



Laois County Council
Comhairle Chontae Laoise

APPENDIX 5:
Wind Strategy 2011-2017

Laois County Development Plan
2011-2017

Adopted 11th October 2011

Table of Contents

| | |
|---|-----------|
| 1-Introduction | 3 |
| 2-Context, Capacity, Value | 4 |
| 3-Wind Energy in County Laois-Current Position | 10 |
| 4-Methodology | 11 |
| 5-Wind Energy Strategy for County Laois-Area Classifications | 17 |
| 6-Development Control Standards for Wind Farms in County Laois | 22 |
| 7. Guidelines on Wind Farm Development Constraints in County Laois | 25 |

1. INTRODUCTION

1.1 Introduction

One of Ireland's greatest natural resources is wind. The country has one of the most advantageous wind regimes in Europe suitable for the production of electricity especially during the winter months when energy demand is at its highest. Over the course of the last decade in particular, there has been a growing interest in the development of wind farming to harness this valuable and renewable resource.

While the western and south-western seaboard counties boast the optimum wind resources, County Laois also has a certain potential in this area notwithstanding its inland location. This is borne out by the granting of permission under **PL Ref 04/935** for a 7 turbine wind farm development in southeast Co. Laois near the county boundaries with Carlow and Kilkenny as well as a number of pre-planning queries for further such developments at other locations throughout the county.

1.2 Background

Ireland is at a cross-roads concerning the future of energy. The challenges of climate change resulting from increasing greenhouse gas emissions need to be tackled effectively, strategically and urgently. Recent studies have contributed to growing awareness and knowledge of the problem, its long-term socio-economic consequences and have stressed the need for decisive and immediate action.

An integrated approach to climate and energy policy is needed given that energy production and use are primary sources of greenhouse gas emissions. Ireland's increasing dependence on energy imports threatens its security of supply and implies higher prices. Ireland is currently the most import dependent country in the European Union for energy. Approximately 86% of the national energy requirement is imported at a cost of approximately **€6.25 bn/annum**. In contrast, boosting investment in renewable

energy and new technologies has wide-reaching benefits and will play a fundamental part in the government's strategy for growth and expansion of the green energy sector.

Moreover, the greater use of wind energy along with other indigenous energy resources as a direct substitute for imported fossil fuels will lead to significant savings on the national fuel bill, greater security of supply and a reduction in the potential for serious economic impacts due to external factors which might affect energy prices. Renewable energy sources are largely indigenous, are not reliant on the future availability of conventional sources of energy, and their predominantly decentralised nature reduces vulnerability to volatile energy supply. Consequently they will comprise a key element of a sustainable energy package going forward.

In compliance with the provisions of the Kyoto protocol and a burden sharing agreement¹ between E.U. member states, Ireland has agreed a national target to limit its increase in greenhouse gas emissions to 13% above 1990 levels during the period 2008-2012. Limiting greenhouse gas emissions is seen as vital in controlling global warming which is one of the most important environmental issues currently being addressed by the European Union. The promotion of wind generated electricity will play a significant part in achieving this target.

As public debate surrounding the topic increases, from developers, legislators, officials and concerned citizens alike, the need for and value of a formal wind strategy for County Laois has become clearly established. Furthermore, there is a growing realization that current County Development Plan policy governing wind farming [as set out in section 7] is in need of a major overhaul. In brief, that policy advocates a case by case approach to the evaluation of this form of development rather than a formal plan led approach as is strongly recommended in the **2006 DoEHLG guidelines**.

1.3 Terms of Reference

Planning has a key role to play in the development of renewable energy in County Laois by facilitating the appropriate siting, establishment and operation of wind farms in ways that balance the environmental, social, and economic benefits with any demonstrated impacts particularly those of a landscape and amenity variety.

The objectives of this report are to evaluate and analyse the potential wind energy resource within County Laois, to outline the key environmental and planning considerations for windfarm development and to make recommendations as to how wind energy resource development policy and practice can be improved.

Ultimately, this document will clarify the Council's policy towards wind energy developments in the county, form the basis for a more streamlined assessment of planning applications for wind farming and ultimately assist in the decision making process of the Planning Authority.

2. CONTEXT, CAPACITY, VALUE

2.1 Evolving National and European Context

Renewable energy development will be a vital part of Ireland's strategy to tackle two major challenges facing the country today-ensuring a secure supply of energy and combating climate change. In recent years Ireland has become heavily dependent on the importation of fossil fuels in order to meet its energy needs, with fossil fuels accounting for 96% of all energy consumed nationally in 2006.

The high dependency on energy imports is risky and as a result, Ireland is currently extremely vulnerable both in terms of meeting future energy needs and ensuring price stability. Accordingly, the Department of Communications, Energy and Natural Resources' [DCENR] energy policy has been moving towards greater levels of self-sufficiency, with renewable energy being a key part of the **Governments Energy Policy framework 2007-2020**. Additionally, in the context of the current global economic downturn and a time of increasing uncertainty over world energy prices, the further exploitation of our renewable resources will be crucial if Ireland is to meet its renewable energy targets, secure energy supply, decouple economic growth from environmental pollution and re-power Ireland's economy.

Ireland's need to support renewable energy also stems from its international commitments under the Kyoto protocol and the **European Directive 2002/77/EC** to tackle greenhouse gas emissions and air pollution. A new **Directive on the Promotion of Renewable Energy Sources** came into effect in June 2009, which will establish a binding target of 20% of overall EU energy consumption coming from renewable sources by 2020 as well as a binding 10% minimum target for energy from renewable resources in the share of transportation fuels. The Irish target under the

directive is for renewable resources to account for **16%** of total energy consumption by 2020. It is widely acknowledged that wind energy will contribute the vast bulk of this target. Failure to meet the EU targets could result in EU sanctions being imposed.

At a basic level the new Directive legally obliges each EU Member State to:

- [a] ensure that its 2020 target is met and
- [b] introduce “appropriate measures” and outline them in a National Renewable Energy Action Plan - designed to ensure that the Member State meets its interim trajectory. This Action Plan is to be submitted before 30 June 2010.

The “appropriate measures” include ensuring that grid-related measures and administrative and planning procedures are sufficient to achieve the target. The European Commission will be able to initiate infringement proceedings if a Member State fails to introduce “appropriate measures” to enable it to meet its interim trajectory, or if a Member State fails to submit its National Action Plan on time. Thus it is critical that industry stakeholders and state-bodies work together to support the delivery of renewables and the associated infrastructure required in order to meet national targets.

2.2 Government and EU Policy

The following is a chronological summary of key objectives for renewable energy identified in recent government and EU policy documents, programmes and acts.

2.3 National Energy Efficiency Action Plan 2009-2020

The purpose of this Action Plan is to identify policies and measures that have the potential to contribute towards the national target of 20% energy efficiency savings by 2020. It builds upon

the Energy Efficiency Action Plan that was submitted to The European Commission in 2007 as part of Ireland’s obligations under the Energy Services Directive [ESD] which requires member states to deliver energy savings of 9% by 2016.

