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Planning Guidance: Small Wind

A good practice guide

November 2011

Contents

Foreword

- **In the last four years more than 10,000 small wind systems have been installed in the UK.**
- **If UK companies are to continue to lead the world in small wind technology, they will need the assistance of policy makers especially in town planning.**

Small wind systems have a substantial role to play in helping the UK meet its renewable energy targets. RenewableUK's analysis of industry trends shows that by 2020 there could be 600,000 small wind systems deployed in the UK and that the sector could be generating 3500GWh of renewable energy annually, compared to the 52GWh it is today. It is therefore essential that the infrastructure needed to underpin these systems is delivered in a sensible way, keeping the impact on the environment to a minimum and dealing with community questions and concerns.

Strategic planning, combined with proper discussion and consultation on proposals for small wind turbines is central to this process, and requires that manufacturers, installers, local authorities and local communities work together to produce the optimum solution for delivering renewable energy targets in the UK.

This good practice guide for the deployment of small wind turbines has been produced by RenewableUK and its members to provide clear and practical advice to stakeholders and the industry on matters associated with small wind turbines. It is written in the hope that standardised practice will promote greater consistency of approach and aid the transparency of the planning process for all concerned.

Small wind systems have distinctive development control considerations to large wind installations such as onshore and offshore wind farms and Development Control Officers should be informed of the specific nature and scale of the considerations which relate to small wind systems.

In producing this document, we have attached great importance to securing good design in development generally and in assisting authorities in dealing with frequently asked questions and concerns. More detailed supplementary information is included within the appendices where necessary.

This guidance is non-statutory and does not purport to give a definitive interpretation of the legal planning requirements but we hope that everyone involved in the planning and deployment of small wind systems will find the guidance of assistance.

RenewableUK would like to thank everyone who has contributed to this guidance document. Any comments, questions or concerns on the content are welcome and can be emailed to RenewableUK.

Contributors

The following organisations have contributed to the production of this guidance:

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Agencies Consulted

The following agencies have been consulted in the production of this guidance, following member consultation stage:

- CAA
- Cadw
- Countryside Council for Wales
- English Heritage
- Environment Agency
- Historic Scotland
- Planning Officers Society
- Natural England
- Northern Ireland Environment Agency
- Royal Society for Protection of Birds
- Royal Town Planning Institute
- Scottish Natural Heritage
- Town and Country Planning Association
- The Planning Inspectorate

1. Introduction

1.1 Purpose and Scope of the Guidance

This document has been compiled to provide key stakeholders within the industry (including determining authorities, developers, communities and regulators across the UK) with a concise and easy to use guide to inform determining planning applications for micro, small and small-medium wind turbine proposals.

The guidance is specifically targeted at small wind turbine systems, which are defined as turbines with a swept path of up to 200 m2 Systems with a swept area greater than 200 m2 fall outside the control of the MCS product accreditation, and as such are not covered by this guidance

1.2 Structure of the Guidance

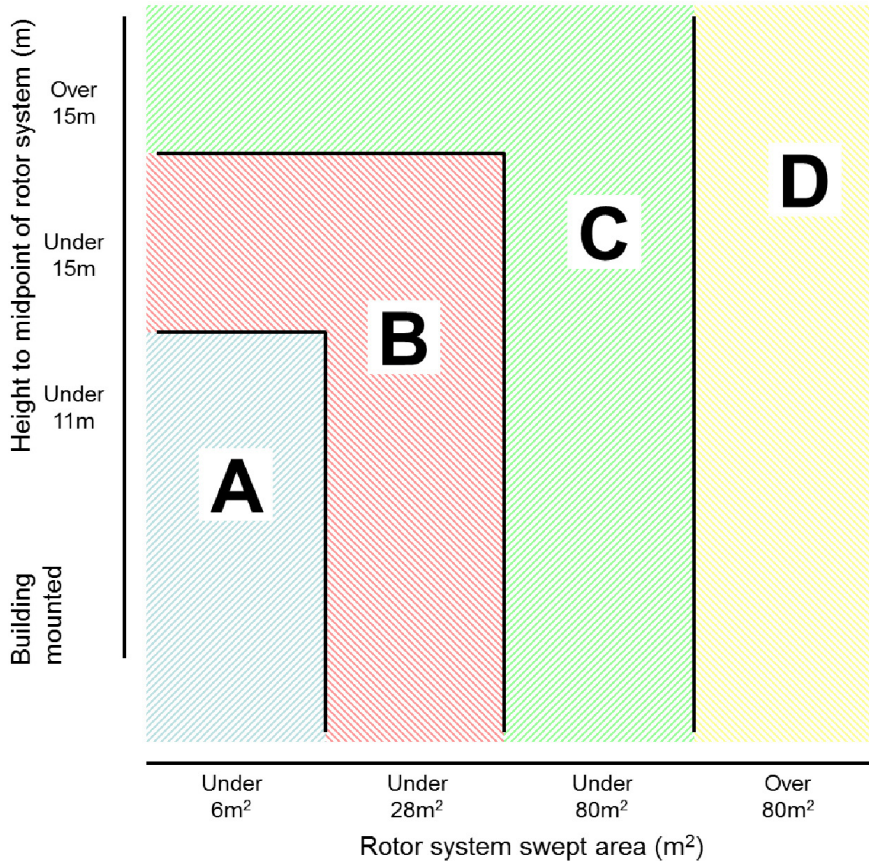
The guidance is structured in two sections

Section 2 covers general policy guidance. It also provides guidance on the controls already in place through the Microgeneration Certification Scheme in order to avoid duplication.

Section 3 covers more specific issues to be considered in determining individual applications. It is intended to assist planners and other stakeholders in assessing planning applications by providing useful checklists and supporting information in each of the key planning issues to be assessed.

The Appendices provide an extensive reference relating to the main document and have been separated from the main text to allow for ease of use.

Figure 1: Guidance on wind turbine sizes and categorisation



Category A: comprises systems up to 6m² swept area and under 11m height to rotor midpoint.

Category B: comprises systems up to 28m² swept area and under 15m height to rotor midpoint.

Category C: comprises systems up to 80m² swept area and under 25m height to the blade tip.

Category D: comprises systems up to 200m² swept area and under 45m height to the blade tip.

