



Offaly County Council

COUNTY OFFALY WIND STRATEGY to 2015



January 2009



Offaly County Council

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Offaly County Council on 19th January 2009

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Offaly
County Council

OFFALY COUNTY WIND STRATEGY 2009 - 2015

*OFFALY COUNTY COUNCIL
January 2009*

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1 INTRODUCTION

1.1 TERMS OF REFERENCE

The objective of this strategy is to evaluate and analyse the potential wind energy resource within County Offaly, to define environmental and planning considerations for wind energy development and to make recommendations on Wind Energy Resource Development Policy and Practice. This is to be done taking into account the Wind Atlas of Ireland published by Sustainable Energy Ireland in 2003 and the Wind Energy Development Guidelines (2006) published by the Department of the Environment, Heritage and Local Government. This document will clarify the Council's policy towards wind energy developments in the County and will form the basis for assessment of planning applications for wind energy development and will assist in the decision making process.

1.2 EVALUATION METHOD

The study examines the potential for using and developing wind energy in the County. It takes account of the relevant International, National and County Policies as well as the principal environmental, planning and technical criteria that determine the feasibility of the existing environment to absorb windfarm developments.

The County Offaly Wind Energy Strategy address commercial large scale wind farms, small scale community based windfarm projects and individual turbines for private use.

1.3 RENEWABLE ENERGY RESOURCES

Development of alternative energy sources is a priority at National and European level for both environmental and energy policy reasons. The context in Ireland is set by Government policies for the provision of electricity from renewable and indigenous sources in line with official European and United Nations targets for reducing dependency on fossil fuels and emissions of greenhouse gases.

It is acknowledged that Ireland has a wind resource which is among the richest in Europe. This is mainly concentrated in the mountainous and coastal areas where landscape quality and environmental designations are also of considerable significance. Without careful planning, such development has the potential to lead to significant environmental and land use planning conflicts.



2 CURRENT RENEWABLE ENERGY SITUATION IN IRELAND

2.1 FUTURE TRENDS AND DEVELOPMENTS IN WIND ENERGY

The international trend in wind energy development is towards producing ever-larger wind turbines laid out in large wind farms to benefit from the economies of scale in both construction and operation costs. This is because a small number of large wind turbines on a location of a certain area, yields more output than a large number of smaller wind turbines. At time of preparing this strategy a number of projects are either planned¹ or proposed in which the turbines have a capacity of up to 2 MW with rotor diameters of 60 to 70 metres and tower heights up to 70 metres. A 20% increase in turbine diameter and height can result in a 50% or more increase in electrical output. Applications for wind farms of over 100 such machines are expected to become more common over the next decade.

Notwithstanding this trend towards larger windfarms and larger turbines, there has also been interest in small scale (3-5 turbines) developments by farmers seeking alternative income sources. Some analysts believe that there will be a significant increase in the number of such applications. Finally there will continue to be the need to accommodate individual turbines where power may be needed for an on-site local need.

Appropriate land use planning policies – such as the adoption of county-based wind energy strategies - will support planners and operators of the Irish power system in the development of Ireland's wind energy resource.

2.2 STRATEGIC CONSIDERATIONS

2.3 THE WIND ENERGY DEVELOPMENT GUIDELINES (JUNE, 2006)

'Wind Energy Development Guidelines' published by the Department of the Environment, Heritage & Local Government supersede the Wind Farm Development Guidelines of 1996. The Guidelines aim to offer advice to Planning Authorities on planning for wind energy through the Development Plan process and in determining planning applications. 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. The guidelines are also recommended to be used as a guide for developers and the wider public when considering wind energy developments.

2.4 ELECTRICITY ACT 1999

The Electricity Act 1999 sets out the following measures:

- Full deregulation of the market for electricity generated using renewable forms of energy as its primary source.
- Priority dispatch of electricity generated from renewable energy sources.
- Establishment of the Commission of Electricity Regulator with a duty to encourage research and development into methods of generating electricity using renewable, sustainable and alternative forms of energy.
- Provides for the development of transmission lines by parties other than Eirgrid.

¹ As of January 2008, there are 74 wind farms in operation in the Republic of Ireland with a total capacity of 803.4 Megawatts. The fully permitted 320Mw wind farm at Oweninny, Co Mayo is a joint venture between ESB and Bord Na Mona that will consist of 180 turbines, with a maximum height (to vertically extended blade tip) of 100 m. The fully permitted 520 Mw Arklow Bank off shore wind farm consists of over 193 turbines. The proposed 330 Mw Oriel off shore wind farm consists of 55 turbines.



3 CONSIDERATIONS FOR EVALUATION OF WIND ENERGY

3.1 ECOLOGICAL DESIGNATIONS

Existing ecological designations in County Offaly are mapped. These include Natural Heritage Areas (NHAs), Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

NHA (Natural Heritage Area) is a National designation introduced by the Wildlife (Amendment) Act 2000. Development within an NHA may be considered by the Minister and only permitted for 'imperative reasons of overriding public interest' including those of social or economic nature. In practice, development proposals within NHAs are typically refused or given consent with restrictive conditions.

SACs (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. Developments that may impact on priority habitats and/or species (rare habitats and species that have been given priority status in Ireland) may only be allowed for health and safety reasons whilst for non-priority habitats and/or species, permission may be granted on the basis of economic or social justification/reasoning. Whilst every individual project is considered on its own merits, windfarm developments proposed within the boundaries of any of the ecological designations mentioned above have been typically refused.

SPAs (Special Protection Areas) are very important areas that are designated by the EU Birds Directive (79/409/EEC) to protect rare or endangered birds and their habitats – especially wetlands used by migratory birds. Development is very rarely permitted in or adjacent to such areas.

County Offaly's SPA sites are along the Shannon and across most of the upper portions of the Slieve Blooms.