The Action Plan contains 90 actions, measures and programmes which will each play their part in securing a more sustainable energy future for Ireland. Of the 90 actions, **five** stand out as having key importance for the delivery of the national target:

- Roll out of a multi-annual National Insulation **Programme for Economic Recovery** to assist homeowners substantially reduce their energy bills,
- Support to businesses to increase competitiveness through tax allowances for energy-efficient technologies,
- Introduction of an **Energy Demand Reduction Target**,
- Encouragement of public sector towards purchasing only green goods and services as part of target to reduce energy usage in the public sector by 33%,
- Development of an electric vehicle deployment strategy to provide for a minimum of 10% of national passenger car and light commercial fleet being electrically powered by 2020.

2.4 The Grid Development Strategy 2007-2025

This strategy recognises that one of the biggest challenges facing the energy sector in Ireland is the development of a high voltage transmission grid to meet the country’s demand for more economical, reliable and environmentally friendly electric power.

Key actions include:

- Creation of a high capacity, efficient, reliable link between generation, and demand centres,
- Doubling in capacity of bulk transmission grids,
- Upgrading 2,300 kms of the existing network,
- Constructing 1,150 kms of new circuits,
- Balanced grid development in each region,

Total investment of €4 billion in national infrastructure of which **€310 million** is earmarked for Midlands Region.

2.5 The National Climate Change Strategy 2007–2012

Published in April 2007, the Government's revised National Climate Change Strategy for the period 2007 to 2012 follows on from the first national strategy, published in 2000 and reviewed in 2002, and takes account of the public consultation process which followed the further review in Ireland's "Pathway to Kyoto Compliance" (2006).

The purpose of the strategy aims is twofold:

- to indicate the measures by which Ireland will meet its 2008–2012 commitment and
- to show how these measures position Ireland for the post 2012 period and to identify the areas in which further measures are being researched and developed to enable the eventual 2020 target to be achieved.

The Strategy shows, sector by sector, that the range of existing and additional measures which have already been developed will reduce Ireland's greenhouse gas emissions by over **17 million tonnes** of carbon dioxide equivalent in the period 2008–2012.

The new strategy outlines specific measures to be put in place across all economic sectors in order for Ireland to meet its national target above. For example, the targets set in the **Energy Supply** sector relevant to this wind energy development strategy include:

- **15%** of electricity to be generated from renewable energy sources by 2010 and 33% by 2020.
- Biomass to contribute up to **30%** of energy input at peat stations by 2015.

2.6 The National Development Plan 2007–2013

The National Development Plan 2007–2013 sets out the economic and social investment priorities for the next seven years to deliver on the overall vision of a better quality of life for all. The Plan fully reflects the strategic role of energy in underpinning the overall economic and social objectives.

Over the seven year period of the National Development Plan, the **Energy Programme** will entail some €8.5 billion in investment in energy funded in part by the Exchequer, by the Energy Semi-State bodies and from other non-public sources. The investment will underpin the overall strategic objective to ensure security of energy supply at the most competitive cost together with environmental sustainability.

The Energy Programme comprises three elements

- **Strategic Energy Infrastructure Programme.**

Over €1.25 billion will be invested in key strategic energy infrastructure projects including new electricity interconnection, improved gas interconnection and strategic reserve capacity.

- **Sustainable Energy Sub-Programme**

A minimum of €276 million will be invested in the sustainable energy sector over the period of the NDP in support of the targets for sustainable energy including renewable energy, energy efficiency and innovation. This investment will underscore the strategic goals for sustainable energy.

- **Semi-state Energy Companies Sub-Programme**

The semi-state energy companies including Bord Gais, ESB, Bord na Mona and Eirgrid will build on the progress made under the last NDP by investing over €7 billion mainly in the electricity and gas transmission and distribution networks, in new and modernized power generation and in wind energy projects. This major investment programme will enhance security of energy supply and will support regional development and competitiveness and all-island co-operation.

2.7 Bio-Energy Action Plan for Ireland 2007

The new Government action plan has been launched as a comprehensive strategy to increase the deployment of renewable energy across three key sectors: electricity, heat and transport.

Among the commitments in the Government Action Plan are:

- By 2020 a third of all electricity consumed in Ireland will come from renewable sources (i.e. wind, tidal, solar, etc.)
- 12% of all residential and commercial heating will be powered by renewable sources (wood chips, solar, etc.)

2.8 White Paper on Energy 2007-2020

Published in March, 2007, the new White Paper entitled "Delivering a Sustainable Energy Solution for Ireland" sets out the Governments

Energy Policy Framework for the period 2007 to 2020 to deliver a sustainable energy future for Ireland. The White Paper sets out the Governments comprehensive action-oriented Energy Policy Framework to 2020 under the following strategic goals:

- Security of Supply,
- Sustainability of Energy and
- Competitiveness of Energy Supply.

The underpinning strategic goals are:

- Ensuring that electricity supply consistently meets demand
- Safeguarding the physical security and reliability of gas supplies to Ireland
- Enhancing the diversity of fuels used for power generation
- Delivering electricity and gas to homes and businesses over efficient, reliable and secure networks
- Creating a stable attractive environment for hydrocarbon exploration and production
- Being prepared for energy supply disruptions
- Addressing climate change by reducing energy related greenhouse gas emissions
- Accelerating the growth of renewable energy sources
- Facilitating Delivering an integrated approach to the sustainable development and use of bio-energy resources
- Providing for increased competition and consumer choice in the energy market
- Ensuring that the regulatory framework meets the evolving energy policy challenges

By 2020 it is envisaged that one third (**33%**) of electricity consumed in the Irish economy will come from renewable sources.

2.9 The Wind Energy Development Guidelines, 2006

The DoEHLG published Wind Energy Development Guidelines in 2006 for the purpose of guiding Local Authorities in the preparation of a strategy or plan led approach towards the sensitive siting of these developments.

The guidelines, which supersede the 1996 version, are designed to ensure consistency of approach to wind energy developments throughout the country and to provide clarity to prospective developers and local communities alike. They also provide a sample methodology for the identification of suitable locations for wind energy development within their boundaries and the treatment of planning applications for wind energy development proposals.

2.10 The Planning and Development [Strategic Infrastructure] Act 2006

This legislation provides for the streamlining of the planning process for certain types of major energy, transport and environmental infrastructure of strategic importance. The new consent procedures apply to, among other things, major electricity transmission lines and interconnectors, strategic gas infrastructure development, power stations, wind farms, liquified natural gas facilities and gas storage facilities.

The new procedures will ensure an enhanced service, with greater flexibility, full and robust decision-making, public participation and more definitive time-frames in terms of key infrastructure delivery on the ground.

