



Guide

Wind Turbines and Wind Farms - Guide to Planning Policies

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Background

This factsheet will look at planning policy and guidance in relation to wind turbines and wind farms. The most relevant planning policy for wind turbines and wind farms is Planning Policy Statement (PPS) 18 'Renewable Energy'. Two guidance documents – Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' and Supplementary Planning Guidance: Wind Energy Development in Northern Ireland's Landscapes are also taken into account. These planning documents are summarised in this factsheet. The policies are available in full on Planning Service website.

Under current planning regulations, planning permission is required for all types of wind turbines and wind farms.



Planning Policy Statement (PPS) 18 'Renewable Energy'

PPS 18 sets out regional planning policies for all renewable energy developments. PPS 18 aims to facilitate renewable energy facilities in appropriate locations. The objectives of the policy are:

- to ensure that the environmental, landscape, visual and amenity impacts of renewable energy development are adequately addressed;
- to ensure adequate protection of the region's built and natural, and cultural heritage features; and
- to facilitate the integration of renewable energy technology into the design, siting and layout of new development and promote greater application of the principles of Passive Solar Design.

Policy RE1: Renewable Energy Development

This policy says that DoE Planning will support renewable energy proposals unless there are **unacceptable adverse effects** which are not outweighed by the local and wider environmental, economic and social benefits of the development. Examples of the benefits of renewable energy are given as: a clean, secure energy supply; reductions in greenhouse gases and other polluting emissions; and contributing to meeting the region's target for use of renewable energy sources.

The policy says that renewable energy development will be permitted provided there is no unacceptable adverse impact on:

- (a) public safety, human health, or residential amenity;
- (b) visual amenity and landscape character;
- (c) biodiversity, nature conservation or built heritage interests;
- (d) local natural resources, such as air quality or water quality; and
- (e) public access to the countryside.

The policy also says that:

- Proposals should be located at, or as close as possible to, the source of the resource needed for that particular technology;
- If a project is likely to result in unavoidable damage during its installation, operation or decommissioning, the planning application will need to indicate how this will be minimised and mitigated e.g. through a habitat management plan or the creation of a new habitat. This should be agreed before planning permission is granted; and
- Significant weight will be given to the wider environmental, economic and social benefits of all proposals for renewable energy in deciding whether planning permission should be granted.

In addition to these criteria, applications for wind energy development also need to demonstrate all of the following:

- (i) the development will not have an unacceptable impact on visual amenity or landscape character through: the number, scale, size and siting of turbines;
- (ii) the cumulative impact of existing and proposed wind turbines are taken into account;
- (iii) that the development will not create a significant risk of landslide or bog burst;
- (iv) there will be no unacceptable electromagnetic interference to communications installations; radar or air traffic control systems; emergency services communications; or other telecommunication systems;
- (v) no part of the development will have an unacceptable impact on roads, rail or aviation safety;
- (vi) the development will not cause significant harm to the safety or amenity of any “sensitive receptors” through noise; shadow flicker; ice throw; and reflected light (“sensitive receptors” are: habitable residential accommodation including future residents, hospitals, schools and churches); and
- (vii) that above-ground redundant plant (including turbines), buildings and associated infrastructure shall be removed and the site restored to an agreed standard appropriate to its location.

The policy also says that:

- Any development on active peatland will not be permitted unless there are reasons of overriding public interest; and
- **Wind farms should normally be separated from any occupied property by ten times the rotor diameter of the wind turbines (and be at least 500 m away).**

Policy RE2, Integrated Renewable Energy and Passive Solar Design

This policy encourages greater integration of renewable energy technologies, both in the design of new buildings and through the appropriate retrofitting to existing buildings. For example, incorporating small-scale renewable energy technologies (‘micro-generation’) or Passive Solar Design principles, to achieve energy gains.

Planning permission will be granted for a development proposal which integrates renewable energy technology. This includes micro-generation and Passive Solar Design (PSD) in its layout, siting and design, where it meets the provisions of Policy RE1 and provided the technology is appropriate to the location in terms of any visual or amenity impact it may have. The following types of development provide the greatest opportunity for maximising the benefits that can be derived from integrated renewable technology and/or PSD:

- large-scale urban development (generally defined for the purposes of this policy as a site of 1 hectare or greater or a building of 5,000 m² or greater);
- public sector development; and
- development in the countryside including individual dwellings.

