistent with 2021 figures.
- Electricity generation from biomass CHP and Co-Firing based on national target in NECP model and population share for County Wexford.

[2] The Climate Action Plan 2021 increased the national target to 80%. The 70% was taken from the Climate Action Plan 2019 and National Energy and Climate Plan 2021-2030 which were in place at the time of preparing and making the Proposed Material Amendments to the Draft Wexford County Development Plan in 2021.

- National onshore wind grows on national trajectory from 2024 – and repowering of existing wind farms, where permitted, will result in increases in capacity output.
- Offshore wind is introduced in 2025 and grows on national trajectory.
- Solar PV grows to 205 MW installed capacity by 2030 for County Wexford (based on national target of 1.5GW installed capacity for Ireland and successful RESS 1 auction projects coming online in 2023).
- Electricity generation from Ocean energy technology based on national target in NECP model and population share for County Wexford.
- 70% RES-E achieved in 2030 and maintained.

Table 6: Wexford - Renewable Energy Production

Wexford - Renewable Energy - Energy production by source (GWh)	2021	2025	2030 to achieve 70% RES-E
Hydro	0.44	0.43	0.40
Biodegradable Municipal Solid Waste	0.00	0.00	0.00
Biogas	0.85	0.68	6.95
Biomass CHP & Co-firing	22.13	12.17	12.17
Onshore wind	436.23	468.53	552.77
Offshore wind	0.00	82.05	325.61
Solar PV	2.21	185.79	171.98
Ocean	0.00	0.03	0.12
Total Energy Generation (GWh)	**461.87**	**749.69**	**1,070.00**

Existing Permissions for Solar PV

Table No. 1 above shows that energy consumption for electricity in County Wexford is projected to be 1,536 GWh in 2030. Based on the above analysis, the projected installed renewable energy capacities and renewable energy production will account for 69.6% of the projected energy consumption for electricity in County Wexford in 2030. However, if all the existing permissions for solar PV developments (475 MW

as at September 2021) are installed, then this would account for 84% of the projected energy consumption for electricity in County Wexford in 2030.

Recent advances in Battery Energy Storage (BES) also mean that output from renewable energy developments can be maximised. Batteries can store energy from intermittent energy sources (e.g. sun and wind) and release it when it is more needed. This increases the contribution of renewables to the energy mix and also maintains grid stability.

RES-E

The Council is committed to achieving national renewable energy targets in order to transition to a low carbon economy, reduce greenhouse gas emissions and importation of fossil fuels and ensure a secure energy supply to meet the future requirement of a growing population. The Climate Action Plan 2019 sets a national target of 70% of electricity from renewables by 2030. However, County Wexford could be in a position to exceed 100% of its electricity needs from renewable energy by 2030. The County's position must be considered in relation to the overarching national and regional policy and targets for renewable energy and in this regard it is recognised that the County may be in a more favourable position in terms of availability of renewable energy resources.

Wexford's coastal location coupled with a strong wind resource, good solar irradiation and a significant grid network present opportunities to maximise energy generation by renewable means. County Wexford is also ideally placed to maximise the potential of bio-energy. There is a strong forestry resource combined with a number of heat demand centres, which could provide a viable opportunity for combined heat and power technology. The proposed interconnectors to Wales and France could also provide opportunities to export excess power from renewable energy.

It is considered that County Wexford could become a national leader in sustainable renewable energy generation, supporting energy efficiency, security and conservation, achieving balanced social, environmental and economic development

throughout the County and assisting in the achievement of Ireland's Green Energy target. This Strategy therefore sets a target of 100% of electricity consumption in the County to be from renewable energy sources by 2027. **This will assist in achieving national renewable energy targets, with County Wexford providing well in excess of its population share towards the 70% national renewable energy target by 2030. The target will be met through a combination of renewable energy developments.**

RES-H

The growth of renewable heat in the residential and services sectors has been attributed to the support of government grant schemes and revisions to building regulations that require a share of energy demand in new buildings to come from renewable sources (modern renewable heat technologies include efficient bioenergy technologies, solar thermal and geothermal/heat pumps).

A number of large energy users in County Wexford have converted to biomass boilers under SEAI grant schemes, including a number of hotels in the County. The Greener Homes Schemes also provided grants for biomass boilers and solar thermal installations in the residential sector which resulted in energy efficiencies. Currently grants are available for businesses to install heat pumps and receive a tariff for the heat created and consumed from a biomass, biogas or CHP system. A range of home energy grants are also available.

The Council will facilitate the development of renewable heat technologies and promote energy efficient design in all new buildings.

RES-T

Transport is currently the largest energy-using sector in the County and is the sector most reliant on imported fossil fuels in the form of petroleum products and biofuels. Ireland's National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland: 2017-2030 set an ambitious target that from 2030, all new cars and vans sold in Ireland will be zero emission capable. This is backed up in the Climate Action Plan 2019 which includes a target of 950,000 EVs on Irish roads by 2030. The Plan

also includes a target to raise the blend proportion of biofuels in road transport to 10% in petrol and 12% in diesel by 2030.

The County Council will support the roll out of electric vehicles and facilitate the installation of essential infrastructure such as electric charging points at appropriate locations throughout the County. The Council will also promote the use of public transport and ensure that land-uses are co-ordinated to reduce the number and length of car trips and assist in reducing GHG emissions.

Chapter 4 - Solar Energy

4.1 Introduction

Solar energy uses the sun's energy for power or heat production. Solar energy can be captured in two ways:

- Active solar techniques which include the use of photovoltaic panels and solar thermal panels to harness energy;
- Passive solar techniques including orientation of a building towards the sun.

Solar Photovoltaic

Photovoltaic (PV) systems use daylight to convert solar radiation into electricity. PVs respond to both direct radiation (i.e. direct sunlight) and diffuse radiation (i.e. through cloud cover), and their output increases with increasing irradiance. A grid-connected PV system is one which connects to the electricity grid and "exports" to the grid. A "solar farm" is a large scale collection of grid connected solar PV panels used to generate electricity which is exported to the national grid via a substation. There has recently been a significant decrease in the cost of solar PV panels and this, together with the relatively fast construction time in comparison to other electricity generation sources, has led to increased demand for this type of development over the last couple of years.

Thermal Solar Panels

Thermal solar panels can be used in buildings for heating/hot water and can make a significant contribution to reducing energy costs. Solar panels, generally located on a south-facing roof, transform the sun's radiation into heat. The heat produced during the day is stored in a large hot water cylinder, so that it can be used at any time. The greater the demand for hot water, the more beneficial solar thermal will be, and the shorter the return on investment. Market trends and current building regulations suggest that we will see increased use of solar energy installations in the form of solar panels for domestic and commercial purposes.

Passive Solar Techniques

An increasing number of buildings are utilising 'passive solar' technology and design that is capable of meeting most, if not all of the building's thermal energy needs from the sun (i.e. without the use of fuel or heating systems). The Council encourages the use of passive design for new build structures.

4.2 Solar PV Ground Mounted

4.2.1 Identification of Existing RE Projects

As of September 2021, planning permission has been granted for 36 solar farms in County Wexford with a combined anticipated output of 475 MW and covering an area of 885.45 hectares. Map 1 shows the location and status of solar farm applications in County Wexford.

4.2.2 Methodology

For the purposes of developing a spatial strategy for ground mounted solar PV developments in County Wexford, a 'sieve analysis' similar to that recommended in the SEAI's 'Methodology for Local Authority Renewable Energy Strategies' (2013) was used. The methodology involved an analysis of environmental, landscape, technical and economic criteria. ARC GIS was used to overlay several layers of data including grid infrastructure, major roads, natural heritage designations, urban settlements and landscape sensitivity. A slope analysis was also carried out. The data was overlaid and used to determine the most suitable areas for solar PV developments. For the purposes of clarity and legibility, the data is displayed on individual maps in the following sections.

Theoretical Resource

The theoretical resource is the highest possible potential energy production from a given resource in the absence of any constraints. Map 2 shows Ireland's average annual solar radiation in kWh/m.sq./day. It shows that the southern half of the country, including County Wexford, has higher annual solar radiation making it particularly suitable for solar PV developments subject to normal planning and environmental considerations.

Map 2: Solar Irradiation

Source: Solar resource map © 2019 Solargis available at https://solargis.com/maps-and-gis-data/download/ireland [accessed 4/6/19]

Grid Infrastructure

Proximity to the transmission grid, and in particular to the ESB substations, is an important factor in the siting of solar farms since they are required to connect to the transmission grid through the substations. Proximity to the substations also reduces connection costs for the developer. Map 1 shows the location of permitted solar farms in relation to the transmission system. EirGrid's current development strategy is to reinforce the existing grid infrastructure with a focus on upgrading and strengthening the capacity of the existing lines rather than building new infrastructure. Proximity to the grid is therefore an important factor in the siting of new developments. However, this will need to be considered with other planning and environmental factors, including cumulative visual impacts.

Designated Sites

Sites designated under European and National legislation for the protection of natural heritage including habitats and species, flora and fauna are shown on Map 3. These include Special Areas of Conservation (SAC), candidate Special Areas of Conservation (cSAC), Special Protection Areas (SPA), Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA), Nature Reserves, Pearl Mussel Areas and Shellfish Areas. These areas are generally considered unsuitable for solar PV developments.

SAC's and SPA's are also known as Natura 2000 sites and together they form part of the network of sites of highest biodiversity importance in the EU. Appropriate Assessment Screening was undertaken to assess the potential impacts of this Strategy on Natura 2000 sites. In addition, a Strategic Environmental Assessment process was carried out which assessed the wider potential biodiversity impacts in relation to this Strategy.

Landscape and Visual Impacts

The Landscape Character Assessment (LCA) contained in Volume 7 of the Wexford County Development Plan 2022-2028 was used to inform this Strategy. The LCA identifies landscape character units which are units of similar landscape characteristics and features with distinctive and uniform landscape quality and integrity. Four landscape

character units are identified: Uplands, Lowlands, River Valleys and Coastal. Within these units there are also 'Distinctive Landscapes'. These are generally located within the lowland and coastal landscape units and represent the features in the landscape and seascape which have the most visual interest and prominence and are therefore generally more sensitive to development. The landscape character units and distinctive landscapes are shown on Map 4.

Ground mounted solar PV developments (solar farms) will not be permitted in the Uplands, River Valleys and Coastal landscapes or in the Distinctive Landscapes. Applications for solar PV development will be considered in the Lowlands area subject to a case-by-case assessment, including an assessment of cumulative impacts on the landscape and having regard to the targets set for the plan period, the constraints and facilitators, and the development management standards outlined below.

Settlements

Ground mounted solar PV developments (solar farms) are generally not considered an efficient use of land within the built up areas of towns and villages and should be avoided in these areas. A minimum exclusion zone around towns and villages is also considered appropriate to allow for the future expansion of these settlements in a compact and sequential manner. Therefore, an exclusion zone of 1km has been applied around the four main towns while an exclusion zone of 250 metres has been applied around villages. Only key towns, large towns and Level 3(a) Service Settlements, Level 3(b) Strategic Settlements and Level 4 Large Villages included in the Settlement Hierarchy in the County Development Plan were included.[3] The exclusion zones are shown on Map 5. Exceptions may be made for small scale solar energy development projects within these exclusion zones in accordance with Objective ES03. For applications for ground mounted solar PV developments in proximity to a town or village, the views from the settlement should be considered as part of the design process.

[3] The development plan and local area plan boundaries were used for Wexford, Enniscorthy, New Ross, Gorey, Taghmon, Clonroche and Courtown and Riverchapel. For all other settlements the Small Area Population Maps {SAPMAPs} from the CSO were used, with the exception of Wellingtonbridge, Ramsgrange, Ballywilliam, Ballindaggin and Craanford.

Areas Open for Consideration

Following an analysis of the above criteria, Map 6 shows the area where solar farms will be open for consideration subject to the targets set for the plan period, the constraints and facilitators and the development management standards outlined below.

4.2.3 Other Constraints and Facilitators

Geological Heritage Sites

'The Geological Heritage of County Wexford – An Audit of County Geological Sites for County Wexford' published by the GSI identifies 42 sites of geological and geomorphological importance in the County. These sites are identified as County Geological Sites and are protected under the objectives of the County Development Plan. Some of these sites have been proposed for designation as NHAs and are considered to be of national importance as best representative examples of particular geological formations or features. Whilst not precluding solar PV development, the impact of solar farms on such sites must be carefully considered. The County Geological Sites are identified on Map 7.

Major Roads and Railways

Solar farms have the potential to cause significant impacts on road and rail users in terms of visual impacts and glint and glare. A specified set back distance is not recommended, however proposals will be assessed on a case by case basis having regard to siting, layout and design, the surrounding topography and the potential impacts on road and rail users. A glint and glare assessment will be required to identify the impacts on road and rail users.

Tourism and Recreation

Care needs to be taken to ensure that solar PV developments do not negatively impact on major tourist attractions and areas popular for outdoor recreation such as looped walks. Applicants should consider such areas in their visual and glint and glare assessments. Where a solar PV development is proposed adjacent to a public right of way, an important viewpoint or other location frequented by members of the public, information and interpretation boards are recommended to inform people

about the project.

Archaeology

In general, archaeological impacts associated with solar PV developments are site specific. Nonetheless, there are significant clusters of archaeological sites or archaeological landscapes in the county, particularly in the south of the county and around historic towns. In addition, there are a number of sites and monuments under public ownership or guardianship that represent a current or future tourism resource. Whilst not precluding solar PV developments, the impact of solar farms on such sites and archaeological landscapes should be carefully considered.

Protected Structures

It will be important that the impacts of proposed solar PV developments on such structures are assessed at the planning application stage. Certain applications may be required to include an assessment of the impacts of a proposed development on architectural heritage. Assessments should be undertaken by a suitably qualified conservation architect and it is advised that the Planning Authority should be contacted at preplanning stage to determine if there is a need for such an assessment.

Loss of agricultural land

It is important that there is no significant long term loss of agricultural land as a result of installing large scale ground mounted solar farms. In this regard proposed developments should be designed to be temporary, capable of removal and 'reversible'. In general, solar panels should be secured to the ground by steel driven piles with limited soil disturbance and, where appropriate, the grassland between modules should be maintained for grazing by sheep or other small animals during the operational phase of the development. Care should be taken to avoid soil compaction on the site and there should be minimal disturbance to field boundaries.

Biodiversity

Where grazing of livestock under panels is not practical, consideration should be given to sowing of wildflowers and bee-keeping. In addition, all existing hedgerows

and trees should be retained, except for removal of access is require3d, and the developer should consider opportunities to provide enhanced management of landscape features and habitats where appropriate. For the purposes of habitat creation, it shall also be a requirement that 15% of the site area of all new permitted solar farms shall be planted with native woodland species in line with the principles of the Native Woodland Establishment Scheme (see development management standards below).

Cumulative Impacts

Cumulative impacts must be considered at the application stage and, as such, planning applications should include visual impact assessments which identify other existing and permitted solar farms in the area, as well as those for which planning applications have been submitted. A glint and glare assessment should also address cumulative impacts on nearby residences, as well as road and rail users.

4.2.4 Objectives

ES01: To facilitate the development of solar PV developments in the area open for consideration as shown on Map 6 subject to the renewable energy target set for the County, the proper planning and sustainable development of the area and the Development Management standards set out below.

ES02: To consider applications for community-based solar developments of an appropriate scale subject to normal planning and environmental criteria. It is the policy of the Council to support and facilitate renewable energy proposals that bring about a direct socio-economic benefit to the local community. The Council will engage with local communities and stakeholders in energy and encourage developers to work with local communities to identify how they can invest in/gain from significant renewable energy development.*

*In order to meet the 2030 renewable energy targets and the required level of emissions reduction, the Climate Action Plan 2019 includes a target to meet 15% of electricity demand by renewable sources contracted under Corporate Power

Purchase Agreements (PPAs). Corporate PPAs allow corporates to lock in a fixed energy price, eliminating exposure to volatile energy prices.

The Climate Action Plan 2019 also requires closer working with community and enterprise by Obligated Energy Suppliers to ensure wider community gain. The first RESS auction, which is expected to open for applications by mid 2020, will include a suite of measures for community participation.

ES03: Facilitate, where appropriate, small scale solar energy development projects in urban areas, industrial estates, business parks and small community-based proposals, subject to compliance with normal planning and environmental criteria and the development management standards contained in Section 4.2.5.

4.2.5 Development Management Standards for Solar Farms

Applications for solar farm developments should be accompanied by the following:

- A description of project including the method of construction. The use of driven or screw pile foundations should be used where possible to ensure that there is no long term loss of agricultural land.
- An indication of the generation capacity of the proposed development.
- A timeframe for completion and commissioning of the project and the expected lifetime of the proposed development.
- Details showing the extent of any site levelling works proposed.
- The location and design of cabinets/ building(s) to house inverters, transformers, switchgear/ substations and spare parts.
- The location of onsite cables (to be underground).
- Details of proposed grid connection.

Siting of New Developments

- Solar PV farms should generally be located on lower slopes or within folds in gently undulating lowland landscapes or on flat plateau sites, and in landscapes with a sense of enclosure.

- The layout and design of schemes should follow the contours and enclosure patterns of the landscape - siting of panels/arrays that are remote from the rest of the group should be avoided.
- The site should be compact and not fragmented over a large landholding.
- Cabinets or buildings should be carefully sited and should generally avoid high or exposed locations – the use of existing and locally occurring vegetation should be used to screen such features where possible.
- Inverters should be housed in existing buildings where possible, particularly where these are of local vernacular and located near the site.
- Access tracks should be kept to a minimum.