2.11 Sustainable Energy Ireland Wind Atlas 2003

SEI, the national energy authority promotes and assists the supply of energy in an environmentally and economically sustainable manner. The promotion and technology research associated with wind energy is a part

of the overall brief carried by SEI. In 2003, a wind atlas for the whole of Ireland was released and records the available wind resource for each county. The wind atlas was used to inform this study.

The study represents meaningful progress forward from previous ESBI studies as it provides information in a user friendly graphic format to assist the developer in choosing a suitable location for a wind farm. Specifically, the critical information presented in the wind atlas relates to locations and access to the electricity grid together with measurement of windspeed at varying heights above ground level.

2.12 Current Capacity

In early 2009, there was just over **1,026 MW** installed in Ireland and 296 MW installed in Northern Ireland. The MWs are located in twenty-two of the thirty-two counties, with the majority being located in Donegal in the North-West and in Kerry and Cork in the South-West. **County Laois** along with 9 other counties [7 in Leinster and 2 in Northern Ireland] has no operating facility at present.

Map No. 1: Installed National Wind Capacity- November 2009



Microgeneration installations [single turbine units] across the island of Ireland over the next number of years with a capacity of approximately 38.5 MW (c. 34MW in Ireland and c. 4.25MW in Northern Ireland).

Map No. 2 Projected National Wind Capacity- November 2009



2.13 Projected Capacity

As the vast majority of new renewable capacity will be provided by on-shore wind, the 40% target is a significant challenge for the Irish wind industry as a whole. Ireland's current installed wind capacity is now over 1,000MW however another 5,500MW of additional wind capacity, roughly equating to **1,500** new turbines, will need to be installed within the next 12 years if Ireland is to meet its RES-E target.

In order to reach the 2020 targets, it is assumed that **7,800 MW** will need to be installed and operational by 2020 on the island of Ireland [c. 6,500,MW in Ireland and c. 1,300 MW in Northern Ireland].There is currently **5,455 MW** of wind energy projects with connection offers provided within the Gate 2 and Gate 3 process in Ireland.

In addition to the large scale wind farms, there is also expected to be circa 4,500

2.14 Economic Value

Increasing the share of national energy consumption from renewable sources will deliver significant benefits for the electricity customer, the local economy and society. Recent volatility in fossil fuel prices has demonstrated that regions with a high dependence on energy imports are exposed to a parallel level of risk. This volatility makes it difficult for investors in the economy to make reliable long term forecasts of their energy costs. The most effective way to reduce this volatility is to increase the share of energy costs that are predictable and locally based. This will lead to lower and more stable long term energy costs. As other regions move to stabilise their long term energy costs it is essential that Ireland continues to increase relative competitiveness in this area. It is estimated that between 25 and 30% of capital investment in renewable energy is retained in the local economy. This typically flows to companies in

construction, legal, finance and other professional services.

Ensuring the security of energy supply is also a key part of the Irish Government's recent **Framework for Sustainable Economic Revival**. Having regard to the current economic downturn, the framework acknowledges the need to put the energy/climate change agenda at the heart of Ireland's economic renewal. Every new wind farm development provides a substantial contribution to the local and national economy through job creation, local authority rates, land rents and increased demand for local support services. More wind on the system will also result in lower and more stable energy prices for consumers while helping us achieve our energy and emissions targets.

3. WIND ENERGY IN COUNTY LAOIS-CURRENT POSITION

To date there have been **nine** applications for wind energy related developments in County Laois of which 8 no. have been approved by the Planning Authority and 1 no. refused. The details of the applications are summarised in **Table 1**.

The bulk of the activity so far has been in upland areas in the southeast of the county near the county boundaries with Carlow and Kilkenny. Four of the applications [PL refs 09/618, 09/237, 04/935 and 03/602] relate, in effect, to the same overall site near the village of Bilboa, north of Castlecomer and will provide for a total of 8 no. 80 metres high turbines with a projected output of 21 MW. Construction of this farm has recently commenced.

Another site adjoining to the northeast involving 6 no. 80 metres high turbines with a projected output of 16 MW was refused permission by both Laois County Council and An Bord Pleanála following a first party appeal.

There have been two applications, both successful, for permission for single wind energy turbines on industrial/commercial sites in Portlaoise and Mountrath respectively. In both cases, the electricity generated will supply existing in-situ business activities operated by the applicants as against export to the national grid which is the intention with the permitted Bilboa farm. The other application for permission also for a single turbine, relates to a farm location between Ballybrittas and Fisherstown. The generated power will be retained for agricultural activities on the site.

Table 1: Wind Energy Applications in County Laois in chronological order to date

| Ref. No. | Applicant | Site | Development | Output | Status |
|----------|---------------------|------------------------|------------------|------------|--------|
| 02/683 | Green Energy Dev. | Knockardagur, B'kill | 2 no. met. masts | N/A | G |
| 03/554 | Gaoithe Teoranta | Rossmore nr. Killeshin | 6 no. turbines | N/A | R |
| 03/602 | Eco Dev. Ltd. | Gortahile nr. Bilboa | 1 no. met. mast | N/A | G |
| 04/935 | Eco Dev. Ltd. | Gortahile nr. Bilboa | 7 no. turbines | 17.5 MW | G |
| 08/211 | Emo Oil Ltd. | Clonminam, Portlaoise | 1 no. turbine | Not Stated | G |
| 08/1404 | M. A. C. Ltd. | Ent. Park, Mountrath | 1 no. turbine | Not Stated | G |
| 09/237 | Eco Dev. Ltd. | Gortahile nr. Bilboa | 1 no. turbine | 3.5 MW | G |
| 09/501 | Carroll Bros. | Courtwood, B'tass | 1 no. turbine | Not Stated | G |
| 09/618 | Gortahile W.F. Ltd. | Gortahile nr. Bilboa | Ext. of duration | N/A | G |

Under the provisions of Statutory Instrument 235 of 2008, the installation of wind turbines and meteorological masts is exempt under certain circumstances. There is at least one case in County Laois of a turbine having being installed on foot of this exemption; the site in question is the Laois County Council carpark to the rear of Aras an Chontae, Portlaoise.

Map 3: Wind Energy Sites in County Laois- February 2010



4. METHODOLOGY

This section presents the methodology used to inform the wind energy strategy for County Laois. The methodology has been primarily informed by the planning history of wind energy developments in County Laois as set out in Chapter 4, available wind data and transmission network, settlement patterns and population densities of the county as well as the relevant environmental and landscape policies in the Laois County Development Plan 2006–2012. Reference is also made to the wind energy strategies of adjoining counties and the DoEHLG Planning Guidelines for Wind Energy Development for Planning Authorities 2006

4.1 Wind Resource Mapping

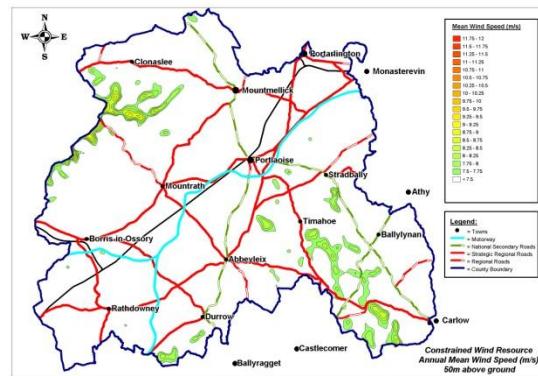
The available wind speed is a critical factor in determining the location and commercial viability of prospective sites.