3.0 Other Considerations

3.1 Landscape and Visual Impact

The impact that wind turbines will have on the landscape will vary depending on the size and number of turbines and the landscape involved. A final decision about the visual and landscape effects of a proposal will be made through professional judgement. Proposals should include an analysis of the impact that the proposal will have on the landscape.

Policy RE1 recognises that wind turbines and wind farms may be developed in areas that are sensitive in terms of landscape and nature conservation value and that larger scale developments may be visible over distances. It says that these impacts “may be considered acceptable for example because they are minor or because mitigation measures may be put in place.”

Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’ says that,

“There are no landscapes into which a wind farm will not introduce a new and distinctive feature. Given the Government’s commitment to addressing the important issue of climate change and the contribution expected from renewable energy developments, particularly wind farms, it is important for society at large to accept them as a feature of many areas of the Region for the foreseeable future.”

However, it goes on to say,

“This is not to suggest that areas valued for their particular landscape and/or nature conservation interest will have to be sacrificed. Nor that elsewhere, attempts to lessen the impacts by integrating the development into the surrounding landscape would not be worthwhile. On the contrary, it emphasises the need for account to be taken of regional and local landscape considerations. Careful consideration is required to locate the development and even though highly visible, every effort should be made to reduce the impact and aid integration into the local landscape” (Best Practice Guidance to Planning Paragraph Policy Statement 18 ‘Renewable Energy’ 1.3.19).

The capacity of the landscape to accommodate wind farm development depends on:

- the degree of impact the development will have on the existing character of the landscape;
- the sensitivity of the character of the landscape; and
- the extent to which this impact can be modified and reduced by design.

The ability of the landscape to absorb development depends on careful siting, the skill of the designer, and the inherent characteristics of the landscape such as landform, ridges, hills, valleys, and vegetation. A cautious approach is necessary in relation to those landscapes which are of designated significant value, such as Areas of Outstanding Natural Beauty, and the Giant’s Causeway World Heritage Site, and their wider settings. Here, it may be difficult to accommodate wind turbines without detriment to the region’s cultural and natural heritage assets (Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’ paragraphs 1.3.21-1.3.23).

Some factors to take into consideration include:

- Landscape character and features;
- Number, size and layout of turbines, and their inter-relationship;
- How the turbines relate to the skyline;
- Design and colour;
- Visual receptors;
- Access tracks;
- Ancillary components like power lines and substations; and
- Land form.

Some techniques that can be used to help assess the visual impact of wind turbines include:

- **Zone of theoretical visibility map** – shows where a wind farm may be seen from;
- **Viewpoint analysis** – based on key viewpoints throughout the surrounding area;
- **Wireline diagrams** – computer generated, indicate how wind turbines will appear from specific viewpoints; and
- **Photo and video montages** – an impression of the proposed development is superimposed on a photograph or video of the site.

Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’ also notes that the cumulative impact of wind turbines along with other developments should be considered. This guidance states that,

“In assessing cumulative effects, it is unreasonable to expect these to extend beyond schemes in the vicinity that have been built, those which have permissions and those that are currently the subject of undetermined applications” (Para 1.3.33 – 1.3.37).

The document **‘Wind Energy Development in Northern Ireland’s Landscapes’** (SPG), published by the Northern Ireland Environment Agency identifies landscape characteristics that may be sensitive to wind turbine development. It contains an assessment of each of the 130 **Landscape Character Areas (LCAs)** in the region and their sensitivity to wind energy development and is intended to help identify the locations most suited for wind energy development in landscape and visual terms. It also provides advice on siting, layout and design of wind energy proposals. Assessment sheets are provided to help assess the best location for wind energy development.

3.2 Noise

Increases in noise levels should be made acceptable by making sure that wind turbines are located at an acceptable distance from developments sensitive to noise – this is usually a separation distance of 10 times the rotor diameter of the turbine and not less 500m. The report **‘The Assessment and Rating of Noise from Windfarms’**(ETSU-R-97) should be used in the assessment and rating noise from windfarms (Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’ para 1.3.43 – 1.3.46).

