

Wind Energy Strategy

VOLUME 5



**WEXFORD COUNTY
DEVELOPMENT PLAN
2013 - 2019**

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Abbreviations

CER	Commission for Energy Regulation
CGS	County Geological Sites
CMP	Construction Management Plan
cSAC	candidate Special Area of Conservation
DECLG	Department of Environment, Community and Local Government
DEM	Digital Elevation Model
DSO	Distribution System Operator
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
GSI	Geological Survey of Ireland
GWh	Gigawatt hours
IWEA	Irish Wind Energy Association
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LIA	Landscape Impact Assessment
LFL	Limited Felling Licence
MW	Megawatt
NEEAP	National Energy Efficiency Action Plan
NREAP	National Renewable Energy Action Plan
NGOs	Non-Governmental Organisations
NHA	Natural Heritage Area
OREDPA	Offshore Renewable Energy Development Plan
pNHA	proposed Natural Heritage Area
RES-E	Renewable Energy Source - Electricity
RES-H	Renewable Energy Source – Heat
RES-T	Renewable Energy Source – Transport
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland

SEI	Sustainable Energy Ireland
SERA	South-East Regional Authority
SERPGs	Regional Planning Guidelines for the South-East Region 2010-2022
SPA	Special Protection Area
TSO	Transmission System Operator
WMP	Waste Management Plan

Section 1 - Introduction

1.1 Introduction

The Wind Energy Strategy forms part of the Wexford County Development Plan 2013-2019 and should be read in conjunction with the policies and objectives contained that Plan. The Strategy, which has been prepared in accordance with the Guidelines for Planning Authorities on Wind Energy Development (Department of Environment, Heritage and Local Government, 2006) identifies areas of the county where wind farm developments are acceptable in principle or open for consideration based on wind speed, access to the electricity and transmission grids and avoidance of adverse impacts on the landscape and designated sites. The Wind Energy Strategy will guide development of wind farms within the county up to 2019.

This Wind Energy Strategy builds upon its predecessor, taking account of updated national and regional planning guidelines, strategies and policy documents. It is also informed by issues of national and global environmental importance that are now accepted as being critical to the formulation and implementation of sustainable development, such as climate change and renewable energy.

A key part of Building Ireland's Smart Economy – A Framework for Sustainable Economic Renewal (Department of the Taoiseach, 2008) is to ensure the security of energy supply. Every new wind farm development provides a substantial contribution to the local and national economy through job creation, land rents and increased demand for local support services in construction, operation and maintenance, legal and accounting services and project management. More wind energy on the system could also result in lower and

more stable energy prices for consumers while helping us achieve our energy and emissions targets.

The key objectives of the Wind Energy Strategy 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 40% of electricity consumption from renewable sources by 2020).
- Work towards a target of 255 MW of wind energy, to enable County Wexford to make the initial steps toward a low carbon economy by 2020 and generate the equivalent of 70% 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).

The Wind Energy Strategy is divided into five sections as follows:

- Section 1 provides an introduction to the Wind Energy Strategy. It highlights international, national and regional policy in relation to wind energy development, outlines information relating to the transmission network in Ireland and identifies the current situation regarding wind energy development in County Wexford.
- Section 2 describes the methodology used in the identification of suitable areas for wind farm development. This includes the use of GIS 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, landscape sensitivity and the location of existing and permitted wind farms.
- Section 3 describes how the Strategic Environmental Assessment (SEA) informed the Wind Energy Strategy, including the consideration of alternatives.
- Section 4 identifies areas for wind farm development and the criteria that apply to each area. This section also identifies the Council's objectives in relation to wind energy and outlines information regarding planning exemptions and strategic thresholds for wind farm development.
- Section 5 sets out development management standards for wind farms. These standards are designed to guide the preparation and assessment of planning applications for wind farm development.

1.2 Background to Renewable Energy

Renewable energy is increasingly seen as a means to address climate change, reduce carbon dioxide emissions and increase national fuel security. The term renewable energy generally refers to electricity supplied from renewable energy sources, such as wind and solar power, geothermal, hydropower and various forms of biomass. These energy sources are considered renewable sources because their fuel sources are continuously replenished. This contrasts with fossil fuels that are considered finite resources.

Ireland ratified the Kyoto Protocol on the 31st May, 2002. Under the Kyoto Protocol, Ireland agreed to a target of limiting its greenhouse gas emissions to 13% above 1990 levels by the first commitment period 2008–2012 as part of its contribution to the overall EU target. The National Climate Strategy 2007-2012 shows, sector by sector, how the 2008-2012 commitment is to be met by a range of existing and additional measures which collectively will cause Ireland's greenhouse gas emissions to reduce by over 17 million tonnes of carbon dioxide equivalent. This includes measures to increase energy supply from renewable energy sources, improved energy efficiency in buildings and a reduction in greenhouse gas emissions in the transport sector as well as measures for the agricultural, forestry and waste sectors. For the period from 2012 to 2020, the strategy describes a number of possible avenues to respond to the EU's commitment to reduce greenhouse gas emissions by at least 20% of the 1990 level.

In 2007 the EU agreed new climate and energy targets “20-20-20 by 2020”. These targets include 20% reduction in greenhouse gas emissions below 1990 levels, 20% reduction in energy consumption through improved energy efficiency and 20% of the EU's energy consumption to be from renewable sources by 2020. In 2009 the Renewables Directive (2009/28/EC) was implemented to establish the basis for the achievement of the 20% renewable energy target across the electricity, transport and heat sectors. 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.

The National Renewable Energy Action Plan (NREAP)(Department of Communications, Energy and Natural Resources, 2010) sets out Ireland's strategic approach and measures to achieve this target which includes the following:

- 40% electricity consumption from renewable sources by 2020 (RES-E)
- 10% electric vehicles by 2020 (RES-T)
- 12% renewable heat by 2020 (RES-H)

As the vast majority of new renewable capacity will be provided by onshore wind, the target of 40% electricity consumption from renewable sources by 2020 (RES-E) is a significant challenge for the Irish wind industry. In June 2012 Ireland's total installed wind capacity was 2053 MW. IWEA notes that 3,250 MW of additional wind capacity would need to be installed onshore within the next eight years if Ireland is to meet its RES-E target.¹

The Government is also 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, recognising that these offer rich (export) potential over the coming decades. The Draft Offshore Renewable Energy Development Plan (Department of Communications, Energy and Natural Resources, 2010) identifies the South Coast as suitable for wind development and the East Coast – South as suitable for wind and tidal development.