Glint and Glare

Glint and glare has the potential to impact on the amenity of nearby residents, road and rail users and on aviation. A glint and glare assessment should accompany all applications for solar farms and should include the following:

- A description of the magnitude of effects on nearby dwellings and rail/roads.
- An assessment of the cumulative impacts with nearby existing and permitted solar farms, as well as other planning applications which have been lodged with the Council or An Bord Pleanála, and other structures/landscape features as appropriate.
- Within a 15km radius of airports, the Glint and Glare Assessment should consider potential glint and glare towards existing and planned aviation receptors which include: i) flight approach paths to runways and ii) air traffic control towers. Any applications within 15km of Waterford Airport will be referred to the Irish Aviation Authority for comment.
- The potential for PV panels, frames and supports to have a combined reflective quality should be assessed. This assessment should consider the likely reflective capacity of all of the materials used in the construction of the solar farm.

Visual Impact Assessment

All applications for solar farms should be accompanied by a Visual Impact Assessment which identifies and describes the likely effects of the proposal,

identifying magnitude of change as a deviation from baseline conditions. The assessment should include the following:

- A zone of theoretical visibility (ZTV) should be prepared to indicate the area over which solar panels may be seen.
- Representative assessment viewpoints should be identified and discussed with the relevant planning authority and other stakeholders where relevant. The number of viewpoints required will vary with the location and scale of the proposal. Priority should be given to views from sensitive locations (e.g. residential areas, areas popular with visitors or areas used for outdoor recreation) and views from elevated locations.
- Photomontages should be included from each viewpoint showing the proposed development with and without any proposed screen planting and detail differing views during different seasons of the year as appropriate.
- An assessment of the cumulative visual impacts of the proposed development in combination with other solar farms and structures permitted in the area, as well as other planning applications which have been lodged with the Council or An Bord Pleanála.

Landscaping

- All applications for solar farms shall be accompanied by a detailed landscaping plan.
- No high value habitats (trees and hedgerows) should be lost as a result of the proposed development and the developer should consider opportunities to provide enhanced management of landscape features and habitats where appropriate. Trees and hedges should be protected during construction.
- Screening development will be important – however, letting hedgerows grow higher should only be employed where it fits with local landscape character, restores traditional management practices, does not result in deterioration of the hedge and does not produce unreasonable shading of panels.

Traffic

The suitability of the road network to cater for traffic movements generated by the proposed development during the construction and operation phases will be considered in the assessment of planning applications. The application should include the following:

- A Traffic Impact Assessment which identifies the number and type of traffic movements to and from the site and the haulage route proposed.
- Adequate sightlines must be demonstrated at the entrance to site.
- A Traffic Construction Management Plan will be required prior to commencement of development.

Noise

The development should be designed to ensure that any significant adverse impacts on residential amenity arising from noise from the proposed development are avoided by locating noise-emitting equipment away from noise sensitive receptors, and taking other relevant measures, such as housing noise-emitting equipment in acoustic enclosures.

Security

- Fencing should form part of the visual assessment and should incorporate mammal passes where appropriate.
- Where CCTV is proposed cameras shall be focused on the site to avoid impact on neighbouring dwellings.
- Any proposed lighting should not impact on residential amenity or on the ecology of the area.

Impact on Agricultural Land

The application should include an assessment of the impact of the proposed development on agricultural activities e.g. the extent of disturbance to ground, restoration works and management of vegetation under panels and the impact on the local area's supply of farming land. Development should not result in undue loss of productive agricultural land. Grazing under panels will be encouraged where practical and where this is not feasible, consideration should be given to sowing of wildflowers and bee-keeping.

Biodiversity

- The application should be accompanied by an ecological assessment of the site carried out by a suitable qualified person. The ecological assessment should identify any likely impacts of the proposed development on the ecology of the area and any proposed mitigation measures to reduce or offset any negative impacts.
- Nesting areas should be avoided and removal of existing hedgerow and trees is discouraged except where required for access.
- Perimeter security fencing should incorporate mammal passes where appropriate.
- The application should include measures to treat invasive species and/or avoid their translocation.
- Where grazing of livestock under panels is not practical consideration should be given to sowing of wildflowers and bee-keeping.
- Proposals shall be submitted to show at least 15% of the solar farm site area to be planted with native woodland species, in line with the principles of the Native Woodland Establishment Scheme. The proposals shall include details of the species mix and planting pattern (having regard to site location, soil type, etc). The proposals should also demonstrate the following:
    - The establishment of new native woodland should be compliant with national legislation, operational and environmental guidelines.
    - The native woodland planting scheme must meet full silvicultural standards.
    - Each site must be capable of supporting the vigorous growth and sustainable long term development of the most appropriate native woodland type(s) identified for the site. These requirements must be achievable without the need for fertiliser input (with the possible exception of a once-off hand application at establishment, to boost initial growth).
    - The standard planting density and spacing should be as per the Native Woodland Establishment Scheme standards, which is 3,300 trees / ha and 2.0 m x 1.5 m, except for GPC8 Alder, in which all constituent species are to be planted at 2,500 trees / ha

and 2.0 m x 2.0 m spacing.

- Natural regeneration of non-native species must be controlled.
- A Forestry Management Plan should be included for the life of the permission.
- All Native Woodland Establishment Scheme sites may include up to 15% Areas of Biodiversity Enhancement (ABEs). As set out in the Forest Biodiversity Guidelines, ABEs include existing habitats specifically identified for retention. Such habitats represent biodiversity 'hotspots' on the site, and are to be retained and protected during planting and management of the woodland. Suitable habitats can include poor fens and flushes or species-rich grassland, linear features such as hedgerows, stone walls or old drainage ditches, and point features such as individual old trees, fallen trunks or badger setts. When identifying ABEs, the Forester must prioritise areas and features of ecological value, e.g. species-rich grassland.
- The minimum average width acceptable is 20 m 'tree-to-tree' (i.e. excluding open spaces such as aquatic buffer zones, public road setbacks and archaeological exclusion zones.
- Woodland activities, including uprooting and felling of trees shall be subject to the provisions of the Forestry Act, 1946, as amended.

Drainage

- Surface water shall be appropriately collected on site to prevent flow onto the public roadway and adjoining properties. Design details for surface water attenuation should be submitted as part of any planning application.
- Access roads should have a permeable surface and be set back a minimum five metres from the existing boundary drainage ditches to avoid sedimentation of nearby watercourses.
- Pipe culverts should be installed where appropriate along the proposed access track to ensure that existing surface water flow is not disturbed. Given the temporary nature of solar PV developments, culverting existing watercourse/drainage ditches should be avoided.

Flood Management

The Council will have regard to the Planning System and Flood Risk Management-Guidelines for Local Authorities (DEHLG and OPW 2009) when assessing planning applications. The key requirements for the management of development in areas at risk of flooding include:

- All development proposals within or incorporating areas at moderate to high risk of flooding will require site specific and appropriately detailed Flood Risk Assessments.
- All development proposals within or incorporating areas at moderate or high risk of flooding will require the application of the Development Management Justification Test in accordance with the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DEHLG and OPW, 2009).
- Any proposal that is considered acceptable in principle shall demonstrate the use of the sequential approach to inform the site layout and design of development. Proposals shall also demonstrate that mitigation and management measures can be put in place and that the development will not increase flood risk elsewhere.

Architectural Heritage

Certain applications may be required to undertake an assessment of the impacts of a proposed development on architectural character, particularly in the vicinity of protected structures. Assessments should be undertaken by a suitably qualified conservation architect and it is advised that at preplanning stage, the Planning Authority should be contacted to determine if there is a need for such an assessment.

Archaeological Heritage

Where the application site includes or is located in close proximity to a Recorded Monument, the application shall be accompanied by an archaeological assessment prepared by a suitably qualified archaeologist detailing the impacts of the proposed development on the archaeology in the area. Archaeological monitoring during construction works will be required where appropriate.

County Geological Sites

Where the application is located within or partially within a County Geological Site, the application shall be accompanied by a report detailing the impacts of the proposed development on the site.

Community Consultation

The developer of a solar PV energy project shall engage in active consultation and dialogue with the local community at an early stage in the planning process and this must be demonstrated in the planning application. Methods of consultation include workshops, public open evenings, distribution of information leaflets, meetings/seminars with stakeholders or focus groups or another form of consultation appropriate to the area identified and the stage of the project.

The developer shall engage in early consultation (prior to submitting a planning application) with local residents regarding the following issues:

- Design and layout of the proposed solar PV farm
- The various stages of the project including planning, construction, commissioning, operation and decommissioning
- Anticipated project timetable (including any public exhibitions)
- Analysis of findings in relation to glint and glare
- Traffic expected to be generated during the construction and operational phases of the development and the routes proposed
- Identification of mitigation measures
- An outline of environmental and social benefits that the development will affect both locally and globally, including any planning gain for the local community.

A Community Report shall be prepared by the applicant and submitted with the planning application detailing how the final proposal reflects community consultation. Consultation shall continue throughout the construction, commissioning, operation and decommissioning phases of the development. The developer should appoint an individual to be accessible to the local community during these stages to allow for dialogue and communication and to keep the public informed about the progress of

the project.

Timescale

Where applications are approved for a temporary solar PV development, planning consent will be limited by condition to that temporary period. Planning permission shall be limited to a period of five years, unless granted by an extension of duration under Section 42 of the Planning and Development Act 2000 (as amended). The lifetime of the development shall also be restricted to a maximum of 25 years, to start from the date as detailed in the commencement notice for construction works to commence in accordance with Building Regulations requirements, due to the temporary nature of the development and the potential deterioration of the infrastructure.

Decommissioning

Where planning permission is granted for a solar PV development, a Decommissioning Management Plan will be agreed with the local authority three months prior to decommissioning. The Plan should include details for the restoration of the site, re- levelling to original contours and continued agricultural use.

Bonds

The Council may require, as a condition of planning permission, the lodgement of financial security to ensure that the permitted development is satisfactorily completed and maintained until decommissioned and appropriately restored. The amount of the security will be determined by the Council. The security will be held by the Council until all works are satisfactorily completed to the exacting standards of the Council, or until the development is taken in charge by the Council.

Appropriate Assessment

The Council will ensure that any plan or project and any associated works, individually or in combination with other plans or projects, are subject to Appropriate Assessment Screening to ensure that there are no likely significant effects on the integrity (defined by the structure and function) of any Natura 2000 site(s) and that the requirements of Article 6(3) and 6(4) of the EU Habitats Directive are fully

satisfied.

Where a plan or project is likely to have a significant effect on a Natura 2000 site it shall be subject to Appropriate Assessment. The plan or project will proceed only after it has been ascertained that it will not adversely affect the integrity of the site or where in the absence of alternative solutions, the plan/project is deemed imperative for reasons of overriding public interest, all in accordance with the provisions of article 6(3) and 6(4) of the EU Habitats Directive.

Environmental Impact Assessment

The Council will require an Environmental Impact Assessment (EIA) to be carried out for proposed development listed in Schedule 5 of the Planning and Development Regulations 2001 (as amended) or other developments which it considers likely to have significant environmental effects. The decision as to whether a development is likely to have significant effects on the environment shall be made in accordance with the criteria set out in Schedule 7 of the Planning and Development Regulations 2001 (as amended).

Where an EIA is required to be carried out the Planning Authority shall require an Environmental Impact Assessment Report (EIAR) to be submitted as part of the planning application. The applicant may request the Planning Authority to give a written opinion on the information to be contained in the EIAR. The Planning Authority will have regard to the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DECLG, 2013).

4.3 Solar PV Roof Mounted

Part L of the Irish Building Regulations state that a building shall be designed and constructed so as to limit the amount of energy required and the amount of carbon dioxide (CO_2) emissions for its operation insofar as is reasonably practicable. Building regulations requirements for new dwellings also prescribe that a reasonable proportion of the energy consumption to meet the energy performance of a dwelling is provided by renewable energy sources. Solar technologies can be used to help meet this contribution.

Solar panels are typically located on the roofs of houses or other structures and require a southern aspect for solar gain. The area required for solar panels is directly related to the amount of energy gain sought. The Planning and Development Regulations 2001 (as amended) set out the area of roof space considered to be exempt from planning permission for residential, industrial and agricultural structures.

Industrial / commercial and agricultural sites generally have a large available roof space for incorporating solar PV technology. Office developments also have good PV potential because their electricity demand is significant year round (including summer) and because demand is highest between 9am and 5pm. Thus the match between demand and supply is good.

The Council will facilitate the incorporation of solar energy technologies in the design of new/existing residential, commercial, industrial and agricultural structures, as well as on public buildings and community buildings, where it is demonstrated to the satisfaction of the Council that there will be no significant adverse impact on the built and natural environment, the visual character of the area or on residential amenity. The Council may also require the installation of solar panels in certain types of developments.

4.3.1 Objectives

ES04: To encourage the incorporation of thermal solar or solar PV (or other suitable micro renewable technology) into the design of all new developments, or extensions to existing development.

ES05: To facilitate solar PV developments on existing industrial or agricultural buildings provided that they do not give rise to adverse impacts on visual or residential amenity.

ES06: To promote and facilitate the use of solar technology in public buildings and infrastructure e.g. traffic lights, street lights and road information signage.

Legend

- Solar Granted Applications
- Solar Refused Applications
- Solar Current Applications
- Electrical Substation
- Electrical Substation
- 38kv Line
- 110kv Line
- 220kv Line
- 110kv Cable (Indicative only)

Rinn Chill Mhichíl
Ask Hill
Tara Hill
Ballyminaun Hill
Boley Hill
Carrigroe Hill
Rinn Chathóir
Oulart Hill
Vinegar Hill
Slievenagorea
Bree Hill
Raheenahoon Hill
Screen Hills
Lacken Hill
Camaross Hill
Camlin Hill
Carrigbyrne Hill
Tinnacarrick
Slieve Coiltia
Forth Mountain
Rosslare Point
Slabaí Loch Garman (thuaidh)
Rámhainn
Slabaí Loch Garman (theas)
Cuan Bhanú
Ballyteige Burrow
Tacumshin Lake
Lady's Island
Inish Slobs
Keeragh Islands
Carnsore Point
Rinn Chrois Fhearnóg
Saltee Islands
BLACKSTAIRS MOUNTAINS
ST GEORGES CHANNEL
Muir Bhreatain
ATLANTIC OCEAN
An tAigéan Atlantach
N
W
E
S
0 5 10
ciliméadair

Wexford County Council

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Solar Farm Permissions and Grid Infrastructure

Drawn by: NK	Checked by: FF
Date: 13.06.2022	Map No: 1

Legend

- Pearl Mussel Areas
- Protected Shellfish Area
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Proposed Natural Heritage Area (pNHA)
- Natural Heritage Area (NHA)

Gorey

Enniscorthy

New Ross

Wexford

N

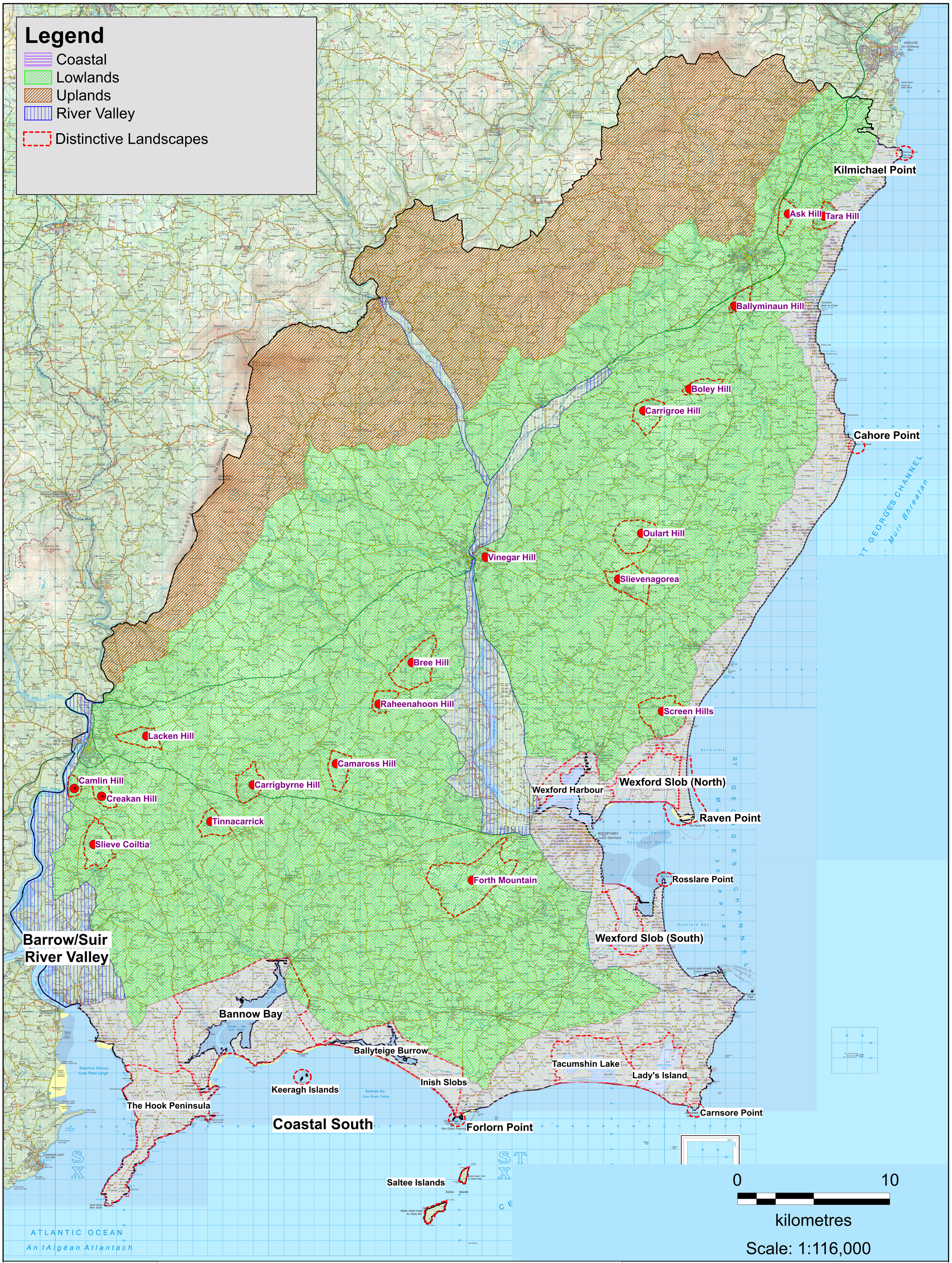
W E

S

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Title: Designated Sites

Drawn by: NK	Checked by: FF
Date: 13.06.2022	Map No: 3



Wexford County Development Plan 2022-2028

Volume 10 Energy Strategy

Title: Landscape Character Units

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 4

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Exclusion Zones around Settlements

Drawn by: NK	Checked by: FF
Date: 13.06.2022	Map No: 5

Legend

- County Boundary
- Settlement Exclusion Zones
- Nature Conservation Exclusion Zones
- Distinctive Landscapes Exclusion Zones
- Open for Consideration

N
W E
S

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Areas Open for Consideration for Solar Farms

Drawn by: NK	Checked by: FF
Date: 13.06.2022	Map No: 6

Chapter 5 – Onshore Wind Energy

5.1 Introduction

Ireland has one of the most favourable climates for harnessing wind energy in Europe and this technology is the largest contributor to renewable electricity generation in the country to date. The Draft NECP 2021-2030 suggests that onshore (and offshore) wind energy installations will continue to increase in line with projections for energy consumption by 2030.