3.3 Safety

The best practice guidance states that there has been no example of injury to a member of the public from a wind turbine. The only source of possible danger would be the loss of a blade or a piece of blade. The guidance states that the **separation distance of 10 times the rotor diameter from any occupied property** should satisfy safety requirements. For a smaller individual wind turbine, the height of the turbine to the tip of the blade plus 10% is often used as a safe separation distance (Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’ para 1.3.50 – 1.3.52).

The best practice guidance also states that the build-up of ice on turbine blades is unlikely to present problems on the majority of sites in Northern Ireland. Even where icing does occur the turbines' own vibration sensors are likely to detect the imbalance and inhibit the operation of the machines (Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' para 1.3.79).

3.4 Shadow Flicker/Reflected Light

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' states that under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off; the effect is known as 'shadow flicker'. It only occurs inside buildings where the flicker appears through a narrow window opening. A single window in a single building is likely to be affected for a few minutes at certain times of the day during short periods of the year.

The likelihood of this occurring and the duration of such an effect depends upon:

- the direction of the residence relative to the turbine(s);
- the distance from the turbine(s);
- the turbine hub-height and rotor diameter;
- the time of year;
- the proportion of day-light hours in which the turbines operate;
- the frequency of bright sunshine and cloudless skies (particularly at low elevations above the horizon); and,
- the prevailing wind direction.

Shadow flicker generally only occurs in relative proximity to sites and has only been recorded occasionally at one site in the UK. Only **properties within 130 degrees either side of north, relative to the turbines can be affected** at these latitudes – turbines do not cast long shadows on their southern side. The further the observer is from the turbine the less pronounced the effect will be.

Problems caused by shadow flicker are rare. **At distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low.** The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the site. Where shadow flicker could be a problem, developers should provide calculations to quantify the effect and where appropriate take measures to prevent or ameliorate the potential effect, such as by turning off a particular turbine at certain times. Careful site selection, design and planning, and good use of relevant software, can help avoid the possibility of shadow flicker in the first instance. It is recommended that **shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day** (Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' para 1.3.72 - 1.3.77).

Turbines can also cause flashes of reflected light, which can be visible for some distance. It is possible to ameliorate the flashing but it is not possible to eliminate it. Careful choice of blade colour and surface finish can help reduce the effect. Light grey semi-matt finishes are often used for this. Other colours and patterns can also be used to reduce the effect further (see 'The Influence of Colour on the Aesthetics of Wind Turbine Generators' – ETSU W/14/00533/00/00). A semi-matt or matt non reflective finish is required to reduce the reflection of light. However, colour choice can not be a substitute for good siting and design (Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' para 1.3.25 and 1.3.78).

3.5 Interference

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' states that the electromagnetic emissions from wind turbines are "at a very low level comparable to most domestic appliances." It says that with careful siting, there should be no significant effect on communication systems like television, radio etc. Consultation should be carried out with organisations responsible for electromagnetic links. It may also be necessary to consult utility providers and emergency service providers (Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' para 1.3.58- 1.3.64).

3.6 Proximity to Roads, Rail and Flight Paths

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' advises that applicants should consult with DRD Roads Service at an early stage for development affecting public roads and with Translink for developments affecting railways. Wind turbines should be set back at least fall over distance (i.e. the height of the turbine to the tip of the blade) plus 10% from the edge of any public road, right of way or railway line.

DoE Planning will consult with airfield and airport operators, the Ministry of Defence and The National Air Traffic Service on wind farm proposals. It is also recommended that the applicant consults with any airfields before making an application. Lights may be required on the wind turbine and are mandatory if it is more than 150 m high. The developer should also carry out consultation about the impact that wind turbines will have on radar.

3.7 Natural and Built Heritage

Effects on archaeology, protected sites, habitats and ecologically sensitive species and biodiversity value will all be considered. It may be necessary to draw up a management plan to deal with the co-existence of the wind turbine and a particular species or habitat. Planning Policy Statement 2, Planning and Nature Conservation and Planning Policy Statement 6, Planning, Archaeology and the Built Heritage will be taken into account.

