Use of Wind Energy in Aberdeenshire

part two

Guidance for Assessing Wind Energy Developments

August 2005

Supplementary Planning Guidance

Aberdeenshire COUNCIL

part two

Use of wind energy in Aberdeenshire:

Guidance for assessing wind energy developments

Supplementary Planning Guidance

This guidance forms part of the RENEWABLE ENERGY STRATEGY:
A strategy to promote the generation of energy from renewable sources

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part two

Wind Energy

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1 Introduction

1.1 Aberdeenshire Council adopted the "Renewable Energy Strategy" in December 2004. This strategy aims to encourage the provision of heat and/or electricity from renewable sources and to make a net contribution to national and global energy needs through the use of renewable energy sources. The generation of renewable energy is increasingly being seen as necessary to address climate change, fuel poverty and in promoting sustainable development, and the Government has set a target to reduce carbon dioxide emissions by 60% by 2050.

1.2 The Renewable Energy Strategy recommends the preparation of Supplementary Planning Guidance (SPG) on wind energy, to assist applicants and provide consistency with interpretation of development plan policy.

1.3 This guidance complements that of "Use of Wind Energy In Aberdeenshire-Guidance for Developers" and provides guidance on how issues relating to wind energy developments will be assessed and the weight that Aberdeenshire Council will lend to each issue. Any assessment is often a matter of balancing often highly subjective criteria and a degree of judgement will always come into the process when deciding whether a particular development is appropriate or not.

1.4 The Cairngorms National Park Authority have also prepared planning guidance on renewable energy developments which developers are advised to observe if the proposed wind energy development will be sited in or adjacent to the National Park.

1.5 While Environmental Impact Assessment (EIA) will have a major role in the determination of significant wind farms this guidance is applicable to other proposals which may not meet the requirements of the relevant regulations on EIA.

1.6 Additional information in the form of a decision support tool is also available to developers to identifying areas of land with characteristics that make them suitable for wind energy developments (primarily wind farms). This tool has been prepared in association with Macaulay Enterprise Ltd, and is only available to Aberdeenshire Council planning officers. Developers are advised to contact the local planning department to discuss areas with potential for wind farms.

Who should use the guidance?

1.7 The guidance is designed for use by development control officers although it also provides a degree of transparency for developers as to how their application would be assessed. The guidance does not replace assessments undertaken by developers but provides a methodology for development control officers to come to an independent and consistent view on the significance of impacts identified.

1.8 Development control officers are encouraged to :

1. use the "Guidance for Developers" in any pre-application discussions;
2. use the Guidance for Developers" to ensure that applicants have submitted appropriate information with their application;
3. use the planning framework in this guidance to encourage and promote the siting of wind turbines in areas of least sensitivity at the pre-application stage;
4. use the planning framework to help determine whether a specific proposal for planning permission should be approved or refused.

1.9 This guidance has been drawn up using information from national government guidance, internal consultation, and advice notes from public and private agencies. They have been subjected to consultation with stakeholders, including both the industry and local action groups.

1.10 The guidance is believed to represent best practice at the point of publication but as wind farm guidance tends to evolve, consideration should be made of any new guidance or policy which is subsequently published.

Definitions used in the text

1.11 A number of definitions are used throughout this document to describe different scales of turbine in different contexts.

1.12 Wind energy development can be broken down into a number of categories depending on the size of the turbines and the number of turbines in one development:

Single (Domestic):	1 Turbine of installed capacity less than 0.25MW
Single:	1 Turbine of installed capacity between 0.25MW and less than 3MW
Cluster:	2-3 turbines or installed capacity between 3MW and less than 6MW
Small scale:	4-10 turbines or installed capacity between 6MW and less than 16MW
Medium scale:	11-20 turbines or installed capacity between 16MW and less than 31MW
Large scale:	21 or more turbines or installed capacity greater than 31MW

1.13 Given the current position of the turbine sizes available, it may be reasonable to categorise turbine sizes into small, medium and large.

1.14 In a rural environment wind turbines should be classified as follows:

Large	>50m+to hub and/or >80m to tip
Medium	30-50m to hub and/or 48-80m to tip
Small	<30m to hub and/or <48m to tip

1.15 In an urban environment, the hub height of a wind turbine will have a greater impact than in a rural environment. Turbine technology can advance rapidly and turbine heights are now much greater than they used to be, and are likely to further increase. Therefore, wind turbines should be classed as follows:

Large	>40m+to hub and/or >65m to tip
Medium	20-40m to hub and/or 32-65m to tip
Small	<20m to hub and/or <32m to tip

1.16 However, local requirements may dictate the preferred size (and number) of turbines.

Note: As a design principle, it is desirable that where a wind energy development already exists nearby (depending on topographical features) a similar scale and design of turbine is proposed.

Assessing the impact of wind energy developments - principles adopted

1.17 Planning applications should be determined in accordance with the relevant Aberdeen and Aberdeenshire Structure Plan policies and the finalised Aberdeenshire Local Plan policies.

1.18 All wind energy developments have common planning and environmental issues, but the impacts of each individual proposal will vary depending on its scale and location. Thus to ensure transparency and consistency when assessing planning applications for wind energy developments, a significance of impact matrix has been developed (see Table 1). This methodology is provided as an aid to transparent decision making and it may not be applicable in every case.

1.19 In assessing impacts the whole of the development, including ancillary developments such as roads and access tracks, power lines and control buildings is included under the generic reference to "wind turbines".

1.20 The final evaluation of a particular proposal will be an assessment of the overall significance of impact of the whole range of issues. In this way the individual assessments are a starting point for the final evaluation and are an indication of the values that Aberdeenshire Council place on the various constraints. In essence the

matrixes provide an indication of the height of the bar over which developments must pass to be deemed acceptable.

Table 1 Matrix of magnitude of effect and sensitivity used to test the significance of impact.

		Sensitivity		
		High	Medium	Low
Magnitude	High	High	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Negligible or positive
	Negligible	Low	Negligible or positive	Negligible or positive

- High represent a significant impact and proposals with one or more assessments which result in a 'high' significance, will only be granted planning permission in exceptional circumstances.
- Medium represents a potentially significant impact, and should normally be refused planning permission, unless it is at a scale that may be resolved by revising the design of the proposal, or undertaking appropriate mitigation, as identified in the Environmental Statement (if required). Any proposal that falls under this category will require careful individual assessment.
- Low, negligible or positive are not normally of concern. However, care should be taken to ensure that the siting and design of the proposal minimises any potential impacts.

Note: This methodology is provided as an aid to transparent decision making and it may not be applicable in every case.

1.21 The significance of impact is a function of sensitivity of the site and magnitude of adverse effect, which is discussed in more detail below. Any assessment is often a matter of balancing often highly subjective criteria and a degree of judgement always come into the process when deciding whether a particular development is appropriate or not.

Sensitivity

1.22 The level of sensitivity of the application site and surrounding area is broadly determined by the designation or characteristics of that site and have been categorised as High, Medium and Low.

Magnitude

1.23 Wind farms, for example, can cover large areas and will impact on different sensitivities. Defining the terms relating to the magnitude of effect is determined by the level of loss or change, and have been categorised as High, Medium, Low and Negligible.

1.24 This guidance does not presume that all impacts will be negative. Large magnitude positive impacts may be possible, particularly where the development provides improvements to the baseline position. However, in assessing impacts Aberdeenshire Council consider that positive impacts are equivalent to negligible negative impact.