2. Planning Policy Overview

2.1 Planning Policy Background

In interpreting local policy, Authorities will be seeking to balance the appropriate level of control over Small Wind System developments against the need for efficient processing of applications.

In doing this, the high level of existing control over the manufacture and installation of Small Wind Systems is of assistance. Under the terms of the Feed-in Tariff eligibility, Small Wind Systems must be certified under the Microgeneration Certification Scheme (MCS) and the installation must also be carried out by an installer who is MCS certified. The detailed issues that are controlled by these two certification requirements are explained further in section 2.2, but in principle this provides a support to the planning process similar to the building regulations.

As a consequence of this support, there are a range of issues that planning officers' should not need to consider further in determining planning applications.

Further detail is provided in the accompanying appendices with regards to relevant planning policy applicable to England, Wales, Northern Ireland and Scotland for each topic within this guidance document.

2.2 The Role of Microgeneration Certification Scheme (MCS)

Certification Process

The MCS certification process covers both the wind turbine systems themselves and the method of installation. The sections below summarise the scope of the certification for both product and installation.

Product Certification

The MCS Small Wind Turbine product certification (MCS 006 Product Certification Scheme Requirements: Micro and Small Wind Turbines) requires the product to be assessed and tested broadly in accordance with IEC61400-2 which is the small wind system part of the international wind turbine standards. This MCS 006 process assesses the design integrity of the product against established standards and tests the product for its performance and noise emission across a range of wind speeds. It also runs the product for an extended test period to demonstrate that the system integrity and performance are robust. The manufacturing site is also assessed to ensure that sufficient factory production control is in place to maintain consistent product specification.

In assessing a planning application which specifies an MCS certified system, the planning officer can be sure that the system meets acceptable standards of design and manufacturing quality. In particular the noise emission data that will be provided by the applicant for the system should be in the standard agreed format as shown in the relevant section of this guidance. This enables an accurate and consistent assessment to be made of noise emission at locations close to the proposed installation site that may be affected by system noise.

Installer Certification

The general MCS Installer certification (MCS 001 - Installer certification scheme requirements) in conjunction with the MCS installation standard specific to small wind turbines (MIS 3003) requires installers to meet and maintain minimum standards in the siting and installation of small wind systems.

In assessing a planning application which will be carried out by an MCS certified installer, the planning officer has confirmation that a number of important issues are covered. All MCS accredited installers must install in accordance with MIS 3003 and maintain a range of quality and safety systems which are subject to annual audit, to ensure consistent standards are maintained.

MIS 3003 covers the following key points:

- System siting and sizing
- Mechanical and Structural requirements
- Wind Loading
- Turbine Support structures
- Electrical requirements
- Conformance to G83/1 or G59/1
- Turbine output cables, isolator and junction box
- Tower earthing, lightning protection
- Metering
- Labelling and signage
- Safe Siting and working
- Commissioning and Testing

These are controlled on each site through a set of checklists to ensure that there is traceability for all installations. Through this process, there are a number of issues that have in the past been raised by planning authorities that do not need to be assessed as part of a planning application, other than to check that the correct process has been applied. These include:

Siting safety

The MCS process closely defines all aspects of siting to ensure the safety of the installation. The planning application should provide a statement on the compliance to the MIS 3003 standard.

System performance

The MCS process provides tested performance data to enable the applicant to generate an accurate estimate of energy generated and carbon saving achieved by the system. Whether this level of energy generation is economic is generally excluded as a planning consideration.

Shadow Flicker

MCS standard MIS 3003 defines in detail the correct method to assess whether an installation is acceptable for shadow flicker and if there are neighbouring properties within the range in which shadow flicker could be an issue, the applicant should provide evidence of the calculation to demonstrate compliance to the standard.

2.3 General Permitted Development Order (GPDO)

Planning permission is currently required to install any size of wind turbine in Wales or Northern Ireland.
In England and Scotland, certain types of wind turbine may be classed as 'permitted development' and therefore not require planning permission. The regulations which govern whether permitted development will apply are very different in England and Scotland.

In England, from 1st December 2011, domestic building mounted turbines are to be considered Permitted Development providing certain criteria are met. These depend upon whether a turbine is to be building mounted or freestanding pole mounted

For domestic building mounted turbines, the criteria include:-

- The house is detached; or the building is detached if it is in the grounds of a dwellinghouse or block of flats;
- The turbine must comply with MCS Planning standards;
- Only one turbine is permitted;
- There is no other wind turbine or air source heat pump on the site;
- The top of the turbine blade is no more than 3 metres above the top of the house (excluding the chimney), or 15 metres above the ground, whichever is the lesser;
- The lowest part of the turbine blade is at least 5 metres above the ground;
- All of the turbine is at least 5 metres from the edge of the householder's property;
- The turbine's swept area must not exceed 3.8 m2;
- The site must not be designated as a Scheduled Monument, a Listed Building, nor within a National Park, and Area of Outstanding Natural Beauty, the Broads, a World Heritage Site or an area designated for the enhancement and protection of the natural beauty and amenity of the countryside.
- The site must not be aviation or defence safeguarded land,
- If in a Conservation Area, the turbine must not be sited on a wall or roof slope which fronts a highway.

For domestic stand alone pole-mounted turbines, the criteria include:-

- The turbine must be located within the curtilage of a house or a block of flats.
- The turbine must comply with MCS Planning standards;
- Only one turbine is permitted;
- There is no other wind turbine or air source heat pump on the site;
- The top of the turbine blade is no more than 11.1 metres above ground;
- All of the turbine is at least 5 metres above the ground;
- All of the turbine is at least 1.1 times the height of the turbine away from the edge of the householder property;
- The turbine's swept area must not exceed 3.8 m2;
- The site must not be designated as a Scheduled Monument, a Listed Building, nor within a National Park, and Area of Outstanding Natural Beauty, the Broads, a World Heritage Site or an area designated for the enhancement and protection of the natural beauty and amenity of the countryside.
- The site must not be aviation or defence safeguarded land,
- If in a Conservation Area, the turbine must not be nearer to any highway which bounds the curtilage than the part of the house or block of flats which is nearest to that highway.