A key part of the Climate Action Plan 2019 is to ensure Ireland meets its future needs for renewable electricity in a sustainable manner. It is intended to increase reliance on renewable electricity from 30% to 70% by 2030 with onshore wind energy a key component to deliver this target. The delivery of wind energy must also be balanced with protection of the landscape of Wexford, including the natural and built environment.

5.2 Current Wind Energy Strategy

The Wind Energy Strategy was prepared as part of the Wexford County Development Plan 2013-2019. The Strategy was prepared having regard to the Wind Energy Guidelines 2006 which were in place at the time. These guidelines have been reviewed and there has been a public consultation period for the Draft Revised Wind Energy Guidelines December 2019. As a proven and cost effective technology, onshore wind will remain part of Ireland's generation portfolio out to 2030 and will help to meet Ireland's contribution to the binding EU-wide 2030 renewable energy target.

It is the intention of the Council to amend the wind chapter to take into account changes of the new revised draft guidelines, including amendments to development management standards, and to ensure consistency with the Wexford County Development Plan 2022-2028.

The key aspects of these changes are:

- the application of a more stringent noise limit, consistent with World Health Organisation noise standards, in tandem with a new robust noise monitoring regime, to ensure compliance with noise standards;
- a visual amenity setback of 4 times the turbine height between a wind turbine and the nearest residential property, subject to a mandatory minimum distance of 500 metres between a wind turbine and the nearest residential property;
- the elimination of shadow flicker; and
- the introduction of new obligations in relation to engagement with local communities by wind farm developers along with the provision of community benefit measures.

Upon adoption the Planning Authority will be required to have regard to the revised wind energy guidelines and apply any specific planning policy in the preparation of their development plans or variations to development plans.

The key objectives of the Wind Chapter are as follows:

- Ensure the security of energy supply by supporting, in principle and at appropriate scales and locations, the development of wind energy resources in the county.
- Promote the development of wind energy and other renewable energy sources in the county to meet national renewable energy targets (supplying a minimum of 70% of electricity consumption from renewable sources by 2030).
- Enable County Wexford to make the initial steps toward a low carbon economy by 2030 and generate the equivalent of 100% of its electricity needs from wind energy.
- Identify strategic areas in the county for wind energy development.
- Investigate the potential for relatively small-scale wind energy developments within urban and industrial areas, and for small community- based proposals outside the key areas.
- Ensure the production of wind energy is consistent with and takes account of nature conservation and environmental legislation and targets, including the

conservation and protection of the designated and proposed Natura 2000 sites and Natural Heritage Areas in and adjacent to the county.

- Ensure full compliance with the requirements of the EU Habitats Directive (92/43/EEC), in particular the need for Appropriate Assessment, in line with the European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997)(as amended), European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011), Appropriate Assessment Guidelines (Department of Environment, Heritage and Local Government, 2009) and the Planning and Development Act 2000 (as amended).
- Ensure full compliance with the requirements of the EU Strategic Environmental Assessment Directive (2001/42/EC), the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004) (as amended) and the Strategic Environmental Assessment Guidelines (Department of Environment, Heritage and Local Government, 2004).

Map No. 8 shows the location of installed wind farms in County Wexford, excluding single domestic and industrial turbines.

5.3 Wind Energy Methodology

Introduction

The Wind Energy Chapter has been prepared in accordance with Wind Energy Development Guidelines and best practice. The methodology involved an analysis of key environmental, landscape, technical and economic criteria. GIS was utilised to examine a range of factors relating to wind energy development including: wind energy potential (through the Wind Speed Atlas), grid infrastructure, natural heritage designations, urban settlements, landscape sensitivity and the location of existing and permitted wind farms. Each of these criteria were mapped and overlaid on GIS in order to determine the most suitable locations for wind farm development. The strategies of adjoining authorities were also examined to ensure consistency across boundaries.

Wind Resource

The Sustainable Energy Ireland (SEI) Wind Atlas 2003 was utilised to extract data on constrained wind resources for County Wexford.[4] The SEI Wind Atlas provides information on wind speeds modelled at heights of 50 metres, 75 metres and 100 metres above ground level. For the purposes of this Strategy, it was decided to use wind speeds at 75 metres above ground level as this reflects the lower turbine heights for commercial wind operators. Only wind speeds above 7.5 metres per second were analysed, as wind speeds below this level were deemed not to be commercially feasible for wind energy generation. The results are shown on Map No. 9.

Transmission Network

A second consideration in identifying areas for wind farm development is access and proximity to the transmission network. Map No. 9 shows the existing transmission infrastructure in County Wexford. As a general rule, the larger wind energy developments need to access the larger power lines such as the 400kV or 220kV lines. Smaller wind energy developments can access into the smaller capacity network such as 110kV or 38kV. However, various technical considerations also come into play in accessing the transmission network.

Designated Sites

Sites designated under European and National legislation for the protection of natural heritage including habitats and species, flora and fauna are shown on Map No. 10. These include Special Areas of Conservation (SAC), candidate Special Areas of Conservation (cSAC), Special Protection Areas (SPA), Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA), Nature Reserves, Pearl Mussel Areas and Shellfish Areas. The designated sites have been excluded from the Acceptable in Principle and Open for Consideration areas.

SAC's and SPA's are also known as Natura 2000 sites and together they form part

[4] The constrained wind speed maps show areas where the wind speed exceeds 7.5m per second and where wind farms are considered commercially viable/feasible commercial resource constrained by physical limitations including airports, roads, lakes, canals, railways, electrical infrastructure, and urban settlements.

of the network of sites of highest biodiversity importance in the EU. Appropriate Assessment Screening was undertaken to assess the potential impacts of this Strategy on Natura 2000 sites. In addition, an SEA process was carried out which assessed wider potential biodiversity impacts in relation to this Strategy.

Residential Areas

Wexford is a predominantly rural county with a strong pattern of independent towns and villages connected by the national and regional roads network. The areas identified for wind energy development avoid the larger settlements of Wexford, Enniscorthy, New Ross and Gorey. In addition, a minimum exclusion zone of 1000 metres has been applied to Level 3(a) Service Settlements, Level 3(b) Strategic Settlements and Level 4 Settlements identified in the Settlement Strategy of the Wexford County Development Plan. These exclusion zones will facilitate the continued growth, development and investment into these existing settlements.

County Wexford has a high rural population. Geodirectory was used to identify the density of housing per square kilometre in each townland. The results are shown on Map No. 11. Townlands with higher densities were excluded from the Acceptable in Principle and Open for Consideration areas.

Notwithstanding the identification of Acceptable in Principle and Open for Consideration areas for wind farm development, in the interests of protecting residential amenity, wind turbines shall not be permitted within 500 metres of any existing or permitted dwelling house. A distance greater than 500 metres may be required depending on the height of the turbines purposed and the potential for increased noise and shadow flicker. Similarly, turbines shall not be permitted within 250 metres of the boundary of an adjacent landholding (including residential and agricultural landholdings), unless the written consent of the owner is given.

Installed Wind Farms

Special cognisance has been taken of the existing operational and permitted wind farms and investments made by private developers, the ESB and EirGrid in terms of site access roads, electricity transmission and distribution infrastructure and

appropriately sited substations. The Council recognises the opportunities arising from the use of more efficient turbines on established wind farms, as they generate much higher energy yields per turbine, thereby reducing the need for additional turbines. The grouping or clustering of wind projects in relatively close proximity on sites with suitable resource is also important in reducing cost to both developers and consumers. Well planned cluster developments enable developers to achieve lower average connection costs and reduce the costs and timelines of infrastructure delivery for the Grid Operator.

Tourism and Recreation

Consideration was also given to areas that are of significant importance for recreation or tourism. In particular, established tourism and recreational areas such as the Blackstairs Mountains, Mount Leinster, Hook Peninsula and other coastal areas were considered to be more sensitive to wind farm developments by virtue of their high scenic value, recreational/ tourist functions, natural heritage designations or archaeological resources. Wind farm developments are not incompatible with tourism and leisure interests, but care needs to be taken to ensure that insensitively sited wind farm developments do not impact negatively on tourism potential. Consideration also needs to be given to the extent to which recreational pursuits and facilities, such as walkways, can be accommodated and facilitated either within or adjacent to wind energy developments.

Landscape Susceptibility

Slope is only one parameter in identifying areas of potential landslide susceptibility. In addition, other factors such as type of soil (mineral or peat), depth of soil, underlying bedrock, aspect and weather patterns can all contribute to landslide susceptibility. The Geological Survey of Ireland (GSI) was consulted during the preparation of this Strategy. It was advised that landslide risk assessment should be undertaken on a site by site basis and that policy should reflect the importance of undertaking adequate modelling, risk assessment and mitigation at the planning application stage. Applications for wind farm developments will be required to include a landslide susceptibility and risk assessment to ensure that all factors contributing to slope instability are identified and addressed appropriately.

Archaeology

Generally, archaeological impacts associated with wind farm developments are site specific. Nonetheless, there are significant clusters of archaeological sites or archaeological landscapes in the county, particularly in the south of the county and around historic towns. In addition, there are a number of sites and monuments under public ownership or guardianship that represent a current or future tourism resource. Whilst not precluding wind farm development, the visual impact of wind farms on such sites and archaeological landscapes should be carefully considered.

Protected Structures

While the location of protected structures did not inform the identification of areas for wind farm development, it will be important that the impacts of proposed wind farm developments on such structures are assessed at the planning application stage. Certain applications may be required to include an assessment of the impacts of a proposed development on architectural character. Assessments should be undertaken by a conservation architect and it is advised that at preplanning stage, the Planning Authority should be contacted to determine if there is a need for such an assessment.

Geological Sites

'The Geological Heritage of County Wexford – An Audit of County Geological Sites for County Wexford' published by the GSI identifies 42 sites of geological and geomorphological importance in the County. These sites are identified as County Geological Sites and are protected under the objectives of the County Development Plan per Map no. 7. Some of these sites have been proposed for designation as NHAs and are considered to be of national importance as best representative examples of particular geological formations or features. The impact of wind farms on such sites should be carefully considered.

Landscape and Visual Impacts

The Landscape Character Assessment (LCA) was used to inform this Strategy. The LCA identifies landscape character units which are units of similar landscape

characteristics and features with distinctive and uniform landscape quality and integrity. Four landscape character units are identified: Uplands, Lowlands, River Valleys and Coastal. Within these units there are also ‘Distinctive Landscapes’. These are generally located within the lowland and coastal landscape units and represent the features in the landscape and seascape which have the most visual interest and prominence, and are therefore generally more sensitive to development. The landscape character units and distinctive landscapes are shown on Map No. 12.

The landscape character units were used as a baseline to assess capacity for areas to accommodate wind farm development and the scale of wind farm development that may be acceptable within each unit. Each landscape character unit was matched to a Landscape Character Type (LCT) in the Wind Energy Development Guidelines. In this way, the ability of each landscape character unit to absorb new wind farm development was assessed. The results are shown in Table 7 below.

Table 7: Strategic Guidance on Landscape Capacity for Wind Energy Developments in Landscape Character Areas

LCA	Characteristics	Wind Resources and Wind Farm Potential	Capacity of Landscape for Wind Farm Development	LCTs in 2006 Guidelines	Appropriate Size of Wind Farms
Uplands	Low intensity agriculture and stock rearing, coniferous forestry plantations and areas of transitional vegetation. Higher ground is characterised by poor drainage, higher wind/rainfall, limited vegetation and land use. This landscape contains elevated and steeper land, ridges and skylines, which are prominent in the overall landscape and which are generally more sensitive to development. Recently constructed wind farms have become a feature in this landscape.	Potential: High 220kV line runs through/adjacent to this area Areas of high wind speed Castledockrell wind farm (12 turbines) and Ballindaggin wind farm (6 turbines) are located in this area and permission has been granted for a further eight wind farms.	Limited capacity to absorb further development.	Mountain Moorland – may be inappropriate for wind energy development for reasons of natural heritage and the fact that some of these landscapes are of rare scenic quality and/or support some of the last wilderness areas of relatively pristine, unspoilt and remote landscapes.	No longer suitable – located in the Not Normally Permissible area.

LCA	Characteristics	Wind Resources and Wind Farm Potential	Capacity of Landscape for Wind Farm Development	LCTs in 2006 Guidelines	Appropriate Size of Wind Farms
Lowlands	Predominantly fertile lands with higher levels of population and intensive agriculture. Slope and topography occurs in a shallow/ gradual transition. Extensive views across large fields. Number of prominent hills which provide more enclosure and 'punctuation' within the overall landscape.	Potential: Moderate to High 220kV and 110kV lines run through this area High wind speeds Richfield wind farm (18 turbines) is located in the southern part of this zone.	High capacity outside of the exclusion zones for settlements and the natural heritage designations. To avoid disproportionate visual impacts and considering the open, flat and often regular nature of the landscape, wind farm developments should be confined to specific areas of the region. Hence, cumulative visual impacts should be restricted to those locations and their surrounding environs and not affect viewsheds throughout the rest of the County.	Hilly and Flat Farmland – although hilly and flat farmland type is usually not highly sensitive in terms of scenery, due regard must be given to houses, farmsteads and centres of population.	There are opportunities to accommodate wind farm developments in the zoned areas subject to careful layout and siting that avails of topographical screening where possible.
River Valleys	Similar characteristics to lowlands but have a more scenic appearance due to the presence of the rivers and their associated riparian and woodland habitats.	Potential: Low Wind speeds less than 7.5m/s	Capacity to absorb wind farm development in this area is low due to scenic value and natural heritage designations.	Hilly and Flat Farmland	Not Normally Permissible
Coastal	East coast is characterised by long, relatively straight coasts of sand or shingle backed	Potential: Moderate to Low High wind speeds but	Low capacity due to the scenic, tourism and recreation value of this area combined with a	Coastal Zone	Not Normally Permissible

LCA	Characteristics	Wind Resources and Wind Farm Potential	Capacity of Landscape for Wind Farm Development	LCTs in 2006 Guidelines	Appropriate Size of Wind Farms
	up by low cliffs and sand dune systems. The northern part of the eastern coast has more promontories and smaller bays. South coast has long beaches and dune systems with views to the Saltee and Keeragh Islands.	majority of landscape is distant from grid. Ballywater wind farm (21 turbines) and Carnsore wind farm (16 turbines) are located in this area.	number of small settlements, high concentrations of one-off houses and a significant number of nature conservation sites. The low lying nature of the South Coast means that wind farms would be visible from a wide area.		
Distinctive Landscapes	Hills and Ridges - offer broad views across the surrounding landscape. Water Bodies - the water features and the generally low-lying land in which they are set form distinctive landscapes. The Islands around the south coast of Wexford - significant landscapes in themselves, as well as providing punctuation and focus to the seascape. Coastal Promontories – prominent features in the coastal land/seascape. Hook Peninsula –	Potential: Low High wind speeds but majority of landscape is distant from grid.	Low capacity due to the scenic, tourism and recreation value, geological, archaeological or nature conservation interests.	Hilly and Flat Farmland/ Coastal Zone	Not Normally Permissible

LCA	Characteristics	Wind Resources and Wind Farm Potential	Capacity of Landscape for Wind Farm Development	LCTs in 2006 Guidelines	Appropriate Size of Wind Farms
	characterised by generally low and rocky cliffs. The southern tip of the peninsula has a very flat low lying distinctive landscape punctuated by agricultural and residential buildings. Screen Hills – represent the largest raised ice contact delta in Ireland and possibly in Europe. Slobs at Wexford and Inish and Ballyteigue – form distinctive, low lying landscapes with straight drainage ditches and wetland areas, largely formed by land reclamation projects in the 1800s.				