3.2 SLIEVE BLOOMS

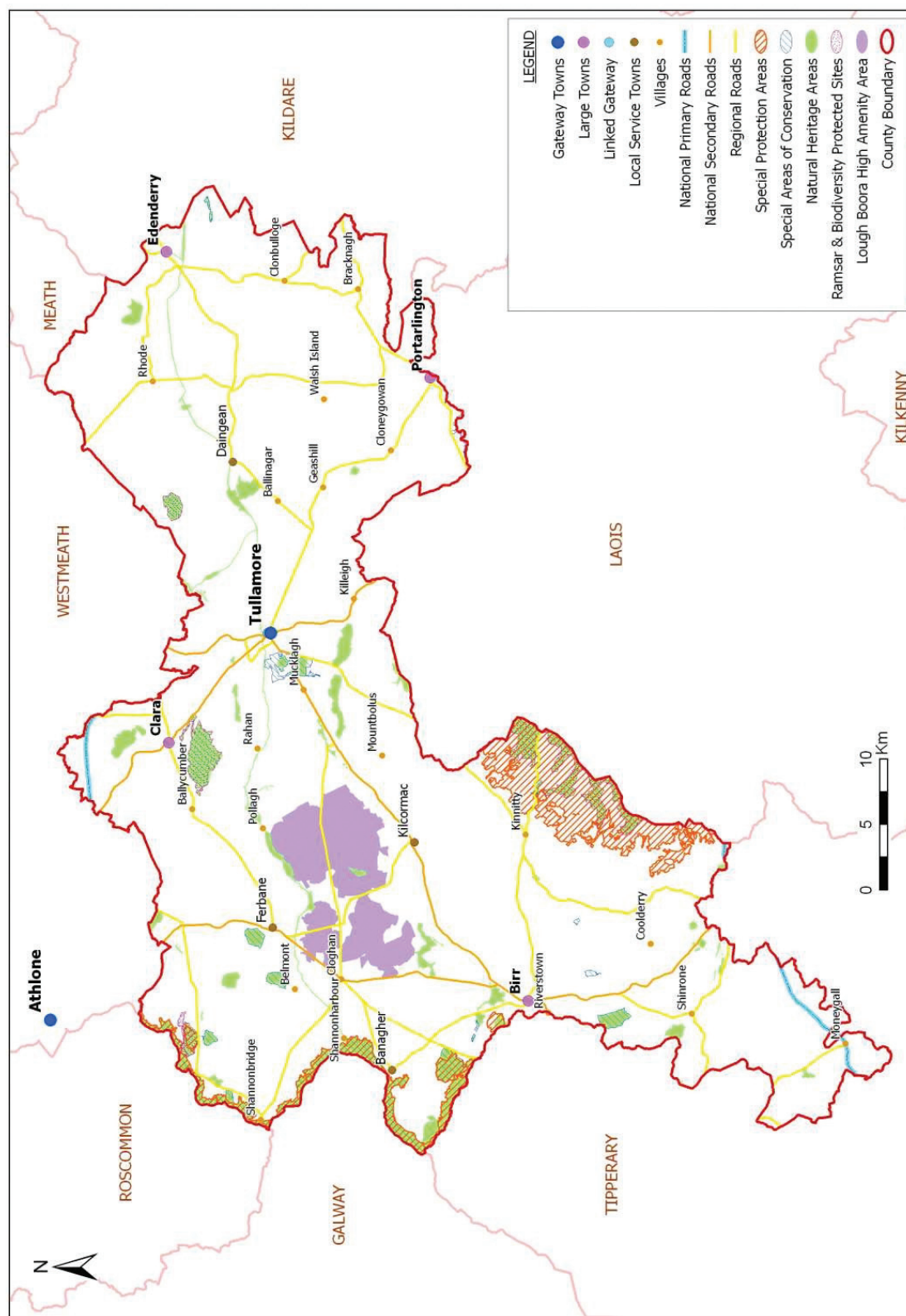
The Slieve Bloom Mountain area is the only substantial upland area in County Offaly. Approximately one-third of the mountains, some 12,000 hectares, lie within County Offaly while the remainder are located in County Laois. The value of the Slieve Bloom Mountains derives from the contrast they offer to Offaly's otherwise flat landscape.

The mountains are protected through a number of designations including SAC, NHA and SPA (The Mountains are designated to protect Hen Harriers and the habitat that supports them in this regard). These designations, as explained in Section 3.1 of this report, contribute to the recognised value that the mountains have as a landscape feature and as a supporting habitat as well as being an amenity for the county and the wider area.

In addition the upper area of the Slieve Bloom Mountains is designated as a Statutory Nature Reserve, a Biogenetic Reserve and a Ramsar Site. The Offaly County Development Plan (2009-2015) designates the Mountains as an Area of High Amenity. The level of protection afforded to the mountains indicates that the integrity of the Slieve Blooms may be comprised should wind energy developments take place there. As a result of a combination of factors including environmental designations, coupled with the mountains being a unique landscape feature in the County, the Slieve Bloom Mountains should not be considered as a location for wind energy development.