This summary guide is not fully comprehensive and the detailed legislation should be referred to (Statutory Instrument 2011 no.2056, The Town and Country Planning (General Permitted Development) (Amendment) (England) Order 2011).

In Scotland, certain permitted development rights are already operative. A building-mounted wind turbine will still require planning permission. However, free standing domestic scale turbines are considered to be permitted development subject to the following criteria:

- There would be more than one free standing wind turbine within the curtilage of the dwelling;
- The wind turbine would be located less than 100m from the curtilage of another dwelling;
- The turbine would be within a conservation area, a World Heritage site, a site of special scientific interest, or a site of archaeological interest, or within the curtilage of a Listed Building.
- In addition, before beginning the development, the developer must apply to the planning authority for the approval of the authority in respect of the design and size of the proposed wind turbine; and a determination as to whether the prior approval fot he authority will be needed in respect of the siting and external appearance of the proposed turbine.

Details of what is required to be submitted in order to allow the authority to make a determination is set in detail in the legislation (Scottish Statutory Instrument 2010 no.27, The Town and Country Planning (General Permitted Development) (Domestic Microgeneration) (Scotland) Amendment Order 2010).

2.4 Other Planning Considerations and Guidance

Environmental Impact Assessment Screening

The Screening criteria specified for Schedule 2 developments as set out in the Environmental Impact Assessment (EIA) Regulations for England, Scotland, Wales and Northern Ireland state that any development of more than two wind turbines or where any turbine is higher than 15m should be screened for requiring an EIA. This means that many small wind developments will need formal screening for EIA. However some of the accompanying Circulars recommend thresholds and state thatsignificant effects will

generally depend upon the scale of the development, and its visual impact, as well as potential noise impacts and thatEIA is more likely to be required for commercial developments of five or more turbines, or more than 5 MW of new generating capacity.

It is therefore clear that a number of small wind system developments may fall well below the criteria for an EIA. Requiring an EIA for development of small systems may render the development uneconomic in some circumstances. This presents local planning authorities with the need to demonstrate that an assessment of the development has been made and the decision not to require an EIA taken properly, with due consideration of the impact of the development.

The majority of small wind systems applications will not require formal environmental impact assessments to accompany the application. The basis for deciding whether a formal EIA is necessary relates to whether or not the impacts arising from the proposed development are considered likely to be significant on the environment. Even if an EIA is not required, in many cases a basic level of assessment will be necessary to assess whether there are any environmental issues, for example a protected species survey may be necessary to determine the habitats and any species using the site.

Requiring a formal EIA to accompany a proposal for a micro, small or small-medium wind proposal will potentially make preparing a planning application financially unfeasible. The Screening decision should therefore be made carefully and considered proportionally to the impacts anticipated to arise from the development proposals.
Appendix 12 provides guidance on the critical aspects of environmental assessment for micro, small and small-medium wind turbine proposals including cumulative considerations of other wind development.

Ecology
All small wind system applications should be accompanied by an ecological assessment to demonstrate that the appropriate care has been taken in siting to minimise impact on local ecology. The detailed recommendations in assessing this ecology impact are given in the next section. However it is important that at a general policy level, inappropriate requirements are not set relating to ecology. The key issue here is that of bats and there some planning authorities requiring a bat survey to be undertaken on all proposed small wind development sites. It may not be necessary to undertake surveys for every development in light of the current information on the effect of small wind systems on bats and may create a bar to development of smaller systems due to the prohibitive cost of such surveys. The same is true of other areas of ecology such a bird nesting surveys, tree surveys, general flora and fauna surveys.

In summary, it is recommended that ecology issues for each development should be separately considered in accordance with the recommendations given in the next section of this guidance.

Listed Buildings and Heritage Assets
National Planning Policy guidance across the UK makes provision for the control of development which may negatively impact the setting and environs of heritage assets. The assessment of what constitutes negative impact is open to a broad range of interpretation.

In this context it is important to note that small wind systems do not constitute permanent structures. Planning permission is granted for the specific system proposed and the typical system life will be no more than 20 years. It will be a condition of consent that once the system is no longer operational it is removed.

On this basis, it should not be the case that location of a small wind turbine in sight of a listed building or heritage site is deemed to negatively impact the heritage asset. A small wind turbine, due to both its limited height and the small sectional area of the blades and tower, will not present a dominant landscape feature in the way that large wind system can. In the context of other modern landscape features such as electricity pylons, telegraph poles and farm buildings, a small wind turbine will not have a significant impact on the wider landscape.

It is therefore recommended that provided the development is not within the curtilage of a listed building or within a designated conservation area, planning policy in relation to heritage should not be used as a reason to refuse permission.

Roads and Railways
In assessing the impact of small and micro wind turbines, the Highways Agency recommends sites are set-back from the nearest highway at least height + 10% and this is also required under the Microgeneration Installation Standard (MIS 3003).

Footpaths, Bridleways and Public Rights of Way
Generally, policy guidance states that the minimum distance of a small turbine from a right of way is such that the blades do not oversail the right of way and it is recommended that the topple distance (height + 10%) be used. For bridleways the British Horse Society April 2010 Advisory Statement has recommended 3xheight as a distance with the 200m recommended in the Technical Guidance to PPS 22 being seen as the minimum (although this tends to be more applicable to larger wind turbines). Any potential distraction to horses will be affected by the planting between the bridleway and the turbine site. It is also the case that the size of

the turbine is more important than the mounting height – a 2.5m diameter turbine on a 15m mast will be less distracting than a 5m diameter turbine on a 10m mast.

Taking these factors together it is suggested that a sensible approach would be to site turbines a minimum of height +10% from any public right of way.

2.5 Other Planning Considerations of limited relevance to Small Wind Systems

In determining applications for Small Wind System developments there are a number of issues that are typically considered for other development but are not likely to be relevant to small wind system developments. This section gives a brief explanation as to why each of these should not need consideration in determining a Small Wind System application.

Transport
Small wind systems in all categories will have very minor transport requirements during construction and no transport implications in operation.

Hydrology and Flood Risk
Largely there will be no significant disruption to groundwater flows or drainage due to the small footprint of these systems although in some cases the location, layout and materials of some schemes may impact on groundwater flows, for example in sensitive habitats such as areas of peat which may require more rigorous investigation.