To avoid potential cumulative impacts, the land use designations in adjoining counties were considered. Map No. 13 shows the areas identified as preferred locations or areas open for consideration for wind farm development in the adjoining counties. Significant areas adjacent to the Wexford boundary in the counties of Wicklow and Carlow are open for consideration to wind farm development. It emerged during the preparation of this Strategy that two areas identified as Open for Consideration in the Carlow Wind Energy Strategy fall within County Wexford. Wexford County Council has notified Carlow County Council of this error. Applications for wind energy development in these areas will not be favourably considered under the Wexford Wind Energy Chapter.

Scenic routes and protected views from the adjoining counties were also considered. Schedule 10.15 of the Wicklow County Development Plan 2016- 2022 identifies the prospect from the R748 Holts Way at Coolroe towards Annagh Hill and Croghan Mountain (Prospect No. 52) as a prospect of special amenity value. The North Clonegal Route L2021-97 (Scenic Route No. 1), featuring the Valley to Wexford Uplands, is identified as a scenic route in the Carlow County Development Plan 2015-2021.

A further consideration in terms of visual impacts is the location of existing and permitted wind farm developments in the adjoining counties. Map No. 8 shows the location of installed wind farm developments in County Wexford and in adjoining counties up to 15km from the county boundary.[5] Viewshed analysis was undertaken for a number of these wind farms. A viewshed is an area that is visible from a specific location based on elevation values of a digital elevation model (DEM). While these viewsheds are a useful guide, they do not take account of screening offered by vegetation or buildings so should not be considered definitive and do not replace more detailed modelling required for site specific wind farm developments.

[5] At the time of preparing the Plan it was not possible to map existing and permitted wind farms in County Carlow

5.4 How the SEA informed the Wind Energy Chapter

The Energy Strategy was assessed as part of the Strategic Environmental Assessment (SEA) of the Wexford County Development Plan 2022-2028 and mitigation measures were included where appropriate. The SEA is contained in Volume 12.

5.5 Wind Farm Development Areas

Introduction

This section identifies strategic areas in the county where wind energy developments are generally acceptable, open for consideration or not normally permissible. These areas have been identified based on the methodology contained in Section 5.3 and have been informed by the SEA and Appropriate Assessment processes. It should be noted that all wind farm development proposals will be subject to the development management standards set out in Section 5.7 of this Chapter including, where required, Environmental Impact Assessment and Appropriate Assessment. Wind resource is a critical element in projecting turbine performance at a given site. It is the responsibility of the developer to satisfy themselves that the proposed development in the selected site will be economically viable.

Identification of Areas for Wind Farm Development

The county has been divided into the following three areas for the purposes of wind energy development: Acceptable in Principle, Open for Consideration and Not Normally Permissible.

To avoid disproportionate visual impacts and considering the open, flat and often regular nature of the landscape in County Wexford, it was decided that future wind farm developments should be confined to a specific area of the region. Hence, cumulative visual impacts should be restricted to those locations and their surrounding environs and not affect viewsheds throughout the rest of the county. Whilst there may be scope for small, locally based projects on carefully selected sites in the county, the potential for new larger commercial wind farms is much more

limited due to the scale and nature of the landscape.

North

Due to the number of existing wind farms, and having regard to the areas open for consideration for wind farm development in adjoining counties, it is considered that the north-west of the county has reached capacity in terms of wind farm development. Further wind farm development in this area may have potential adverse cumulative impacts. This area is also designated as 'Uplands' in the Landscape Character Assessment and is identified as having limited capacity to absorb development. The north-east of the county is also mainly designated as 'Uplands' and there are a number of settlements in this area which make it less suitable for wind farm development. The north of the county has therefore been included in the Not Normally Permissible area.

Applications for repowering will be considered on a case-by-case basis in accordance with Table No. 8. Any such applications should include details of how best available technology are to be used to keep noise impacts to a minimum.

South

This area has pockets of high housing density and is close to a number of SPAs including Lady's Island Lake, Ballyteigue Burrow, Bannow Bay and Tacumshine Lake. These sites are some of the most important ornithological sites in the country. They are considered nationally and internationally important as roosting, feeding, wintering and breeding sites for many bird species some of which are listed on Annex I of the EU Birds Directive. The cumulative effects of wind farm developments in this area and the potential impacts on flight paths for migrating birds are unknown.

The south area is currently serviced by 110kV and 38kV lines. While smaller wind energy developments can access into these smaller lines, in general larger wind energy developments need to access the larger power lines such as the 400kV or 220kV lines. The Richfield wind farm development is located in this area. Further wind farm development could potentially require larger power lines which could have the potential for significant cumulative visual impacts in terms of overhead lines and

associated infrastructure. There are also a number of landscapes of greater sensitivity in this area. The south of the county has therefore been included in the Not Normally Permissible area.

East

This area is considered to be visually sensitive to wind farm development. It is close to a number of designated sites and contains a number of distinctive landscapes (hills and ridges) as identified in the Landscape Character Assessment. It is considered that wind farm developments in this area would have widespread visual effects. The east of the county has therefore been included in the Not Normally Permissible area.

West

This area is considered to be the most suitable for new wind farm development. It is close to the 220kV line and has the lowest density of housing per square kilometre when compared with the other three areas. The Acceptable in Principle and Open for Consideration zones are located in this area. These zones are identified on Map No. 14 and Table 8 below sets out the principles that apply to each zone. In the Open for Consideration area, care will need to be taken to ensure that new wind farm development does not result in adverse impacts on the Slaney River Valley SAC (Boro River) and also that any new development does not result in cumulative impacts when taken together with existing and permitted wind farms in the north-west of the county.

In order to compare the Acceptable in Principle and Open for Consideration areas with the location of existing and permitted wind farms, Map No. 14 should be read in conjunction with Map No. 8.

During the lifetime of this Plan, if any part of the Acceptable in Principle or Open for Consideration area is designated or proposed for designation as a Natura 2000 site, this area shall no longer be deemed suitable for wind farm development.

Table 8: Wind Energy Development Areas

Strategic Area	Description and Guidance
Acceptable in Principle	This is the preferred area for wind energy development characterised by low housing density, high wind speeds, proximity to 220kV grid line and where there is adequate road infrastructure and no significant conflict with natural heritage designations. Wind farm developments will be facilitated in this area subject to compliance with normal planning and environmental criteria and the development management standards contained in Section 5.7.
Open for Consideration	This area has the potential to accommodate wind farm development provided it does not have an adverse impact on the Slaney River Valley SAC or result in visual clutter or cumulative visual impacts with existing and permitted wind farms in the north-west of the county. Wind farm developments will be facilitated in this area subject to compliance with normal planning and environmental criteria and the development management standards contained in Section 5.7. Wind farm proposals in this area will be required to demonstrate that there will be no cumulative visual impacts, in particular with existing and permitted wind farms in the north-west of the county.
Not Normally Permissible	This area is considered to be generally unsuitable for wind farm development due to significant environmental, heritage and landscape constraints, housing density, distance from the grid and/or wind speed. Individual small scale turbines will be considered on a case-by-case basis for local community needs. Applications for re-powering (by replacing existing wind turbines) and

	extension of existing wind farms will be assessed on a case-by-case basis and will be subject to the development management standards contained in Section 5.7. Any such applications should include details of how best available techniques are to be used to keep noise impacts to a minimum. When assessing planning applications for repowering or extensions to existing wind farms against the development management standards, the planning authority will have particular regard to the reasons why the area was identified as 'Not Normally Permissible' in Section 5.5

5.6 Wind Energy Development Objectives

The objectives have been formulated having regard to national guidelines and in particular the Government's commitment to reduce greenhouse gas emissions and increase the amount of energy consumed from renewable sources by 2030. The objectives for wind energy development in County Wexford are set out below.

Objective ES07

Ensure the security of energy supply by supporting the development of wind energy resources in County Wexford at appropriate scales and in appropriate locations, subject to compliance with normal planning and environmental criteria and the development management standards contained in Section 5.7.

Objective ES08

Aim to achieve the target set out in the Renewable Energy Strategy, to enable County Wexford to make the initial steps toward a low carbon economy by 2027.

Objective ES09

Facilitate wind energy development on appropriate sites in the county and work with the relevant agencies to encourage investment in research and technology associated

with wind farms and other renewable energy technology.

Objective ES10

Favourably consider proposals for the development of infrastructure for the production, storage and distribution of electricity through the harnessing of wind energy in appropriate sites and locations, subject to relevant policy, legislation and environmental considerations and the development management standards contained in Section 5.7.

Objective ES11

Promote community consultation in proposed wind farm developments in accordance with Draft Revised Wind Energy Guidelines December 2019) , Best Practice Guidelines for the Irish Wind Energy Industry (IWEA, 2012) and the Code of Practice for Wind Energy Development in Ireland – Guidelines for Community Engagement (DCCAE, 2016).

Objective ES12

Encourage the development of ecological enhancements or improvements that go beyond measures required to mitigate or compensate for damage from wind farm construction. Providing attractive and wildlife-rich habitats is a way to contribute to local and national biodiversity strategies and targets.

Objective ES13

Require an Appropriate Assessment to be carried out for proposals which have the potential to adversely affect the integrity of any Natura 2000 site. Having regard to Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC, where a proposed development will give rise to significant adverse direct, indirect or secondary impacts on Natura 2000 sites (either individually or in combination with other plans or projects), permission will only be granted where there are no alternative solutions and where there are imperative reasons of overriding public interest in favour of granting permission, including those of a social or economic nature.

Objective ES14

Facilitate, where appropriate, small scale wind energy development projects in urban areas, industrial estates, business parks and small community-based proposals, subject to compliance with normal planning and environmental criteria and the development management standards contained in Section 5.7.

Objectives ES15

Consider the re-powering (by replacing existing wind turbines) and extension of existing wind farms. Applications on such sites will each be assessed on their merits, demonstrate that the equipment is upgraded to the best available technology and will be subject to the development management standards contained in Section 5.7 (see Table 8).

Objective ES16

Facilitate onshore support infrastructure including landing locations for land-sea connections for appropriate offshore development, subject to relevant policy, legislation, environmental, landscape, amenity, seascape and technical considerations and subject to the development management standards contained in Section 5.7.

Planning Exemptions and Strategic Thresholds

Micro renewable technologies for generating renewable energy for domestic, agricultural and light industrial activities are now exempted development subject to criteria detailed in the Planning and Development Regulations 2001(as amended). Micro-renewable technologies include wind, solar thermal, photovoltaic, heat pumps and biomass technologies.

Under the Planning and Development Act 2000 (as amended), the following category of wind energy developments may be considered as strategic infrastructure and are accordingly assessed by An Bord Pleanála: *“An installation for the harnessing of wind power for energy production (a wind farm) with more than 25 turbines or having a total output greater than 50 megawatts”.*

Section 37G(7)(d) of the Planning and Development (Strategic Infrastructure) Act 2006 (No. 27 of 2006) provides for An Bord Pleanála to attach a condition requiring the construction or financing of facilities or services for the local community in the area of the proposed development.

5.7 Wind Farm Development Management Standards

Introduction

This section sets out the considerations, guidelines and standards that will guide the preparation and assessment of planning applications for wind energy developments. These standards have been developed having regard to the Draft Revised Wind Energy Guidelines December 2019) and best practice. They also incorporate the mitigation measures identified in the SEA.

Pre-Planning Considerations

- Early consultation with Wexford County Council and the relevant statutory agencies will assist in identifying environmental sensitivities and other relevant designations and considerations during the preparation of a planning application.
- Wind energy developments with more than 25 turbines or having a total output greater than 50MW are considered Strategic Infrastructure and applications must be submitted to An Bord Pleanála.

Consultation with Local Community

- The developer of a wind energy project shall engage in active consultation and dialogue with the local community at an early stage in the planning process and this must be demonstrated in the planning application. The developer shall identify the nature and extent of the communities affected by the proposed development and shall consult with all such communities. Methods of consultation include workshops, public open evenings, distribution of information leaflets, meetings/seminars with stakeholders or focus groups or another form of consultation appropriate to the area identified and the stage of the project. Developers should have regard to the advice contained in Guidelines for Planning Authorities on Wind Energy Development

(Department of Environment, Heritage and Local Government, 2006) , Best Practice Guidelines for the Irish Wind Energy Industry (IWEA, 2012) and Code of Practice for Wind Energy Development in Ireland – Guidelines for Community Engagement (DCCAE, 2016) in relation to community consultation.

The developer shall engage in early consultation (prior to submitting a planning application) with local residents and the communities identified as being affected by the proposed development regarding the following issues:

- Design and layout of the proposed wind farm
- The various stages of the project including planning, construction, commissioning, operation and decommissioning
- Anticipated project timetable (including any public exhibitions)
- Scoping of Environmental Impact Statement and identification of likely significant impacts
- Analysis of findings in relation to shadow flicker and noise
- Traffic expected to be generated during the construction and operational phases of the development and the routes proposed
- Identification of mitigation measures
- An outline of environmental and social benefits that the development will affect both locally and globally, including any planning gain for the local community.

- A Community Report shall be prepared by the applicant and submitted with the planning application detailing how the final proposal reflects community consultation. The Community Report must also outline steps taken to ensure that the proposed development will be of enduring economic benefit to the communities concerned. While the precise benefit will vary according to the nature and scale of a project and the local communities' preferred options regarding the nature of the community benefit, it is essential that applicants/developers offer a form of community benefit that provides for a tangible long-term dividend to the community.

- The community report shall detail the following:
  - A map of the proposed project and the communities in the vicinity of the proposal within a radius of up to approximately 10 km of the turbines, depending on the circumstances of the case;
  - The steps taken by the applicant seeking planning permission for the wind energy development to seek out the views of relevant communities in developing the project;
  - A summary of the responses received as a result of the engagement process and a statement of any principal design adjustments or modifications undertaken in response to the feedback of the community before the project was submitted for planning permission;
  - Proposed details as regards the steps to be taken to ensure that the proposed development will be of enduring economic benefit to the communities concerned, through the negotiation of a form of community investment/ownership, benefit or dividend;
  - Demonstrate how the proposed development will adhere to the Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement issued by the Department of Communications, Climate Action and Environment (2016) (or any subsequent replacement Code of Practice).

- Consultation shall continue throughout the construction, commissioning, operation and decommissioning phases of the development. The developer should appoint an individual to be accessible to the local community during these stages to allow for dialogue and communication and to keep the public informed about the progress of the project. Contact details should be made available to neighbouring residents and community groups. The operator should investigate any complaints from individuals and, where appropriate, work with the relevant authorities to address any issues raised.

Duration of Permission

Planning permission shall be limited to a period of five years, unless granted by an extension of duration under Section 42 of the Planning and Development Act 2000 (as

amended). The lifetime of the development shall also be restricted to a maximum of 25 years, to start from the date of grid connection, due to the temporary nature of the development and the potential deterioration of the infrastructure.

Siting, Layout and Design

- The layout and design of wind farms should be suited to the landscape setting and minimise visual impact on the landscape.
- Wind turbines will not be permitted to locate within a distance of four times the tip height between a wind turbine and the nearest point of the curtilage of any existing or permitted residential property, subject to a mandatory minimum setback of 500 metres. Applications will be required to include the GPS coordinates (Irish Grid or Irish Transverse Mercator) for each turbine on a site layout map.
- Wind turbines will not be permitted within 250 metres of the boundary of an adjacent landholding (including residential and agricultural landholdings), unless the written consent of the owner is given.
- An exception may be provided for a lower setback requirement from existing or permitted dwellings or other sensitive properties to new turbines where the owner(s) and occupier(s) of the relevant property or properties are agreeable to same but the noise requirements of these Guidelines must be capable of being complied with in all cases. In such exceptional reduced setback situations, the relevant parties must provide written confirmation to the satisfaction of the planning authority that they have agreed to a reduced setback and have no objection to the proposed wind energy development. A minimum set back distance from national and regional roads and railways of a distance equal to one and a half times the height of the turbine and blade shall be achieved.
- A minimum set back distance from national and regional roads and railways of a distance equal to one and a half times the height of the turbine and blade shall be achieved.

Boundaries and Fencing

Fencing shall generally be permitted around the substation and not on any other part of the site unless agreed as part of a rehabilitation programme for on-site vegetation.

In such cases fencing shall be permitted for the length of time required to ensure recovery of the vegetation.

Access Roads

- Access roads within the site shall be unsurfaced and shall be located and constructed so as to minimise their visual impact. If the development is decommissioned they shall be removed, unless an alternative use for them has been agreed in advance with the Planning Authority.
- Prior to commencement of development, details of access openings to the site shall be agreed with the Planning Authority.
- Site road embankments and associated areas shall be contoured and seeded to the satisfaction of the Planning Authority after construction.
- Surface damage to public roads created during the construction phase shall be reinstated to the satisfaction of the Planning Authority.
- Construction/delivery routes shall be assessed on a case by case basis.

Ancillary Structures and Equipment

- No structures other than the wind turbines, substation, monitoring mast and other essential ancillary installations will be permitted.
- Cables from the turbines to the substation shall be located underground. The planning application shall include details of all such installations.
- All wind monitoring masts require planning permission. These are typically 40m or 50m masts required to monitor on-site wind speeds over 1-2 years. If a permanent, hub height mast is required, permission will be considered only if the developer demonstrates that it is necessary for the economical operation of the wind farm.