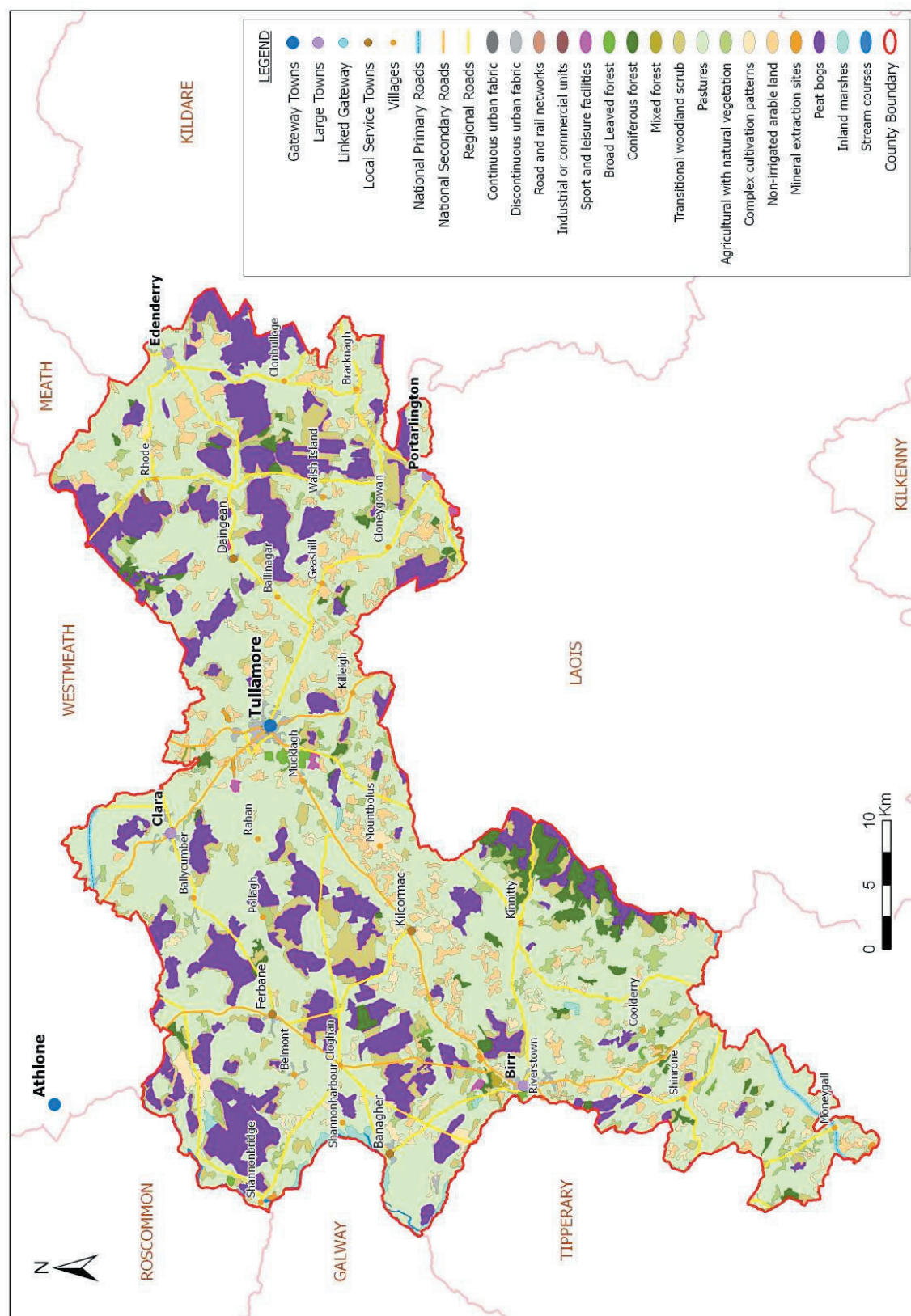


Figure 1. Ecological Designations in County Offaly



This shows the areas in the County that are designated for protection – as well as the Lough Boora Parklands Area of High Amenity. Note, in particular the Special Protection Area designations (brown hatch) along the River Shannon (at the mid western and north western County boundaries) and across the Slieve Blooms (on the Laois County boundary, east and south of Kinnitty).

Figure 2. CORINE Landcover Mapping



This is derived from satellite photography and is a good approximation for a land-use map of the County.



Figure 3. Cutover Bog Areas ²

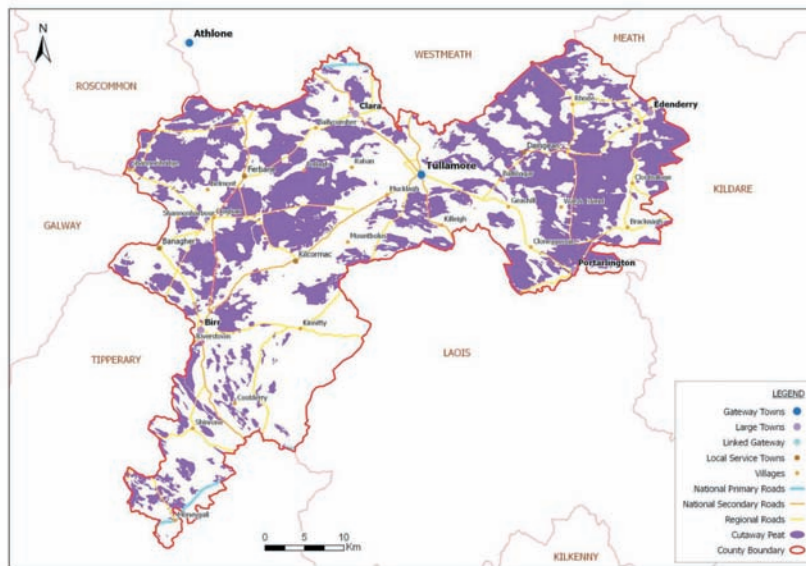
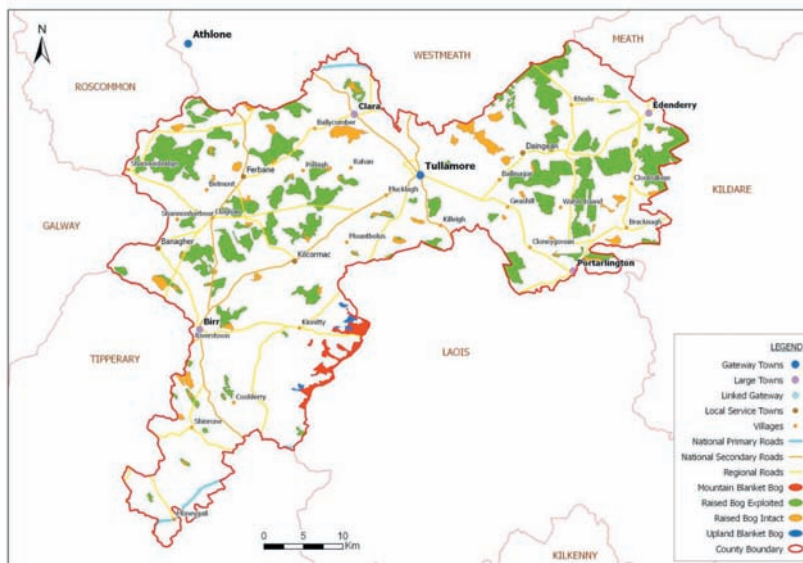