¹ IWEA submission on draft plan dated 20th August 2012

The South-East Regional Authority (SERA) is involved in CLIMATLANTIC, an INTERREG IV B project aimed at developing strategies at regional and local level towards the reduction of the carbon footprint in the European Atlantic Area. The project focuses on four pillars: mobility, energy, territorial management and social behaviour. SERA are the project partner responsible for the energy pillar and have recently produced a paper on local and regional actions for carbon footprint reduction. The paper notes that wind energy will become an important source of renewable electricity in all Atlantic-facing countries, especially in Ireland and the UK with their high wind speeds, and can play a major role in meeting 2020 electricity targets.

BirdLife International is a global partnership of non-governmental organisations (NGOs) with a special focus on conservation and birds. They are calling for an increase in the EU's target to cut greenhouse gas emissions by 20% by 2020 in order to reduce carbon emissions which are harmful to bird populations. Meeting Europe's Renewable Energy Targets in Harmony with Nature (BirdLife Europe, 2011) supports the renewable energy targets in the Renewable Energy Directive (2009/28/EC) but highlights that these targets should to be seen alongside the EU commitment to halting the loss of biodiversity and the degradation of ecosystem services by 2020.

BirdLife Europe supports achieving and going beyond Europe's 2020 renewables target, in line with four key principles:

1. Renewables must be low carbon – renewable energy supply must make a significant difference in reducing greenhouse gas emissions compared to fossil fuels, accounting for emissions from the full life-cycle.
2. A strategic approach to deployment is needed – positive planning frameworks are needed so that the most appropriate energy sources are exploited in the most appropriate places.

3. Harm to birds and biodiversity must be avoided – precautionary avoidance of harm to biodiversity and ecosystems is essential when locating and designing renewable energy facilities.
4. Europe's most important sites for wildlife must be protected – where significant impacts on a Natura 2000 site (those protected under the Birds and Habitats Directives) are likely, development may only proceed under strict conditions, which must be robustly applied.

1.3 Transmission Network

The Commission for Energy Regulation (CER) is responsible for the regulation of electricity in Ireland. Generally the high voltage lines deliver electricity from Ireland's generation sources to the transformer stations, where the electricity voltage is reduced and taken onwards through the distribution system to individual customers' premises. EirGrid is the independent state-owned body licensed by the CER to act as the Transmission System Operator (TSO) and is responsible for the operation, development and maintenance of the transmission system. EirGrid is independent from the ESB which is licensed as the owner of the transmission system.

The Distribution Network is the medium and low voltage electricity network used to deliver electricity to connection points such as houses, offices, shops, and street lights. ESB Networks is the Distribution System Operator (DSO) and is responsible for building, maintaining and operating the distribution level network infrastructure including all overhead electricity lines, poles and underground cables used to bring power to Ireland's customers.²

² Commission for Energy Regulation (2011). Commission for Energy Regulation. Available at <http://www.cer.ie/en/electricity-distribution-network-overview.aspx> (Accessed 27 January 2011)

1.4 Connection Process

In addition to obtaining planning permission, developers of wind energy projects must apply for a grid connection from EirGrid or ESB Networks Ltd. This is currently undertaken on a first come first served basis. In general, applicants must apply for a distribution connection from the ESB for projects under 20 MW total export capacity. For projects over 20 MW total export capacity applicants must apply for a transmission connection from EirGrid. All applications are processed through the Connection Offer Process.

Since December 2004 renewable generators wishing to connect to the transmission or distribution systems have been subject to group processing of connection applications through a series of successive “Gates”. There have been two Gates to date. Gate 1 was finalised in December 2004 and applications equating to 373 MW of renewable capacity were processed. The principles and criteria for Gate 2 were finalised in June 2006. Gate 2 could potentially see a further 1300 MW of renewable generation capacity connected to the system if all generators are built.³

Gate 3 refers to the third round of connection offers issued to generators under the group processing approach. It involves offers for connection to circa 3900 MW of wind generation and 1700 MW of conventional generation. The 3900 MW of wind developments which received an offer as part of Gate 3 will provide for the 40% renewable generation target if all the generators to receive an offer are built.⁴ The issuance of offers was completed in June 2011. Applicants are currently considering their offers and some have accepted offers to date.

³ Commission for Energy Regulation (2011). Commission for Energy Regulation. Available at <http://www.cer.ie/en/renewables-connecting-to-the-network.aspx?article=68c8fc68-4eab-4276-a7b8-4aa5113064f1> (Accessed 26 August 2011)

⁴ EirGrid (2011). EirGrid. Available at <http://www.eirgrid.com/gate3/> (Accessed 12 August 2011)

To connect to the electricity network, developers must obtain a licence to generate from the CER. Authorisation from the CER is also required to construct a generating station prior to commencing work. The CER authorisation and licensing processes are separate to the grid application process.

1.5 Grid 25

EirGrid's Strategy Grid 25 sets out the future requirements of the electricity network up to 2025. The Strategy states that the capacity of the bulk of the transmission system will need to be doubled by 2025 to facilitate the necessary increase in renewable generation (40% electricity to be generated from renewable energy sources by 2020), to adequately meet the demands of the electricity customer and to ensure that Ireland has the electricity supply infrastructure to ensure our economic growth and maximise our competitiveness. This will be achieved through major reinforcements to the existing network across all regions.

Grid 25 anticipates the future capacity for wind farm development within the South-East to be in the region of 545 MW for onshore wind farms and 445 MW for offshore wind farms. Area A, which incorporates all of County Wexford and parts of Counties Wicklow, Carlow and Kilkenny, is expected to have 335 MW of onshore wind generation. It is assumed that County Wexford will absorb the largest share of the expected 335 MW of onshore wind generation as it comprises the largest portion of the Area A. The county has good wind resources, a 220kV network which can provide high-capacity supply to the region and an underlying 110kV network, as well as existing large scale generation facilities at Great Island.

The East-West Interconnector has now been completed and provides a 500 MW link with the UK Grid. Grid 25 will provide for the connection of further interconnectors along the south-east or southern coast as these are the most

likely regions for interconnectors to connect to the system. These interconnectors could play a significant role in internationalising the Irish energy market and in facilitating the anticipated high levels of renewable generation on the island by providing a means to export excess generation when output from renewable generation is high and to import power when it is low.⁵

1.6 Regional Planning Guidelines for the South-East Region 2010-2022

The SERA recognises the need to increase electrical infrastructure in the region, including the development of new ‘main’ 400 KV lines and strengthening of 220 KV, 110 KV transmission lines and equipment. Objective PPO 6.5 of the Regional Planning Guidelines for the South-East Region 2010-2022 (SERPGs) states that SERA supports the sustainable development and expansion of the grid network and future connections to renewable sources of energy (including Gate 3 projects), subject to appropriate assessment of all necessary environmental considerations.