The Sustainable Energy Ireland (SEI) Wind Atlas 2003 was utilised to extract data on constrained wind resources for County Laois. The SEI Wind Atlas provides information on wind speeds modeled at 50m, 75m and 100m. Generally the areas considered economically viable have wind speeds above 7.5 metres per second at 75 m height turbine height above ground level.

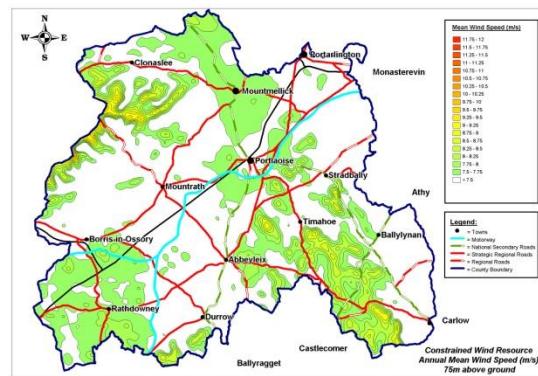
While elevation obviously has an impact on wind speeds, it is not the sole determining factor-construction, grid connection and maintenance costs may be higher at greater elevations and therefore affect viability.

Due to advances in technology and economies of scale, there is now increasing scope for development of wind energy at much lower elevations than heretofore. For example, Bord Na Mona is proceeding with ambitious plans for sections of its worked out boglands in a number of locations throughout the country. Many of these sites are in relatively low-lying locations.

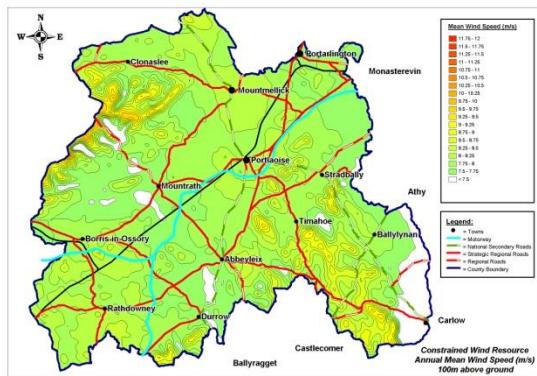
Map No.4: Mean Wind Speed at 50 ms over Ground level in County Laois



Map No. 5: Mean Wind Speed at 75 ms over Ground level in County Laois



Map No. 6: Mean Wind Speed at 100 ms over Ground level in County Laois



4.2 Transmission Network

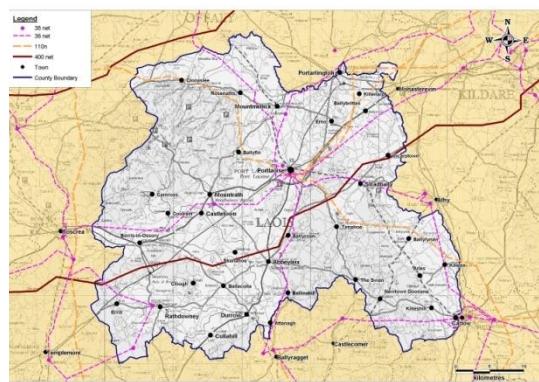
Access and proximity to the transmission network is another key factor in identifying potential areas for wind farm developments. For the large, commercial operations, the end product in the form of electricity needs to be fed into the national grid and this can be a notable constraint both in practical and cost terms regarding the viability and location of the project.

There are a number of large electricity transmission lines running approximately north to north east across County Laois. Proximity to these lines is a significant consideration for the siting of commercial windfarms in the county.

In addition to the grid connection, the transport of electricity from the turbines to a substation, which connects to the grid, will usually require the establishment of ancillary infrastructure which may cause separate additional visual impact although undergrounding of services, albeit more costly, usually lessens this impact.

A separate planning permission is normally required for connection of the power lines from the farm site to the national grid.

Map 7: Transmission Network in County Laois



4.3 Settlement Patterns and Population Densities

The total population of County Laois amounted to **67,059 persons** in 2006 an increase of 14% since the previous census of 2002.a growth rate which was the second highest in Leinster with County Laois, for the first time in recent decades, outperforming counties such as Dublin, Kildare and Wicklow, the traditional leaders in this regard.

The aggregate urban population also increased. According to the 1996 census, 30.8% of the population lived in urban areas. By 2002 this had risen to 33.1% and reached 40.5% in 2006, representing an overall increase of 30% in 10 years. In the context of a declining agricultural base and net rural outward migration, the trend towards increased urbanisation is likely to continue, even allowing for the recent downturn in the economy.

Nonetheless, Laois remains a predominantly rural county with a dispersed settlement pattern. As a result, it is likely that in many cases wind farm developments will lead to land use planning conflicts and significant local opposition, due mainly to concerns in relation to visual and landscape character as well as impacts due to noise generation. However, by their nature, wind farms traditionally have gravitated towards more elevated, isolated

locations which usually coincide with lower population densities.

4.4 Designated Areas

Existing ecological designations provided under European and National legislation in County Laois are shown on Map 9. These include Natural Heritage Areas (NHA), Special Areas of Conservation (SAC) and Special Protection Areas (SPA). There are 30 NHAs, 7 SACs and 1 SPA in County Laois located predominantly in upland areas and in the environs of the main watercourses.

NHAs are a national designation introduced by the Wildlife (Amendment) Act 2000.

Special Areas of Conservation have been created by the Habitats Directive (92/43/EEC) to enable the protection, conservation and, where possible and necessary, restoration of certain habitats and/or species. Designated SACs are compiled within a framework of protected areas – i.e.*Natura 2000*.

Special Protection Areas are strictly protected sites classified in accordance with article 4 of the EU Birds Directive [79/409/EEC] for rare and vulnerable birds and for regularly occurring migratory species.