Shadow Flicker

A Shadow Flicker Study shall be submitted detailing the outcome of computational modelling for the potential for shadow flicker from the development should accompany all planning applications for wind energy development. If a suitable shadow flicker prediction model indicates that there is potential for shadow flicker to occur at any particular dwelling or other potentially affected property, then a review

of site design involving the possible relocation of one or more turbines to explore the possibility of eliminating the occurrence of potential flicker is required. Following such a review, if shadow flicker is not eliminated for any dwelling or other potentially affected property then clearly specified measures which provide for automated turbine shut down to eliminate shadow flicker should be required as a condition of a grant of permission.

Noise

- An acoustic report carried out by an appropriately qualified and competent person shall be prepared for all noise sensitive properties within a distance of ten times the rotor diameter of any proposed wind turbine location.
- A separate acoustic report shall be prepared where there are other existing or permitted wind farm developments within 2km of the proposed development.
- Relative related noise levels (LA rated, 10min) resulting from wind development and taking into account the cumulative impact of noise levels from existing and proposed wind energy developments shall not exceed:
  1) Background noise levels by more than 5 dB(A) within the range 35-43 dB(A), or
  2) 43 dB(A),

  Both measured as LA90, 10min outdoors at specified noise sensitive locations.
- In lower noise environments where the background noise is less than 30 dB(A), the daytime level of the LA90, 10min of the wind energy noise shall be limited within the range of 35-40 dB(A).
- Noise shall be measured in accordance with the most up-to-date ISO standards for noise measurement or other best practice standards, as appropriate.
- Once commissioned, the development will be required to be monitored at the expense of the developer/operator. A noise monitoring report shall be submitted annually to the Planning Authority and/or at the request of the Planning Authority. In the event that the monitoring report shows that any turbines is exceeding its projected noise levels and is having a detrimental noise impact, the wind turbines shall be turned off until compliance with noise limits is proven to the satisfaction of the Planning Authority. The Planning Authority reserves the right

to commission an independent noise monitoring report to ensure compliance with noise limits are achieved, the costs of which shall be borne by the developer/operator.

The submitted acoustic report shall include the following:

1) A proposed noise monitoring and control procedure for the construction phase
2) A clear statement that the wind energy development shall not exceed the predicted LA rated levels per the acoustic report
3) A proposed detailed methodology for a post compliance noise survey in accordance with IoA GPG Supplementary Guidance Note 5: Post Completion Measurements for each turbine to be commenced within four weeks of commissioning of any turbine or group of turbines.
4) A map showing the noise monitoring locations for the ongoing phase of the wind energy development along with a detailed proposed noise monitoring and reporting procedure.
5) A proposal for a documented complaints handling procedure.

Electromagnetic Interference

The potential electromagnetic interference of any proposal shall be assessed by the applicant in consultation with the relevant bodies prior to submission of any application. Proposals shall include measures to monitor the effects of the development on telecommunications and procedures to remedy any interference when the wind farm becomes operational.

Grid Connection

While the grid provider is responsible for grid connections, details of likely routes shall be included with the planning application. Connections within the wind farm shall be laid underground.

Financial Contributions

- Prior to commencement of development, the developer will be required to pay Wexford County Council a financial contribution towards the capital cost of providing infrastructure in accordance with the Development Contribution

Scheme in place at the time of the application.

- In order to ensure the satisfactory completion of the development, the developer will also be required to pay a deposit or bond, the amount of which will be decided by the Planning Authority.

Landscape Impact Assessment

- All wind farm applications should be accompanied by a Landscape Impact Assessment (LIA), either as part of the Environmental Impact Statement (EIS) where appropriate or as a separate report. The LIA should include the following:
    - Description of proposed development, including alternatives considered during design process;
    - Description of geographic location and landscape context;
    - Selection of viewshed reference points from where the proposal is examined in detail, to include the most prominent views of the proposed development from the closest town or villages, surrounding roads and elevated points;
    - Assessment of the sensitivity of landscape from each viewshed reference point;
    - Preparation of photomontages;
    - Estimation of likely degree of impact on landscape; and
    - Recommendation of mitigation measures
- The visual impacts on established landmarks, landscape features and views should be considered as part of the LIA. Potential impacts in adjoining counties should also be identified and assessed. In particular, designated scenic landscapes, views, routes and features of county, regional and local value may be considered and assessed for visual impacts.
- Should specific recommendations arise from the proposed National Landscape Strategy and National Landscape Characterisation, any future applications must take such guidance into consideration.
- Methods employed to mitigate the impact of wind turbines in the landscape setting in general will be influenced by the layout and design of the proposed wind farm. In this regard, applicants should have regard to Aesthetic Considerations in Siting and Design contained in Chapter 6 of the Guidelines for

Planning Authorities on Wind Energy Development (Department of Environment, Heritage and Local Government, 2006), and any updated version.

- Cumulative landscape and visual impacts must be assessed. For wind farm developments with a proposed tip height of over 100 metres, the cumulative impact should be assessed over an area of least 20km from the proposed development. For smaller developments, an area of at least 15km from the proposed development will need to be considered.

Archaeology

- Wind turbines and wind farms should be sited and designed to ensure that they do not unduly dominate or damage archaeological structures or sites. Adequate assessment and mitigation measures should be included as part of the EIS or as a separate report where appropriate.
- All planning applications in close proximity to a Recorded Monument should be accompanied by an archaeological assessment prepared by a suitably qualified archaeologist detailing the impacts which the proposed development would have on archaeology in the area and any mitigation measures proposed.
- A registered archaeologist should be present during the initial stripping of the topsoil at permitted development sites. Where developments are proposed close to National Monuments in State ownership or guardianship, and monuments subject to Preservation Orders, zones of visual amenity should be defined for them in order to assess potential impacts on the archaeological landscape and setting.

Architectural Heritage

Certain applications may be required to undertake an assessment of the impacts of a proposed development on architectural character, particularly in the vicinity of protected structures. Assessments should be undertaken by a conservation architect and it is advised that at preplanning stage, the Planning Authority should be contacted to determine if there is a need for such an assessment.

Forest Clearance

- An EIS is required to be carried out for deforestation for the purpose of

conversion to another type of land use, where the area to be deforested would be greater than 10 hectares of natural woodlands or 70 hectares of conifer forest.

- A Limited Felling Licence (LFL) may be required from the Department of Agriculture, Food and the Marine. Two LFLs must be applied for: 1) to cover turbine bases, roads, buildings and 2) to cover the area on which turbulence felling will take place, if required.[6] The LFL applicant may be required to carry out replacement planting at an alternative site in their ownership as a condition of the licence. Developers should consult with the Forest Service in the Department at the earliest possible stage of the project in order to ensure that all forestry issues are identified and mitigated at the earliest opportunity. The Forest Service Policy on the Granting of Felling Licences for Wind Farm Development (Department of Agriculture, Food and the Marine, 2011) provides advice in this regard.

Traffic Management Plans

- Traffic Management Plans should be submitted with applications and should include details of the road network/haulage routes, the vehicle types to be used to transport materials on and off the site and proposals to address impacts on residents in relation to construction activities.
- The carrying capacity, operational efficiency, safety and investment in national roads should be protected in relation to the implementation of the Wind Energy Strategy and Traffic Impact Assessments may be required to demonstrate same.
- Construction traffic and machinery movement should be confined as much as is practicable to the roads and tracks that are part of the long-term development in order to minimise unnecessary compaction.
- Applicants will be required to comply with the development management standards contained in the County Development Plan in relation to sightlines and access onto national, regional and local roads.

[6] Turbulence felling is deemed to be felling in the vicinity of the turbines, the purpose of which is to avoid turbulence that can be created by the forest canopy and that can affect the performance and efficiency of the turbines.

Waste Management Plans

A Waste Management Plan (WMP) should be submitted with applications to address waste management impacts. This Plan should have regard to Best Practice Guidelines in Reuse and Recycling of Construction and Demolition Waste (Department of Environment, Heritage and Local Government, 2006). The WMP should be in compliance with county policies on construction waste management.

Environmental Impact Assessment

- Environmental Impact Assessment (EIA) is required to be carried out for wind farm developments where more than five turbines are proposed or where the proposed development would exceed 5MW. In these circumstances, an EIS must be submitted with the relevant planning application.
- EIA may also be required for projects under this threshold where the proposed development would be likely to have significant effects on the environment. Schedule 7 of the Planning and Development Regulations 2001 (as amended) sets out the criteria for determining whether a development would or would not be likely to have significant effects on the environment.

Construction and Environmental Management Plans

A Construction and Environmental Management Plan (CEMP) may be required to be prepared for wind energy developments. This would incorporate measures in relation to a range of environmental issues, such as surface water, groundwater protection, slope stability, flood risk potential, waste generation and management, ecology and protection of natural heritage and habitat restoration and management. The EMP should also include proposals in relation to annual monitoring procedures, particularly in the case of NHAs or Natura 2000 designated sites.

Bats and Birds

- Potential impacts on birds in terms of collision, disturbance and any other impacts must be considered. It will be particularly important to assess effects in relation to breeding areas, roosting grounds and flight paths in consultation with an appropriate authority and to ensure compliance with the Habitats Directive 92/43/EEC and the Birds Directive 2009/147/EC in relation to deterioration or

disturbance of breeding sites or resting places. Advice should be sought from a qualified and experienced ecologist/ ornithologist.

- Pre and post-construction monitoring of birds at wind farm developments will be required where appropriate. The post-construction monitoring schedule will be agreed in consultation with Wexford County Council and National Parks and Wildlife prior to the granting of permission.

Designated Sites

- All development proposals must be screened for Appropriate Assessment and shall be subject to full Appropriate Assessment where they have the potential to have significant adverse impacts on the integrity of a Natura 2000 site, either individually or in combination with other plans or projects, in accordance with Article 6 of the Habitats Directive 92/42/EEC. Permission will only be granted where the Appropriate Assessment concludes that no likely significant effects are likely to occur.
- Applicants should have regard to the following documents in the preparation of Appropriate Assessments:
    a) Planning and Development Act 2000 (as amended)
    b) European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997)(as amended)
    c) European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011)
    d) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2009)
    e) The Wind Energy Developments and Natura 2000 Guidance Document (European Commission, October 2010)
- Where a development is proposed close to or within a Natural Heritage Area, further ecological or geological surveys may need to be undertaken by suitably qualified ecologists or geologists.
- Where construction and maintenance of wind energy developments are proposed close to coastal and estuarine areas, any impacts shall be assessed and adequate measures for the protection of fisheries/ shellfisheries should be

developed as part of the EIS/EMP. In carrying out such assessment applicants should have due regard to the Shellfish Waters Pollution Reduction Programmes for Wexford Harbour Inner and Outer, Bannow Bay and Waterford Harbour Shellfish Designated Areas.

- Where construction and maintenance of wind energy developments are proposed close to designated freshwater pearl mussel rivers, any impacts shall be assessed and adequate measures for the protection of these areas will be required as part of the EIS/EMP.
- Other biodiversity issues should be considered where these are protected under Irish legislation such as the 1999 Flora Protection Order, the provisions of the Wildlife Acts 1976-2000 and international legislation such as Article 10 of the Habitats Directive.
- The protection of non-designated habitats, species and local biodiversity features should be promoted through site design and landscape management plans.

Habitat Mapping

Habitat mapping (including wetlands) and ecological impact assessment may be required for wind energy applications. This habitat mapping should be undertaken at an appropriate scale and in accordance with Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011). The habitat map should be overlaid with the proposed development to highlight sensitive habitats and help assess potential impacts. The applicant shall consult with Wexford County Council and National Parks and Wildlife Service in this regard.

Habitat Restoration

A habitat restoration and management plan should be developed as part of the EIS/EMP to address reinstatement of mineral soils and allow for positive ecological impacts associated with the development. Such plans should be developed in consultation with Wexford County Council.

Invasive Species

The implementation of measures to control and manage alien and invasive species such as Japanese Knotwood (Fallopia Japonica), Giant Rhubarb (Gunnera

tinctoria/manicata) and noxious weeds such as ragwort may be required as part of the EIS/EMP. In particular, attention should be paid to the potential for construction activities to introduce such species to an area.

Landslide Susceptibility

- Landslide susceptibility and risk assessment must be undertaken for all proposed developments to ensure all factors contributing to slope instability are identified and addressed appropriately. The developer should consult with the Geological Survey of Ireland and obtain professional advice/source reports from suitably qualified geotechnical engineers, engineering geologists or geologists as appropriate. If upland sites are proposed, the application should be accompanied by a statement from a geologist, a hydro-geologist or an engineer with expertise in soil mechanics.
- For wind farm developments in areas of modified or degraded peatland habitat a peatland conservation and management plan must be developed, where appropriate and in agreement with National Parks and Wildlife Service, in line with the Ireland's Peatland Conservation Action Plan 2020 (Irish Peatland Conservation Council, 2009).
- The potential impacts on slope stability relating to climate change impacts, most particularly flash floods and changing weather patterns shall be considered and adaptation measures should be developed to account for same. Regard shall be given to The Planning System and Flood Risk Management Guidelines and Technical Appendices (Department of Environment, Heritage and Local Government and Office of Public Works, 2009).

Construction

- A Construction and Environmental Management Plan (CEMP) must accompany the EIS which outlines the measures taken to avoid dust impacts and negative impacts from construction traffic. CMPs developed as part of a planning application should address quarrying, borrow pits, soil management including storage, and opportunities for soil reinstatement.
- Construction works should be timed and designed so as not to disturb breeding birds and site specific advice should be sought from a qualified and experienced

ecologist/ornithologist.

- The applicant shall have regard to the relevant objectives and measures set out in the National River Basin Management Plan (2018-2021) and associated Programme of Measures. In particular, works relating to construction and maintenance of wind energy developments should aim to prevent the deterioration and maintain high or good status for surface waters, limit pollution inputs and prevent deterioration of groundwater.
- Construction traffic and machinery movement should be confined as much as is practicable to the roads and tracks that are part of the long-term development in order to minimise unnecessary compaction.
- Where temporary earth works are required, ground and vegetation should be reinstated as soon as possible.
- All liquids and hydrocarbons stored on site during construction shall be stored in a waterproof bunded area.
- Silt traps shall be provided to intercept silt laden water from the site during construction.
- All ancillary construction equipment shall be removed from the site within one month of final completion.
- Prior to commencement, the developer shall agree with the Planning Authority details of the redistribution of any excess spoil generated during the construction phase.
- During the construction phase of works, regard should be given to the EU Noise Directive (2002/49/EC), the associated national noise regulations and any Noise Action Plans that may be prepared for the county.
- An Environmental Monitoring Report may be required during the construction phase, including mitigation measures to maintain habitats present on site in accordance with the details submitted in the EIS and with the planning application, to be submitted to the Planning Authority at a minimum of every 12 months during construction.
- Where possible, after construction is completed, vegetation should be reinstated on banks and margins of roads that are constructed to accommodate the passage of construction machinery and trucks. This is especially critical where cut and fill has been required.

Monitoring

- Developers may be required to undertake and submit a monitoring report at appropriate intervals in the construction and operation phases to monitor mitigation measures and environmental impacts particularly in terms of soils, water quality and biodiversity.
- The monitoring report must be undertaken by appropriately qualified professionals and the terms of monitoring should be agreed in advance with Wexford County Council. Developers may be required to inform Wexford County Council in advance of key construction activities in sensitive areas and facilitate the monitoring of construction activities by Wexford County Council to ensure mitigation measures are being implemented adequately.

Decommissioning

- The wind energy development shall be decommissioned and removed 25 years after the date of grid connection unless, prior to the end of this period, planning permission has been granted for the continuation of the use of the land as a wind energy development for a further period in accordance with prevailing legislation.
- A Decommissioning Management Plan may be required for wind farm developments to ensure that the site of the development is appropriately reinstated. This may be required as part of the planning application and/or EIS, or it may be required by way of a condition of planning permission.
- If any turbine has been non-operational continuously for 12 months, it shall be decommissioned by the developer unless otherwise agreed in writing with the Planning Authority during the 12 month period. If the wind energy development is deemed to be operating unsatisfactorily, the Planning Authority will require that all necessary mitigation or other measures are implemented to ensure that the development complies with the conditions of planning permission.
- The sites of developments that are decommissioned shall be reinstated through the removal of on-site structures and other visually intrusive works and the re-establishment of appropriate soil and vegetation cover and drainage.

Replacement, Re-powering and Redevelopment

- Proposals for replacing existing turbines or for the re-powering or redevelopment of existing wind energy developments will be considered. Such proposals will generally require planning permission, unless it can be demonstrated to the satisfaction of the Planning Authority that changes are of a sufficiently minor nature, would not constitute a material change to the development and would not generate additional impacts.
- Applications for re-powering (by replacing existing wind turbines) and extension of existing wind farms in the Not Normally Permissible areas will each be considered on their merits (see Table 8).

Cumulative Impacts of Wind farms

- The cumulative or in-combination impacts of wind energy developments in the county, in particular in areas close to Natura 2000 sites, will be carefully monitored over the lifetime of the Strategy. All development proposals must be screened for Appropriate Assessment and shall be subject to full Appropriate Assessment where they have the potential to significantly affect the integrity of a Natura 2000 site, either individually or in combination with other plans or projects, in accordance with the Habitats Directive 92/42/EEC.
- In order to preserve the spatial, scenic and rural integrity of areas zoned for wind energy development the cumulative effect on the landscape will be taken into consideration. A balance will need to be struck between visual impacts and the benefits of clustering wind farms in terms of efficient use of infrastructure.
- Cumulative impacts on biodiversity, flora and fauna, population and human health, soil, water, air, material assets, cultural heritage and landscape shall be considered. Consideration of cumulative impacts on population and human health shall include the cumulative assessments carried out in accordance with sections above in relation to shadow flicker, noise and visual impacts.