Figure 4. Exploited Raised Bog Areas ³



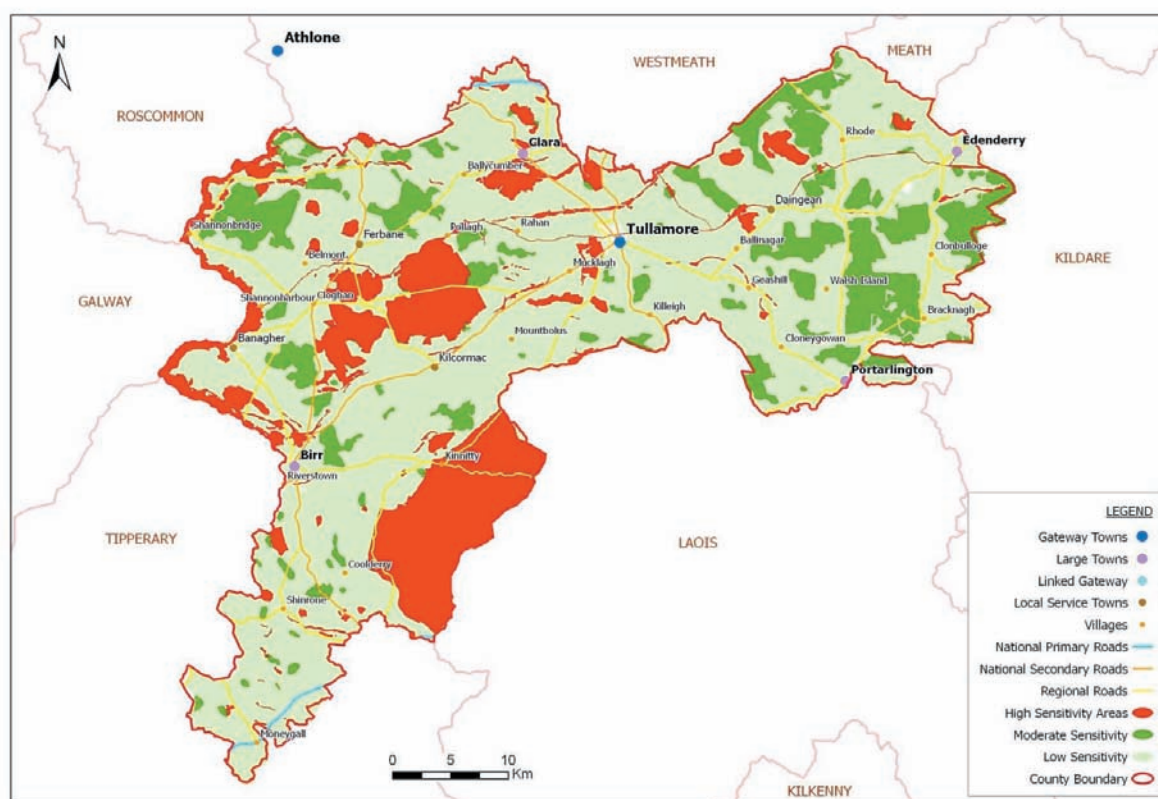
It is important to note that many of the lowland areas marked 'transitional woodland scrub', 'agricultural land with natural vegetation' and 'coniferous forestation' are in fact areas of cut-over bogs that have become revegetated.

Figure 3 shows all such areas in purple to illustrate the extent of such areas in the County. These areas generally have visually degraded landscape character, very low levels of residential settlement and large landholdings which give them a high potential for the development of windfarms – while avoiding conflicts with neighbours or scenery.

Figure 4 also illustrates the extent of areas of exploited raised bog in green.

² Derived from CORINE data

³ Map 10.2 from the Offaly County Development Plan 2009 - 2015



3.3 LANDSCAPE SENSITIVITY

It is conservatively assumed that wind turbines are significantly visible from a distance not exceeding 10km. As the distance between viewing location and wind turbines expand, the prominence decreases. The size, shape and topography of Offaly mean that in practice any windfarm development will be visible over most of the County. However, for evaluation purposes it has been assumed that at distances in excess of 2km, the turbines will not be visually dominant – and this has been used as a set-back distance from visually sensitive features for analytical mapping purposes (See Figure 7).



3.4 URBAN AREAS

In the case of wind energy development being proposed within or adjacent to urban / developed areas, the relevant planning authority will have regard to the Wind Energy Development Guidelines (2006), published by the Department of the Environment, Heritage and Local Government, when determining any planning application for wind energy development, in addition to the policies of the relevant Development Plan in force for the subject area.

3.5 TECHNICAL AND OTHER RELEVANT CONSIDERATIONS

The Planning Authority will have regard to the Wind Energy Development Guidelines (2006), published by the Department of the Environment, Heritage and Local Government when determining any planning application for wind energy development and in particular will have regard to the stability of the overall site in order to determine the suitability of any such development.

3.5.1 WIND SPEED

The cost at which windfarms can generate (and in some cases, supply) electricity depends on many factors (access to grid, construction costs, planning considerations etc), but wind speed is a critical factor for economic viability. Given prices offered under the recent Alternative Energy Requirement 5th competition, wind speeds above 8.5 m/s at 50 m hub height is generally required⁴. Future schemes may however enable some windfarms in favorable sites (close to consumer demand or where the windfarm will reinforce the grid) to be viable at lower wind speeds perhaps down to 7 m/s.

Offaly's wind energy potentially is significantly below such levels over most of the County. The areas in the Slieve Blooms that have the highest wind speeds are heavily designated on account of their ecological, scenic and amenity value and so are not considered appropriate for developing wind energy.

3.5.2 ESB GRID CONNECTION

220, 110 and 38 kV electricity lines and substations are mapped to show the main route corridors of the ESB coverage. Large windfarms produce large amounts of electricity which need to be fed into the electricity network – this can be a constraint, both in practical and cost terms, to the location of large windfarms. In addition to grid connection, the transport of energy from the turbines to a substation, which connects to the grid, will usually require the establishment of ancillary infrastructure which may create additional visual impact. The scale of modern larger windfarms can however, ensure that grid connection cost (up to 10km) is generally not a significant constraint. A separate planning permission is normally required for connection of the power lines to the national grid.

3.5.3 NOISE

There are two sources of noise from wind turbines: the mechanical noise from the turbine and the aerodynamic noise from the blades. The former can be considerably reduced through appropriate engineering technology. The aerodynamic noise depends on the rotor speed, which in turn depends on the wind speed. In general, a lower fixed limit of 45 dB(A)¹⁰ or a maximum increase of 5 dB(A) above background noise at nearby noise sensitive locations is considered appropriate⁵ to provide protection to wind energy development neighbours. However, in very quiet areas, the use of a margin of 5 dB(A) above background noise at nearby noise sensitive properties is not necessary to offer a reasonable degree of protection and may unduly restrict wind energy developments which should be recognised as having wider national and global benefits. Instead, in low noise environments where background noise is less than 30 dB(A), it is recommended that the daytime level of the LA90, 10min, of the wind energy development noise be limited to an absolute level within the range of 35-40 dB(A).

⁴ The profitability of a wind farm is a factor of the price per unit (set by the AER) and the wind energy yield of a site. Lower prices require higher wind speeds to ensure profitability.

⁵ Department of Environment, Heritage and Local Government, Guidelines on Wind Energy Development, Section 5.6.