2. Ecological and Hydrological Impacts

2.1 Aberdeenshire is very rich in natural heritage. Several areas of Aberdeenshire have been designated to reflect their international, national or local importance for the protection of species, habitats, geology, landforms, or a combination of these. The majority of the nationally and internationally designated sites are located along the coast and the south-west corner of Aberdeenshire. However, there are many other habitats and species of importance found outwith designated sites. Information on each of the designations is given in greater detail in NPPG 14: Natural Heritage.

2.2 Wind farm developments outwith a designated site, can still affect areas of natural heritage protected under national or international designations. Conversely, wind turbines developments within a designated site may be appropriate in some cases if the magnitude of effect on the purpose/attribute for which the site is designated is negligible. Therefore, when determining the magnitude of ecological effects, such as bird displacement, bird flight lines/paths, habitat loss or hydrological impacts, applicants should discuss with Scottish Natural Heritage (SNH), Cairngorms National Park Authority (where the development is on or adjacent to the boundary or visible from the National Park), RSPB and with the Councils Environment Team, the total area that could affected.

2.3 Wind energy developments of any particular scale can provide an opportunity for farm diversification, and due to their small land take, most agricultural activities can still continue, once the turbine(s) are erected.

2.4 Large developments often have impacts well outwith their site boundaries and in any assessment of impact consideration should also be given to these.

2.5 Where there is a potential for impact applicants should provide a robust analysis, undertaken by a competent professional and based on an adequate survey which is complete, appropriate and up to date. Reference should be made to the North East Scotland Biological Records Centre (NESBReC) as a source of information on natural heritage issues. Where an Environmental Impact Assessment is required impacts on ecology and hydrology will be a key part of the assessment.

2.6 Advice should be sought from SNH if a proposed development will affect a site or species of international importance, a Site of Special Scientific Interest and other protected species, such as badgers and bats. The siting of a wind energy development on or adjacent to a site of international importance will have to be assessed in accordance with the Habitats and Species and Wild Birds Directives, and the British Trust for Ornithology should also be consulted on this matter.

2.7 Hydrology and the potential effects of drainage from turbine, access tracks and other ancillary development should be considered, as there could be significant effects on or adjacent to the application site. Watercourses, underground streams and private springs should be avoided, and private water supplies should not be adversely affected.

2.8 Consideration should also be given to the potential release of carbon dioxide during the construction period of a wind farm as a result of the proposed development disturbing peat and/or bogland areas (SCENES, 2004). Some commentators believe that it may take many years before any wind energy development reduces carbon emissions resulting from peat disturbance, and the consequent carbon dioxide release that would occur during construction.

2.9 Where requested, calculations of potential carbon emissions from any peat or bogland areas during the construction period and operation lifetime of the turbines should be assessed against the wind farms provable net carbon savings. This should include the length of time (number of years) it will take the wind farm to make any reduction in carbon emissions (e.g. carbon dioxide released from peat against the annual carbon savings proposed by the wind farm).

2.10 Details should be provided of prime agricultural land and other information relating to soil quality. This information can be obtained from the Macaulay Institute.

Planning considerations

2.11 Wind turbines should not be sited on any internationally or nationally important ecological sites, unless there are no alternative sites available, the underlying aims and objectives of the site remain largely intact, and those qualities for which the site has been designated are outweighed by the national benefits accruing from the proposed development (see Structure Plan Policies 19 and 26 for more details). In addition developments that may adversely impact on nearby internationally important sites require to be given very careful consideration.

2.12 Adverse impacts on areas that are safeguarded by regional or local designations, including prime agricultural land (classes 1, 2 and 3.1), should be avoided. Where harmful effects are likely it should be demonstrated that no suitable alternatives exist in an undesignated site.

2.13 The sensitivity of each natural habitat will vary, and the magnitude of impact will depend on size and number of wind turbines, the siting of underground cables, drainage channels and track roads, and the scale and location of the development proposed. Even temporary crane platforms, which are used during the construction of each wind turbine, can affect sensitive sites such as peatlands. Developments should avoid areas of high natural heritage sensitivity, such as Special Areas of Conservation, candidate Special Areas of Conservation, Special Protection Areas (or potential areas), Ramsar sites, and in areas where there has been little human intervention. In other less sensitive areas mitigation measures may avoid any significant impact on such sites through detailed siting and design.

2.14 Several species are more sensitive to wind energy developments than others, and birds can be affected, either through displacement or through the possibility of collision with turbines if turbines are situated on migratory routes, or within roosting and/or feeding grounds (such as raptor hunting grounds). It is important that the flight paths of birds remain uninterrupted, especially internationally or nationally protected species, and consideration must be given to SNH guidance on the cumulative effect of wind farms, the Conservation (Natural Habitats &c.) Regulations 1994, Circular 6/1995 (as updated in 2000), Birds of Conservation Concern 2002-2007, Article 6 of the Habitats Directive 92/43/ECC, and the 1979 'Birds' Directive. The development of a wind farm or single turbine along regular flight lines, such as between roosting and feeding grounds can increase the risk of bird strikes.

2.15 SNH have developed good practice for addressing bird impacts (see chapter 19 for further information). This sets out the recommended survey methodologies for developers to gather information about bird use of their site, the results of which (such as flight-line data or collision risk assessment) can be used to assess the likely impacts of a proposed development on bird interests.

2.16 Any potential impact that results in bird displacement should be kept to a minimum, and new habitats should be created for those birds displaced.

2.17 It has also been shown that the development of a wind energy development can affect bird species who may be more sensitive during their breeding season at differing distances from the development. Therefore, the construction of turbines, tracks and ancillary development in these areas should occur outwith the nesting season. The risk of disturbance to bird species during operation should also be seriously considered (PAN 45, 2002).

2.18 The cumulative impact on critical populations of plants or animals should also be considered as the impact of several wind farms may add up to a level which cannot be sustained in one area. Further information is available in Chapter 12.

2.19 The criteria used for the determination of significance of effects are summarised in Tables 2 below and 3 (on following page).

Table 2 Sensitivity: ecological components

Sensitivity	Definition
High	The application site contains a habitat or species cited in the designation of Special Areas of Conservation (SACs), including candidate SACs, and Special Protection Areas (SPAs).
	The application site contains species listed on EU Birds Directive Annex 1, EU Habitats Directive priority habitat/species and/or Wildlife and Countryside Act Schedule 1 species.
	Ramsar sites.
	The application site contains other species that contribute to the integrity of a SAC, SPA or Site of Special Scientific Interest (SSSI).
	The application site contains a local population of more than 1% of the national population of a species.
	The application site contains UK Biodiversity Action Plan (BAP) priority species/habitats (if not covered above).
	The application site contains species present in regionally important numbers (>1% regional population).
	European Protected Species.
	National Parks.
	National Nature Reserves.
	National Scenic Areas.
	River and stream beds.
	Coastal sand and dune systems.
	SSSI.
Medium	The application site of Interests to Natural Sciences.
	The application site contains other species/habitat of conservation interest e.g. species listed on the Birds of Conservation Concern not covered above.
	Local or non-statutory Nature Reserves.
	District Wildlife Sites and Wildlife corridors.
	Ancient and semi-ancient woodlands.
	Wildlife sites.
	Royal Society for the Protection of Bird Reserves.
	Scottish Wildlife Trust Reserves.
Low	The application site contains species and/or habitats not covered by the above designations.