The Environment Agency, Environment Agency Wales, Scottish Environment Protection Agency (SEPA) and Northern Ireland Environment Agency (NIEA) together with the Local Planning Authority should be consulted if it is proposed to site the turbines adjacent to watercourses, flood defence or rivers as specific consents may be required.

Refer to Appendix 10 Hydrology for further information on specific planning policy guidance for England, Wales, Northern Ireland and Scotland.

Contaminated Land
The very small quantity of excavation due to the small footprint of these systems means that it is unlikely removalof spoil from the site during construction will be required as there is only likely to be limited and local disturbance. Further consideration may be required for any substantial length of access tracks.

Power Lines
Safe siting rules dictate that no turbine will be sited where it can hit power lines under topple conditions.

3. Issues in Determining Small Wind Planning Applications

As with other types of development, there are a range of potential issues associated with small wind proposals. The following sub-sections present an overview of the possible issues which may arise when considering small wind applications. Guidance for the following individual topic areas is provided, particularly with a view to assisting determining authorities in identifying when applications may require more detailed evaluations.

- Landscape and visual Impact
- Noise
- Ecology
- Aviation
- Electronic communications
- Archaeology and Heritage

3.1 Landscape and Visual Assessment

The purpose of a full Landscape and Visual Impact Assessment (LVIA) is to understand how a proposed development is likely to affect existing sensitive assets such as landscape features, landscape character and visual amenity of the surrounding environment. However in the case of small wind systems it would only be appropriate to require an LVIA for sensitive receptor environment. In most cases a limited landscape assessment should be sufficient which should be scoped with the Local Authority to determine the level of information required and whether or not any photomontages are required. Other useful sources of information available across the UK include:

- The Northern Ireland Landscape Character Assessment (NILCA) published by the Department of the Environment in 2000. It defines areas of distinct, recognisable and common character into 130 Landscape Character Areas (LCAs). At present information are also available on-line on the Northern Ireland Environment Agency (NIEA) website.
- The landscape character areas in Scotland have been defined through the National Programme of Landscape Character Assessment carried out by Scottish Natural Heritage in partnership with local authorities and other agencies.
- The Countryside Agency and Countryside Commission, now Natural England published 'Countryside Character' which describes landscape character in England. It is defined by National Character Areas (NCAs) formerly known as Joint Character Areas. The NCAs cover large areas and are quite broad in their description and assessment. Local planning authorities tend to publish their own landscape character assessments with more defined smaller areas.
- Wales has its own unique system called LANDMAP. It is based on 5 layers covering cultural landscape, geology, habitat, historic landscape and visual & sensory layer. The country is divided in aspect areas with detailed assessment including field pattern, current land management.

The appendices summarise the criteria for requiring an LVIA and the level of information that should reasonably expected proportional to the scale of the development.

A landscape assessment may be appropriate given a turbine is to be located within or close to a Conservation Area, Statutory Protected Landscape or Registered Landscape. Visual amenity needs to consider the sensitivity of the landscape to change and the magnitude of the proposed wind turbine. Although National Planning Policy guidance varies across the UK, it is generally considered that small scale renewable developments should be permitted within such areas provided there is no significant environmental detriment.

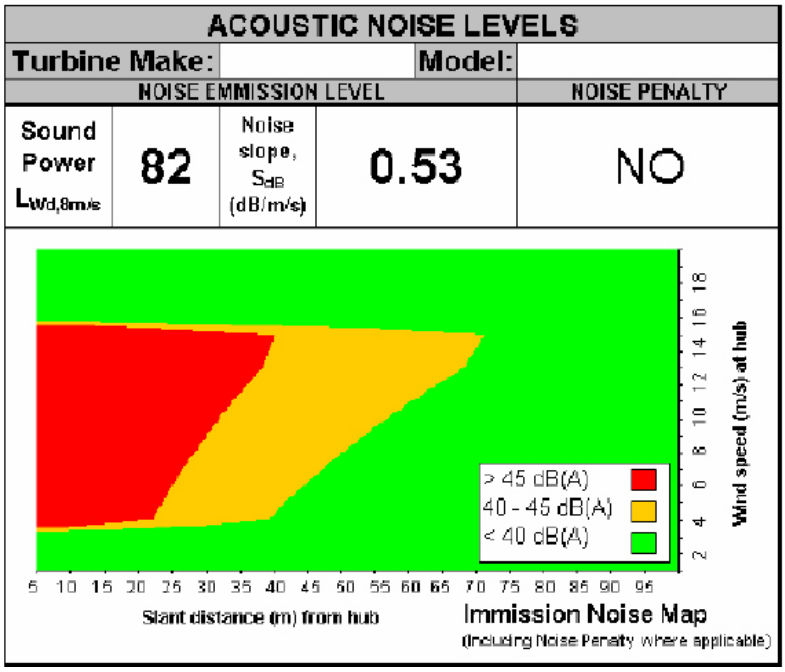
3.2 Noise

In determining any planning application for a wind system, consideration must be given to potential noise impact on neighbouring residential properties. Under the proposed GPDO a threshold of acceptance is suggested if any property would be exposed to noise emission levels less than 45dB (as measured) 1m from any window of an occupied room for 90% of the time.[1]

The noise emission from any MCS certified turbine is systematically measured in accordance with the BWEA Small Systems Safety and Performance Standard 29 Feb 2008 which references IEC 61400-11: 2003 and presented in the form of a noise map (Figure 2).
The graphic shows the declared noise emission levels as well as calculated noise immission (that is received by the hearer) at different distances from the turbine and at different wind speeds.

The Sound Power box states that for this particular turbine the noise emitted (that is transmitted from the turbine) has a sound power of 82dB LWd at a wind speed of 8m/s. This wind speed is used as on a typical inland UK site, the wind speed is less than 8m/s for 90% of the year. The 'd' subscript is a declared level in accordance with IEC 61400-14:2003 which applies the uncertainty on the measurement and presents a 'worst case' scenario.
Taking this an example, in order for a neighbouring window to receive a sound pressure level (Lp) above the suggested threshold it would need to be within 28m of the turbine head. In assessing a specific site the wind speed used should be the V90 wind speed for that site as predicted using the NOABL database.