3.5.4 ACCESS ROADS

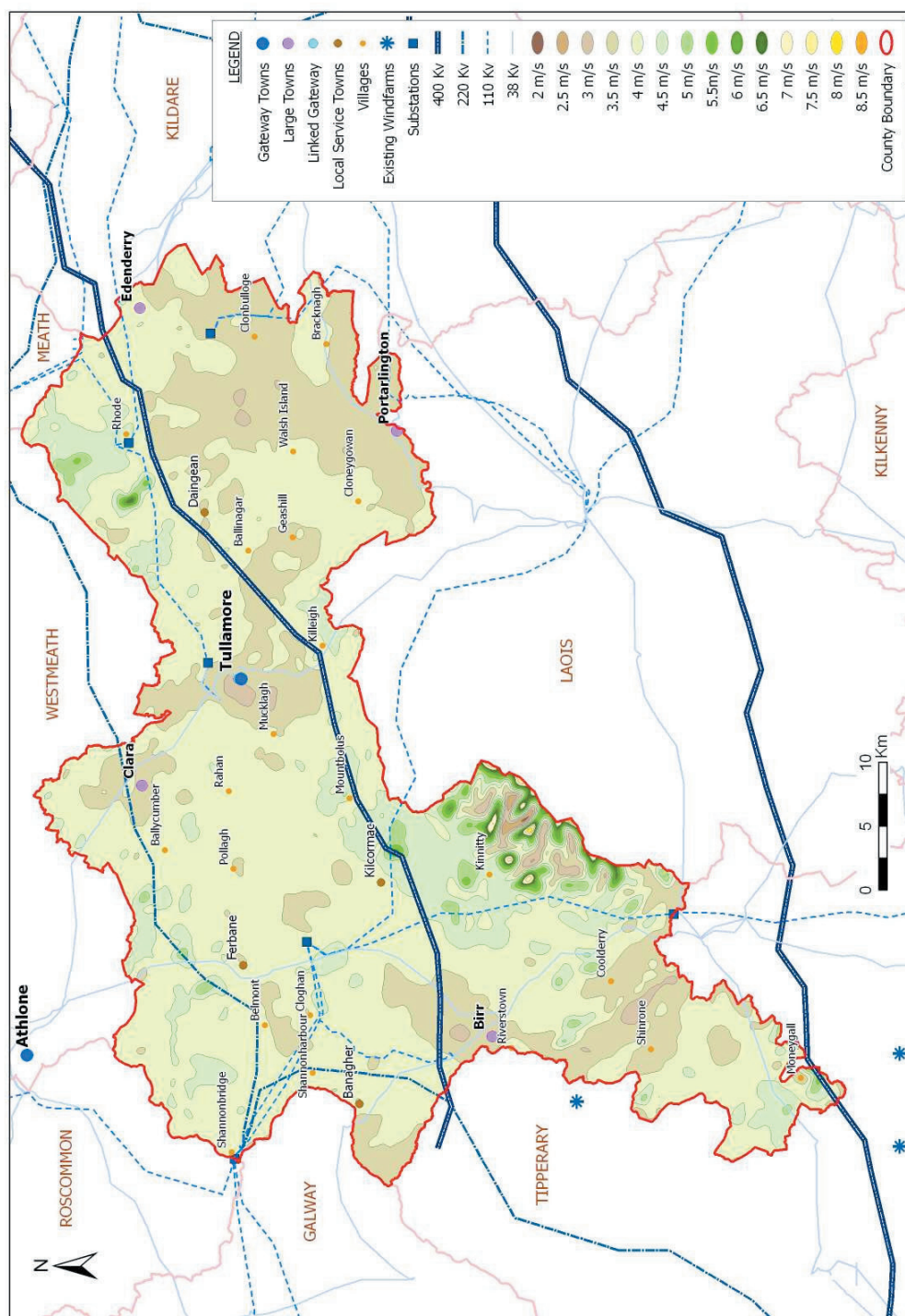
Existing access roads and tracks should be encouraged to be used where possible in order to avoid the construction of new access roads and tracks. In the case of new access roads being required, unsealed surface (e.g. quarry screenings) should be applied over compact surface to allow for minimum disturbance of the proposed site. In the case of granting planning permission, conditions may be applied in relation to accessing to the site, the type of road and the nature of materials used. In addition, the proposed wind energy development may require a Transport Impact Assessment to be undertaken, depending on the location and scale of the proposal. The Roads Department in the relevant local authority will be consulted in this regard.

Access Requirements:

- Existing access points should be used (roads and tracks, where appropriate) in the first instance ahead of constructing new roads to serve the proposed wind energy site.
- Where new access points are required to be constructed, they should be constructed to serve the maintenance and attendance of the site, as appropriate. Therefore the type and scale of the road should reflect the site requirements of the proposed wind energy development.
- Construction or upgrading or any new access point should have minimum impact on the character of the surrounding landscape.
- Appropriate landscaping of the road/track may be required in order to mitigate against any adverse visual impacts.

The relevant planning authority will have regard to the Wind Energy Development Guidelines (2006), published by the Department of the Environment, Heritage and Local Government, when determining any proposal for wind energy development.

Figure 6. Summary of Technical Considerations ⁶



Proximity to a dense network of existing grid, and associated substations as well as the nearby demand centre of Dublin is Offaly's main technical advantage. The shape of the County means that no area within it is less than 15km from a 110kv line and most areas are less than 10km – which creates very attractive 110kV grid connection circumstances. The advantage is increased by the existence of 6 evenly spaced substations throughout the County – especially at Shannonbridge and Rhode which are near concentrations of cut-over bogs. Wind energy resources are 4 m/s or less over most of the County and only exceed 7 m/s at a small number of sites of very limited extent

⁶ Wind Speeds are shown at 50m elevation



4 ANALYSIS OF SUITABLE AREAS IN CO. OFFALY FOR WIND ENERGY DEVELOPMENT

4.1 METHOD

In accordance with the recommendations of the 'Wind Energy Development Guidelines' (2006) in relation to the identification of suitable areas in the County for wind energy developments; this section illustrates the step-by-step methodology adopted in the preparation of this strategy. The methodology shows the 'sieve mapping' analysis of the key environmental, landscape, technical and economic criteria which must be balanced in order to identify the most suitable locations in Offaly for wind energy developments. Figure 7 (overleaf) shows the results of that mapping. It has been drawn on the basis of a combination of the information presented in Figures 1 – 6 in the previous sections.