Table 3 Magnitude of ecological effects

Magnitude	Definition
High	Any number of wind turbines that may result in a total loss or complete alteration, to one or more ecological interests in the area. After development, the attributes of these ecological interests would be fundamentally altered or the interest would be lost from the site altogether, such as: ■ a significant effect on bird flight lines of migratory birds and feeding (flight) routes or ■ adverse hydrological impact(s).
	Therefore, adversely affecting the environmental quality, ecological status and viability of the area.
Medium	Any number of wind turbines that may result in a loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes will be partially changed. Any number of wind turbines that may result in a minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns. Any number of wind turbines that may result in a very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation.
Low	
Negligible	

2.20 Details of the applicant's method statement could be highlighted in planning agreements and/or planning conditions.

3. Landscape Impacts

3.1 Landscape impacts are different from visual impacts. Visual impacts relate to changes in views, while landscape impacts are usually considered in terms of the disturbance, damage or loss of individual features of landscape character, such as streams, woodlands and stone walls. Landscape impacts are those which alter the character of the landscape such as streams, woodlands, stone walls, or built or cultural heritage sites. Landscape character is a reasonable starting point for assessing whether a landscape is suitable for wind energy development. The following should be considered:

- the aims and objectives of the designated area, and development plan policies, including Structure Plan Policy 19 (Wildlife, Landscape and Land Resources), and finalised Aberdeenshire Local Plan Policies Env\5 (National Scenic Areas and Areas of Landscape Significance), 7 (Protected and Other Open Areas in Settlements), 8 (Trees and Woodlands), 18 (Listed Buildings) 19 (Archaeological sites and Ancient Monuments), 20 (Historic Gardens and Designed Landscapes) and 23 (Vehicle Hill Tracks); and
- whether the site is designated for its landscape value; and
- Supplementary Planning Guidance on locally valued landscapes once completed in 2006.

3.2 In some cases a wind farm may appear less significant in a 'busy' view with diverse features or where there are already existing man-made features (for example, grain silos, shelter belts, or commercial forest plantations). Alternatively some developments may be more suited to remote locations with a less 'cluttered' appearance in the landscape. The landscape impact of wind turbines can be influenced by:

- land form and landscape characteristics (e.g. rounded hills or prominent ridgelines)
- number, size, colour, and layout of turbines;
- how turbines relate to the skyline;
- access tracks; and/or
- ancillary components, such as power lines.

3.3 Landscape impact assessment is a well respected tool for assessing potential impacts on landscape character. Such assessments (if required) should be undertaken by a reputable professional Landscape Architect. Where an Environmental Impact Assessment (EIA) is required, the landscape impact assessment should be incorporated into this document. Appraisal of visual impacts usually relates to multiple viewpoints. The decision as to whether a development is acceptable in landscape terms may depend on the composite evaluation of a range of sensitivities and magnitudes.

Planning considerations

3.4 Development Plan policy and national guidance makes it clear that a designated site of importance should not be developed unless there are no other alternatives; that any development would only be permitted if it can be demonstrated that the underlying objectives of the site remain largely unaffected; and that these 'qualities' for which the site has been designated are outweighed by the national benefits which might accrue from the development. This is given in expression in the Aberdeen and Aberdeenshire Structure Plan Policies 19 and 26, and finalised Aberdeenshire Local Plan Policy Env\5.

3.5 Proposals for a wind energy development should avoid being sited on prominent ridgelines, hills or sensitive skylines.

3.6 Designated sites can be affected by development some distance away. There is therefore, a need to assess the potential impact of any proposed development against the aims and objectives of the National Park and/or National Scenic Areas (NSA) where a development is proposed in proximity to either of these designated sites. SNH advise that within an area up to 10km from a NSA careful assessment of any effect on the NSA is required, although it should be noted that this guidance is not implying that a buffer zone policy should be applied. The same principle will apply to the Cairngorms National Park until further guidance is received, but in the meantime, applicants should consider the potential impact of their proposed development against landscape setting of the Cairngorms National Park.

3.7 The quality or value of a landscape is based on judgement, and the 'sensitivity' of the landscape is an indication of its capacity to absorb change (see Table 4 below).

Table 4 Sensitivity: landscape components

Sensitivity	Definition
High	Enclosed or small scale diverse landscapes (e.g. rugged peninsula of mountain moorland and farmland complex; lowland coastal strip, rolling and undulating farmland,
	Landscape of very high quality (e.g. largely intact, coherent and balanced).
	Valued landscape character with important components of a particular character that are susceptible to small changes (e.g. small exceptional landscapes and/or of high landscape quality/value; flat or rolling, smooth or sweeping, high moorlands; remoteness; is in excellent or good condition with valued and/or distinguished features; and/or considered attractive and valued nationally and/or locally (e.g. National Park, National Scenic Areas, National Trust property, Green Belt, public open space within settlements).
	Landscape contains category A and B listed building(s), Scheduled Ancient Monument(s), Non-statutory List of sites likely to be of national importance, and/or Designated Gardens and Landscapes.
	Landscape contains no or very few intrusive or discordant features.
Medium	Medium scale landscape (e.g. valleys - rugged and semi enclosed mountain moorland (including local areas of rough upland less than 300m above sea level) and farmland complex.
	The landscape of moderate quality (e.g. it is no longer intact and coherent and/or may have evidence of alteration, degradation, or erosion).
	Landscape of moderately valued characteristics, reasonably tolerant of change (e.g. Straths (river systems), moorland transitional landscapes; agricultural lowlands; areas in good condition with some distinguished or valued features; and/or of value locally (e.g. Areas of Landscape Significance).
	Landscape contains category C(S) listed building(s) and/or archaeological sites on the Sites and Monuments Record (of regional and local importance).
	Landscape contains a number of confusing, discordant or intrusive features.
	Landscapes which, in a local context, are unique or rare.
Low	Large scale landscape (e.g. Smooth rolling mountain moorland/ upland plateau or farmland complex).
	Landscape of low quality (e.g. despoiled or degraded).
	Relatively unimportant landscape , not valued locally, the nature of which is potentially tolerant to substantial change (e.g. in poor condition, with weak landscape structure and few valued or distinguished features; agricultural lowlands; or large scale human intervention i.e. tree felling or mineral extraction)
	Landscape contains archaeological sites of lesser importance and/or non-inventory gardens and designed landscapes.
	The landscape contains many confusing, discordant or intrusive elements.

3.8 The magnitude of change reflects the degree of change a development will have on an existing environmental/landscape characteristic. The magnitude of change does not equate to significance of impact, as the effect of a new structure within the landscape is a subjective one. Wind turbines are by their nature visible structures that create a magnitude of change in the landscape, whether or not this change is adverse is a different judgement. Magnitude of impact on landscape character is not solely a function of change in the landscape but change to its very nature.

Table 5 Magnitude of impact on landscape.

Magnitude	Definition
High	Any number of wind turbines that may result in a major change, which is easily discernible to key features/elements of the baseline conditions such that a noticeable change to the landscape character, composition and quality results.
Medium	Any number of wind turbines that may result in a moderate, but still discernible change (loss or alteration) to one or more key features/elements of the baseline conditions, such that the underlying landscape character, composition and quality will be partially changed.
Low	Any number of wind turbines that may result in a minor loss/alteration to some of the elements/features of the baseline conditions. This change would be distinguishable from the surroundings, but the landscape character, composition and quality would be largely intact, and similar to the pre-development circumstances/patterns.
Negligible	Any number of wind turbines that may result in a very slight loss/alteration to the baseline conditions, such that change is barely distinguishable.