Figure 2: Acoustic noise levels chart



1. At the time of writing this guidance the noise threshold of 42dB(A) for domestic micro wind turbines was announced. Details of how to interpret this can be found in the Statutory Instrument 2011 no.2056, The Town and Country Planning (General Permitted Development) (Amendment) (England) Order 2011) and the MCS 020 Planning Standard. This is applicable only to micro turbines of up to 11m height in England.

Sites with no Neighbouring Properties within the threshold
Where there are no neighbouring properties within the threshold there is no need for further assessment.

Sites with Neighbouring Properties within the threshold
Where there are neighbouring properties at which noise emission levels are predicted to be higher than the 45dB threshold this does not necessarily mean that the application should be declined (See Appendix 3: Noise for further details on the 45dB threshold). This is a low noise level and it may be perfectly acceptable within the general ambient noise environment experienced by nearby receptors to the site.

If the site is near a busy road, for example, background noise levels could be considerably higher than 45dB. PPG24 Annex 1 provides guidance on the relative noise levels acceptable in residential environments.

If a house has a road 100m away and a car passes at 40mph this will generate a noise level of around 55dB and a lorry at 30mph will generate 65dB. Note that the sound intensity doubles with every additional 10dB so a passing car is twice a loud as the 45dB threshold and a passing lorry four times as loud. The background noise levels should therefore also be taken into account when determining the acceptability of a site where noise emission levels are predicted to be higher than 45 dB(A). However it may be that traffic levels on such a road drop greatly at night whereas a wind turbine will operate at any time of day that the wind blows.

In the first instance therefore if the calculated noise emission exceeds 45dB(A), it is recommended that a simple measurement of background noise emission be made on site over a 24 hour (weekday) period. If the background noise exceeds 57dB(A) for more than 60% of the measurement period there is unlikely to be any noticeable impact of the wind turbine noise.

Above these levels, there would need to be a full noise impact assessment undertaken to justify that the additional turbine noise would be acceptable.

Table 1: Noise levels corresponding to the noise exposure

Categories For New Dwelling L_{Aeq},T dB				
	Noise Exposure Category			
Noise Source	**A**	**B**	**C**	**D**
Road traffic				
07.00 - 23.00	**<55**	**55 - 63**	**63 - 72**	**>72**
23.00 - 07.00	**<45**	**45 - 57**	**57 - 66**	**>66**
Rail traffic				
07.00 - 23.00	**<55**	**55 - 66**	**66 - 74**	**>74**
23.00 - 07.00	**<45**	**45 - 59**	**59 - 66**	**>66**
Air traffic				
07.00 - 23.00	**<57**	**57 - 66**	**66 - 72**	**>72**
23.00 - 07.00	**<48**	**48 - 57**	**57 - 66**	**>66**
Mixed sources				
07.00 - 23.00	**<55**	**55 - 63**	**63 - 72**	**>72**
23.00 - 07.00	**<45**	**45 - 57**	**57 - 66**	**>66**

Table 2: Noise exposure categories as interpreted by planning

NEC	
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning application and, where appropriate, conditions imposed to ensure and adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure commensurate level of protection against noise.
D	Planning permission should normally be refused.

3.3 Ecology

This section provides an overview of the potential ecological impact of small wind turbines.

The ecological impact of a small wind turbine is generally expected to be minimal where care has been taken in siting and design. Unfortunately, ecology has been used by many campaigners to oppose large scale wind developments and this has raised concerns that are on the whole inappropriate to small scale wind turbines. However, impacts might occur as a result of poor location, design or timing of installation.

While there is some evidence of negative environmental impacts resulting for inappropriately located large-scale wind energy developments, due to the scale and the nature of small scale turbines, adverse effects on the natural assets are generally expected to be minimal.

In considering the environmental impact of a small wind system development both the installation and the operation of the system should be covered.

The installation of these systems is dependent on the system size. In the smallest, Category A, systems, the installation is similar to the fitting of a television aerial and is likely to have few potential ecological impacts. In category B there will be some excavation (typically a few square metres) for footings and a cable trench to be run and possibly construction of access tracks. Again there will probably be little disturbance to ecology if located away from vulnerable species and habitats. In the largest categories, C and D, there will be heavier equipment needed for the construction including excavation and erection and there may be some minor concerns. For example, in sensitive areas it may be appropriate to require that the installation is timed to avoid nesting periods, or disturbance of wintering birds. Appendix 4: Ecology refers to relevant checklist criteria to be followed when considering ecological issues).

The main concerns on ecological impact are in relation to the operation of the system (and potentially the construction of any associated infrastructure such as access tracks) and in particular to their impact on flying fauna – bats and birds, however, depending on the habitats present at the site and the location of the turbines other protected species may need to be considered. Provided the installation is not directly on a sensitive location it is likely there will be no or at least minimal impacts on flora or non-flying fauna. This section therefore makes recommendations on the treatment of sites near or within statutory designated areas and in particular with reference to sites where there is sensitivity relating to bat or bird populations.

Statutory Designated Areas

These protected areas vary with levels of protection and importance, therefore the potential ecological issues associated with small scale wind turbines will vary between each designation. Clearly International Statutory Sites will carry most weight followed by National Statutory Sites then Local/ Regional Designations.

It is advisable that if a turbine is proposed near to the boundary of a Statutory Designated Area then consultation should be sought to confirm that the effects of the turbine would not significantly effect site integrity and outweigh the benefits that the turbine will offer in terms of the generation of renewable energy. Refer to Checklist Criteria 1 and 2 in Appendix 4: Ecology for procedure when dealing with Statutory and Non-Statutory Designated areas.

Turbine proposals outside of these consultation zones are unlikely to require additional surveys, however, caution must be applied as there still may be protected species outside of these zones. If the proposed site is within the Consultation Zone, then details of the existing ecology should be sought from the relevant statutory body and discussions initiated in terms of scope of survey work required.

Birds & Bats

Concerns about the impact of large wind farms on bird and bat populations have led to a range of research projects both within and outside of the UK.