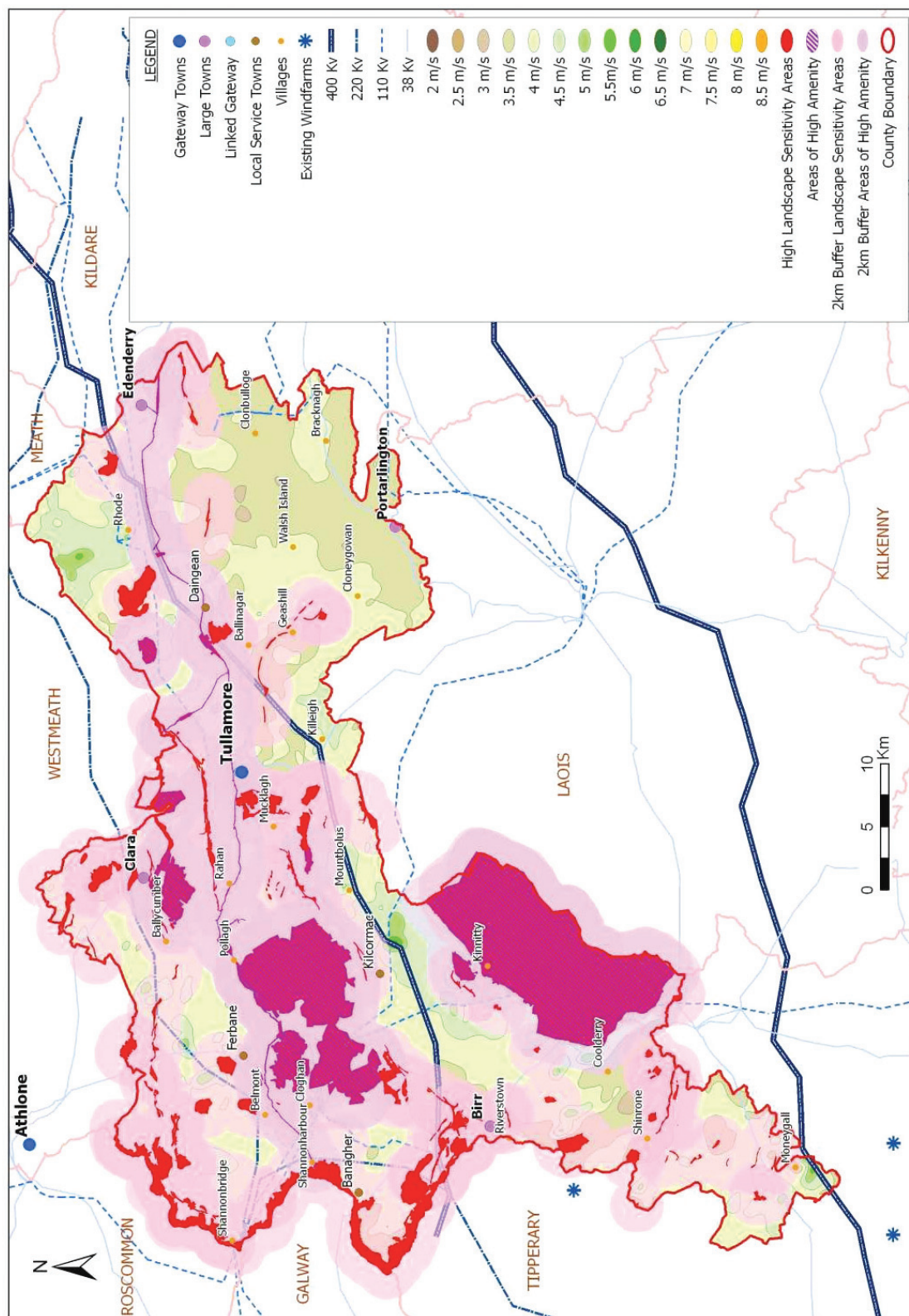
4.2 FINDINGS AND FIELD INSPECTIONS

Following the analytical mapping exercises, a series of site visits was made to verify the extent of the boundaries that were identified by remote sensing data and to assess the potential for cumulative effects – having regard to local factors such as densities of dwellings, local landscape character, local precedent of development and visibility from adjacent settlements and amenities. The results of this analysis are contained in Table 1.

⁷ Section 3.5 of the Guidelines in particular



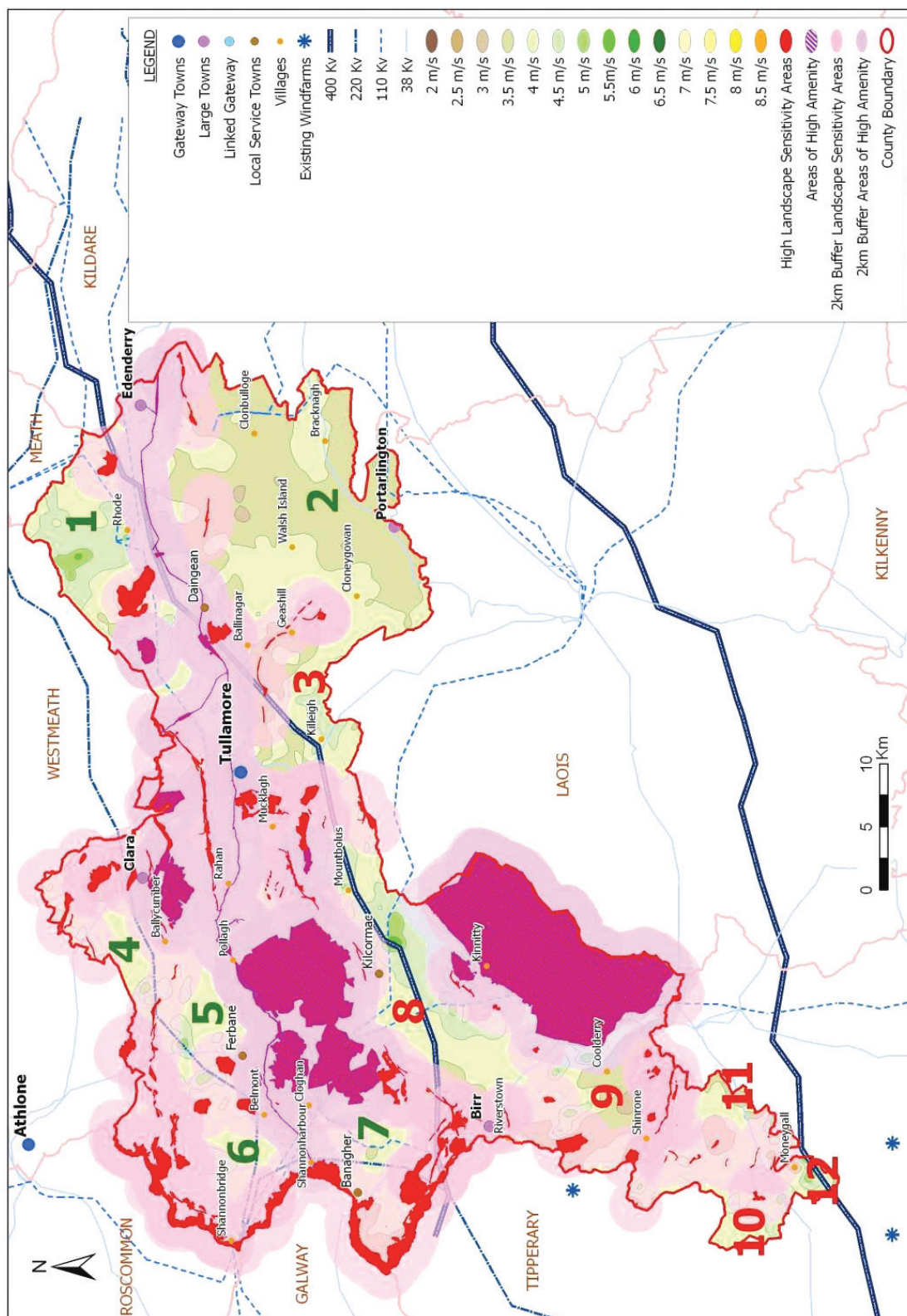
Figure 7. Compilation of Technical Opportunities and Environmental Constraints