4. Visual Impact

4.1 Visual impacts relate to a wind farm's visibility and its impacts on views, as experiences by people. In determining a wind energy development's visual impacts, the layout of the wind farm should be assessed from key viewpoints. Good design is essential for wind energy developments to ensure that its visual impacts are minimised and that sensitive viewpoints are not adversely affected. Visually sensitive viewpoints include those where there may be views to, or from, designated landscapes (e.g. Cairngorms National Park); however, sensitivity is not confined to designated interests. Visually sensitive viewpoints can include those which are frequently visited by people (such as well-used transport corridors, tourist roads or picnic spots), settlements where people live, other inhabited buildings or viewpoints which have a landscape value that people appreciate (and which they might visit for recreational pursuits such as the National Park or areas for hill walking, cycling or education).

4.2 The Cairngorms National Park Authority may call in planning applications that affect the National Park and are Section 36 planning applications (wind energy developments with a generating capacity of more than 50MW).

4.3 All applications require a visual impact assessment but the rigour of this assessment will vary with the magnitude of the development and the sensitivity of the site. Where a rigorous assessment is required, this should be undertaken by a reputable Landscape Architect and the guidelines on visual assessment published by SNH or other best practice supported by that body should be adhered to. Visual Impact assessment can be incorporated into landscape or townscape assessments.

4.4 If the development includes a local or onsite borrow pit for supplying construction base material, the applicant should supply the planning authority with full details. Information should also be included as part of the application as to how the visual impact of the borrow pit will be minimised and the borrow pit will be made good/reinstated after use. Borrow pit, ancillary equipment and access tracks will be minimised.

Planning considerations

4.5 The applicant should provide evidence that their proposal will have no unacceptable adverse impact on the elements for which the area has been designated. Unsatisfactory visual impacts such as clutter and turbines being lined up behind one another (e.g. only one tower visible, with multiple rotor blades behind it) or blades cutting the horizon should be avoided when viewed from sensitive viewpoints. Furthermore, any proposed development should avoid 'dwarfing' a historic building or landmark, or to make 'out of scale' a local hill or range of hills.

4.6 The 'sensitivity' of each view or visual receptor (viewer) is an indication of its capacity to absorb change, and several factors can be used to assess this sensitivity:

- The occupation or activity of the receptor.
- The location and quality of the viewpoint (e.g. how coherent and attractive the view is in a landscape or townscape setting).
- The value of the landscape or townscape (e.g. the importance of the landscape or townscape through designations or because of local popularity, due to usage; as scenic quality, perceptions of tranquillity or wildness, or special cultural associations.

4.7 The overall sensitivity and magnitude of impacts will be a composite of the impacts on a range of receptors. The sensitivity of different types and numbers of receptors is likely to vary, but may include:

a) communities and occupiers of residential properties living within view of the wind energy development. (Generally it will be rare for the impact on a single dwelling to be categorised as of high significance. However, it may be combined with similar impacts on other properties to give rise to a more general impact of high significance).

b) Whether the wind energy development is visible from key public viewpoints e.g. from a designated built, cultural or natural heritage site.

c) Users engaged in outdoor recreation activities including footpaths, whose attention or interest may be focused on the landscape/townscape, such as hill walking, mountain biking, Nordic skiing, horse riding, sailing, fishing, or visiting attractions, such as parks, listed buildings, or archaeological sites.

d) People travelling through or past the landscape/townscape in cars, trains or other transport routes.

e) People at their place of work.

Table 6 Sensitivity: visual quality.

Sensitivity	Definition
High	The view is of good quality and is well valued.
	The view is valued for its distinctiveness and is valued nationally.
	The view contains no or very few intrusive features.
	The view is visible by sensitive visual receptors (e.g. strategic or significant recreational footpaths, community path networks, and views from important landscape features, beauty spots, picnic areas, built and cultural heritage building(s) or structure(s); valued views enjoyed by the community; and residential properties).
Medium	The view is attractive.
	The view is valued locally.
	The view is visible by less sensitive visual receptors (e.g. recreational users on land where the landscape adds to their enjoyment, such as those visiting a castle; secondary footpaths; road users; or travellers on trains and other transport routes)
Low	The view is unattractive.
	The view is not valued locally or will not affect the setting of built and cultural heritage building(s) or structure(s).
	The view contains a number of discordant or intrusive elements.
	The view is visible by visual receptors of low sensitivity (e.g. recreational users on land or water that do not rely on the appreciation of the landscape; views from peoples place of work)

4.8 Determination of both magnitude and sensitivity of something as complex as impacts on visual quality require judgement to be made on a variety of 'views' of a proposal and an overall conclusion on its sensitivity and magnitude reached.

4.9 The magnitude of change to the visual resource can be assessed using the following factors:

- distance of the viewpoint from the wind energy development (see Table 7 below) and whether the viewpoint would focus on the development due to proximity or the development would form one element in a panoramic view;
- the extent of the view that would be occupied by the wind energy development (degree of visual intrusion): full, partial, glimpse, etc;
- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape and townscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture;
- extent of other built development visible (e.g. any distracting features in the landscape or townscape, particularly in the foreground, which attract the attention of the visual receptor, such as other vertical structures);
- angle/elevation of view in relation to the main activity of the receptor (e.g. when a viewpoint is lower than the site feature, it is more likely to be viewed against the sky, increasing its impact. However, when the viewpoint is higher than the site, it is

viewed against a backdrop, diminishing the impact). Likewise whether the view is direct or oblique will have an impact;

- scale of change in the view with respect to loss or addition of features;
- whether the view is transient or one of a sequence of views, as from a moving vehicle or footpath;
- background of the development (hills, buildings, structures, etc);
- cumulative impact of the wind energy development together with other existing or approved developments in the area, and those subject to a scoping opinion (if information about the development is available);
- the context of the view, how the development would relate to the surrounding landscape; and/or
- Successive visibility (panoramic view) of a wind farm e.g. the development encircles the viewer.

4.10 Applicants should discuss possible cumulative effect with the local planning authority and SNH.

4.11 PAN 45 sets out a general guide to the effect which distance has on the perception of wind farm developments in an Open Landscape (paragraph 78). Table 7 forms a basis for assessing the level of sensitivity of visual receptors, and should be used when assessing the significance of visual impact, e.g. zone of theoretical visibility.

Note: When assessing the significance of visual impact, the proposal should assess Table 6 with Tables 7 and 8 (magnitude of effect).

Note: Magnitude of impact does not necessarily equate to visual harm.

Table 7 Magnitude of effect to visual receptors either indoors or outdoors

Magnitude	Definition
High	Receptor(s) are within 500m of the development.
Medium	Receptor(s) are between 500m-2km from the development.
Low	Receptor(s) are between 2-5km from the development.
Negligible	Receptor(s) are more than 5km from the development.