The guidelines also state that the Authority supports the upgrading of the Great Island generation plant from oil fired to a gas powered combined cycle generation plant, with increased generation capacity up to 400 MW, to provide security of generation capacity within the South-East Region. The guidelines encourage sustainable energy policies and practices which maximise the use of renewable energy technologies and are supportive of wind farm developments at appropriate locations.

The SERPGs state that development plans should incorporate targets for renewable energy in line with the 40% target set by Government.

⁵ EirGrid (2010) *Grid 25: A Strategy for the Development of Ireland’s Electricity Grid for a Sustainable and Competitive Future*. Dublin: EirGrid.

1.7 Wind Energy in County Wexford

County Wexford's share of Ireland's total installed wind capacity comprises five wind farms with a combined installed capacity of 151.85 MW. This compares with 280.21 MW generated in County Donegal, which has the largest number of wind farms nationally. County Wexford has the largest share of installed wind capacity in the South-East Region with Carlow, Kilkenny and Waterford having a combined 17 MW and Tipperary (North and South) having 90.64 MW. The installed wind capacity in County Wexford represents 6.75% of the total installed wind capacity in Ireland to date.⁶

Table 1: Installed Wind Capacity in County Wexford

Wind Farm	No. of Turbines	Installed Capacity (MW)	Gate	Nearest 110kV Station
Ballywater	21	42	Pre-Gate/Gate 2	Crane
Castledockrell	18	41.4	2	Lodgewood
Carnsore	16	11.9	Pre-Gate	Wexford
Richfield	18	27	Pre-Gate/Gate 1	Wexford
Ballycadden	9	25.95	Gate 1/Gate 3	Crory
Ballaman	2	3.6	Gate 2	Crory

Source: EirGrid Installed Wind Report – 30th September 2011 available at

[http://www.eirgrid.com/media/Connected%20Wind%20Farms%20-](http://www.eirgrid.com/media/Connected%20Wind%20Farms%20-%2031%20Dec%202011.pdf)

[%2031%20Dec%202011.pdf](http://www.eirgrid.com/media/Connected%20Wind%20Farms%20-%2031%20Dec%202011.pdf) and ESB Networks Distribution

Connected/Energised Wind Farms available at

[http://www.esb.ie/esbnetworks/en/generator-connections/Connected-](http://www.esb.ie/esbnetworks/en/generator-connections/Connected-Contracted-Generators.jsp)

[Contracted-Generators.jsp](http://www.esb.ie/esbnetworks/en/generator-connections/Connected-Contracted-Generators.jsp)

⁶ Figures accurate at the time the County Development Plan 2013-2019 was adopted.

Map No. 1 shows the location of existing and permitted wind farms in County Wexford.⁷ Seven of these - Ballywater, Carnsore, Castledockrell, Ballindaggin, Richfield, Ballycadden and Ballaman - have been completed and have a combined output of 151.85 MW. The remaining six permitted wind farms have a total anticipated output of 53.7 MW. If constructed, this will bring the total output in County Wexford to 205.55 MW. Of the six permitted wind farms four (32.35 MW) are on the Contracted Wind Farms list, meaning that they have a Connection Agreement with either EirGrid or ESB Networks Limited.

⁷ Excludes single domestic and industrial turbines

Table 2: Permitted Wind Farms in County Wexford

Planning Register No.	Location	No. of Turbines	Hub Height (m)	Anticipated Output (MW)	Contracted/ Live Offer	Capacity to be Installed (MW)	Gate	Target Connection Date
20110504	Knocknalour	4	85	9.2	Contracted	5.0	1	Mar 2013
					Contracted	3.95	3	Mar 2013
20110288	Ballynastraw	3	85	6.9	No contract or live offer	---	---	---
20091623	Ballyshonock, Johnstown & Ballynastraw	6	85	13.8	No contract or live offer	---	---	---
20090266	Kitilly, Graigue More & Bolinahealy	6	80	14.8	Contracted	14.8	2	Feb 2013
20034003	Ballyduff	2	85	5.0	Contracted	4.0	2	Mar 2013
					Live Offer	0.6	---	---
20033444	Ballynancoran	2	78	4.0	Contracted	4.0	2	Mar 2013

Source: ESB Networks Distribution Contracted Wind Farms available at <http://www.esb.ie/esbnetworks/en/generator-connections/Connected-Generators.jsp> and EirGrid Connection Offer Disclosure of Applications - 17

December 2012

1.8 Energy Requirements

The *NEEAP/NREAP scenario* in the Sustainable Energy Authority of Ireland's (SEAI) Energy Forecasts for Ireland to 2020: 2010 Report is based on the targets set out in the National Energy Efficiency Action Plan 2009-2020 (NEEAP) (Department of Communications, Energy and Natural Resources, 2009) and the NREAP. Following this scenario, total final consumption of electricity in Ireland is expected to grow by 7.6% from 2,429 ktoe in 2009 to 2,613 ktoe in 2020. Fundamental to this scenario is the interaction between implementing efficiency measures that reduce energy demand and the level of effort required to achieve supply-side obligations.

In line with Government policy, Ireland must produce 40% of its electricity from renewable energy sources by 2020. The *NEEAP/NREAP* scenario equates this target with 1,032 ktoe supplied from renewable energy sources in 2020. The *NEEAP/NREAP* scenario assumes that 88.2% or 910 ktoe of this will be provided by wind. This is equivalent to 10,601 GWh or 4,034 MW of installed wind energy capacity (utilising a capacity factor of 30%⁸).

According to the Census 2011 preliminary results, County Wexford's share of the national population is approximately 3.17%. Using this population share as a proxy, the electricity demand in County Wexford would equal 3.17% of the national electricity market in 2020. Therefore, 40% of the Wexford electricity market in 2020 would represent 33 ktoe, which is equivalent to 386 GWh or 146 MW of installed wind energy capacity (utilising a capacity factor of 30%). If, in line

⁸ The capacity factor is the ratio of the actual output of a wind farm over a period of time and its potential output if it had operated at full capacity the entire time. For a wind farm, the capacity factor is mostly determined by the availability of wind. The **IEA Wind 2010 Annual Report** shows the average national wind generator capacity factor for each year from 2002-2010. The average capacity factor over the five year period 2006-2010 is 29.4%. Prolonged periods of adverse weather can significantly reduce the capacity factor in any given year.

with the *NEEAP/NREAP* scenario, 88.2 % of the renewable energy target is provided by wind, this would equate to 29 ktoe, which is the equivalent to 340 GWh or 129 MW of installed wind energy.