The following are the locations of the existing and proposed NHAs and SACs and SPAs in County Laois:-

Special Areas of Conservation (SACs) in County Laois (as identified on Map No. 8)

| Site Name | Site Code | ½" Map Number |
|--------------------------------|-----------|---------------|
| River Barrow And River Nore | 002162 | |
| Clonaslee Eskers and Derry Bog | 000859 | 38 |
| Lisbigney Bog | 000869 | 44 |
| Mountmellick | 002141 | |
| Slieve Bloom Mountains | 000412 | 38/44 |
| Coolrain Bog | 002332 | |
| Knockacollier Bog | 002333 | |

Natural Heritage Areas (NHAs) in Co Laois (as identified on Map No. 8)

| Site Name | Site Code | Main habitat or species |
|--------------------------------------|-----------|---|
| Annaghmore Lough Fen | 000413 | Calcareous fen with willow and birch scrub |
| Ballylynan | 000857 | Grassland, wet meadows |
| Barrow Valley At Tankardstown Bridge | 000858 | River, canal, grassland, marsh |
| Clonaslee Eskers And Derry Bog | 000859 | Esker, raised bog |
| Clonreher Bog | 2357 | Raised bog |
| Clopoock Wood | 000860 | Ash/hazel woodland, limestone hill |
| Coolacurragh Wood | 000862 | Birch/alder woodland, fen peat |
| Coolrain Bog | 000415 | Midland raised bog (with Knockacollier Bog, these two bogs are the most southerly intact examples of true Midland Raised Bogs in the country) |
| Cuffsborough | 000418 | Grassland used by Greenland White-fronted geese |
| The Curragh And Goul River Marsh | 000420 | Wet meadow, river, winter feeding site for Greenland White-fronted Geese |
| Delour River Nr Lacca Manor | 000864 | Oak/birch woodland, river, wet grassland |
| Derries Wood | 000416 | Disturbed raised bog, disused gravel pit, conifer plantation, lake, reedbed, important insect populations |
| Dunamaise Woods | 001494 | Limestone hills, oak/ash woodland |
| Emo Court | 000865 | Semi-natural mixed (oak/ash with beech) woodland, lake, parkland, amenity grassland |
| Forest House Wood | 000874 | |
| Grand Canal | 002104 | Canal, wetland, grassland |
| Grantstown Wood and Lough | 000417 | State-owned nature reserve. Lake in transition through fen to alder/willow. Important invertebrate fauna |
| Kilteale Hill | 000867 | Limestone hill, hazel/ash woodland |
| Knockacollier Bog | 000419 | Midland raised bog, Birch and alder woodland. One of the few intact bogs south of the Slieve Blooms |
| Lisbigney Bog | 000869 | Raised bog |
| Mannin Wetland | 00868 | Species-rich fen |
| Monaincha Bog/ Ballaghmore Bog | 00652 | Raised bog |
| Ridge Of Portlaoise | 000876 | Esker ridge, ash/hazel woodland, species-rich grassland, disused gravel pits |
| River Barrow And River Nore | 002162 | River, wetland, woodland |
| River Nore/Abbeyleix Woods Complex | 002076 | River, site for Freshwater Pearl Mussel (international importance), Twaite Shad (Vulnerable), wet grassland, mixed deciduous woodland of great antiquity and species diversity, with specimen oak |
| Rock of Dunamaise | 000878 | |
| Shanahoe Marsh | 001923 | |
| Slieve Bloom Mountains | 000412 | Old Red Sandstone mountains, mountain blanket bog, Peregrine Falcon, Hen harrier, red grouse |
| Stradbally Hill | 001800 | |
| Timahoe Esker | 000421 | Esker ridge, Hazel/Ash woodland |

Special Protection Areas (SPAs) in Co Laois (as identified on Map No. 8)

| Site Name | Site Code | Main habitat or species |
|------------------------|-----------|---|
| Slieve Bloom Mountains | 004160 | Whooper Swan, Corncrake, Hen Harrier, Merlin, Peregrine |

4.5 Landscape and Visual Impacts

Landscape policies and designations in the Laois County Development Plan 2006 to 2012 were incorporated into the strategy and onto the GIS. These include Special Areas of Development Control and Views and Prospects Worthy of Preservation.

4.6 Special Areas of Development Control

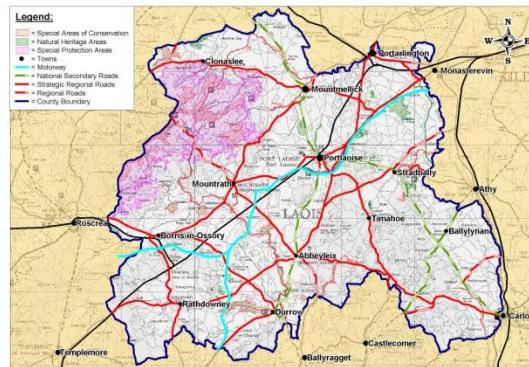
There are areas [as identified on map no. 9] in the county that warrant special protection due to their sensitive character and these areas have been identified as Special Areas of Development Control. In general they overlap with NHA and SAC designation, however, some of the areas lie outside of these designations but warrant special consideration due to their visual amenity. The following areas are Special Areas of Development Control:

- Slieve Blooms
- Rock of Dunamaise
- Killeshin Plateau
- Aharney / Cullahill Mountain
- The Heath
- The Windy Gap / Luggacurren

According to the County Development Plan 2006-2012, there will be a general presumption against development in Special Area of Development Control unless it can be demonstrated by means of a landscape assessment and appropriate landscape and building design proposals that the proposed development will enhance the overall landscape character of the site and its visual context. The

onus will be on the applicant to ensure that the proposed development is integrated sensitively into the existing landscape.

Map 8: Natural Heritage Designations in County Laois



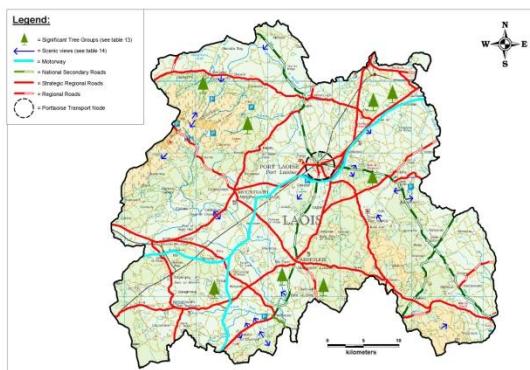
4.7 Views and Prospects Worthy of Preservation

The County Development Plan deems that the following views and prospects in County Laois are worthy of preservation.

Table 2: Views and Prospects worthy of Preservation

| Map No./MAP REF | LOCATION |
|-----------------|------------------------|
| 001 | Killeshin/Rossmore |
| 002 | The Windy Gap |
| 003 | Aharney |
| 004 | Slieve Bloom Mountains |
| 005 | Rock of Dunamaise |
| 006 | Grange, Mountmellick |
| 007 | The Heath |
| 008 | Raheen |
| 009 | Kilamuck |
| 0010 | Raheenleagh |
| 0011 | Castletown |
| 0012 | Clonaslee |

Map 9: Views and Prospects to be Preserved in County Laois



4.8 Archaeology

Generally, archaeological impacts associated with windfarm developments are site specific and are usually examined as part of the accompanying EIS. Generally, whilst not precluding wind farm development, the visual impact of wind farms on such sites and archaeological landscapes should be carefully considered.