Table 8 Magnitude of visual impact

Magnitude	Definition
High	A major or easily discernible change to key elements/features of the baseline conditions with the introduction of elements that are uncharacteristic with the attributes of the landscape/townscape to be developed on, resulting in a noticeable change to the visual character, composition and quality.
	This change in view is very prominent involving substantial obstruction of existing view. The development would be conspicuous and distinct, and would dominate or control the view.
Medium	A moderate (partial loss/alteration), but still discernible change to one or more key elements/features of the baseline conditions with the introduction of elements that may be prominent but are not uncharacteristic with the attributes of the landscape/townscape to be developed on. Thus, the visual character, composition and quality will be partially changed - change may be prominent but not substantially different in scale and character from the surroundings and the wider setting.
	The change in view may involve partial obstruction of the existing view, as the development may be an obvious feature in the landscape/townscape.
Low	A minor, but still discernible change to some elements/features of the baseline with the introduction of elements that may not be uncharacteristic with the surrounding landscape/townscape, but that the visual character, composition and quality would be largely intact.
	The change in view would be slightly distinguishable, but the development would be less apparent.
Negligible	A change of indiscernible nature such that the baseline conditions remain almost or completely unchanged.
	This change in view would be barely distinguishable from its surroundings. The development would be inconspicuous and not obvious.

Note: Consideration should be given to the cumulative effect a wind turbine or wind farm may have if a wind turbine or wind farm already exists within in view of a designated landscape, settlement or dwelling houses outwith the settlement boundary.

5. People and Settlements

5.1 When siting renewable energy developments, consideration must be given to minimising adverse impacts on residential and local amenity, and any adverse effects should be capable of satisfactory mitigation (NPPG 6). The visual impact of wind turbines is discussed under chapter 4 and the safety issues under chapter 10. Amenity impacts on recreation users are discussed in chapter 9. This section will look at other potential issues associated with wind energy developments, including:

- Shadow flicker and shadow throw
- Noise
- Amenity impacts
- Site construction

5.2 The applicant should consider the potential impact of a wind energy development (including ancillary development) on or adjacent to an ornamental landscape, such as a private garden, public park, cemetery, botanical garden, or plant collection. Any assessment of the impact on garden or other grounds should be considered as an impact on the amenity of the dwelling or other regularly occupied building itself.

5.3 A number of detailed considerations of potential impacts on people and settlements can be identified and, if the magnitude of the proposal and the sensitivity of the site warrant it, are best assessed by professional studies commissioned by the applicant. A key impact on people and settlements can be the construction of the development itself and a method statement may be required detailing elements of this process which may have an impact on residents or visitors in the area (such as principal construction traffic routes, timing of lorry movements, blasting operations etc).

Planning considerations

5.4 Clearly there may be instances of buildings sited in large surrounding grounds that are not intensively used but, in such cases, a value judgement would be required in terms of impact on safety and amenity.

5.5 Within urban areas, hub or tower-free wind turbines that only require to be attached to a building, or are integrated into its design, rather than being free standing, will be acceptable, providing that the planning authority is satisfied that the impacts on the surrounding residents will be acceptable.

5.6 Proposed developments should be sited with appropriate access to the site, and access route(s) to and from a wind farm during the construction or decommissioning period should avoid roads that pass schools or other community facilities, or be scheduled for times when such facilities are unused.

5.7 Table 9 below reflects those areas or properties that may be sensitive to noise, safety, shadow flicker and/or access as a result of a wind energy development. While it is acknowledged that private garden space may be a 'sensitive receptor' under the terms of finalised Aberdeenshire Local Plan Policy Inf\7 ((Renewable Energy Facilities - Wind energy) criterion g), it should be considered to be a lower sensitivity than the dwelling house itself and more akin to a recreational area.

Table 9 Sensitivity: Land use (residential and employment land) in or adjacent to the site.

Sensitivity	Definition
High	Residential uses (including nursing houses, accommodation blocks)
Medium	Non-residential uses and brownfield land within settlements
Low	Non-residential uses and brownfield land outwith settlements

5.8 Table 10 sets out in order of magnitude, those factors considered likely to impact on the amenity of a site or neighbouring properties, including any mitigation measures proposed in the Environmental Statement. The day- and night-time noise levels used in the table are derived from the council's Environmental Health (EH) teams figures rather than from Future Energy Solutions (formerly known as ETSU) noise assessment report from 1996, as the EH team has taken into consideration the World Health Organisations guidelines on noise levels, which suggests levels which are lower than in Future Energy Solutions guidelines for night-time noise. Where mitigation measures are proposed, these will be assessed by the planning authority's consultees for their effectiveness.

5.9 Where a single wind turbine is proposed in a planning application, any detrimental effect on amenity should only be considered in relation to neighbouring residents, and not the owner of the land on which the proposed turbine stands. This requirement does not apply in the case of a wind turbine proposed on a built or cultural heritage site/area/feature e.g. a residential listed building owned by the applicant/beneficiary of the wind turbine.

5.10 A financial interest in the site is defined as either owning the land on which the turbines are to be sited, leasing the land on a long (greater than 20 year) lease, or being a shareholder or owner of the development company. Where property is owned by someone with a financial interest in the development, but is leased to a third party on a lease longer than 1 year, the occupiers of the property do not have any legal interest in the site and may be protected against amenity intrusions.

Table 10 Magnitude of amenity effects.

Magnitude	Definition
High	Any number of turbines (including those already built or with planning permission) which generate a noise level greater than 38dB(A) $L_{A90,\ 10min}$ at night-time or 35 dB(A) $L_{A90,\ 10min}$ day-time at any noise sensitive receptor and measured externally, (see Table 9); OR any number of wind turbines which generate noise 5dB(A) above background noise levels for either day- or night-time, measured over the same period. Background noise should be measured using the $L_{A90,\ 10min}$ descriptor for both day- and night-time (NB the background level for each period may be different).
	Mechanical noise intrusion from any number of wind turbines which is likely to detract from site amenity and/or that of an area adjacent to a wind energy development.
	The safety measures proposed are deemed inadequate.
	The effect of shadow flicker/throw from any number of wind turbines will occur a significant number of time in the year.
	Wind energy development would result in major alterations or impacts to roads within a settlement or to minor roads outwith the settlement boundary and/or would have a significant impact on sensitive road users, e.g. school children.
	Where the wind turbine(s) proposed are for the applicants own use or there is a financial interest in the development, the day and night-time noise levels at the affected property(s) exceeds 40dB(A) $L_{A90,10min.}$
Medium	The effect of shadow flicker/throw from any number of wind turbines may partially affect neighbouring properties during part of the year, i.e. between October and April.
	Wind energy development would result in partial alteration(s) or impacts to roads within a settlement or to minor roads outwith the settlement boundary and/or would have a moderate impact on sensitive roads users, e.g. school children.
Low	The effect of shadow flicker/throw from any number of wind turbines is unlikely to cause any impact on neighbouring properties during all or part of the year.
	Wind energy development would result in minor alteration(s) or impacts to roads within a settlement or to minor roads outwith the settlement boundary; and/or would have a minimal affect on sensitive roads users, e.g. school children.
Negligible	The wind turbine(s) proposed are for the applicants' own use or there is a financial interest in the development, the day- and night-time noise levels at the affected property(s) do not exceed 40dB(A)$L_{A90,10min}$ AND it does not affect any of the above.
	Any number of wind turbines which generate less than 5dB(A) above background noise levels for either day and night-time (background noise, measured using the $L_{A90,10min}$ descriptor).
	Shadow flicker/throw from any number of wind turbines would not impact on neighbouring properties during any part of the year.
	Wind energy development would result in very slight or no alteration(s) or impacts to roads within a settlement or to minor roads outwith the settlement boundary; and/or would have little or no affect on sensitive roads users, e.g. school children.