Wexford County Geological Site Legend

Geological Site

N
W E
S

WX025
WX002
WX014
WX032
WX008
WX009
WX006
WX010
WX021
WX026
WX035
WX011
WX041
WX016
WX013
WX036
WX042
WX029
WX005
WX018
WX020
WX037
WX004
WX015
WX040
WX007
WX017
WX038
WX028
WX003
WX012
WX022
WX030
WX001
WX039
WX031
WX027
WX019
WX024
WX023
WX033
WX034

Map 2

Map 3

0 5 10
kilometers

Wexford County Council

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

County Geological Sites

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 7

Legend

Constructed Wind Farms

Coolgreaney
Killinerin
Hollyfort
Clonegal
Ballymoney
Bunclody
Courtown
Clohamon
Camolin
Ballycanew
Castledockrell
Ballygarrett
Kiltealy
Ballyedmond
Monageer
Kilmuckridge
Caim
Ballagh
Clonroche
Blackwater
Oilgate
Castlebridge
Barntown
Taghmon
Murntown
Rosslare
Campile
Wellingtonbridge
Mayglass
Kilmane
Ballyhack
Carrick
Duncannon
Kilmore
Ladys Island
Fethard
Kilmore Quay

N
W
E
S

Wexford County Council

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Title: Installed Wind Farms

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 8

Mean Wind Speed (m/s)
- 15 +
- 14.75 - 15
- 14.5 - 14.75
- 14.25 - 14.5
- 14 - 14.25
- 13.75 - 14
- 13.5 - 13.75
- 13.25 - 13.5
- 13 - 13.25
- 12.75 - 13
- 12.5 - 12.75
- 12.25 - 12.5
- 12 - 12.25
- 11.75 - 12
- 11.5 - 11.75
- 11.25 - 11.5
- 11 - 11.25
- 10.75 - 11
- 10.5 - 10.75
- 10.25 - 10.5
- 10 - 10.25
- 9.75 - 10
- 9.5 - 9.75
- 9.25 - 9.5
- 9 - 9.25
- 8.75 - 9
- 8.5 - 8.75
- 8.25 - 8.5
- 8 - 8.25
- 7.75 - 8
- 7.5 - 7.75
- < 7.5

Legend
- 38kv Line
- 110kv Line
- 220kv Line
- 110kv Cable (Indicative only)
- 220kv Substation
- 110kv Substation

Gorey
Banoge
Lodegwood
Crane
Enniscorthy
New Ross
Wexford
Wexford
Great Island
N
W
E
S

Wexford County Council

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Title: Wind Speed at 75m and Transmission Network

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 9

Legend

- Pearl Mussel Areas
- Protected Shellfish Area
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Proposed Natural Heritage Area (pNHA)
- Natural Heritage Area (NHA)

Gorey

Enniscorthy

New Ross

Wexford

N

W E

S

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Title: Designated Sites

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 10

Houses per sq km by Townland (Geodirectory)

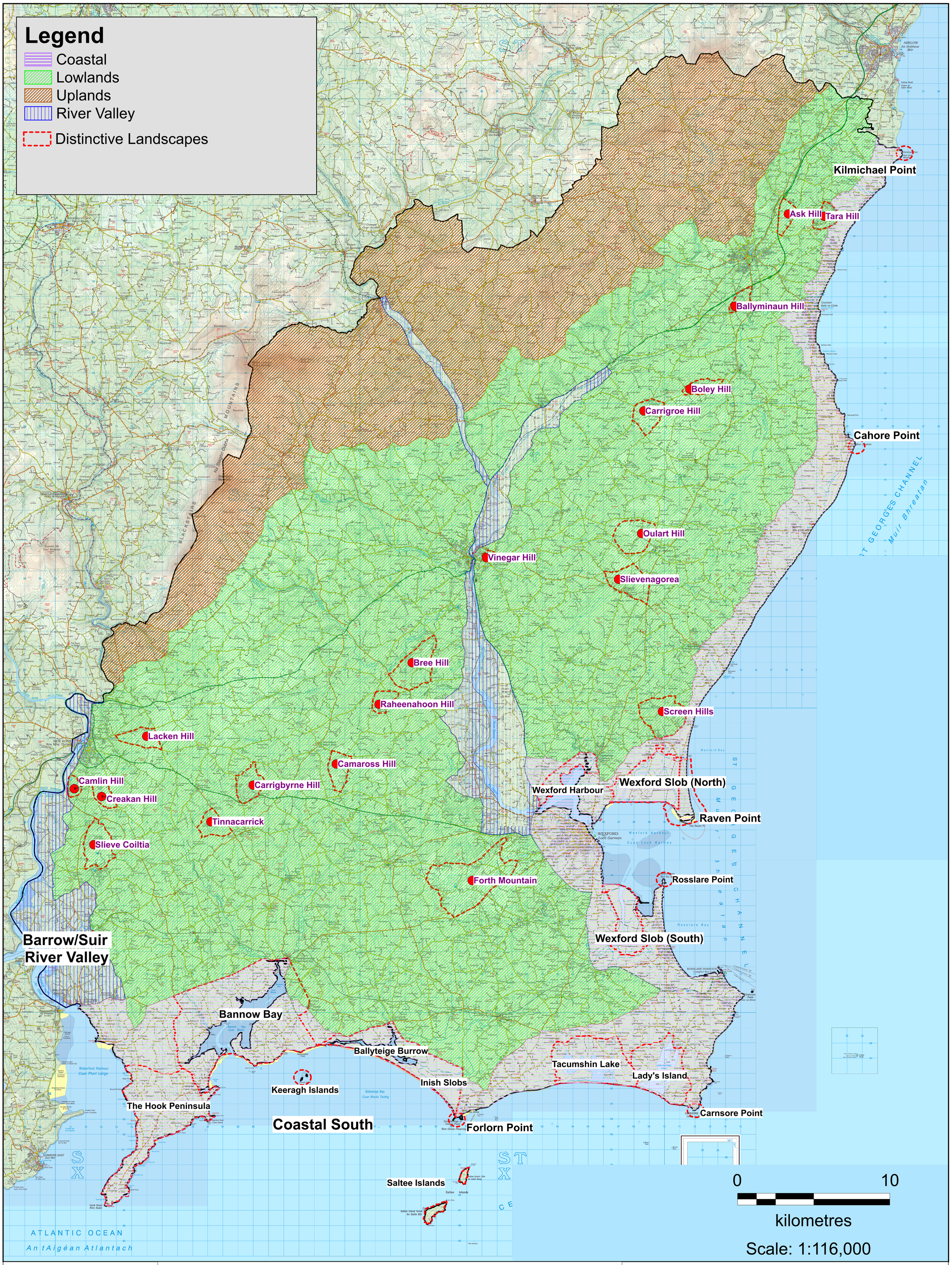
24 and greater	(451)
> 20 and < 24	(96)
> 16 and < 20	(180)
> 12 and < 16	(241)
> 8 and < 12	(419)
> 4 and < 8	(464)
> 0 and < 4	(515)

N
W E
S

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Title: Housing Density per square kilometre in each Townland

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 11



Wexford County Development Plan 2022-2028

Volume 10 Energy Strategy

Title: Landscape Character Units

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 12

Legend

N
W E
S

County Wicklow
- Not Favoured
- Less Favoured
- Most Favoured

County Carlow
- Open for Consideration
- Preferred Location

County Kilkenny
- Acceptable in Principle
- Open for Consideration
- Not Normally Permissible

County Waterford
- Strategic Areas
- No-Go Areas
- Areas Open for Consideration
- Preferred Areas

Wexford County Council

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Title: Wind Energy Strategy Maps for Adjoining Counties

Drawn by: NK	Checked by: DW
Date: 13.06.2022	Map No: 13

Legend

- Not Normally Permissible
- Acceptable in Principle
- Open for Consideration

*

Wexford County Development Plan 2022-2028
Volume 10 Energy Strategy

Title: Wind Energy Strategy Map

Drawn by: NK	Checked by: FF
Date: 13.06.2022	Map No: 14

Chapter 6 – Bioenergy

6.1 Introduction

Bioenergy may be defined as the energy derived from biomass. Biomass is the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste. It also includes crops specifically grown for energy use, such as willow and miscanthus. Biomass can be used to generate electricity, heat and transport fuels.

Bioenergy is produced through many different processes: combustion and anaerobic digestion being the most common and widely used. Combustion is the process whereby biomass (for example wood chips) is burned to produce process heat or to heat space or hot water. Anaerobic digestion involves the bacterial transformation of biomass (for example animal manure) to methane gas or biogas. The biogas can be used to fuel a stationary gas engine or gas turbine to produce electricity, or burned in a boiler to provide heat or to raise steam. Biogas can also be compressed and used as a transport fuel.

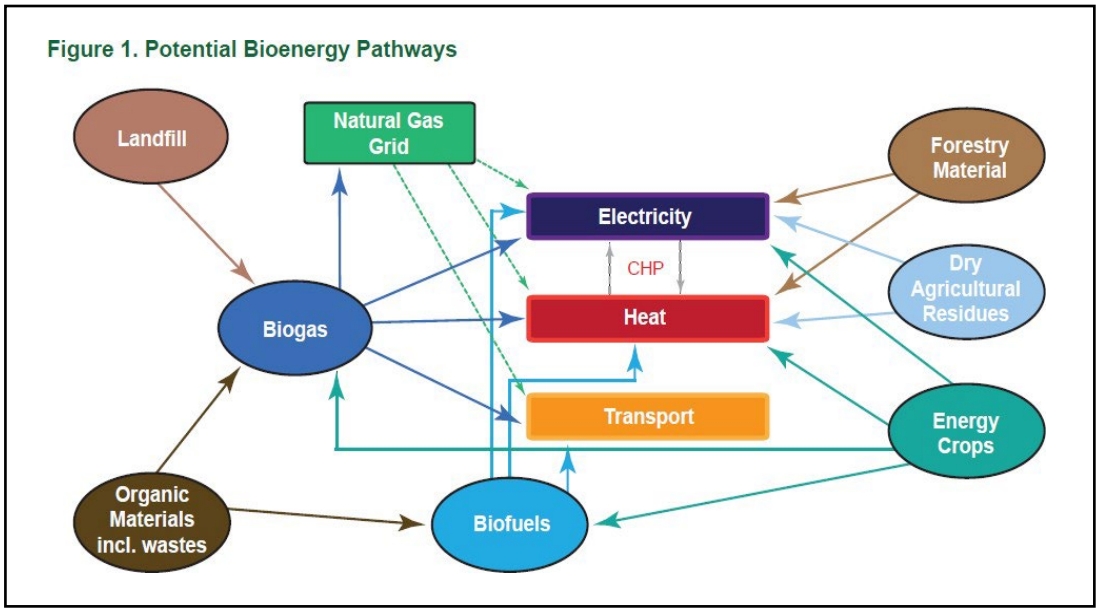


Figure 1: Potential Bioenergy Pathways (Source: Draft Bioenergy Plan 2014)

The majority of current biomass-derived energy comes from wood combustion to produce heat. It is expected to continue to play a significant role in further displacing fossil fuels, especially in the larger heat users in the commercial and industrial sector. SEAI currently operate a Support Scheme for Renewable Heat. This is a government funded initiative designed to increase the energy generated from renewable sources in the heat sector and is open to commercial, industrial, agricultural, district heating, public sector and other non-domestic heat users.

The Climate Action Plan 2019 includes actions to support the use of biomass to increase the level of renewable energy in the heat sector, increase the renewable biofuel content of motor fuels, support the biomass supply chain and realise the potential of bioenergy supply opportunities, including biomass mobilisation and biogas/biomethane supplied from anaerobic digestion. The Draft Regional Spatial and Economic Strategy for the Southern Region also recognises the role of biomass in decarbonising the electricity and agriculture and forestry sectors.
Objective No. 85 supports the preparation of a Bio-Energy Implementation Plan for the Region.

The South-East Region Bioenergy Implementation Plan 2013-2020 notes that the South-East Region has significant bioenergy potential in the form of agricultural land, forestry and waste residues from municipal treatment plants, agriculture and industrial sources. Increased use of these resources will mean that the Region will be contributing to meeting national renewable energy targets, to complying with climate change mitigation policies, waste policies and assisting in rural development by providing new markets and employment development opportunities for the farming and forestry sectors. The Plan sets a target of 7.3% contribution of bioenergy to TFC in the South-East Region by 2020.

The Council recognises the opportunities presented by the bioenergy sector in County Wexford and will promote the development of this sector in line with national and regional policy. The development of the bioenergy sector will involve a co-ordinated approach across a number of policy areas including renewable energy; agriculture; forestry; the environment; sustainability; and the growth potential of the

green economy; while taking account of international development policy.

Developing the bioenergy sector can also help in achieving wider policy objectives in areas such as waste recovery. The circular economy in principle seeks to reduce, reuse and recycle (e.g. biomass) as much as possible. While biomass is required in the short and medium term to meet climate and energy targets, there may be circular economy and bio-economy opportunities that may seek to keep materials in circulation, where they have value.

6.2 Anaerobic Digestion

The process of anaerobic digestion involves the breakdown of organic matter by bacteria and enzymes in an oxygen-free environment. The end product of this process is a biogas which can be captured and burned to produce heat, electricity or a combination of the two. The main types of organic material feedstock used in anaerobic digestion are sewage sludge, farm slurry and municipal solid waste.

Plants can vary in scale from small schemes treating the waste from an individual farm to medium-sized centralised facilities dealing with wastes from several farms to sizeable industrial anaerobic digestion plants handling large quantities of municipal solid waste. Surplus electricity can be exported to the national grid and surplus heat can be used for district heating. There is also potential to upgrade the biogas from anaerobic digestion into bio-methane which can be injected into the national gas network. Some plants produce digestate which can be used as an agricultural fertiliser, thus returning nutrients to the land.

Anaerobic digestion has a number of associated environmental benefits. Energy from anaerobic digestion is effectively carbon neutral. Anaerobic digestion also lowers the organic pollution potential of slurries resulting in water quality benefits, the by-products result in better quality fertilisers and reduces the need for artificial fertiliser use. The process also has the advantage of utilising waste substances that are otherwise difficult to dispose of in an environmentally acceptable manner – this management of organic waste contributes towards the achievement of obligations under the EU Landfill Directive.

There is currently one anaerobic digester facility in County Wexford at Ballyshannon, Adamstown which has a capacity for 5000 tonnes of waste per annum. Planning permission has been granted for a further facility at Moneydurtlow (planning register 20160469 & 20151267 refers) which will have capacity to process 19,000 tonnes per annum of slurries, silage and fodder.

6.3 Combined Heat and Power and District Heating

Combined Heat and Power (CHP) is a technology that uses the energy produced in the combustion of fuel to produce heat and electricity. CHP can refer to gas fired CHP or to biomass CHP. CHP technologies based on biomass combustion represent a great potential to reduce CO2 emissions since they are based on utilisation of renewable energy sources (for example wood fuels or sawdust). They also have the potential to increase local employment as fuel is sourced locally. CHP plants are available in a range of scales, from micro-CHP domestic applications to medium size plants serving an office block to large industrial applications and CHP plants serving district heating schemes. CHP is often seen as a practical addition, providing on-site heat and electricity.

A district heating system provides heat from a central boiler to more than one building and is an alternative to providing separate heating systems for each building. A district heating system consists of a central boiler, a heat distribution network of insulated pipes and heat exchangers in each building. District heating can offer reduced capital cost and increased energy efficiency and the combination of CHP and district heating is very energy efficient. A district heating system will be more successful when implemented in areas of higher population density and high heat demand from industry or commercial enterprises and is more suited to a new-build scenarios as opposed to retro-fit.

6.4 Liquid Biofuels

Biofuel refers to liquid or gaseous fuel extracted from biomass. The Biofuels Obligation Scheme places an obligation on suppliers of road transport fuels to

ensure that specified percentages of the motor fuel they place on the market in Ireland is produced from renewable sources, e.g. bioethanol and biodiesel. The Climate Action Plan 2019 seeks to increase the renewable biofuel content of motor fuels and sets a target to raise the blend proportion of biofuels in road transport to 10% in petrol and 12% in diesel by 2030.

There are currently two manufacturers of biofuels in County Wexford. Green Biofuels Ireland Ltd. in New Ross currently produces 30,000 tonnes biodiesel per annum. The fuel is produced through a chemical process known as trans-esterification using animal oils, waste cooking oils and alcohol in the presence of a catalyst. Fertiliser and glycerine are produced as by-products. Biogreen Energy Products Ltd. in Adamstown manufactures oil from rapeseed. The company was originally set up to produce rapeseed oil for use as a diesel substitute. However, more recently the Company has developed new markets for both the oil and the cake particularly in the animal feed industry.

6.5 Energy Recovery from Waste

Since 2012, there has been a clear government policy focus on waste as a resource and virtual elimination of landfilling. The current and future focus is on waste prevention, reuse, maximising recycling and using waste as a fuel in replacement of fossil fuels. Segregation and separate collection of food waste from households has been legislated for since 2013 and municipal waste recycling at composting and anaerobic digestion facilities has increased as a result.

The Southern Region Waste Management Plan 2015 - 2021 sets a target to reduce to 0% the direct disposal of unprocessed residual waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.[7] After prevention, reuse and recycling, the plan strives to improve the recovery and generation of energy by maximising the resource value of the materials and energy embodied in residual wastes. The Plan sets out a number of measures

[7] Unprocessed residual waste means residual municipal waste collected at kerbside or deposited at landfills/ CA sites/ transfer stations that has not undergone appropriate treatment through physical, biological, chemical or thermal processes, including sorting.

including:

- Plan and develop higher quality waste treatment infrastructure including new reprocessing, biological treatment, thermal recovery and pre- treatment facilities;
- Grow the biological treatment sector, in particular composting and anaerobic digestion, by supporting the development of new facilities;
- Support the development of thermal recovery in the region which meets the needs of the region and the State in reducing the export of residual wastes for treatment abroad;

The policy aim is for the region and the State to become more self-sufficient, in terms of treating the wastes we generate and are currently exporting.