The installed capacity from existing wind farms in County Wexford is 151.85 MW, with six permitted wind farms accounting for a further 53.7 MW. County Wexford will therefore exceed its proportionate share of the national 40% renewables target for electricity in 2020 based on installed and permitted wind farm developments. If all six permitted wind farms are built, then based on the *NEEAP/NREAP* scenario and a capacity factor of 30%, electricity consumption from renewable sources will account for 56% (539 GWh) of total electricity consumption in County Wexford in 2020. If only those on the Contracted Wind Farms List are built, this percentage is reduced to 50% (484 GWh).⁹

According to the Wind Atlas, County Wexford has significantly more wind availability (i.e. higher wind speeds over a larger geographical area) than the other four counties in the South East Region. Having regard to this resource, electricity demand forecasts and subject to the delivery of necessary transmission infrastructure, County Wexford has the potential to absorb additional wind energy developments and make a significant contribution to the de-carbonising of Ireland's energy supply. This Strategy therefore, works towards a target of 255 MW of wind energy by 2019 which will enable County Wexford to generate the equivalent of 70% of its electricity needs from wind energy.

There are also other renewable energy options, such as tidal energy, which could potentially enable County Wexford to supply more electricity from renewable energy sources than its total electricity consumption. In such a scenario, County Wexford would be in a position to become a net exporter of electricity.

⁹ Of the six permitted wind farms four (32.35 MW) are on the Contracted Wind Farms list. It should be noted that CER licences and authorisation are required for wind farm developments to proceed, in addition to planning permission and a grid contract.

1.9 Offshore Wind Farms

The development of offshore wind farms falls under the legal jurisdiction of the Minister of the Environment, Community and Local Government (for the foreshore area out to 12 nautical miles) and are therefore not considered as part of the Wexford Wind Energy Strategy. However, it should be noted that local authorities may have responsibility with regard to onshore elements of offshore wind farms such as cable landfall and onshore grid connection infrastructure. Local authorities may also be involved as consultees during the consenting process for offshore wind farms.

Offshore wind turbines typically have a higher electricity output than onshore, with turbines of 5 MW capacity now in production, and larger turbines of up to 10 MW capacity in development. This compares to an average turbine capacity of around 2 MW for onshore wind.¹⁰ However, issues such as foreshore leasing and interaction with other marine users and the marine environment need to be addressed.

The Draft Offshore Renewable Energy Development Plan (OREDPP)(Department of Communications, Energy and Natural Resources, 2010) identifies potential areas for renewable energy development including wind, wave, tidal or a combination of any of the three. It identifies the potential for 4,500 MW from offshore wind and 1,500 MW from wave and tidal energy. The East Coast – South is identified for wind and tidal development, while the South Coast is identified for wind development only. This is subject to a number of qualifications and caveats including that:

- The potential areas identified for development exclude all known technical constraints (aquaculture sites, oil and gas infrastructure, pipelines and cables, disposal sites and dredging areas).

¹⁰ National Offshore Wind Association of Ireland (2011). NOW Ireland. Available at <http://www.nowireland.ie/> (Accessed 11 November 2011)

- The development of 4,500 MW from offshore wind and 1,500 MW from wave and tidal energy is based on developing areas outside all designated nature conservation site, however this does not exclude *per se* these sites from development in the future subject to a number of surveys, extensive monitoring and research in order to provide sufficient evidence that a particular development would not have a significant adverse effect on the integrity of the site.
- Further surveys/monitoring is likely to be required in certain locations in order to determine whether there would be a significant adverse effect on the distribution of key benthic habitats and species outside designated sites and interactions between offshore renewable energy developments on mobile species such as marine mammals, seabirds, reptiles and fish.

The only offshore wind farm constructed to date is the first phase (25 MW) of the 520 MW Arklow Bank project. Foreshore Leases have been granted for the remainder of this Arklow Bank project and for a 1,100 MW offshore wind project at Codling Bank in the Irish Sea. However, neither has a grid connection offer at present. Applications for Foreshore Leases have been made for three further wind farm developments: Dublin Array (off Bray Head, Co Wicklow – in the Irish Sea) (364 MW), Oriel (Dundalk Bay, Co Louth – in the Irish Sea) (330 MW) and Fuinneamh Sceirde Teoranta (Outer Galway Bay, Atlantic coast) (100 MW). All three have a grid connection offer as part of the Gate 3 process. EirGrid's Report Connection Offer: Disclosure of Applications – 11 January 2012 shows that there is also an application for grid connection for a 600 MW offshore wind farm at Glassgorman Banks off the coast of County Wexford.¹¹ However, it does not have a grid connection offer or foreshore lease at present.

¹¹ EirGrid (2011). EirGrid. Available at <http://www.eirgrid.com/customers/completedgenerationapplications/> (Accessed 14 November 2011)

Section 2 - Methodology

2.1 Introduction

The Wind Energy Strategy 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.

2.2 Wind Resource

The Sustainable Energy Ireland (SEI) Wind Atlas 2003 was utilised to extract data on constrained wind resources for County Wexford.¹² 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. 2.

¹² 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.

2.3 Transmission Network

A second consideration in identifying areas for wind farm development is access and proximity to the transmission network. Map No. 2 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.

2.4 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. 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. 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 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.

2.5 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 all District Towns and Strong Villages 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. 4. 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, except where the written consent of the owner is given. 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, unless the written consent of the owner is given.

2.6 Existing and Permitted 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.

2.7 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.

2.8 Landslide 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.

2.9 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.

2.10 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.

2.11 Geological Sites

GSI were consulted regarding sites of geological importance in County Wexford. The GSI and the Department of Environment, Community and Local Government (DECLG) are in the process of identifying important geological and geomorphological sites in Ireland for designation as NHAs. The sites are being

selected under 16 different geological themes with a representative sample to be identified under each theme. A second tier of County Geological Sites (CGS) are identified for inclusion in development plans in order to receive a measure of recognition and protection through the planning system. In County Wexford there are 26 sites recommended for NHA designation and 11 sites recommended for CGS designation. The impact of wind farms on such sites should be carefully considered.

2.12 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 'Landscapes of Greater Sensitivity'. 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 landscapes of greater sensitivity are shown on Map No. 5.

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 3 below.