4.9 Recreation, Tourism and Amenity

Consideration was also given to areas within the County that are of significant importance for recreation or tourism. Typically, these areas are attractive due in large part to their high quality environment, scenic value, natural heritage designations and archaeological resources and are therefore considered to be much more sensitive to windfarm developments eg the Sliabh Bloom Mountains.

4.10 Landslide Susceptibility.

The issue of landslide risk associated with windfarm developments is very topical considering recent events on sites in Counties Galway [October 2003] and Kerry [April 2007].

Landslides may be a risk at slopes of 4 degrees, depending on peat depth. However, 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 advised that some very preliminary mapping could be undertaken but that landslide risk assessment is required on a site by site basis and policy should reflect the importance of undertaking adequate modeling, risk assessment and mitigation at planning application stage.

4.11 Wind Energy Strategies in Adjoining Counties

The wind energy strategies for Counties Carlow, Kildare, Kilkenny, North Tipperary, and Offaly were examined as part of the methodology and those areas within those counties identified as being favourable towards wind energy development immediately adjoining County Laois are highlighted on map no. 11.

The purpose of this exercise is to put the evolving situation in County Laois into a wider regional context. With the exception of County Kildare, it is noteworthy that each of the other counties has a favoured area either directly adjoining or in very close proximity to County Laois.

In the case of Counties Carlow and Kilkenny, the areas in question are significant in extent and border County Laois generally in a line from Rossmore westwards to Spink and Ballinakill. County Offaly has much of its eastern half designated [save for the Sliabh Blooms which is deemed to be an area not open for consideration] and this meets with County Laois at Kilcavan, Mountmellick and Portarlington. The North Tipperary wind strategy identifies lands in the Roscrea, Templemore and Templetohy areas just over the county boundary from Errill and Rathdowney. In addition, the Lisheen windfarm is located in this general area.

5. WIND ENERGY STRATEGY FOR COUNTY LAOIS-AREA CLASSIFICATIONS

Arising out of the preceding methodology-in particular, superimposing the wind data maps with the other designation maps-the suitability of County Laois in terms of wind energy generation can be subdivided into four distinct area classifications. This is in line with the Governments Strategy for Intensifying Wind Energy Development as set out in the 1999 Green Paper on Sustainable Energy.

The **four** area classifications, as indicated on map no. 10, are as follows:

STRATEGIC AREAS

Areas deemed eminently suitable for windfarm development and reserved for such purposes. Applies to useable areas that have economically viable wind speeds, have no designations, are sparsely populated, are in close proximity to a grid connection and have the ability to absorb wind development.

It is considered that there are **no** such areas in County Laois.

The most optimum wind regime for commercial wind energy in County Laois is in the Slieve Bloom Mountains. However this area is being excluded for the following reasons.

- It is one of the most designated parts of the county in terms of NHA, SAC, SPA, Special Area of Development Control and Views and Prospects,
- It offers major tourism and leisure potential,
- Part of the Slieve Blooms lie in County Offaly and it's Wind Energy Strategy has excluded the Slieve Blooms for similar considerations.

PREFERRED AREAS

Areas deemed suitable for windfarm development that should be granted planning permission **unless** specific local planning circumstances within the context of the development plan support a decision to refuse. The category is used for areas that have a relatively low sensitivity to wind development, have a viable wind regime, avoid most designations, are sparsely populated and are in close proximity to a grid connection and an approved or built wind farm.

Four such areas have been identified in County Laois. The first two comprise former Bord Na Mona cutaway bog sites; one at **Cul na Mona** between Portlaoise, Abbeyleix and Mountrath, the other straddling the Laois, Tipperary, Kilkenny border between **Rathdowney** and Templetouhy and due northeast of the recently completed windfarm site at Lisheen, Co. Tipperary. Neither of these two preferred areas have NHA, SAC or SPA designations. Nor are they in the Special Area of Development Control.

Because of the relatively low-lying nature of the terrain at Cul na Mona, it is possible that turbines of minimum 100ms height would need to be utilized to harness the prevailing wind at these sites.



A major plus for the Cul na Mona site is it's location in close proximity to large energy demand centres in Portlaoise. In addition, it has excellent road connectivity in comparison to

many other potential sites in more isolated, upland locations. This is an important factor especially at construction stage as damage to and interference with road infrastructure is frequently an issue of concern for residents living in the vicinity of such sites.



The Lisheen site in County Tipperary clearly shows the potential of using disused cutaway bogland for developing wind energy. Also, there is a current planning application with Offaly County Council for a very large wind farm development [32 no. 100 metres high turbines] on the extensive Bord Na Mona boglands between Daingean and Walsh Island, west of Portarlington.



The third area under consideration extends roughly from **Cullinagh Mountain** outside Ballyroan eastwards to **Luggacurren and Timahoe**, southwards towards the Kilkenny border incorporating parts of **The Swan, Wolfhill, and Bilboa** and westwards towards **Spink and Ballinakill**. While elevated and exposed and within the Area of Special

Development Control in certain places, this area is not designated in terms of NHA, SAC or SPA. The area has numerous coniferous tree plantations which offer some, albeit limited, screening potential.



This area is also, on its eastern extremity, in the immediate vicinity of the approved 8 turbine wind energy site on the Laois/Carlow/Kilkenny border near **Bilboa**. Apart from the availability of a favourable wind resource, the main advantage associated with this site is the fact that the approved farm is being developed as a co-operative effort by a number of local landowners keen to diversify from mainstream agriculture. There may be further scope in this regard. The following preferred areas have been identified

- Preferred Area no. 3A – Spink and Ballinakill
- Preferred Area no. 3B – Timahoe & Luggacurren
- Preferred Area no. 3C – Bilboa



The fourth area under consideration consists of elevated lands on Cullahill Mountain between Durrow and Cullahill and extending eastwards to the Kilkenny border. Though within the Area of Special Development Control and containing a number of listed views and prospects, the site contains no NHA, SAC or SPC designation. Also, it is noted that this site is immediately adjoined on the Kilkenny side of the county boundary by a preferred wind energy zone.

AREAS OPEN FOR CONSIDERATION

Applications in these areas will be treated on their merits with the onus on the applicant to demonstrate why the development should be granted permission. This category is used for areas that exhibit economically viable wind speeds, are sparsely populated, have some capacity to absorb wind development but which are **sensitive** enough [eg elevated lands in the Windy Gap area between Stradbally and Carlow that are readily visible from the N80 Carlow/Stradbally section] to require a detailed site-by-site appraisal before any assumptions are made as to the suitability of the area for development.

From the County Laois perspective, four such areas are recommended. The primary area is an extension of Area no. 3 identified in the preferred category ie a large tract of upland area in the southeast of the county in the general vicinity of the following settlements: Ballyroan, Ballinakill, Crettyard, Killeshin, Newtown Doonane, Spink and The Swan. Much of this area is not designated in terms of NHA, SAC or SPA.