6. Built and Cultural Heritage

6.1 The built and cultural heritage of Aberdeenshire contributes towards the identity of the area, and features such as castles and pre-historic sites help give the North East a distinctive character. Advice should be sought from Historic Scotland, the council's Archaeological Service and Built and Cultural Heritage Team on all potential impacts on the site or setting of scheduled monuments, listed buildings and historic designed landscapes identified in the Inventory or its Supplementary volume (see also Appendix 1).

6.2 Applicants should also consider Structure Plan Policies 20 (Built Heritage and Archaeology) and 26 (Four Tier Policy Areas for ... Wind Farm Proposals), and finalised Aberdeenshire Local Plan Policies Env\18 (Listed Buildings), 19 (Archaeological Sites and Ancient Monuments), and 20 (Historic Gardens and Design Landscapes).

6.3 Operations that directly impact on any listed building or scheduled monument will also have to apply for further statutory consent.

6.4 Impacts on the setting of listed buildings, archaeological sites, historic land uses, and designed gardens and landscapes may be assessed as part of a landscape and/or visual assessment.

Planning considerations

6.5 Wind farms will not be permitted within any scheduled ancient monument(s), historic gardens and designed landscapes, or listed buildings, unless it has been demonstrated that:

- that the underlying objectives and overall integrity of the site remain largely intact or;
- that the qualities for which the site has been designated are outweighed by the national benefits that could accrue from the proposed wind energy development.
- In addition it should be demonstrated that no suitable alternative sites exists in lower tier areas by means of a sequential approach.

6.6 Adverse impacts on other archaeological sites and setting appearing on the Sites and Monuments Record should be avoided. Where harmful effects are likely it should be demonstrated that no suitable alternatives exist in an undesignated site.

6.7 Wind energy developments in a conservation area are unlikely to be acceptable due to the sensitive nature of these townscapes, unless they are sensitively incorporated into the fabric of the building.

6.8 The criteria used for the determination of significance of impact are summarised in Tables 11 and 12.

Table 11 Sensitivity: Built and cultural heritage on the site.

Sensitivity	Definition
High	Category A and B listed building
	Scheduled Ancient Monument
	Non-statutory List of sites likely to be of national importance
	Designed Gardens and Landscapes
Medium	Category C(S) listed building
	Archaeological sites on the Sites and Monuments record (of regional and local importance)
	Conservation Areas
Low	Archaeological sites of lesser importance
	Non-Inventory Gardens and Designed Landscapes

6.9 Table 12 below shows what is considered as causing considerable harm to the setting of listed buildings, archaeological sites, historic gardens or designed landscapes. Wind turbines should not appear to 'dwarf' a listed building or archaeological site. Where the tranquillity of a built or cultural heritage site or area is important to the amenity of the site, such as an archaeological site or designed garden or landscape, consideration should be given to the potential mechanical or 'aerodynamic' noise impacts a wind energy development may have.

Table 12 Magnitude of built and cultural heritage effects.

Magnitude	Definition
High	Any number of wind turbines and/or ancillary development that would result in: ■ the removal or partial removal of key features, areas or evidence important to the historic character and integrity of the site, which could result in the substantial loss of physical integrity; and/or ■ a substantial obstruction of existing view by the addition of uncharacteristic elements dominating the view, significantly altering the quality of the setting or the visual amenity of the site both to and from.
	Where the mechanical or aerodynamic noise from any number of wind turbines (or from other neighbouring wind energy developments) that are likely to detract from site amenity of a popular built or cultural heritage site managed as a visitor attraction adjacent to a wind energy development.

Medium	Any number of wind turbines and/or ancillary development that would result in: ■ the removal of one or more key features, parts of the designated site, or evidence at the secondary or peripheral level, but are not features fundamental to its historic character and integrity; and/or ■ a partial obstruction of existing view by the addition of uncharacteristic elements which, although not affecting the key visual and physical relationships, could be an important feature in the views, and significantly alter the quality of the setting or visual amenity of the site both to and from.
	Where the noise intrusion (mechanical or aerodynamic) from any number of wind turbines (or from other neighbouring wind energy developments) may detract from the amenity of a built or cultural heritage site adjacent to a wind energy development.
Low	Any number of wind turbines or ancillary developments that may result in: ■ a partial removal/minor loss, and/or alteration to one or more peripheral and/or secondary elements/features, but not significantly affecting the historic integrity of the site or affect the key features of the site; and/or ■ an introduction of elements that could be intrusive in views, and could alter to a small degree the quality of the setting or visual amenity of the site both to and from.
	Where the noise intrusion (mechanical or aerodynamic) from any number of wind turbines (or from other neighbouring wind energy developments) is unlikely to detract from the amenity of a built or cultural heritage site adjacent to a wind energy development.
Negligible	Any number of wind turbines or ancillary developments that may result in: ■ a relatively small removal, and/or alteration to small, peripheral and/or unimportant elements/features, but not affect the historic integrity of the site or the quality of the surviving evidence; and/or ■ an introduction of elements that could be visible but not intrusive in views, and the overall quality of the setting or visual amenity of the site would not be affected both to and from.
	Where he noise intrusion (mechanical or aerodynamic) from any number of wind turbines (or from other neighbouring wind energy developments) would not have any noticeable affect on the amenity of a built or cultural heritage site adjacent to a wind energy development.

7. Townscape Impact

7.1 The majority of townscapes in Aberdeenshire are extremely sensitive to development involving (very) tall structures. Industrial townscapes, including large harbours, would be most suitable for larger turbines (40-60m), as they may already have tall structures erected on site, and large areas of open space for landscaping, storage areas or car parks. Furthermore, it is important for the applicant to consider the visual impact a wind energy development may have from public open space within a settlement, such as parks, sports pitches and publicly accessible woodlands.

7.2 In the same way as a Landscape Impact Assessment may be required for rural wind energy developments a "Townscape Impact Assessment" may be required for urban developments to assess whether the character of the town is likely to be prejudiced by the development. Where an Environmental Impact Assessment is required, the Townscape Impact Assessment should be incorporated into this document.

Planning considerations

7.3 The scale, quality or value of a townscape is based on judgement, and the 'sensitivity' of the townscape is an indication of its capacity to absorb change (see Table 13).

Table 13 Sensitivity: townscape components

Sensitivity	Definition
High	Enclosed or small scale diverse townscapes (e.g. industrial/brownfield areas in rural service centres; or urban areas other than industrial/brownfield land).
	Townscape of very high quality (e.g. largely intact, coherent and balanced).
	Valued townscape setting with important components of a particular character that are susceptible to small changes (e.g. conservation areas and public open space within settlements).
	Townscape contains no or very few intrusive or discordant features.
Medium	Medium scale townscape (e.g. industrial/brownfield areas, including important harbours in big settlements).
	Townscape of low quality (e.g. no longer intact and coherent and/or may have evidence of alteration, degradation, or erosion).
	Townscape has a number of confusing, discordant or intrusive features (e.g. pylons, chimneys).
Low	Townscapes of low quality (e.g. despoiled or degraded).
	A relatively unimportant townscape, not valued locally, the nature of which is potentially tolerant to substantial change (e.g. in poor condition, with few valued or distinguished features).
	The townscape contains many confusing, discordant or intrusive elements.

7.4 The magnitude of change reflects the degree of change a development will have on an existing townscape setting. The magnitude of change to the townscape setting can be assessed using the following factors:

- the location of the proposed development in or adjacent to the townscape area.
- The compatibility of the wind energy development with the existing townscape setting.
- Any discordant features in the townscape.
- The composition or simplicity of the image presented by the development.