Table 3: 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	<p>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.</p> <p>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.</p> <p>Recently constructed wind farms have become a feature in this landscape.</p>	<p>Potential: High</p> <p>220kV line runs through/adjacent to this area</p> <p>Areas of high wind speed</p> <p>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.</p>	Limited capacity to absorb further development.	<p>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.</p>	<p>No longer suitable – located in the Not Normally Permissible area.</p>
Lowlands	<p>Predominantly fertile lands with higher levels of population and intensive agriculture.</p> <p>Slope and topography occurs in a shallow/ gradual transition.</p> <p>Extensive views across large fields.</p> <p>Number of prominent hills which provide more enclosure and ‘punctuation’ within the overall landscape.</p>	<p>Potential: Moderate to High</p> <p>220kV and 110kV lines run through this area</p> <p>High wind speeds</p> <p>Richfield wind farm (18 turbines) is located in the southern part of this zone.</p>	<p>High capacity outside of the exclusion zones for settlements and the natural heritage designations.</p> <p>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.</p>	<p>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.</p>	<p>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.</p>

LCA	Characteristics	Wind Resources and Wind Farm Potential	Capacity of Landscape for Wind Farm Development	LCTs in 2006 Guidelines	Appropriate Size of Wind Farms
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 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.	Potential: Moderate to Low High wind speeds but majority of landscape is distant from grid. Ballywater wind farm (21 turbines) and Carnsore wind farm (16 turbines) are located in this area.	Low capacity due to the scenic, tourism and recreation value of this area combined with a 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.	Coastal Zone	Not Normally Permissible
Landscapes of Greater Sensitivity	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 –characterised by generally low and rocky cliffs.	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
	<p>The southern tip of the peninsula has a very flat low lying distinctive landscape punctuated by agricultural and residential buildings.</p> <p>Screen Hills – represent the largest raised ice contact delta in Ireland and possibly in Europe.</p> <p>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.</p>				

To avoid potential cumulative impacts, the land use designations in adjoining counties were considered. Map No. 6 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 Strategy.

Scenic routes and protected views from the adjoining counties were also considered. Schedule 17.9 of the Wicklow County Development Plan 2010-2016 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 2009-2015.

A further consideration in terms of visual impacts is the location of existing and permitted wind farm developments in the adjoining counties. Map No. 1 shows the location of existing and permitted wind farm developments in County Wexford and in adjoining counties up to 15km from the county boundary.¹³ 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.

¹³ At the time of preparing the Plan it was not possible to map existing and permitted wind farms in County Carlow

Section 3 - How the SEA Informed the Wind Energy Strategy

3.1 Introduction

An SEA of the Wexford County Development Plan 2013-2019 was carried out and informed the Wind Energy Strategy. During the scoping stage of the SEA, it was recognised that the Wind Energy Strategy may have the potential to significantly impact upon on the environment, in particular on the landscape and nature conservation interests. The SEA helped to define areas for wind energy development and ensured that highly sensitive environmental resources were avoided or potential negative impacts highlighted and addressed through mitigation measures. Designated sites were avoided by excluding them from the Acceptable in Principle and Open for Consideration areas. Landscape Character Areas were also excluded where they were considered to be sensitive to wind farm development.

It was not possible to avoid Recorded Monuments due to the large number of sites dispersed throughout the County. Similarly, it was not possible to avoid all breeding areas, roosting grounds and flight paths for protected bird species as detailed data was not available at the time of preparing this Strategy. Therefore, measures have been incorporated into the development management standards contained in Section 5 of this Strategy to mitigate potential adverse impacts of wind farm development on archaeological heritage and potential impacts on birds in terms of collision, disturbance and any other impacts on the environment.

The SEA addressed a number of alternatives and these are presented below. The alternatives are divided into Strategic Energy Options which identify alternative renewable energy options and Spatial Wind Energy Options which consider the location of new wind farms.

3.2 Strategic Energy Options

Option 1: Do Nothing Scenario

This option would involve retaining the existing Wind Energy Strategy. However, it was decided early on in the SEA process that the existing Wind Energy Strategy should be reviewed to:

- Take account of updated national and regional policy in relation to climate change, renewable energy and the need to reduce greenhouse gas emissions
- Assess the cumulative impacts of existing and permitted wind farms in the county and adjoining counties
- Set a target for renewable energy in line with the 40% target set by Government, as recommended in the SERPGs
- Take account of technological advances in wind turbine development and improvements to the National Grid

Option 2: Ad-hoc Planning for Wind Farm Development

This option would involve wind energy applications being assessed on a case-by-case basis without an overall strategic framework to guide wind farm development. This is not in line with existing planning guidance for wind energy development and would not facilitate an evaluation of cumulative impacts associated with wind farm development. In addition, the lack of strategic evaluation of this land use would not be in keeping with the SEA Directive.

Option 3: Alternative Renewable Energy Sources

This option would involve planning for alternative renewable energy sources such as biomass or tidal power in seeking to achieve a target that reflects the national target of 40% renewable energy production by 2020. The reason this is not being pursued as a means to meet this target in this Plan is, that whilst other renewable energies can and will contribute to this target, in practice County Wexford has a

significant wind resource and, at national level, Ireland has experience in planning and managing this technology.

The East Coast of Wexford is identified in the Draft OREDP as being suitable for tidal development, however further research and development will be required before this type of renewable energy is developed. There is also some uncertainty regarding the economic viability of anaerobic digesters. The Bioenergy Action Plan for Ireland (Department of Communications, Energy and Natural Resources, 2007) notes that, in general, it would not be economic for farmers to transport manures any great distance to an anaerobic digestion plant for treatment and subsequent land spreading. High capital costs are another inhibiting factor. Hence, this option was not considered to be a realistic alternative for the lifetime of this Plan. Other renewable energies will, however, be supported by Wexford County Council in conjunction with the Wind Energy Strategy.

Option 4: Offshore Wind Energy Development

This scenario would see the direction of wind farms to the offshore areas of County Wexford as a means of achieving renewable energy targets. The Draft OREDP identifies the south and east coasts of Wexford as being suitable for wind energy development and Grid 25 anticipates the future capacity for offshore wind farm development off the coast of County Wexford to be in the region of 445 MW. To date, no connection offers have been made for offshore wind farm developments in this area.¹⁴ The 3,900 MW of wind developments which received an offer as part of Gate 3 will provide for the 40% national renewable generation target by 2020 if all the generators to receive an offer are built. It is therefore unlikely that the county will achieve significant renewable energy production from offshore wind energy development within the lifetime of this Plan.

¹⁴ Eirgrid's *Connection Offer: Disclosure of Applications – 24 October 2011* shows that there is an application for grid connection for a 600 MW offshore wind farm at Glassgorman Banks off the coast of County Wexford. The application, made in 2008, is still in progress.

Option 5: Alternative Targets and Alternative Timeframes

This scenario would assess different renewable energy targets and timeframes as a means of achieving the 2020 renewable energy target of 40% electricity production from renewable energy resources. The target of 255 MW in this Wind Energy Strategy will enable County Wexford to generate the equivalent of 70% of its electricity needs from wind energy by 2019. The target of 70% has been chosen as the county has significantly more wind availability (i.e. higher wind speeds over a larger geographical area) than the other four counties in the South-East Region. Having regard to this resource, electricity demand forecasts and subject to the delivery of necessary transmission infrastructure, County Wexford has the potential to absorb additional wind energy developments and make a significant contribution to the national target of 40%.