Although there is limited evidence of both bird and bat mortality from wind turbines, the RSPB reported in March 2009: “High collision rates are, however, unusual and a review of the available literature by Drewitt and Langston (2006) found that where collisions have been recorded, the rates per turbine are low, though variable with averages ranging from 0.01 to 23 bird collisions annually. Furthermore, typical bird collisions rates with wind turbines are much lower than those for overhead power lines.” This is in relation to a large wind farm and it is important to consider that a bird or bat approaching a turbine in a strong wind needs to take evasive action. When the turbine is 50m diameter a bird or bat must react much sooner to avoid a collision than with a turbine that is say 10m diameter.

Refer to Checklist Criteria 3 to 9 in Appendix 4: Ecology for procedure when dealing with sites with bats and birds.

Birds

Householders and installers should be aware that all bird nests are fully protected from damage, destruction or interference whilst in use of being built under The Wildlife & Countryside Act 1981 and it is not possible to move a nest or attempt to move a nesting bird to another site during the breeding season.

With respect to migration routes, the scale of these turbines means that they do not present a significant danger to migrating flocks in the smaller categories and it is not necessary to consider this for Categories A and B. For turbines mounted at heights above 15m hub height in categories C and D then details of migration routes should be sought from the relevant statutory body and discussions initiated (Council, NE / CCW / NIEA / SNH or RSPB).

On any site where there is a known nesting site for all species of bird, the installation must not be carried out during the nesting season.

Bats

All species of bats in the UK are protected by law. In order to protect Bat populations from the effects of large scale wind turbines Natural England produced a Technical Information Note TIN051 and TIN059 which relates to single turbines. It is only necessary to follow the guidelines of the TIN051 if evidence exists that Bat populations are present or if the habitat feature is likely to support the presence of Bats. The

Bat Conservation Trust has also recently produced Good Practice Guidelines.

The danger of bats being blown onto a large turbine is as for birds - the size of the blade has a large influence on the danger of collision. However for bats, there is evidence that the blades can damage the bats even if there is no direct collision as the pressure pulse caused by the passing of a large blade. In the case of the smaller systems covered by this guide however, this is not a risk.

TIN051 therefore recommends that for large turbines, to minimise risk to bat populations, a 50 m buffer is maintained around any feature (trees, hedges) into which no part of the turbine intrudes. This means the edge of the rotor-swept area would need to be at least 50 m from the nearest part of the habitat feature. Although the 50m buffer zone may not be applicable to all small systems, in terms of the precautionary principle it would be preferable to site systems out of this zone where possible.

Small systems, sited near to bat roosts and or nurseries (including those in buildings) should not be automatically viewed as exempt from the sort of care required for larger ones also near such sites.

The potential impacts of both micro-turbines and smaller turbines are not fully understood, though there is some evidence that they do present a risk to bats (BCT study 2007). It is recommended that micro-turbines are assessed on a case by case basis, even where they are permitted development in Scotland, SNH recommends a precautionary approach that roof mounted and free standing micro-turbines should not be installed on buildings known to or suspected to contain bat roosts, within 50m of a known bat roost, on buildings where bats are frequently observed, or on known bat flyways.

There has also been concern raised that very small turbines – typically less than 1m diameter – can generate a high pitched noise that confuses bats or that their echo signature may confuse the bats. Research is ongoing but it is currently recommended by the Bat Conservation Trust that micro-turbines (Category A) are not sited close to known bat populations. Where a site contains buildings that may host a bat roost and the site is close to the building, or the turbine is mounted on such a building, a bat survey should be carried out.

For larger systems – Categories B-D – there is no evidence that bats are confused by these systems and so they should not be an issue provided they are not directly in bat flight paths. TIN051 describes typical bat behaviour as follows:

Most species of bats have echolocation calls with a useful range of only a few metres and so prefer to fly close to habitat features such as hedgerows, woodlands, walls, rivers, and within and just above the tree canopy. These species are probably less likely to collide with a turbine.

Some species of bats, particularly those with strong echolocation calls, will exploit open habitats and are more likely to be at risk from collision with turbines. Severance of flight paths of such species may be caused by the erection of turbines.

There is some evidence to suggest that the further away from linear/habitat features, the greater the decline in activity, even for high flying bats like noctules that tend to fly in open areas. This means that turbines should not be

Table 3: Environmental Statutory Sites

INTERNATIONAL STATUTORY SITES	**500m Consultation Zone**
DESIGNATION	PROTECTED UNDER
Special Areas of Conservation (SACs) NATURA 2000	Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora)
Special Protection Areas (SPAs) NATURA 2000	Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds)
Ramsar	Under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)
NATIONAL STATUTORY SITES	**100m CONSULTATION ZONE**
DESIGNATION	PROTECTED UNDER
National Parks	
Sites of Special Scientific Interest (SSSIs)	Wildlife and Countryside Act 1981, Countryside & Rights of Way Act 2000
National Nature Reserves (NNRs)	Section 19 of the National Parks and Access to the Countryside Act 1949, or Sections 34 or 35 of the Wildlife and Countryside Act 1981
Areas of Special Protection (ASPs)	Wildlife and Countryside Act 1981.
Areas of Outstanding Natural Beauty (AONBs)	National Parks and Access to the Countryside Act of 1949
Environmental Stewardship Scheme	
LOCAL/ REGIONAL SITES	**50m CONSULTATION ZONE**
DESIGNATION	PROTECTED UNDER
Local Nature Reserves (LNRs)	Section 21 of the National Parks and Access to the Countryside Act
Sites of Importance for Nature Conservation	
County Wildlife Sites (not applicable in Scotland)	
Regionally Important Geological/ Geomorphological Sites	
National Trust	National Trust Act 1907-1971 as varied by a Parliamentary Scheme implemented by The Charities (National Trust) Order 2005
Area of Great Landscape Value (AGLV)	

installed along the line of an established hedgerow, or close to a tree canopy.

TIN051 states that bats become fairly well dispersed in the landscape within a few hundred metres of the roost, though this depends in part on the species and the type of roost. This means that even when there is a bat roost on the same site as a proposed turbine, provided that the turbine is a reasonable distance from the roost it should not present a problem.

3.4 Archaeology and Heritage

A small wind system may have both a physical or non-physical effect on heritage assets, but this will depend on location. However, any physical and non-physical effects are generally smaller than larger scale sites. More detail is given on the effects of small turbines on the physical and non-physical impacts of cultural heritage and archaeology resources in Appendix 8: Archaeology and Heritage.