The South-East Region Bioenergy Implementation Plan 2013-2020 also notes that landfill gas produced from waste is a resource that can be utilised for energy production. At landfill sites, the natural digestion of the organic fraction of waste by bacteria under partially anaerobic conditions produces a biogas consisting primarily of methane and carbon dioxide. The methane can be recovered and combusted to produce energy. However, with the introduction of the brown bin system the decreased organic content of waste means that landfill gas generation will decrease.

There is currently one landfill in County Wexford located at Holmestown and one closed landfill at Killurin. Organic waste has not been taken at the Holmestown site since 2012 and monitoring has shown that landfill gas has been dropping off year by year. Therefore landfill gas utilisation at this facility is not currently viable.

6.6 Objectives

ES17: To support and encourage the development of the bioenergy sector and facilitate its development for energy production, heat storage and distribution subject to normal planning and environmental criteria and the development management standards set in Section 6.7

ES18: To support and assist in the implementation of the South-East Region Bioenergy Implementation Plan 2013-2020 and any updated version of that plan through the planning process, subject to compliance with Article 6 of the Habitats

Directive.

ES19: To support the installation of on-farm anaerobic digester/fermentation plants using slurries produced on site, and the importation and treatment of feedstock's imported from the surrounding local area to supplement the on-site treatment of agricultural waste. Such facilities shall be located within existing farm complexes, use excess heat on site and may be connected to the national electrical grid.

ES20: To support mixed biomass processing (using a range of technologies) and using mixed feedstock (including biological waste) imported from surrounding areas on suitable sites. Mixed bioenergy plants should be located close to the energy source and the point of demand, where they can be served by a transport network with sufficient capacity to safely absorb increased traffic movements and where waste heat can be used. Such facilities will be assessed against the ability of the receiving environment to accommodate them without causing an adverse impact on residential or environmental amenity.

ES21: To facilitate the development of biofuel processing plants on industrial zoned lands subject to normal planning and environmental criteria and the development management standards set out in Section 6.7.

ES22: To support and facilitate the installation of district heating technologies in new developments, including multi-unit apartment developments, commercial and industrial developments. Where district heating is proposed, the associated infrastructure, networks and services for such systems shall be identified at planning stage and the long-term management and maintenance arrangements shall be to the satisfaction of the Council.

ES23: To support the recovery of energy from waste in accordance with the provisions of the Southern Region Waste Management Plan 2015-2021 and any updated version of that plan. In particular, the Council will facilitate waste to energy processes on the site of production or in local biomass processing installations subject to normal planning and environmental criteria and the development management standards set out in Section 6.7.

6.7 Development Management Standards for Anaerobic Digesters

Applications for new development should be accompanied by the following:

- A description of the type, source and volume of the product/waste to be used
- The anticipated number and type of vehicles to/from site
- Plans for the disposal of end products from the plant
- Surface water attenuation and drainage details
- A Noise Report
- An Odour Management Plan
- A detailed landscaping plan
- Details of grid connection where relevant

Siting of New Developments

- Proposed developments should be sited so as to:
  - Integrate into the surrounding landscape
  - Avoid undue impacts on adjacent properties
  - Avoid impacts on architectural and archaeological heritage
  - Avoid pollution from operational procedures e.g. spillages and from digestate
- Where possible, the anaerobic digester plant and buildings should be sited in association with existing buildings of similar scale, height and massing.
- In the case of locating within an agricultural unit, the anaerobic digester plant and buildings should be sited as close as possible to existing agricultural buildings or other structures of similar scale such as silos.
- The reuse and/or conversion of existing redundant buildings to contain elements of the anaerobic digester process should be considered to avoid the need for new development.
- Where appropriate, plant and buildings should be sited to take advantage of existing topography and / or vegetation or trees to assist with visual integration.

Water Quality

The applicant will be required to demonstrate that suitable arrangements will be put

in place to minimise the risk of dirty water entering watercourses of groundwater during the storage and delivery of feedstock and the subsequent storage and distribution of digestate and/or liquor. Storage of feedstock such as slurry or silage should take place in appropriately constructed tanks/stores. All storage and handling of feedstock and digestate should be undertaken on impermeable surfaces and within areas with an engineered site containment and drainage system designed to contain all contaminated runoff.

Where digestate from the anaerobic digester plant is to be disposed of by land spreading it will be necessary to demonstrate an adequate land-source in order to comply with the Nitrates Directive. Full details on the location and extent of the land in question should be provided by way of relevant farm maps.

Traffic

The suitability of the road network to cater for traffic movements generated by the proposed development during the construction and operation phases will be considered in the assessment of planning applications. The application should include the following:

- A Traffic Impact Assessment which identifies the number and type of traffic movements to and from the site and the haulage route proposed.
- Adequate sightlines must be demonstrated at the entrance to site.
- A Traffic Construction Management Plan will be required prior to commencement of development.

Appropriate Assessment

The Council will ensure that any plan or project and any associated works, individually or in combination with other plans or projects, are subject to Appropriate Assessment Screening to ensure that there are no likely significant effects on the integrity (defined by the structure and function) of any Natura 2000 site(s) and that the requirements of Article 6(3) and 6(4) of the EU Habitats Directive are fully satisfied.

Where a plan or project is likely to have a significant effect on a Natura 2000 site it shall be subject to Appropriate Assessment. The plan or project will proceed only after it has been ascertained that it will not adversely affect the integrity of the site or where in the absence of alternative solutions, the plan/project is deemed imperative for reasons of overriding public interest, all in accordance with the provisions of article 6(3) and 6(4) of the EU Habitats Directive.

Environmental Impact Assessment

The Council will require an Environmental Impact Assessment (EIA) to be carried out for proposed development listed in Schedule 5 of the Planning and Development Regulations 2001 (as amended) or other developments which it considers likely to have significant environmental effects. The decision as to whether a development is likely to have significant effects on the environment shall be made in accordance with the criteria set out in Schedule 7 of the Planning and Development Regulations 2001 (as amended).

Where an EIA is required to be carried out the Planning Authority shall require an Environmental Impact Assessment Report (EIAR) to be submitted as part of the planning application. The applicant may request the Planning Authority to give a written opinion on the information to be contained in the EIAR. The Planning Authority will have regard to the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DECLG, 2013).

Flood Management

The Council will have regard to the Planning System and Flood Risk Management-Guidelines for Local Authorities (DEHLG and OPW 2009) when assessing planning applications. The key requirements for the management of development in areas at risk of flooding include:

- All development proposals within or incorporating areas at moderate to high risk of flooding will require site specific and appropriately detailed Flood Risk Assessments.
- All development proposals within or incorporating areas at moderate or high risk of flooding will require the application of the Development Management

Justification Test in accordance with the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DEHLG and OPW, 2009).

- Any proposal that is considered acceptable in principle shall demonstrate the use of the sequential approach to inform the site layout and design of development. Proposals shall also demonstrate that mitigation and management measures can be put in place and that the development will not increase flood risk elsewhere.

Architectural Heritage

Certain applications may be required to undertake an assessment of the impacts of a proposed development on architectural character, particularly in the vicinity of protected structures. Assessments should be undertaken by a suitably qualified conservation architect and it is advised that at preplanning stage, the Planning Authority should be contacted to determine if there is a need for such an assessment.

Archaeological Heritage

Where the application site includes or is located in close proximity to a Recorded Monument, the application shall be accompanied by an archaeological assessment prepared by a suitably qualified archaeologist detailing the impacts of the proposed development on the archaeology in the area. Archaeological monitoring during construction works will be required where appropriate.

Chapter 7 - Other Renewable Energy Sources

7.1 Marine Renewables

7.1.1 Introduction

The term 'marine renewable energy' typically refers to wave, tidal and offshore wind. Marine renewable energy as a whole is seen as a medium to long term technology which can contribute significantly to Ireland's renewable energy targets.

The Strategic Environmental Assessment and Appropriate Assessment carried out for the Offshore Renewable Energy Development Plan (OREDP) (DCENR, 2014) found that it would be possible to achieve the high scenario of 4,500 MW from offshore wind and 1,500 MW from wave and tidal devices in Irish Waters without likely significant adverse effects on the environment. The east coast of Wexford is identified as suitable for wind and tidal development while the south coast of Wexford is identified as suitable for wind only. Figure 2 below shows Areas 2 and 3 of which the Wexford coastline is part.

A key enabler with regard to the development of Ireland's offshore renewable energy resource is the introduction of a new planning and consent architecture for development in the marine. At present, applicants applying for development in the foreshore must apply to the Department of Housing, Planning and Local Government for a foreshore lease/licence.[8] A separate planning application must be made to the Planning Authority for development on the foreshore where it adjoins the functional area of the Planning Authority.

The Maritime Area and Foreshore (Amendment) Bill 2013 proposes a new planning and consenting system, whereby applicants will apply to the Local Authority or An Bord Pleanála for consent to development in the maritime area. Under this new procedure, there will be a single environmental impact assessment by the

[8] A lease is generally used for a development that requires exclusive occupation of the foreshore e.g. jetties, bridges, piers, marinas, offshore windfarms and reclamation. A licence is generally used for a development that does not require exclusive occupation of the foreshore e.g. repair work, dredging, undersea pipes and cables and site investigation works

development consent authority. The Local Authority will be the consenting authority for development on the nearshore where EIA/AA is not required, while the Board will be the consenting authority for:

- strategic infrastructure;
- development beyond the nearshore;
- development requiring EIA/AA; and
- Local Authority own development requiring EIA/AA.

The proposed development may be located entirely in the maritime area or comprise of contiguous elements located partially on land and partially in the maritime area. When considering applications for a foreshore lease or licence in respect of a development for which consent has been granted by the Planning Authority or the Board, the Minister will only be obliged to consider the property conveyancing aspects of the proposal.

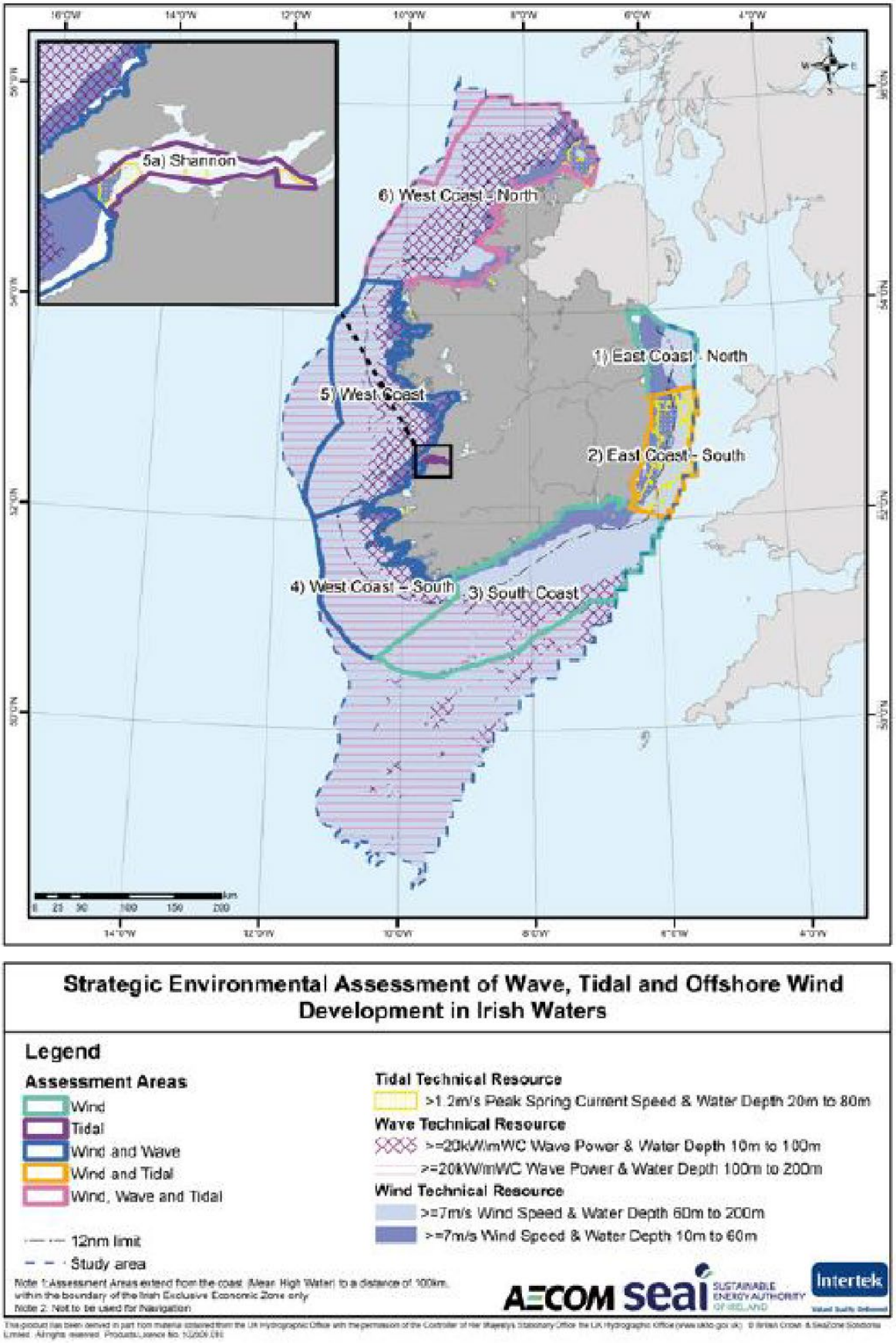


Figure 2: Marine Renewable Energy Indicative Development Zones (Source: OREDP 2014)

7.1.2 Maritime Spatial Planning

The increasing demand for maritime space for different purposes, such as installations for the production of energy from renewable sources, oil and gas exploration and exploitation, maritime shipping and fishing activities, ecosystem and biodiversity conservation, the extraction of raw materials, tourism, aquaculture installations and underwater cultural heritage, as well as the multiple pressures on coastal resources, require an integrated planning and management approach. Maritime spatial planning works across borders and sectors to ensure human activities at sea take place in an efficient, safe and sustainable way.

Figure 3: Ireland's Maritime Area (Source: http://www.housing.gov.ie/sites/default/files/public-consultation/files/2016_04_05_map_of_msp_area.pdf [accessed 12/12/17])

The Framework Directive for Maritime Spatial Planning (Directive 2014/89/EU) was transposed into Irish Law through Part 5 of the Planning and Development (Amendment) Act 2018 and requires that a Maritime Spatial Plan for Ireland must be in place by 2021.

This plan, known as the National Marine Planning Framework (NMPF) in Ireland, is a 20-year plan for the country's maritime areas. It provides the over-arching framework for marine decision-making that is consistent, evidenced based and secures a sustainable future for our country's marine area. It contains a series of

overarching policies over environmental, social and economic themes, and provides sectoral policies for 16 sectors ranging from renewable energy, aquaculture, port, harbours and shipping to tourism and defence.

The NMPF is a parallel document to the National Planning Framework, which guides terrestrial planning and development.

The Maritime Area Planning Act, 2021 also seeks to establish a coherent and comprehensive marine planning system to manage development and activities in Ireland's seas and establishes in law a new planning regime for the maritime area. It replaces existing State and development consent regimes and streamlines arrangements on the basis of a single consent principle, i.e. one State consent (Maritime Area Consent) to enable occupation of the Maritime Area and one development consent (planning permission), with a single environmental assessment.[9] This legislation is designed to work for all types of development – from the smallest structures to the largest offshore windfarm proposal and will be critical to ensuring Ireland meets its ambitious offshore renewable targets.

7.1.3 Offshore Wind Farms

Offshore wind is the most technically advanced of the marine renewables. The advantage of offshore over onshore wind farms is that larger and more efficient turbines can be used at sea and wind availability is typically higher. However, offshore wind presents challenges in terms of construction, grid connection, planning and visual/environmental impacts, requiring the input of a wide range of stakeholders. Careful consideration needs to be given to the impact of such developments on the seascape, designated sites and other marine activities. Seabird Sensitivity mapping shall be used as part of the preparation and assessment of marine energy developments.

Currently, offshore wind projects require development consent under the foreshore leasing and planning processes and Local Authorities will primarily be concerned

[9] https://www.gov.ie/en/press-release/d13b0-maritime-area-planning-bill-2021-passes-through-all-stages-of-the-oireachtas/

with the onshore elements of offshore wind farms such as cable landfall and onshore grid connection infrastructure. Under the proposed new consenting regime this type of development is likely to fall under the category of strategic infrastructure or development requiring EIA/AA where the Board will be the consenting authority for the development, including any elements located partially on land.

Offshore wind energy is expected to contribute to the national 2030 renewable energy targets. The Climate Action Plan 2019 states that achieving the national 70% renewable electricity target by 2030 will include a number of measures, including the development of at least 3.5 GW of offshore renewable energy of mainly offshore wind. The offshore wind resource off the coast of County Wexford is identified on Figures 4 and 5. A foreshore application has recently been lodged with the Department of Housing, Planning and Local Government for site investigation works off the coast of Bannow Bay.