Table 14 Magnitude of impact on townscape setting.

Magnitude	Definition
High	Any number of wind turbines that may result in a major change, which is easily discernible to key features/elements of the baseline conditions such that a noticeable change to the townscape setting, composition and quality results.
Medium	Any number of wind turbines that may result in a moderate, but still discernible change (loss or alteration) to one or more key features/elements of the baseline conditions, such that the underlying townscape setting, composition and quality will be partially changed.
Low	Any number of wind turbines that may result in a minor loss/alteration to some of the elements/features of the baseline conditions. This change would be distinguishable from the surroundings, but the townscape setting, composition and quality would be largely intact, and similar to the pre-development circumstances/patterns.
Negligible	Any number of wind turbines that may result in a very slight loss/alteration to the baseline conditions, such that change is barely distinguishable.

8. Tourism and Countryside Access

8.1 Scotland's landscapes (and some townscapes) are a major economic asset for the tourism industry, which is Scotland's largest employment sector; this may provide an argument for "avoiding adverse impacts on those aspects of the Scottish landscape which attract tourism" (SNH 2001).

8.2 Assessment of the potential impacts on tourist infrastructure will be undertaken under other headings (safety, noise, visual impact etc), but these require to be given additional weight when they affect the tourist economy.

Planning considerations

8.3 Wind energy developments should not result in the unacceptable loss of amenity to individuals who enjoy recreation pursuits on land or water. A proposal should also have no adverse effect on any existing or proposed public access for walking, cycling, horse riding or Nordic skiing, unless it retains existing or potential public access, while maintaining or enhancing its amenity value; or an alternative access is provided, which must be no less attractive and is safe and convenient for public use. Further information is available in the finalised Aberdeenshire Local Plan Policy Env\22 (Public access).

8.4 Sites should be selected which minimise skyline silhouettes from important tourist viewpoints and routes.

8.5 Any assessment to determine whether or not there is a significant impact should use Tables 7, 8, 11 and 12 in chapters 4 and 6.

9. Public Safety

9.1 Safety issues, such as structural damage, ice throw and driver distraction must be considered when siting a wind turbine in close proximity to roads, public paths and railway lines. The greater the number of wind turbines in close proximity of a road, public path or railway line, the greater the risk of debris following catastrophic failure, and the greater the risk of driver distraction. Drivers may also be distracted by the erection of a wind farm/turbine, as it will be a new feature in the landscape.

Planning considerations

9.3 In the interests of safety, the distance between a wind turbine and an existing road, railway line, path, Nordic ski trail or potential path (other than a new-build turbine access road) should be at least the height (to blade tip) of the proposed turbine(s).

9.4 When considering any proposal, an assessment must be done on the potential risk posed to any road or rail users while it is accepted that risks may be very low. Tables 15 and 16 show the criteria used for the determination of significance of effect for road, rail and public path users.

Table 15 Sensitivity: public highways, railway lines and paths in or adjacent to the site.

Sensitivity	Definition
High	Main roads: A class roads, trunk roads, popular/recognised hillwalking/tourists routes, Nordic ski trails, bridleways and railway lines
Medium	Minor roads: B class roads
Low	Minor roads: C class roads, off track or other roads (excluding access roads for a wind farm)

9.5 The level of road use can be broadly determined by the class of road, i.e. a main road would be used more often than a minor road. Therefore, the magnitude of effect will be determined by the number and distance of wind turbines from a road, railway line or public path.

Table 16 Magnitude of effects on public highway(s), railway line(s) and path(s)

Magnitude	Definition
High	Any number of wind turbines are adjacent (within a rotor blades length) to a public path, railway line or road other than a driveway (or private road) belonging to the owner of the turbine(s).
	The proposed development may cause significant distraction to drivers, as the majority (approximately more than 70%) of the turbines proposed (hub/tower and blades) will be visible from a public road.
Medium	Any number of wind turbines are half their total height (including the hub and rotor blades) from a public path, railway line or road other than a driveway (or private road) belonging to the owner of the turbine(s).
	The proposed development may cause some distraction to drivers as approximately between 21% and 69% of the turbines proposed (blades or towers) will be visible from a public road.
Low	Any number of wind turbines are set back to at least their total height from a public path, railway line or road other than a driveway (or private road) belonging to the owner of the turbine(s).
	The proposed development will hardly distract drivers passing through as approximately less than 20% of the proposed turbine blades or towers will be visible from a public road.
Negligible	Any number of wind turbines are set back more than their height from a public right of way, railway line or road other than a driveway (or private road) belonging to the owner of the turbine(s).
	No wind turbine(s) are visible from a road or would pose no risk to driver distraction.

10. Aircraft, Aerodromes and Technical Sites: Safeguard Zones and Electro-Magnetic Interference

10.1 Tall structures such as wind turbines can potentially interfere with electromagnetic transmissions of aviation operations, depending on their size, shape, construction materials and location. Their support structure and rotating blades can have an effect on communication, navigation and surveillance by giving off false radar returns and masking (shadowing) genuine aircraft returns. Tall structures can also act as obstructions to low flying aircraft as they take off and land or interfere with visual aids such as landing lights. There are also issues of cumulative impacts that should be considered. For this reason, major airports and technical sites (civil and military) are "safeguarded" by Directions under the Town and Country Planning (General Development Procedure) (Scotland) Order 1992 and other facilities require to be given consideration in the planning of wind turbine proposals.

10.2 When there is a line of sight between the wind farm and the airport radar there is a high probability that the turbines will generate a return on the primary radar and appear on the air traffic controller's screens. Because the turbine blades are rotating the return is likely to be intermittent, meaning that the radar cannot be simply programmed to ignore it as in the case of a mast or tower. The variability of the return is further influenced by other factors such as weather and the speed at which the turbine is rotating relative to the rotation of the radar. In some cases, under certain conditions, it is possible for a turbine which is 'hidden' from view from the radar, perhaps by terrain, to still generate a return on the radar.

10.3 Resolution of potential conflicts with aircraft operators can only be undertaken in consultation with the relevant authority. Applicants should be encouraged to liaise before submitting an application.

Planning considerations

10.4 The siting of wind turbines may have implications for flight paths of aircraft (including helicopter flights paths), airport radar and communications (civilian or military) and weather radar stations. Major airports and technical sites are 'safeguarded' by Directions made under the Town and Country Planning (General Development Procedure) (Scotland) Order 1992 (see Part 1, Guidance for Developers, Appendix 1 for further information). In order to reduce potential impacts that may affect any safeguarded zone, proposals should avoid siting wind turbines:

- in the approach/take-off airspace of an aerodrome;
- in the line of sight of any radar or other electronic aids for air navigation or for weather reading if within a safeguard zone; and/or where they would;
- infringe the aerodromes obstacle limitation surfaces;
- obscure runway approach lights;
- have the potential to impair the performance of aerodromes navigation aids, radio aids or telecommunication systems;
- distract pilots by lighting if proposed; or
- have the potential to increase the numbers of birds or the bird hazard risk.