Option 6: Strategic Approach to Onshore Wind Energy Development

This approach recognises where the principal wind resources are and matches them to existing infrastructure – two critical considerations for wind energy development. It seeks to protect designated sites and existing settlements while maximising the potential of local renewable energy resources. This approach would allow potential applicants a means to progress wind energy developments within robust strategic areas in the county, thus assisting the county in meeting its renewable energy targets. It would also encourage clustering or sharing of infrastructure associated with wind energy development.

3.3 Spatial Wind Energy Options

Option 7: Consolidate Wind Energy Development in a Single Large Cluster

This option would allow for the clustering of new wind farm developments in a single location based on strategic analysis of the most suitable area in terms of wind resources, environmental, landscape and other factors. This approach would potentially lead to significant effects in a particular location, particularly in

terms of landscape and environmental impacts. However, these effects would be localised rather than dispersed throughout the county. This option would have the greatest potential to meet the wind energy targets for the county whilst limiting the extent of environmental, visual and amenity impacts.

Option 8: Disperse Wind Energy Development throughout County

This option would allow for the dispersal of wind farm developments throughout the county within potentially suitable areas. This approach would not realise opportunities for clustering wind farm developments in the most strategic locations and would result in widespread environmental and visual impacts around the county.

Option 9: Larger Wind Farm Clusters in Suitable Areas and Smaller Wind Farm Developments in Potentially Suitable Areas

This option would allow for the concentration of larger wind farm developments in the most suitable areas together with smaller wind farms or groupings of wind farms in other acceptable areas, subject to environmental and visual assessment. This option would result in dispersed environmental and visual impacts around the county when compared with Option 7.

3.4 Preferred Option

Each of the strategic energy and spatial wind energy options were evaluated against a set of strategic environmental objectives. The results of this evaluation are shown in Table 25 of the Strategic Environmental Assessment contained in Volume 8 of the Wexford County Development Plan 2013-2019. The preferred option is a combination of Option 6 Strategic Approach to Onshore Wind Energy Development and Option 7 Consolidate Wind Energy Development in a Single Large Cluster. Together these options form the basis for this Strategy, allowing for the strategic development of wind in areas where there are high wind speeds

and grid connections while seeking to avoid or reduce impacts on the environment and ensuring the protection of residential and visual amenity.

Section 4 - Wind Farm Development Areas

4.1 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 2 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 of this Strategy 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.

4.2 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 and permitted 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 will reach capacity in terms of wind farm development (assuming that all permitted wind farms will be built). 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.

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 landscapes of greater sensitivity (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. 7 and Table 4 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. 7 should be read in conjunction with Map No. 1.

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 4: Wind Energy Development Areas

Strategic Area	Description and Guidance
Acceptable in Principle	<p>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.</p>
Open for Consideration	<p>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. 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.</p>

<p>Not Normally Permissible</p>	<p>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 and permitted wind farms will be assessed on a case-by-case basis and will be subject to the development management standards contained in Section 5. When assessing planning applications for extensions 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 4.2. In this regard, it is considered that the north of the county will reach capacity if all permitted wind farms are built.</p>
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4.3 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 2020. The objectives for wind energy development in County Wexford are set out below.

Objective WE01

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.

Objective WE02

Aim to achieve a target of 255 MW of wind energy, to enable County Wexford to make the initial steps toward a low carbon economy by 2020.

Objective WE03

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 WE04

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.

Objective WE05

Promote community consultation in proposed wind farm developments in accordance with Guidelines for Planning Authorities on Wind Energy Development (Department of Environment, Heritage and Local Government, 2006) and Best Practice Guidelines for the Irish Wind Energy Industry (IWEA, 2012).

Objective WE06

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 WE07

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 WE08

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.

Objectives WE09

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 and will be subject to the development management standards contained in Section 5 (see Table 4).

Objective WE10

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.

4.4 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 2001-2011. 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.

Section 5 - Development Management Standards

5.1 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 Guidelines for Planning Authorities on Wind Energy Development (Department of Environment, Heritage and Local Government, 2006) and best practice. They also incorporate the mitigation measures identified in the SEA.

5.2 Development Management Standards

5.2.1 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.

5.2.2 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) and Best Practice Guidelines for the Irish Wind Energy Industry (IWEA, 2012) 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.
-
- Consultation shall continue throughout the construction, commissioning and operation 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.

5.2.3 Duration of Permission

- The Planning Authority may grant permission for a duration longer than five years in certain circumstances, for example, to ensure that the permission does not expire before a grid connection is granted. It is, however, the responsibility of the applicants in the first instance to request such longer durations in appropriate circumstances.

5.2.4 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 500 metres of any noise sensitive property, including existing or permitted dwelling houses, except where the written consent of the owner is given. Permission will be subject to an adequate level of amenity being achieved in relation to noise, shadow flicker and visual impact. 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. 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, except where the written consent of the adjoining landowner is given. The impact of proposed wind farms on the development potential of adjacent sites will be considered.
- 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.

5.2.5 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.

5.2.6 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.

5.2.7 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.

5.2.8 Shadow Flicker

- An assessment of the theoretical shadow flicker shall be prepared for all existing and permitted offices and dwellings within a distance of 10 times the rotor diameter of any proposed turbine location. Shadow flicker at offices and dwellings within this area should not exceed 30 hours per year or 30 minutes per day. If required, mitigating measures shall be proposed and agreed with the Planning Authority. This may include installing a mechanism to ensure that the turbines cease to operate during periods when shadow flicker would otherwise occur.
- A separate cumulative shadow flicker assessment shall be prepared where there are other existing or permitted wind farm developments within 2km of the proposed development.

5.2.9 Noise

- A noise assessment shall be prepared for all existing and permitted noise sensitive properties within a distance of 10 times the rotor diameter of any proposed turbine location.
- A separate cumulative noise assessment shall be prepared where there are other existing or permitted wind farm developments within 2km of the proposed development.
- In general, permitted maximum noise levels at noise sensitive properties shall be 45dB(A) or 5dB(A) above background noise during the hours of 0800 and 2000 and 43dB(A) at all other times.
- In lower noise environments where the background noise is less than 30dB(A), the daytime level of the LA90, 10 min of the wind energy development noise shall be limited to a level within the range of 35-40dB(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. In the event that the monitoring shows that any turbine is exceeding its projected noise levels and is having a detrimental noise impact, mitigating measures shall be agreed with the Planning Authority.

5.2.10 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.

5.2.11 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.

5.2.12 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.

5.2.13 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).

- 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.

5.2.14 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.

5.2.15 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.

5.2.16 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.¹⁵ 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.

5.2.17 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.

¹⁵ 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.

- 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.

5.2.18 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.

5.2.19 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.

5.2.20 Environmental Management Plans

- An Environmental Management Plan (EMP) 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.