This map shows environmental constraints (ecological, visual) as shades of purple and technical opportunities – grid access and wind speed (base layer). Areas free of constraints have the potential to sustain wind-energy development without causing adverse environmental effects.



Figure 8. Areas of Wind Energy Development Potential



The map shows the 12 main areas emerging as having wind energy development potential. These were examined in the field to determine whether conditions on the ground reflected those deduced from remote sensing and mapping. Suitable areas are numbered in green, areas that are not suitable are numbered in red. The results of this analysis are presented in Table 1.



Table 1 Results of Field Analysis of Potential sites for Wind Energy Development

NO	Considerations	Decision
1	<p>Area North of Rhode</p> <p>Having regard to proximity to existing substation access, roads, cutover bog, large landholdings, precedent of existing visually intrusive infrastructure, this area is highly suitable. There is some sensitivity to the overlooking of the western portion of this area from protected views.</p>	<u>Suitable</u> for large-scale Windfarms.
2	<p>Area from Cloneygowan to Clonbullogue</p> <p>Having regard to the very low levels of existing dwellings, large land holdings reasonable access to grid, reasonable road access and existing cut-over bogs this area is suitable for large scale windfarm development.</p>	Core areas of cutover bog <u>suitable</u> for large-scale windfarms. Scope for more dispersed clusters of smaller developments over the remainder of the area.
3	<p>Area around Killeigh</p> <p>Having regard to the proximity to areas of high amenity, protected views and to the likely effect on views towards and from such areas this area is not suitable for wind energy development.</p>	<u>Not suitable</u> for wind energy development.
4	<p>Area around Corracullin Bog</p> <p>Having regard to low levels of adjacent dwellings, reasonable access to grid, proximity to access and areas of cut-over bog this area is suitable for windfarms.</p>	<u>Suitable</u> for large-scale wind energy development.
5	<p>Area around Castletown Bog</p> <p>Having regard to low levels of adjacent dwellings, reasonable access to grid, proximity to access and areas of cut-over bog this area is suitable for windfarms. Parts of the area are locally overlooked by protected views from roads on elevated eskers in the area.</p>	<u>Suitable</u> for large-scale wind energy development – subject, in particular, to a requirement to demonstrate no adverse visual effects on Clonmacnoise.
6	<p>Area East of Shannonbridge</p> <p>Having regard to low levels of adjacent dwellings, reasonable access to grid, proximity to access, areas of cut-over bog this area and most importantly to the existing visual intrusion of the Shannonbridge installation, this area is suitable for windfarms. Field visits indicate that development in this area will not impact on the Shannon or Clonmacnoise – because of intervening esker features.</p>	<u>Suitable</u> for large-scale wind energy development – subject, in particular, to a requirement to demonstrate no adverse visual effects on Clonmacnoise.
7	<p>Area South of Cloghan</p> <p>Having regard to low levels of adjacent dwellings, reasonable access to grid, proximity to access and areas of cut-over bog this area is suitable for windfarms.</p>	<u>Suitable</u> for large-scale wind energy development.
8	<p>Area South and East of Kilcormac</p> <p>Having regard to higher densities of housing in this area, the proximity to areas of high amenity and to the likely effect on views towards and from such areas this area is not suitable for wind energy development.</p>	<u>Not suitable</u> for wind energy development.
9	<p>Area West of Coolderry</p> <p>Having regard to the proximity to areas of views and amenities and to locally elevated concentrations of dwellings, this area is not suitable for wind energy development.</p>	<u>Not suitable</u> for wind energy development.
10	<p>Area South of Cloughjordan</p> <p>Having regard to the proximity to areas of views and amenities and to locally elevated concentrations of dwellings, this area is not suitable for wind energy development.</p>	<u>Not suitable</u> for wind energy development.
11	<p>Area North of Dunkerrin</p> <p>Having regard to the proximity to areas of views and amenities and to locally elevated concentrations of dwellings and to the proximity of a National Primary route, this area is not suitable for wind energy development.</p>	<u>Not suitable</u> for wind energy development.
12	<p>Area South of Moneygall</p> <p>Having regard to the proximity to areas of views and amenities and to locally elevated concentrations of dwellings and to the proximity of a National Primary route, this area is not suitable for wind energy development.</p>	<u>Not suitable</u> for wind energy development.



5 WIND ENERGY STRATEGY FOR COUNTY OFFALY

5.1 GENERAL STRATEGY

This purpose of this strategy document, as outlined in Section 1.1 is to evaluate and analyse the potential wind energy resource within County Offaly, to define environmental and planning considerations for wind energy development and to make recommendations on Wind Energy Resource Development Policy and Practice. The strategy gives a broad indication of where potential appropriate wind energy development could take place. However, any proposals in relation to the development of wind energy would have to demonstrate compliance with relevant policies of the current County Development Plan and also satisfy normal planning provisions as set out in the Wind Energy Development Guidelines (2006).

Wind Energy shall be permitted in the County as follows:-

- 1 In Areas Suitable for Wind Energy Development – Development of Wind Farms and smaller wind energy projects shall be open for consideration.
- 2 In all other areas Wind Energy Developments shall not normally be permitted – except as provided for under exemption provisions.

5.2 WIND ENERGY POLICY

5.2.1 AREAS SUITABLE FOR WIND ENERGY DEVELOPMENTS

Areas marked in hatched red in Figure 9 are areas that are likely to be suitable for all scales of wind energy development on account of a combination of factors that include:

- available access to suitable grid connections (within 10 km);
- the absence of overwhelming environmental constraints; and
- low densities of adjacent residential development.