The second area includes low-lying pasture and bog land [some reclaimed] to the northeast of that section of National Secondary Route N80 between **Mountmellick** and Killeigh and Cloneygowan, Co. Offaly. The land here is in multiple private ownership, a factor which may hinder possible interest in development.



The third area lies on the northwest side of the Iarnrod Eireann railway line outside Errill in the southwest of the county and extends westwards to the Tipperary border. The land here comprises a mix of low-lying bog, wood and pasture and has no designations.

The fourth area is elevated land on the southeast side of the Windy Gap southeast of Stradbally these lands partly coincide with an SAC.

AREAS NOT OPEN FOR CONSIDERATION

These are areas identified as particularly unsuitable for windfarm development. This category is used for areas which due to their scenic, ecological or tourism values are unable to accommodate development of this type.

Along with the Sliabh Bloom Mountains, the other key area recommended for inclusion in this category are “The Seven Hills of Laois” a series of hills eg Rock of Dunamaise, Corrigeen Hill that extend in a north/south trajectory between Portlaoise and Stradbally.



Both areas enjoy extensive designations. With reference to the Sliabh Blooms, it is the only SPA site in County Laois. It also contains extensive SAC and NHA land classification and is a location for considerable tourist and leisure activity. The “Seven Hills” coincide with an NHA and Area of Special Development Control. They also offer major tourism potential focused mainly on the Rock Of Dunamaise.

5.1 Individual Turbine Developments

Apart from the commercial production of wind energy, there is growing interest among the residential, agricultural and commercial sectors in the utilization of wind energy for private use at a more local, stand-alone level throughout the county.

Depending on the turbine size, the available wind speeds and the nature of the site, a wind turbine could supply upwards of 70% of the energy needs of a home, farm or business resulting in major cost savings.

Already there have been **3 no.** successful planning applications for single turbine installations in County Laois, one each for an industrial site [Portlaoise], business park [Mountrath] and farm [Courtwood]. Similar applications are likely at any location in the county.

Micro renewable generation for domestic, agricultural and light industrial activities are

now exempted development subject to criteria detailed in Statutory Instrument No. 83 of 2007 and No.256 of 2008.

5.2 Suggested Policy for Wind Energy Developments in County Laois

- WES One: Development of Renewable Energy Generation

It is the policy of the Council to support, in principle and in appropriate scales and locations, the development of wind energy resources in County Laois. The future sustainable development of the County is dependent on a secure supply of energy. There is a need to promote the development of renewable energy to reduce dependency on fossil fuels and to comply with national and European policies with regards to renewable energy resources and to address the challenge of climate change. It will be an objective of the Council to ensure the security of energy supply by accommodating the development of wind energy resources in appropriate areas and at appropriate scales in the county

- WES Two: Development of Low Carbon Economy

Laois County Council will seek to promote itself as moving towards becoming a low carbon County by 2018 as a means of attracting inward investment to the County and the wider Midlands region.

- WES Three: County Partnership Approach

Laois County Council will seek to promote wind energy in appropriate sites in the County and will work with agencies such as the Laois County Development Board, I.D.A, Enterprise Ireland and Irish Wind Energy Association to encourage investment in research and technology associated with windfarms and other renewable energy technology.

- WES Four: Community Involvement and Gain

Laois County Council will seek to promote community involvement and require community benefit where possible in proposed windfarm developments..

5.3 Specific Area Policies

Three area classifications [there are no Strategic Areas] have been recommended for windfarm development in County Laois and specific policies pertaining to each are presented below:

WES Five: Preferred Areas –

These areas are considered suitable for Windfarm development because of sufficient wind speeds, access to grid network, and established patterns of inquiries.

Projects within these areas must demonstrate conformity with existing and approved wind farms to avoid visual clutter, be developed in line with the Planning Guidelines in terms of siting, layout and environmental studies. Proximity to a Special Area of Conservation or Special Protection Area will require an Habitats Directive Assessment under Article 6 of the Habitat Regulations.

WES Six: Areas Open for Consideration –

Wind energy applications in these areas will be evaluated on a case by case basis subject to viable wind speeds, environmental resources and constraints and cumulative impacts.

WES Seven: Areas Not Open for Consideration:-

These areas are not considered suitable for wind farm development due to their overall sensitivity arising from landscape, ecological, recreational and/or cultural and built heritage resources as well as their limited wind regime.

WES Eight: Single Turbine Sites

It is the policy of the Council to facilitate, where appropriate, small scale wind energy development by residential, industrial and agricultural producers to help meet the immediate needs of the development being provided / reduce their reliance on fossil fuels, and subject to the following criteria being met:

1. The energy will be primarily generated to be used on the site and within the site boundary
2. Noise and visual impacts including shadow flicker will not be significant on nearby residents.

6. DEVELOPMENT CONTROL STANDARDS FOR WIND FARMS IN COUNTY LAOIS

6.1 Towns and Villages

The impact of proposed wind farms on towns and villages will be considered.

Turbine distances from the boundaries of these settlements will be assessed on a case by case basis.

6.2 Dwelling Houses

Turbines shall not be located within 250 metres of any existing or permitted dwelling house. An application for a wind turbines[s] will be considered at a location between 250 metres and 500 metres of an existing or permitted dwelling house subject to a satisfactory noise assessment being carried out and implemented. A planning application for a dwelling house will be considered up to a distance of 250 metres of an existing or permitted turbine.

6.3 Boundary

The impact of proposed wind farms on the development potential of adjacent sites will be considered.

Turbine distances from the boundaries of adjacent landholdings will be assessed on a case by case basis.

6.4 Shadow Flicker

An assessment of the theoretical shadow flicker shall be prepared for all dwellings within 600m of any turbine. A further assessment shall indicate the likely level of shadow flicker based on anticipated meteorological constraints. If required, mitigating measures shall be proposed

6.5 Cumulative Impacts

In order to preserve the spatial, scenic and rural integrity of the areas open to consideration the cumulative effect will be taken into account so as to avoid multiplicity of wind farms in these areas.

6.6 Archaeology

An archaeological assessment will be required for all sites within close proximity to Recorded Monuments. Relocation of turbines to minimise impacts to the archaeological heritage will be permitted if necessary. This will be subject to agreement with the planning authority.

6.7 Bird Migratory Routes

Wind Turbines will not be permitted within the known flight path of migratory wild fowl.

6.8 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. The fencing shall then be permitted for the length of time required to ensure recovery of the vegetation.

6.9 Noise

Permitted maximum noise levels at noise sensitive residences shall be in compliance with noise specifications of the DoEHLG "Wind Energy Guidelines". Once commissioned the development will 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 Local Authority.

6.10 Environmental Monitoring

Environmental monitoring will be required in sites adjacent to sensitive or vulnerable areas.

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. If on-site borrow pits are to be used during the construction phase the details shall be agreed with the Planning Authority beforehand.

This may involve a separate planning application.

6.11 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.

Prior to commencement of development the developer shall submit and agree with the Planning Authority proposals in relation vehicle types and use of public roads during the construction phase.