In areas with special designations, each proposal will be assessed against the specific reason for designation e.g. uniqueness, beauty, character of the landscape, habitat and species, physiographic, geological, heritage and cultural features.

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' states that "bird species and their habitats are rarely affected by wind turbines". However, some areas are important for a variety of bird species protected under the EU and UK legislation (SPAs, SACs and ASSIs). These could represent potential constraints to wind farm development. As indicated in PPS 2 on nature conservation, the importance of complying with international and national conservation obligations must be recognised and wind farms should not adversely affect the integrity of designated sites. Protected species, such as hen harriers, occupy many areas outside designated sites and are protected across Northern Ireland. These factors have to be considered against the positioning and size of turbines, including the size of the area swept by the blades in relation to the air space used by the birds in the vicinity of the development.

Early consultation between the developer and the Northern Ireland Environment Agency (NIEA) and RSPB is recommended. Most sites will require an assessment of breeding birds (between late March and early June) and wintering birds (September to March). Others, where potential ornithological sensitivities are higher, may require substantially more survey work, including studies of wintering/passage birds, raptors and moorland birds and detailed observations to quantify bird flight activity across the site.

Among the other potential impacts to birds, loss of habitat, the deposition of spoil or hazardous substances from construction and operation, scrub and hedgerow removal should also be assessed.

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' recommends early consultation between the developer and NIEA and the Bat Conservation Trust. Some sites may require the submission of a bat survey to assess the use of the site.

Developers should ensure that their ecological advisers enter into early discussions with NIEA about the presence and importance of species and habitats in and around a proposed development site. Discussions should assess any potential impacts and the scope for mitigation in the design and layout. A Habitat Survey could usefully inform these discussions. In addition discussions with locally based groups such as the Ulster Wildlife Trust or RSPB could benefit the ecological assessment procedure.

Where the development is likely to have an adverse effect on natural heritage or nature conservation, developers will be required to bring forward mitigation measures and possibly compensatory measures.

The DoE is required to undertake an Appropriate Assessment of any proposal that has the potential to significantly affect a European Site, either directly or indirectly. In such cases developers must provide any information reasonably required for the purposes of this Assessment. Further information on Appropriate Assessment is contained in the publication: **Habitats Regulations Guidance Notes for Competent Authorities, Northern Ireland Environment Agency September 2002**. Appropriate Assessment may be required for renewable energy proposals that have the potential to significantly affect other **Sites of International Nature Conservation Importance**. (Special Protection Areas (including potential SPAs), **Special Areas of Conservation** (including candidate SACs), **Sites of Community Importance and Ramsar Sites**).

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' states that, "The potential impact of the proposed wind energy development on the archaeological heritage of the site should be assessed. The assessment should address direct impacts on the integrity, visual amenity, and setting of individual sites and monuments or any location designated as an **Area of Significant Archaeological Interest**. It should also detail appropriate mitigation measures, such as through a desktop study and a field inspection where necessary.

In addition, an assessment should be made on the potential impact of the proposed wind energy development on the wider built heritage of the locality and its landscape context, where relevant. This is particularly necessary in the case of structures impacting on Listed Buildings; Historic Parks, Gardens and Demesnes; Conservation Areas; and Areas of Townscape Character" (Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' paragraphs 1.3.40 – 1.3.41).

3.8 Peatland

Active peatland is a priority habitat for Europe. Risks include damaging the peatland during development and landslide or bog burst. Where the wind turbine would be located on peatland, comprehensive information should be provided identifying existing, potential and construction induced peat landslide hazards.

If risk cannot be completely avoided then engineering options to mitigate the risk should be included. Permission may be refused due to the level of risk identified or if the engineering solutions would increase the level of disturbance, drying out of the peat or release of carbon. In some cases DoE Planning may require the developer to restore areas to active peatland within or next to the site.

3.9 Decommissioning

Applicants should provide details of how the wind turbine will be decommissioned, including how the site will be restored. Planning conditions and legal agreements, where appropriate, will be used to make sure that the site is restored to an agreed standard.