5.2.21 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.

5.2.22 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.

5.2.23 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.

5.2.24 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.

5.2.25 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.

5.2.26 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).

5.2.27 Construction

- A Construction Management Plan (CMP) 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 South Eastern River Basin Management Plan (2009-2015) 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.

5.2.28 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 (see also 5.2.21 above).
- 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.

5.2.29 Decommissioning

- The wind energy development shall generally be decommissioned and removed 25 years after the date of commissioning of the wind energy development 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.

5.2.30 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 4).

5.2.31 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 (see also 5.2.13 above).
- 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 5.2.8, 5.2.9 and 5.2.13 above in relation to shadow flicker, noise and visual impacts.



**Wexford County Development Plan 2013 - 2019
Wind Energy Strategy**

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Title: Existing and Permitted Wind Farms

Drawn by: NK	Checked by: FF
Date: 12.03.2013	Map No: 1



Wexford County Development Plan 2013 - 2019 Wind Energy Strategy

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Title: Wind Speed at 75m and Transmission Network

Drawn by: NK

Checked by: FF

Date: 12/03/2013

Map No: 2



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Title: Designated Sites

Drawn by: NK	Checked by: FF
Date: 12/03/2013	Map No: 3

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

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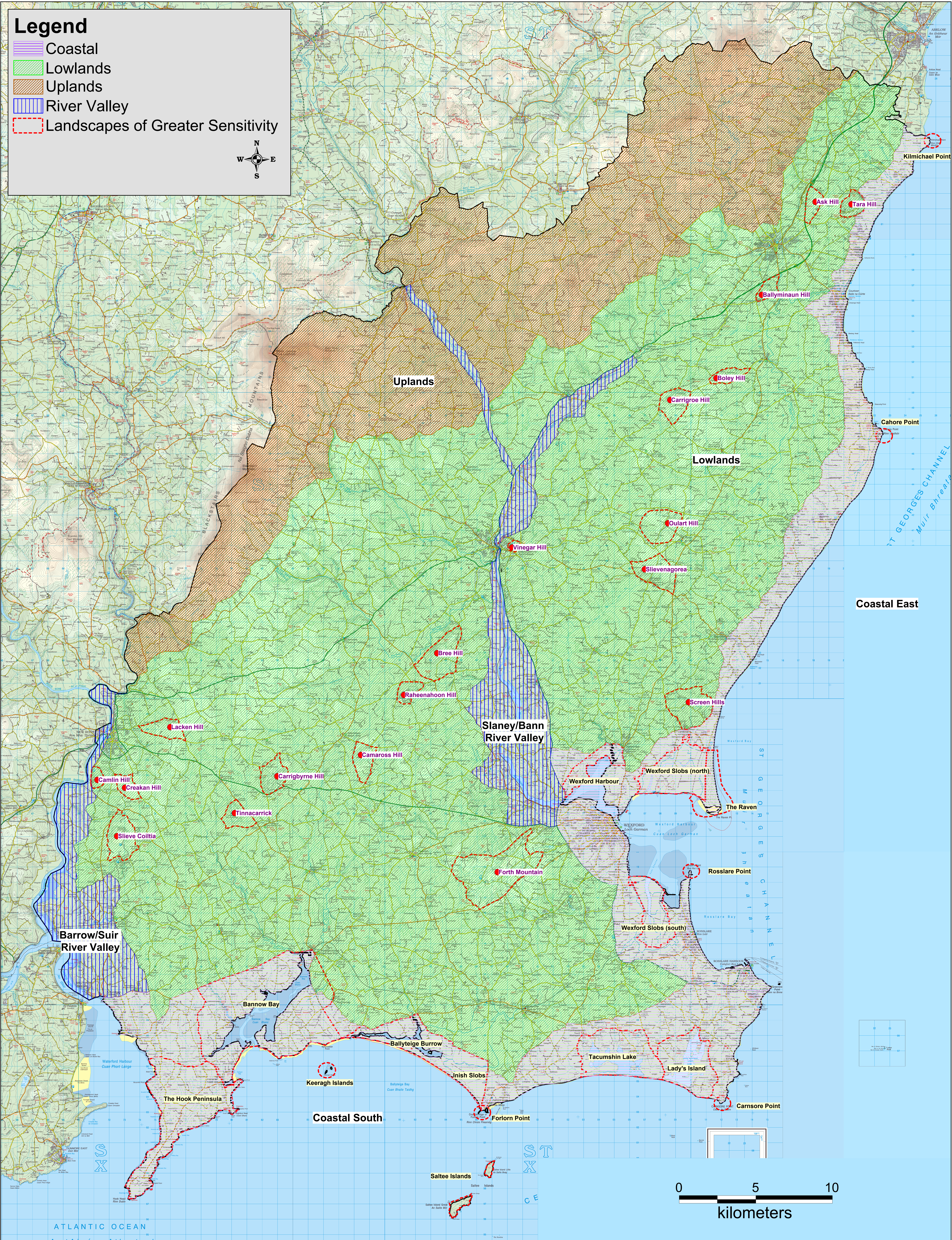
**Title: Housing Density per square kilometre
in each Townland**