Although these systems have small footprints and limited groundworks associated with their construction it is important to ascertain whether or not there is any archaeology present, whatever the scale of the development. Generally small wind systems are less likely to physically affect below ground archaeological remains than larger wind farm schemes. A key factor is the extent to which development design can respond to baseline constraints mapping.

Non-physical effects can comprise visual changes, noise and shadow flicker on the settings of cultural heritage resources. Visual changes can include turbines interrupting important vistas or sight lines associated with heritage assets. Due to the finite life spans of turbines the non-physical impacts on cultural heritage resources are considered temporary in nature.

In Wales, small-medium turbines may require ASIDOHL assessment and require consultation with Cadw to be assessed on a case by case basis depending on their location.

The siting of turbines on Listed Buildings (micro turbines) or within the associated curtilage of Listed Buildings would require Listed Building Consent. Siting of turbines within the general environs of a Listed Building would not require Listed Buildings Consent.

3.5 Aviation

The majority of small wind systems may not affect radar/aviation assets on account of their small scale. The potential impact on radar and radio navigation aids should be consulted on if the location and scale of the system justify this. Depending on range from the airfield, it is quite possible that the system will not present any physical obstruction to aircraft.

In order to determine if a proposed turbine is likely to have aviation impacts the developer should follow planning guidance and CAA guidelines as laid down in CAP 764[2] and contact their local planning officer (or use the on-line aviation safeguarding tool after 1 December 2011) to determine if the proposed site falls within any safeguarded areas and thus requires consultation with the potentially affected aviation stakeholder. Other tools that may assist in identifying potential aviation issues with a proposed development include the RESTATS Website,[3] NATS website,[4] the MOD pre-planning proforma[5] and aeronautical charts.[1]

Further information on the effect of small turbines on radar and radio navigation aids is given in Appendix 6 Aviation. In relation to obstacle clearance, there are some clear criteria which can be applied which would limit the geographical extent of any consultation requirements for wind turbines below specified heights. These are set out in CAP 168 – Licensing of Aerodromes - for civil aerodromes and JSP 554 - Military Aviation, Aerodrome Standards and Criteria – for military aerodromes. Both are based on international civil criteria.

2. www.caa.co.uk/docs/33/CAP764.pdf
3. https://restats.decc.gov.uk/cms/aviation-safeguarding-maps/
4. www.nats.co.uk/nats-services/issues/windfarms/self-assessment-maps/
5. www.bwea.com/docs/developers_proforma.doc
6. www.nats-uk.ead-it.com/public/index.php%3Foption=com_content&task=blogcategory&id=222&Itemid=340.html

3.6 Electronic Communications

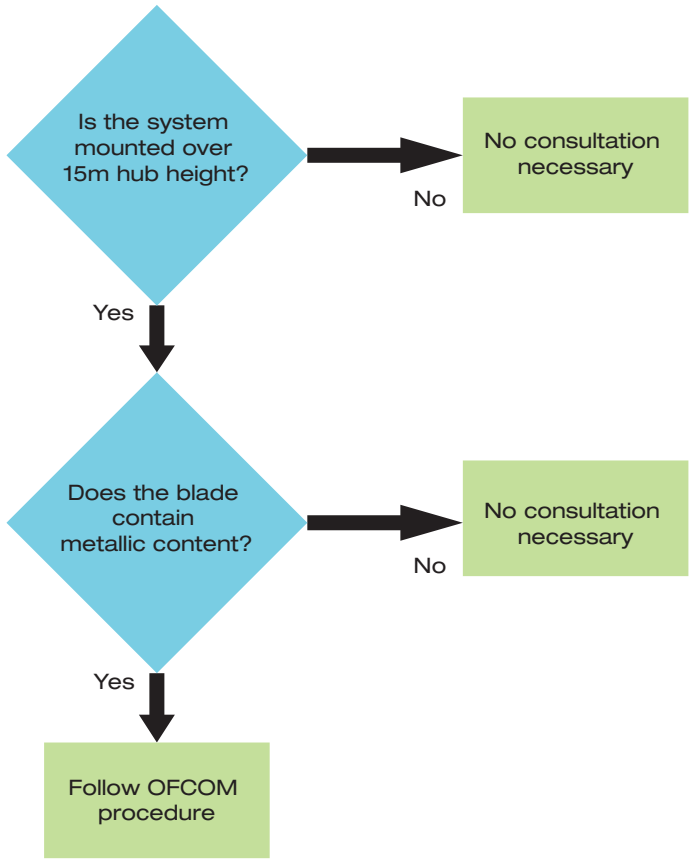
It is unlikely that small wind systems will affect electronic communications networks and services, but there is a residual risk of three potential effects.

i. Interference with Television Reception

Ofcom state that even with large wind turbines "the tower or nacelle rarely has any effect on TV reception" and that the active part of the turbine is the blade system. In the case of large turbines the blades are radio-magnetically active due to the metallic content in strengthening members, lightning conductors and counterweights. In contrast, small wind turbine blades are usually constructed from inactive materials such as glass reinforced plastics.

If the system to be installed is under 15m hub height or has non-metallic blades, no consultation should be required.
If there is metallic content to the blades and is above 15m hub height than an assessment should be made for all classes of turbine in accordance with the process defined in a document published by OFCOM dated 26 August 2009 and entitled "Tall Structures and their Impact on Broadcast and Other Wireless Services".