Applications for wind turbines in these areas are acceptable in principle – subject to conformance with all other requirements of this plan. The rationale behind this policy is to minimise the impacts of such large scale developments on the environment of County Offaly as a whole, while maximising the potential for optimal and efficient grid connection.

Within *Areas suitable for Wind Farms* all permissions shall have a 20 year life and it is anticipated that all windfarm sites within this Strategy Area will be intensified in the future by:

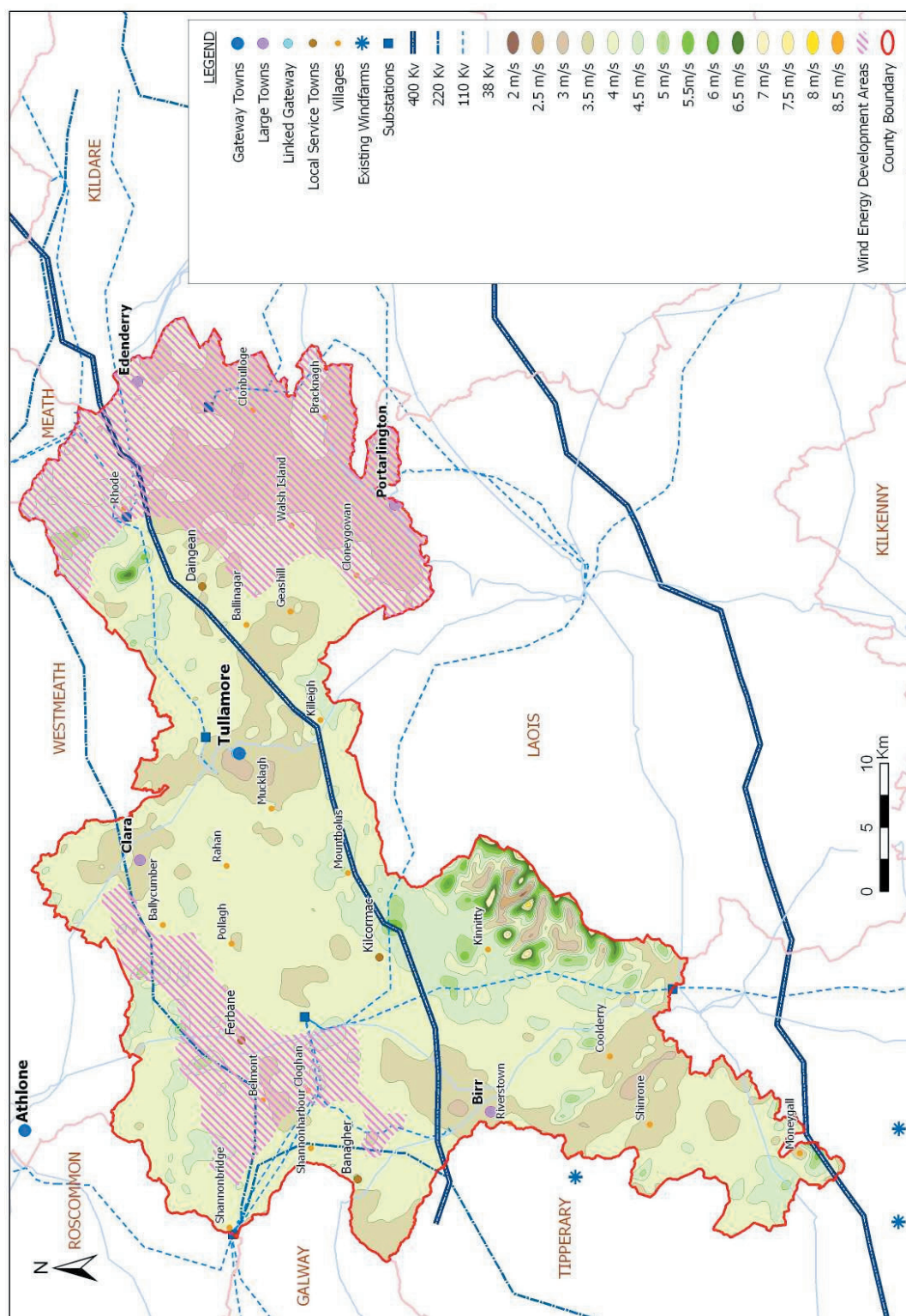
- Taller turbines with larger swept areas.
- Higher densities (closer spacing of turbines).
- More advanced technology with higher efficiencies of energy capture.

The boundaries of the current Strategy Areas will be reviewed once substantial wind energy development has occurred within them – with a view to extending or contracting them having regard to:

- the alteration to the landscape character of the area due to the proximity of established windfarm projects;
- the requirements for alternative energy at that time;
- the future configuration and availability of grid connections; and
- relevant environmental and social constraints.



Figure 9. Wind Energy Strategy for County Offaly



Areas hatched in red are Areas Suitable for Wind Energy Developments, subject to the policies outlined below and to all other relevant provisions of this plan.



5.3 EXEMPTED DEVELOPMENT

5.3.1 DOMESTIC

The Department of Environment, Heritage and Local Government announced, in March 2007, planning exemptions to make provision for micro wind turbine developments⁸ which will not require planning permission. The new exemptions are summarised as follows:

- Wind Turbines with a mast height of 10 metres and a rotor diameter of 6 metres will be exempt from planning permission requirements subject to conditions set out in the relevant exemption regulations.

In the main, the conditions attached to the exemption for micro wind turbines are designed to ensure their safe installation and use. Issues such as visual amenity, noise, vibration, possible structural damage, safety and poor installation mitigate against the inclusion of building mounted turbines as exempted development. Nevertheless, it will still be possible to apply for planning permission for such turbines in the normal way.

5.3.2 AGRICULTURAL AND COMMERCIAL

In addition to the exemptions listed above, the Department of Environment, Heritage and Local Government announced, in July 2008, exemptions to make provision for wind turbine developments⁹ within the curtilage of an industrial building or light industrial building, business premises or agricultural holding, which will not require planning permission.

The new exemptions are summarised as follows:

Wind turbines (one per premises or building or agricultural holding) with a total height of no more than 20 metres and a maximum rotor diameter of 8 metres, will be exempt from planning permission requirements subject to conditions set out in the relevant exemption regulations.

⁸ S.I. No. 83 of 2007, Section 1

⁹ S.I. No. 235 of 2008, Section 5



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