Drawn by: NK

Checked by: FF

Date: 12/03/2013

Map No: 4



**Wexford County Development Plan 2013-2019
Wind Energy Strategy**

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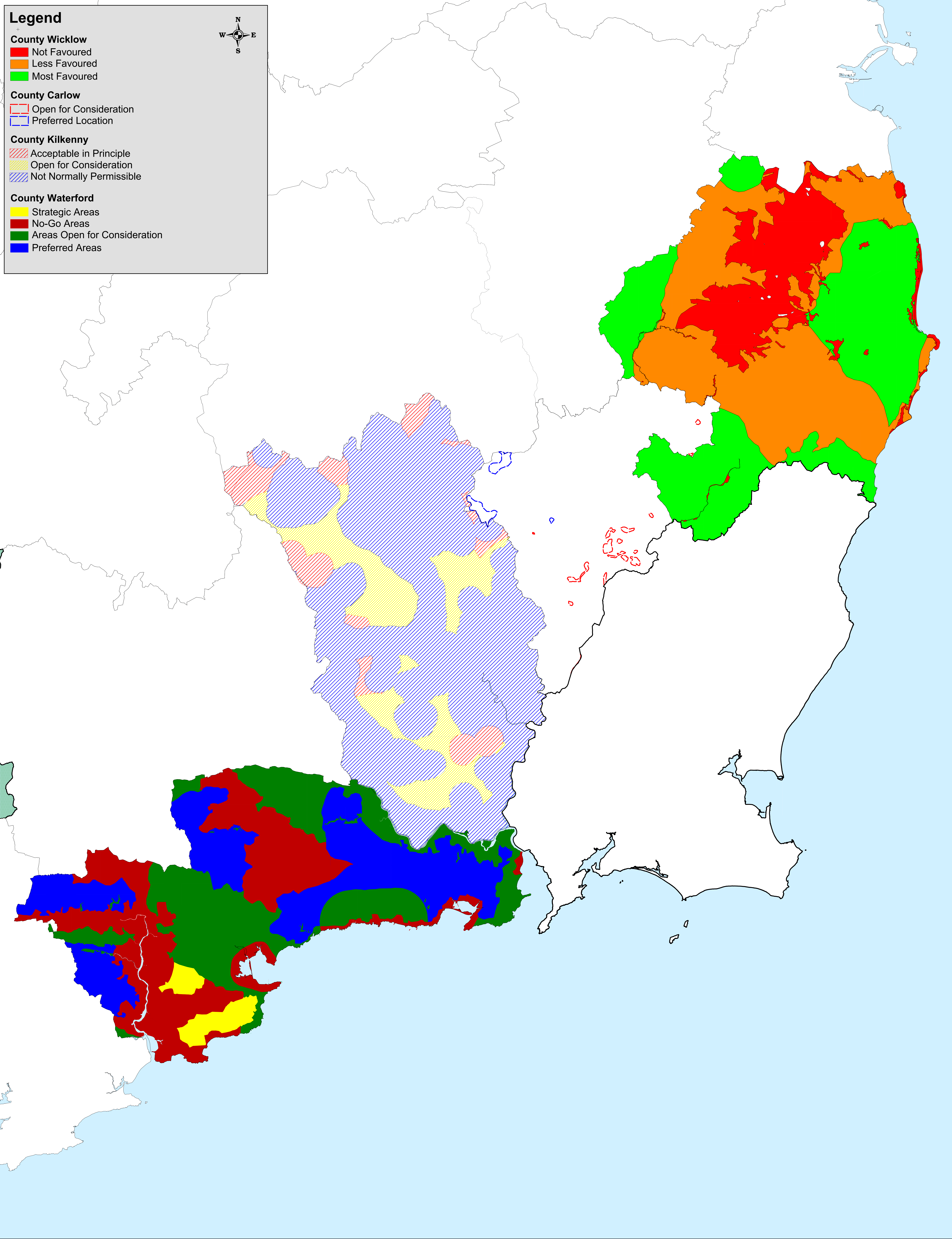
Title: Landscape Character Assessment

Drawn by: NK

Checked by: FF

Date: 12.03.2013

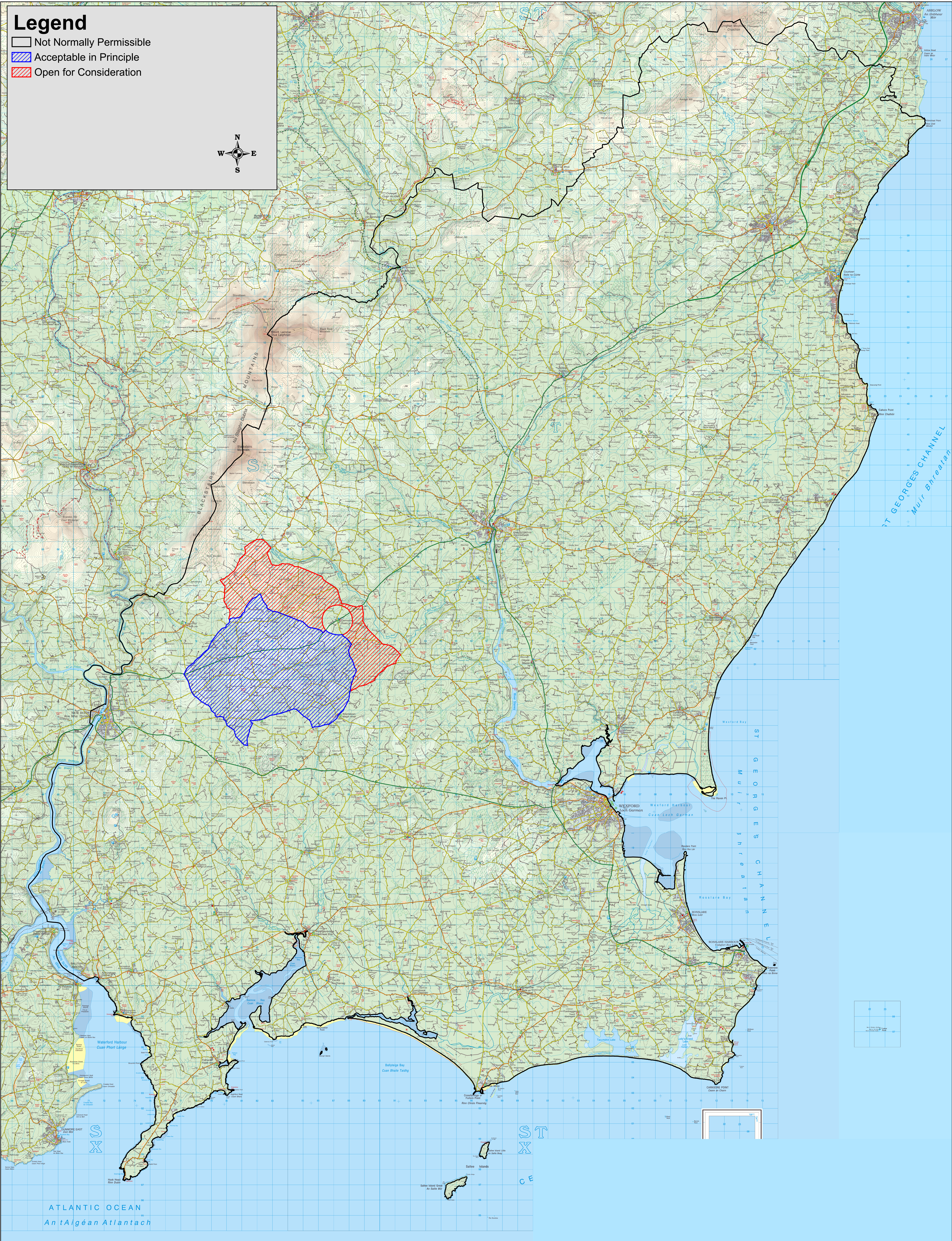
Map No: 5



Wexford County Development Plan 2013 - 2019
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Title: Wind Energy Strategy Maps for Adjoining Counties	
Drawn by: NK	Checked by: FF
Date: 12/03/2013	Map No: 6



Wexford County Development Plan 2013 - 2019
Wind Energy Strategy

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Title: Wind Energy Strategy Map

Drawn by: NK

Checked by: FF

Date: 12.03.2013

Map No: 7