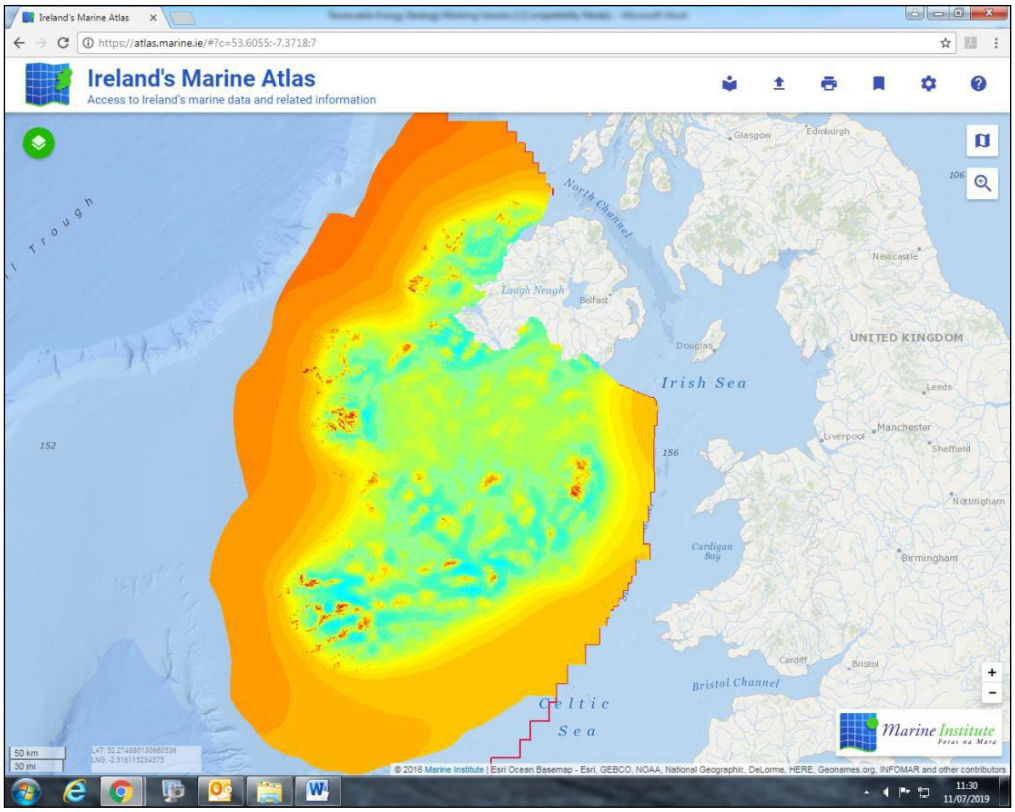


Figure 4: Wind Speed at 100m Source: Data from the wind energy resource theme accessed through Ireland's Marine Atlas at http://atlas.marine.ie/ [11/7/19]

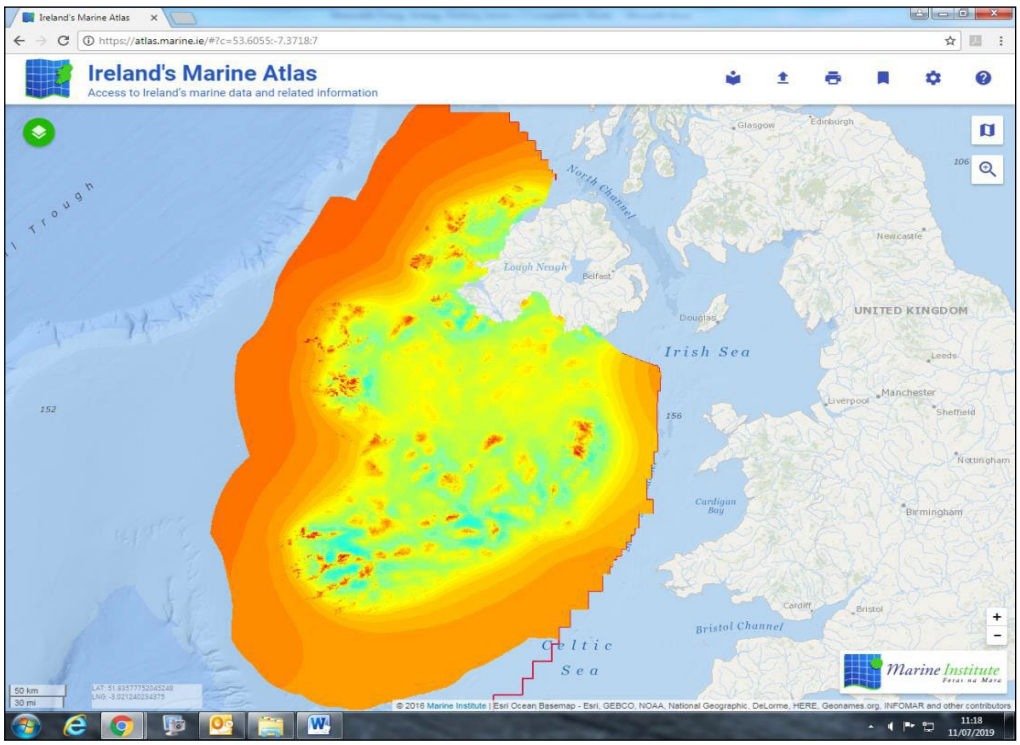


Figure 5: Wind Speed at 150m Source: Data from the wind energy resource theme accessed through Ireland's Marine Atlas at http://atlas.marine.ie/ [11/7/19]

7.1.4 Tidal Energy

The two main types of tidal energy extraction are tidal barrage systems and tidal stream-flow turbines. Barrages are usually located across a tidal inlet and capture the energy of the tidal movement by creating a barrier and channelling it through turbines. Tidal stream-flow turbines are located beneath the ocean surface and can be submerged so they are not seen or heard. Similar to wave devices, there are currently a broad and diverse range of technologies under development for harnessing tidal energy.[10] The major benefit of tidal energy is the predictability of tidal streams which is highly attractive for grid management and load profiles. This Strategy is supportive of Wexford being a location for research and development of tidal technology.

7.1.5 Wave Energy

The OREDP did not cover wave energy as part of its assessment of the energy potential for the south/east coast as much of the focus to date for wave energy has

[10] Methodology for Local Authority Renewable Energy Strategies (SEAI, 2013)

been concentrated off the west coast of Ireland where there are a number of test sites. However, that is not to say that wave and tidal energy would not have a role to play off the Wexford coast in the future and the Council will support research and development of this technology.

7.1.6 Sustainable Energy Zones

There is potential at Rosslare Europort to develop a centre to support the renewable energy industry with potential for wind, wave, tidal and electric vehicles development. The aim is to develop the port as a centre of excellence in wind energy, supporting the growth of offshore wind energy through providing support services such as manufacturing, construction, assembly and maintenance facilities. The SEZ also aims to explore opportunities to develop tidal resources off the East Coast and develop renewable energy incubation and manufacturing units for domestic consumers and for export. There are also opportunities for assembly and maintenance of electric cars and trucks. This would create job opportunities and high export potential to the UK and mainland Europe. The development of the SEZ at Rosslare Harbour would also provide potential for companies involved in the research and development of tidal energy.

7.1.7 Objectives

ES24: To support the development of offshore renewable energy in accordance with the Offshore Renewable Energy Development Plan (Department of Communications, Energy and Natural Resources, 2014), the Climate Action Plan 2019 and any Maritime Spatial Plan that is adopted for Ireland.

ES25: To actively explore and pursue opportunities to service the marine renewable energy sector at existing ports, to facilitate the growth of new ports, supporting infrastructure and associated development, subject to normal planning and environmental criteria.

ES26: To facilitate the expansion of ports and provision of additional quayside harbour working areas to further enhance their attractiveness to marine renewable industry developers.

ES27: To promote and to facilitate, as far as possible, all proposed testing and research sites / required installations for future potential marine renewable energy

off the coastline of County Wexford.

ES28: To support the development of feasibility studies which examine the tidal energy resource off Tuskar Rock and the development of this resource where viable, subject to compliance with normal planning and environmental criteria.

ES29: To support the development of Rosslare Europort as a Sustainable Energy Zone (SEZ) and provide the necessary infrastructure to facilitate its development as an SEZ.

7.2 Hydropower

Hydroelectricity is electricity derived from the power harnessed from the flow of falling water, typically from fast-flowing streams and rivers. Hydroelectric schemes can be grouped into two broad categories:

- Pumped hydro electric storage
- Small scale hydro electric scheme

Pumped hydro is a method of storing electrical energy as potential energy by pumping water from a reservoir or lake to another reservoir at a higher elevation and storing it for use in generating electricity when required. Pumped hydro is ideally suited to providing back up to the electrical grid during times of peak / varying demand. Development of this technology is not highlighted in the Climate Action Plan 2019 or the Draft National Energy and Climate Plan 2021-2030 as contributing to national renewable energy targets and it is not envisaged that it will develop in County Wexford over the lifetime of the plan.

Small-scale hydro refers to hydroelectric plants, typically ranging from 5KW to 0.5MW. Small-scale micro hydro power is both an efficient and reliable form of energy. With the right site it is a viable way of providing power to houses, workshops or businesses that need an independent supply. Surplus electricity can be sold to the national grid. There is potential in County Wexford to develop small hydropower plants on historical watermill sites. They will have all or most of the civil works needed to bring the water to the machinery still in place.

In assessing new development, the Council will have regard to ‘Guidelines on the Planning, Design, Construction and Operation of Small-scale Hydro-electric Schemes’ (Inland Fisheries Ireland, 2010) (and any review thereof). In assessing planning applications for new small-scale hydropower facilities the Council will also seek to ensure that any proposed projects will not conflict with the requirements of the Water Framework Directive or the Habitats Directive.

Objective

ES30: To facilitate the development of small scale hydroelectric projects, subject to compliance with normal planning and environmental criteria.

7.3 Geothermal Energy

Geothermal energy refers to heat energy stored in the ground. Solar thermal radiation is absorbed by the surface of the earth each day. This heat can be extracted using a ground source heat pump which transfers the heat stored in the earth or in ground water to buildings in winter and the opposite in summer for cooling. Geothermal energy may be classified as either ‘deep’ or ‘shallow’ depending on the depths involved. Ireland has widespread shallow geothermal resources for small and medium - scale heating applications, which can be explored online through Geological Survey Ireland’s Geothermal Suitability maps for both domestic and commercial use. Ireland also has recognised potential for 'deep' (>400m) geothermal resources. Geological Survey Ireland currently supports and funds research into this national energy resource.

Shallow geothermal energy systems are connected to the ground thermal resource through either closed loop pipe networks (horizontal or vertical) or open loop systems with ground water being re-injected back to the subsurface or discharged to streams, rivers or the sea. Because the temperature of the subsurface, including the groundwater, is relatively constant all year round, ground source heat pumps are more efficient for heating than air source heat pumps during low temperature periods, which is when heating is most needed. They are also more efficient during hot weather when heat pumps are used in cooling mode. (This is called the

Seasonal Performance Factor, SPF).[11]

The Council will encourage the provision of ground source heat pumps, also known as geothermal heat pumps. These are used for space heating and cooling, as well as water heating for both residential and commercial developments.

Objective

ES31: To promote the use of geothermal energy technology in new developments subject to compliance with normal planning and environmental criteria.

7.4 Micro-generation

Micro-generation is the small-scale generation of heat and electricity by individuals, small businesses and communities to meet their own needs, as an alternative to or to supplement grid-connected power. It is acknowledged that on- site / decentralised heat and electrical micro generation can have a significant impact on reducing carbon emissions from dwellings and businesses.

Micro-renewable technologies include:

- Solar photovoltaic panels (PV)
- Small free standing wind turbines
- Micro scale CHP plants
- Hydro electric schemes
- Solar hot water panels
- Micro scale biomass heating and wood burning stoves
- Ground source heat pumps
- Air source heat pumps

Certain micro-renewable generation installations for domestic, agricultural and light industrial activities are exempted development subject to criteria detailed in the Planning and Development Regulations 2001 (as amended). Planning permission is

[11] https://www.gsi.ie/en-ie/programmes-and-projects/geoenergy/activities/Pages/Geothermal- Energy-and-Ground-Source-Heat.aspx

not required for small-scale renewable energy generator that comes within the exemption limits and restrictions. However, certain installations may be of a scale and nature or are may be so located to render them outside of the planning exemption criteria and will therefore, require planning permission.

Objectives

ES32: To facilitate micro-renewable energy installations where it is demonstrated to the satisfaction of the Council that they will not result in a significant adverse impact on residential, visual or environmental amenity.

ES33: To require all planning applications for new buildings in the residential, industrial, commercial and agricultural sectors to demonstrate how the energy needs of the proposed development can be provided for with indigenous renewable energy resources, harnessed by incorporating micro renewable technologies, as an important element in establishing a low carbon County and assisting in meeting assigned renewable energy targets.

ES34: To encourage the retro fit of domestic and commercial buildings with micro generation technologies, to improve the environmental performance of buildings subject to normal planning and environmental criteria.

Chapter 8 – Supporting Infrastructure

8.1 Introduction

Renewable energy developments need various types of infrastructure to facilitate transmission, distribution, storage, export and use of their product, whether it be electricity, heat or a liquid or solid fuel. The availability of such infrastructure is required to fully exploit the renewable potential. The Local Authority will support the development of such infrastructure to achieve national energy targets and realise local renewable energy potential.

8.2 The National Grid

Meeting our 2030 renewable energy targets will require a stable and secure electricity grid to be in place. EirGrid's current Strategy 2020-25 'Transform the power system for future generations' seeks to transition to low carbon and renewable energy by preparing the electricity system for a future almost entirely based on renewable energy. It is also proposed to build an interconnector (the Celtic Interconnector Project) with France which will enable excess power to be exported.

The Climate Action Plan 2019 supports the development of necessary transmission infrastructure to support Ireland's national renewable electricity target and, in the long term, a more sustainable electricity supply. The Plan is also supportive of the development of an offshore electricity grid, in tandem with new interconnection, to allow Ireland to balance its significant renewables potential with security of electricity supply and develop long-term ambitions to export its offshore renewable resources. The Council will therefore support such development, subject to normal planning and environmental criteria, including impacts on residential and visual amenity.

Objective ES35

To facilitate the provision of and improvements to energy networks in principle, provided that it can be demonstrated that:

- The development is required in order to facilitate the provision or retention of significant economic or social infrastructure

- The route proposed has been identified with due consideration for social, environmental and cultural impacts
- The design is such that will achieve least environmental impact consistent with not incurring excessive cost
- Where impacts are inevitable mitigation features have been included
- Proposals for energy infrastructure should be assessed in accordance with the requirements of Article 6 of the Habitats Directive

8.3 Ports

Wexford County Council recognises that the maintenance, improvement and, in some cases, construction of new piers and harbours is essential in order to provide the necessary infrastructure to maximise the potential of marine renewable energy. The Climate Action Plan 2019 recognises the crucial role of ports in facilitating the necessary development of both offshore renewable generation and grid infrastructure, requiring investment to handle plant, equipment and cabling, and the associated shipping during the construction, operation and maintenance phases of future projects. Lands around Rosslare Europort also have potential for marine related industry and renewable energy.

Objective ES36

To facilitate the development of port infrastructure to serve marine renewable developments, subject to normal environmental and planning criteria, the Habitats and Water Framework Directives.

8.4 Energy Storage

Recent advances in Battery Energy Storage (BES) mean that output from renewable energy developments can be maximised. Batteries can store energy from intermittent energy sources (e.g. sun and wind) and release it when it is more needed, thus increasing the renewables contribution to the energy mix. It also helps to maintain grid stability and flexibility by providing a more constant supply. BES systems allow the owners of solar PV or wind generators to store the energy produced – when it is inexpensive and when it would be uneconomic to supply it to

the grid – and then to release it when prices are higher. Similarly, batteries can store the energy produced with renewables that would otherwise have been curtailed (e.g. when wind turbines are shut down due to high wind speeds). This increases the contribution of renewables to the energy mix and also maintains grid stability.[12] There are additional energy storage technologies such as liquid air storage and synchronous condensers that can also play a role in grid stability.

Batteries can be deployed at all levels of the electricity grid:

- At generation level, batteries can store the energy produced with renewables that could not be injected to the grid and would have been curtailed.
- At transmission and distribution level, batteries can offer several ancillary services to stabilize the electricity grid, improving its working conditions, extending its capacity and making it more secure, reliable, and responsive. Batteries can rapidly store energy or feed in energy, even in milliseconds, in order to balance a grid area so as to avoid frequency instability.
- At household level, a battery system connected to a PV or small wind generator can increase the amount of self-produced electricity as well as increasing self-consumption. Prosumers can also offer ancillary services to grid operators: these services can also be aggregated and managed by third parties.

Objective ES37

To facilitate the development of Battery Energy Storage Systems and other energy storage technologies such as air storage and synchronous condensers at appropriate locations to ensure a reliable and secure energy supply, subject to normal planning and environmental criteria, including residential and visual impacts.

8.5 Renewable Energy Support Schemes

In the electricity sector, the main support scheme is the REFIT scheme. This currently supports onshore wind, hydro, biomass, landfill gas, anaerobic digestion, biomass high efficiency CHP, biomass combustion and biomass co- firing. A new Renewable Electricity Support Scheme (RESS) is currently being developed. The

[12] https://eurobat.org/images/news/publications/eurobat_batteryenergystorage_web.pdf

RESS aims to provide a framework to ensure the continued growth in renewable electricity out to 2030 and will provide increased certainty for potential investors by providing some level of guaranteed return on investment for fixed periods of time.

The first RESS auction, which is expected to open for applications by mid 2020, will include a suite of measures for community participation.