i. Consultation Criteria

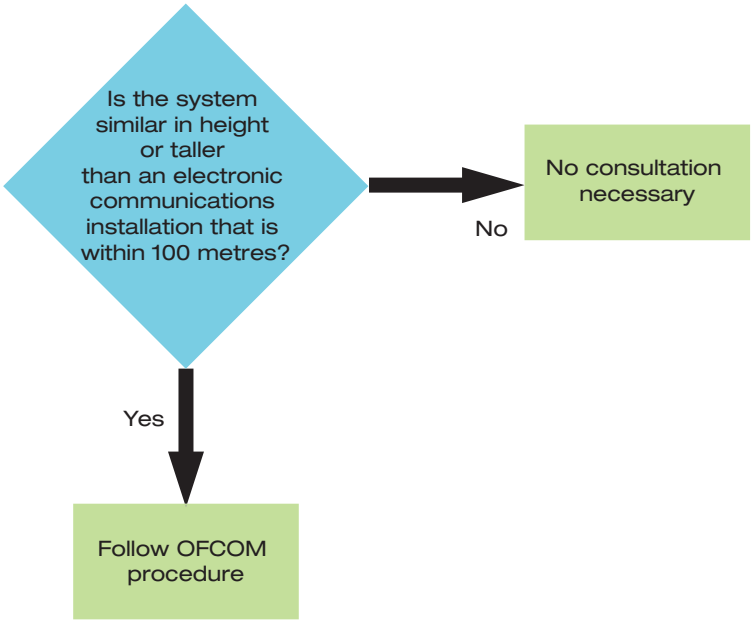


ii. Interference of electronic communications through physical blocking

The function of electronic communications installations is likely to be adversely affected by tall structures located nearby as they can physically block radio signals. So for example, panel or omni directional antennas used by a mobile operator can be affected in this way separately to any potential affect on dish links.

Siting of small wind turbines should therefore avoid locations in close proximity to electronic communications installations.

ii. Consultation Criteria

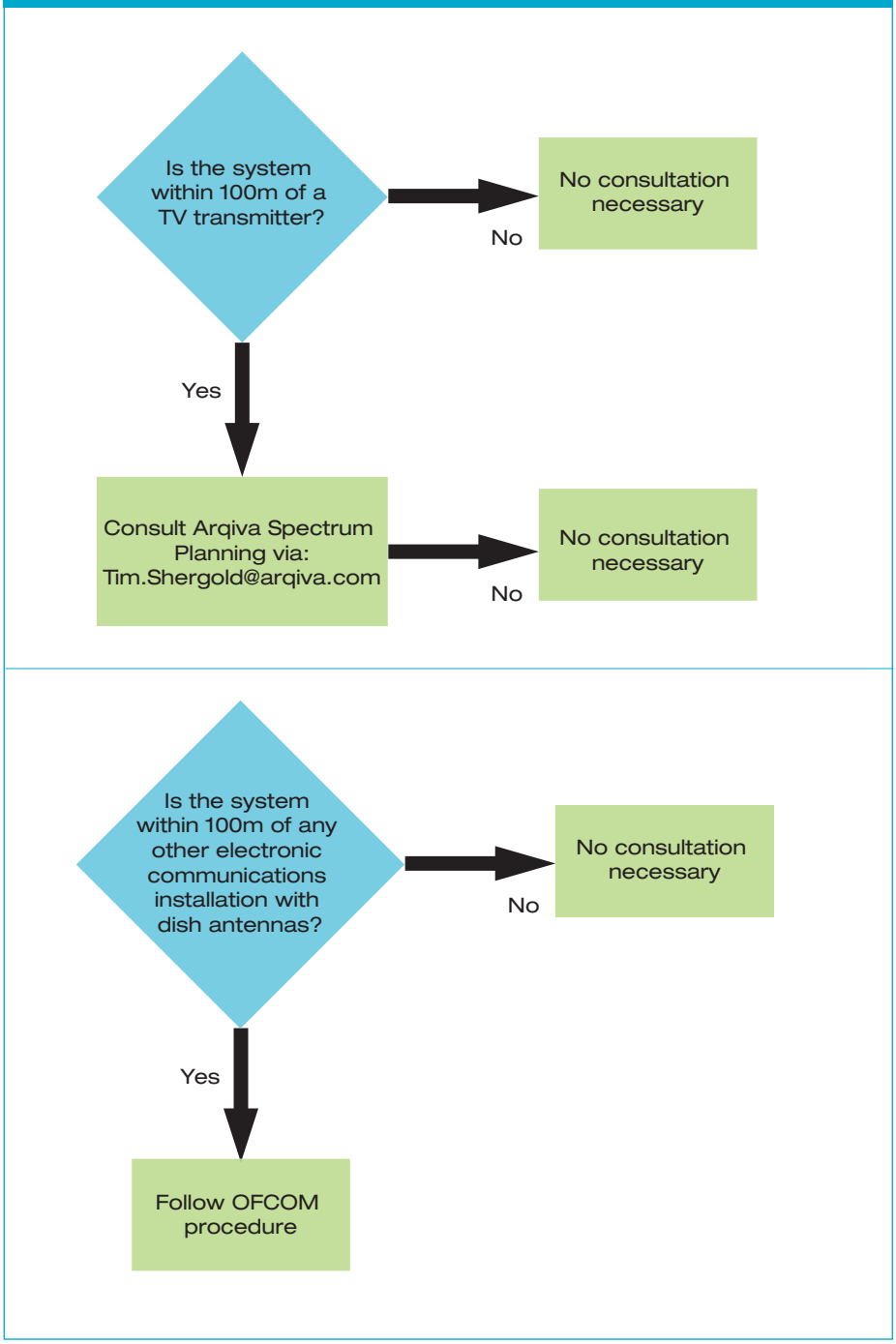


iii. Interference with fixed links

The operation of the terrestrial television network is dependent upon Rebroadcast Links, i.e. radio dish links that typically connect the main television transmitters with the outlying relay stations. If a dish link is broken by an intervening tall structure, like a wind turbine, then this could have a serious affect on the local operation of the television broadcast network. It is important to note that radio dishes are often located well below the top of a tower.

Other systems, such as the mobile networks also use fixed links to connect sites and these are licensed by OFCOM. These links may also be affected in the same way.

iii. Consultation Criteria



Further information on the effect of small turbines on telecommunications is given in Appendix 7: Electronic Communications.

4. Appendices

A full schedule of appendices as listed below has been prepared as a separate companion document and includes more detailed information on the issues outlined below.

- Appendix 1 – Issues in Determining Small Wind Planning Applications
- Appendix 2 – Landscape and Visual Issues
- Appendix 3 – Noise
- Appendix 4 – Ecology
- Appendix 5 – Shadow Flicker
- Appendix 6 – Aviation
- Appendix 7 – Electronic Communications
- Appendix 8 – Archaeology and Heritage
- Appendix 9 – Transport
- Appendix 10 – Hydrology
- Appendix 11 – Contaminated Land
- Appendix 12 – Environmental Assessment

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