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.

6.12 Aquifers

The developer shall have a responsibility to demonstrate that any proposed development will not have significant impacts upon aquifers.

6.13 Ancillary Structures and Equipment

No structures other than wind turbines, substation, monitoring mast and other essential ancillary installations will be permitted.

The planning application shall include all details of all such installations and shall be provided to the Planning Authority as part of the planning process.

Suitable landscaping proposals to reduce substation its visibility shall also be submitted. All wind monitoring masts require planning permission. These are typically for a 40m or 50m mast required to monitor on-site wind speeds over 1-2 years.

6.14 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 will be laid underground.

6.15 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.

6.16 Aeronautical Safety

All proposals shall be referred to the Irish Aviation Authority for their comments and recommendations prior to the submission of any planning application.

6.17 Financial Contributions

In accordance with the Development Contribution Scheme the developer shall pay Laois County Council a levy in accordance with the Development Contribution Scheme.

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

6.18 Safety Aspects

The developer shall submit a maintenance agreement to be agreed with the Planning Authority to ensure the turbines do not deteriorate to a degree where they may pose a hazard to public safety.

Where proposals are located in close proximity to Motorways, National Primary and Secondary Routes, it is recommended that the applicant consult with the National Roads Authority, prior to making an application, in order to agree a setback distance from the road.

In the case of all other public roads, proposed setbacks for wind farms shall be subject to the agreement of the Council's Roads Department.

6.19 Single Turbine Developments

Many single turbine developments may be exempt under the Local Government Planning and Development Regulations, in particular under S.I. 83 of 2007 [for residential development] and under S.I. 256 of 2008 [for agricultural and commercial development].

For single turbine development proposals [inclusive of single turbine developments which generate energy for use within the site and feedback in to the grid on a tariff basis as in the UK], the development control standards as indicated above will not necessarily apply as such likely impacts as noise and shadow flicker are generally less significant than in the case of the larger, commercial type windfarm developments.

Proposals for single turbine developments will be assessed on a case by case basis.

7. GUIDELINES ON WIND FARM DEVELOPMENT CONSTRAINTS IN COUNTY LAOIS

An adequate wind resource is the primary constraint in developing a wind farm. As mentioned above, some indication of likely wind speeds can be extracted from the Irish Wind Atlas. However, at least one year's measured data is required before a project can be developed. This will entail erecting a 40m or 50m wind monitoring mast within the site and recording data for a minimum of 12 months. Planning permission, usually for 2 years, is required for this mast.

7.1 Pre-planning Consultations

Before any substantive design work is undertaken it is essential to discuss development proposals with the Planning Authority at an early stage. Many issues can be resolved by timely discussions. Visual impacts are particularly important and advice on the choice of viewshed reference points (VRPs) will be required. These will be part of the Landscape Impact Assessment which will be required as part of the planning application.

In the case of small wind farms, with outputs of less than 5MW, an EIS is not formally required, (although the Planning Authority retain the option of requesting one if they believe it is warranted). It is advisable at this stage to confirm with the Planning Authority their requirements to ensure all aspects are adequately covered when the planning application is finally lodged.

7.2 Pre-Application Discussion and Consultation

It is always wise to discuss proposed wind farm developments within the local community. This may well reduce local fears that are frequently founded on inaccurate information. A formal

Information gathering is advisable where large wind farms are proposed.

Although future Co. Laois wind farm developments are likely to lie outside NPWS designated sites (e.g NHAs, SACs and SPAs) it is advisable to consult the National Parks and Wildlife Service in relation to wind farm proposals early in planning stage.

Regarding potential impact on aviation flight paths, early consultation with the Irish Aviation Authority is also recommended.

7.3 Siting and Design of Wind Farms

The comprehensive guidelines on the Siting and Design of Wind Energy Development provided in the DoEHLG's Planning Guidelines ought to be consulted as a matter of course by all would-be developers at an early stage in their project. An overview is provided below.

Chapter 5 of the Guidelines cover the following areas:

- Siting and location
- Spatial extent and scale
- Cumulative effect
- Spacing of turbines
- Layout of turbines
- Height of turbines

The Guidelines also provides a comprehensive overview of siting turbines in specific landscapes.

A number of these, Hilly and Flat farmland, Transitional marginal land, Urban/industrial are relevant to Co. Laois and are addressed below.

7.3.1 Hilly and Flat Farmland.

Developments must be scaled in sympathy with the scale of the landscape. For example, a large wind farm development stretching over a patchwork of numerous small fields is

inappropriate. Likewise, turbine spacing must reflect the scale of the landscape. For example, regular spacing is appropriate in a landscape with a regular field pattern and visa versa. Wind farm layout must also be arranged in sympathy with the landscape, e.g a layout on a long ridge or plateau will be linear while a clustered layout should be used on a hilltop. A balance with the underlying landscape must also be found in relation to turbine height. Large scale landscapes will tend to support higher turbines. The temptation to increase hub height in marginal sites must be avoided unless the scale of the landscape is sufficiently large to accommodate them. The cumulative effect of several wind farms is greatest in upland areas. On low-lying lands the effects may be reduced substantially by the buffer effects of hedgerows, tree lines and buildings.

7.3.2 Transitional Marginal Landscapes

These landscapes typically include upland or lowland areas which are farmed extensively with some regeneration of natural vegetation allowed. As these landscapes tend to quite irregular it follows that turbine arrangement, spacing and layout must also be irregular. In most marginal upland areas turbine heights will not appear uniform in height.

7.3.3 Urban/Industrial

Co. Laois has a long and varied industrial history and the siting of turbines in industrial areas eg the Emo Oil complex in Portlaoise can be increasingly considered in the context of reducing energy costs, particularly for high volume power consumers. The siting and layout of turbines in industrial areas must take into consideration the scale of the area. A large wind farm beside a small industrial complex is not appropriate. Generally speaking industrial infrastructure is arranged in an orderly fashion, although elements within it may be quite varied in size and form. Therefore wind farm layouts should also be regular.

7.4 Requirement for an Environmental Impact Assessment (EIA)

An environmental impact assessment is required for wind energy developments which contain more than 5 turbines or output more than 5MW, (Section 176 of the 2000 Act, Article 93 and Schedule 5 Part 1 of the 2001 Regulations). However, the Planning Authority retain the option to request an EIA for smaller wind farms if they believe significant environmental impacts may occur.

The type of information required in an EIS is set out in the Regulations.

Legend:

- [Blue Box] = Preferred Areas
- [Yellow Box] = Areas Open for Consideration
- [Red Box] = Areas not for Consideration
- [Purple Diamond] = Lisheen Wind Farm (Existing)
- [Purple Hatched Box] = Preferred Areas in Neighbouring Counties
- = Towns
- = Rail
- = Motorway
- = National Secondary Roads
- = Strategic Regional Roads
- = Regional Roads
- = County Boundaries