The duration of planning approval will probably be linked to the lifetime of the wind turbine. However, if an application is made to replace the original turbines or re-equip them so that they will be operational for longer, this application will be determined on its own merit in light of policies and other material considerations at the time.

3.10 Ground Water Conditions/Geology

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' paragraphs 1.3.38 – 1.3.39 provide detailed information about the information that should be submitted with an application e.g. geological surveys, geotechnical assessments etc.

3.11 Economic and Social Benefits

Wind energy developments are not necessarily incompatible with tourism and leisure interests, but care needs to be taken to ensure that insensitively sited wind energy developments do not impact negatively on tourism potential. The educational potential of wind energy developments should also be considered. For example, there may be scope for an interpretive centre on alternative energy resources to be located at accessible location in proximity to a wind energy development. It would be helpful if established long distance walking routes/amenity rights-of-way were identified and mapped to enable an assessment both of the extent to which recreational pursuits can be accommodated and facilitated either within or adjacent to wind energy developments. Local councils would be a useful contact point to provide information on this matter (Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' paragraphs 1.3.80 - 1.3.82).

4.0 Making an Application

The documents '**Wind Energy Development in Northern Ireland's Landscapes**' (SPG), and **Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy'** provide detailed advice on the process that should be completed before an application is submitted. Assessing a wind turbine application entails detailed consideration of a range of factors and information will normally have to be submitted on at least some of the issues mentioned earlier.

4.1 Site Identification, Analysis and Design

4.1.1 Site Selection

The document '**Wind Energy Development in Northern Ireland's Landscapes**' states that,

"Good site selection and scheme definition are the most effective ways of addressing issues of potential landscape and visual impact and ultimately ensuring that a proposal is likely to be acceptable in landscape and visual terms."

It recommends that developers involve a landscape architect with landscape assessment expertise and that initial scheme planning and design should be informed and influenced by an ongoing process of landscape and visual impact assessment to prepare proposals which are more likely to be acceptable in landscape and visual terms. The annex to the document '**Wind Energy Development in Northern Ireland's Landscapes**' contains landscape assessment sheets which should be consulted as a first step to help identify some general locations where there may be capacity for wind energy development and may offer principles for its placement within the landscape. Once a suitable site has been identified, a detailed analysis of the site should be carried out.

4.1.2 Design, Layout and Siting

This should mitigate any adverse visual impact and impact on the landscape. Table 5 of '**Wind Energy Development in Northern Ireland's Landscapes**' summarises the principles of good siting, design and layout.

4.2 Environmental Impact Assessment

An assessment of landscape and visual impact will normally be a central part of the EIA – key good practice requirements for landscape and visual impact assessment (LVIA) are summarised in Table 6 of '**Wind Energy Development in Northern Ireland's Landscapes**'.

Even if an EIA is not required, an assessment of the environmental effects of the development should be submitted. The level of detail required should reflect the scale and location of the development. For small scale projects and micro-generation schemes a short report prepared by the applicant, will normally suffice. This should describe any environmental impacts and how they have been addressed. **Pre-application discussions with the local planning office** will help to determine what information should be submitted.

For larger scale projects, developers will also be expected to outline the benefits arising from the development in terms of the energy produced in order to enable a balanced assessment of the proposal to be carried out.

5.0 Community Benefit

The Justification & Amplification to **Policy RE 1** (PPS 18) says that the DoE considers that developers of renewable energy projects, in particular wind farms, should take an active role in engaging with the local community. This should include pre application discussion and provision of background information on the renewable energy technology that is proposed.

Experience has shown that there are opportunities to achieve community benefits through large-scale renewable energy projects such as major wind farm development. Certain benefits can be justified as mitigation of development impacts through the planning process. In addition, developers may offer other community benefits not directly related to the planning process. **Annex 3 of PPS 18** provides further information and examples about the types of community benefit which have been provided through wind farm developments in Great Britain. The **Fermanagh Trust's report, "Maximising Community Outcomes from Wind Energy Developments"** also provides some useful information (www.fermanaghtrust.org/cms/uploads/1/Wind_REPORT.pdf).

The Department would encourage this type of proposal but stresses that the offer of community benefits from a developer will not enable permission to be given to a proposal that otherwise would be unacceptable in planning terms.



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