10.5 The level of sensitivity is defined in Table 17 below.

Table 17 Sensitivity: aviation designations or components in or adjacent to the site

Sensitivity	Definition
High	Aerodromes with an approach radar;
	RAF aerodrome;
	the upper and lower tier sensitive areas for the weather radar station;
	the inner zone of a safeguarded civil or military technical site;
	within the 15km safeguarded zone for Aberdeen Airport; and/or
	within a Ministry of Defence (MoD) low flying zone.
Medium	Within the 15-30km marker of the safeguarded zone for Aberdeen Airport;
	within the outer zone of a safeguarded civil or military technical site; and/or
	within 2km of a civil aerodromes not safeguarded by the Civil Aviation Authority (CAA).
Low	Outwith the safeguarded zone for a civil or military technical site or weather radar station; and/or
	within 5km from a civil aerodrome not safeguarded by the CAA.

10.6 While the magnitude of effect for any specific proposal is given in Table 18 below, it will also depend on comments from the owners/operators of individual aerodromes and civil technical sites, and the MoD Defence Estates.

Table 18 Magnitude of aviation effects

Magnitude	Definition
High	Any wind turbine(s):
	sited in the approach/take-off airspace of an aerodrome;
	infringe the aerodromes obstacle limitation surfaces;
	obscure runway approach lights;
	impair the performance of aerodromes navigation aids, radio aids or telecommunication systems;
	distract pilots where lighting is proposed on the turbine(s);
	within a safeguarded zone, positioned in the line of sight of a radar or other electronic aids for air navigation which would affect signal/returns;
	increase the numbers of birds or the bird hazard risk; and/or
	any other factor that may inhibit the operation of an airport, radar or weather station.
Medium	Any number of wind turbine(s):
	sited within the 15km colour coded inner boundary safeguarded zone for Aberdeen Airport;
	positioned in the line of sight of any radar and other electronic aids for uses other than air navigation, i.e. weather radar, and would affect its signal/returns; or
	any other factor that may affect the operation of an airport, radar or weather station.
Low	Wind turbine(s) within a safeguarded zone are/not positioned in the line of sight of any radar or other electronic aids for air navigation or other radar station, pose no risk to human safety; or
	any other factor that may have a minor affect on the operation of an airport, radar or weather station.
Negligible	Wind turbine(s) that are sited outwith a safeguarded zone and pose no risk to human safety.

Note: Cumulative impact is a significant concern to the British Aviation Authority (BAA) and consideration should be given to the cumulative impact a wind turbine or wind farm may have if a wind turbine or wind farm already exists or is proposed within a safeguarded zone.

11. Electro-Magnetic Interference (Communications Systems) and Television Reception

11.1 Wind turbines produce electro-magnetic radiation, which can interfere with broadcast communications and signals. It is impossible to obtain a definite picture of all the transmission routes across any proposed site for a wind energy development due to the large number of bodies who use communication systems. However, they will have an impact on the layout of turbines.

11.2 The Office of Communication (Ofcom) should be contacted (see page 47 for contact details) to identify any potential television and radio broadcasting, telecommunication and wireless communication issues. It is also advisable that applicants contact other authorities or bodies which use communication systems such as the MoD, the British Aviation Authority, Civil Aviation Authority, National Air Traffic Control Service, the BBC, police, utility companies, and local authority.

11.3 Television reception can also be affected by wind turbines. This is of a predictable nature, and can be alleviated by installing or modifying the local repeater station or some cable connection.

11.4 Resolution of potential conflicts with telecoms can only be undertaken in consultation with the relevant authority. Applicants should be encouraged to liaise before submitting an application.

Planning considerations

11.5 The nature of interference to communication or television reception depends on many variables, including the system frequency, the position of the wind turbine(s) with respect to the system, and the directional characteristics of the transmitting and receiving antennae. Proposals should avoid siting turbines:

- within a known communications 'band';
- where they would interrupt communication systems for emergency services or MoD; and
- where they would interfere with television reception to a level that would require householder(s) to install new booster equipment or require digital television at their expense. Where it proves impossible to predict this a precautionary approach should be adopted with a commitment from the developer to compensate householders and business for any loss in quality of signal received either through cabling or provision of a digital service.

11.6 Table 19 shows the level of sensitivity for electric-magnetic interference on broadcast communications.

Table 19 Sensitivity: communications systems and TV reception.

Sensitivity	Definition
High	Communication systems that are important for emergency services (i.e. police, ambulance, fire brigade, or coast guard), strategic and military reasons: MoD communication systems (non-air navigation); and mobile phone transmission corridors.
Medium	Communication systems that are used for work or leisure and/or any antennae can be repositioned or modified: civil radio, utility operators and television reception.
Low	Communication systems used for leisure purposes only, which require minimum mitigation measures.

11.7 The magnitude of effect will primarily be determined by the authorities and bodies consulted by the applicant. Table 20 below shows what is considered as causing considerable interference to broadcast communications, which has been determined by the number and distance wind turbines are from a communication system, and whether any mitigation measures are possible. The term 'close proximity' will be determined by each authority or body consulted by the applicant.

Table 20 Magnitude of electro-magnetic interference.

Magnitude	Definition
High	Any number of wind turbines causing adverse affects of electro-magnetic interference (e.g. continuous interruption to service); AND no mitigation measures are practical.
Medium	Any number of wind turbines causing moderately low levels of electro-magnetic interference; AND no mitigation measures are practical.
Low	Wind turbines (any number) are within close proximity to one or more antennae (or other communication system), but could cause relatively low or no electro-magnetic interference; and/or
	mitigation measures are available to reduce the level of electro-magnetic interference to an acceptable level.
Negligible	No wind turbine(s) are within close proximity of any antennae, and causing no electro-magnetic interference.

Note: Consideration should be given to the cumulative impact of wind turbines or wind farms.

12. Cumulative Impacts

12.1 Cumulative effect is very difficult to assess but can have significant land use planning implications, particularly in relation to noise, visual, aviation, landscape, townscape, ecological, and hydrological impacts. The acceptability (and siting) of wind energy developments will depend on the nature and character of the location, and sensitive visual receptors, wildlife species, and habitats.

12.2 In order to identify cumulative effects, the developer/applicant will need to consider whether the proposed development:

- magnifies existing effects, such as sky-lining/movement/industrial/sculptural/ structures; reinforces any existing effects or perceptions of scale; or incremental loss of perception of wildness and change in character;
- interacts well with other, non wind energy developments, as cumulative effects can occur where wind farms are located near to other structures which have similar characteristics; or
- results in the effects created by a gathering of wind energy developments.

12.3 A cumulative impact assessment will have to consider other existing or approved wind energy developments, and those subject to a scoping opinion (if information about the development is available).

Planning considerations

12.4 Any expansion of a wind farm development should not be seen as a separate wind farm. A significant expansion would likely raise the magnitude of impact. Where an existing wind energy development is extended the classification of the wind farm (i.e. small scale etc) will have to be amended accordingly (see paragraph 1.12).

12.5 Cumulative effects may be judged unacceptable on the basis of incompatibility in design between wind farms in the same vicinity. While two wind farms of similar design on adjacent hills may be judged acceptable in landscape terms, two wind farms which contrast in size, turbine height and layout may give rise to visual conflict and be judged unacceptable. Therefore, where two (or more) wind energy developments are proposed on neighbouring sites, the following issues should be addressed by the developer:

- the size of turbines in neighbouring sites should generally be uniform, taking note of hill gradients and visual impact.
- The colour of turbines in neighbouring sites should be the same.
- The direction turbines rotate on neighbouring sites should be consistent.

12.6 Although there needs to be a significant cumulative impact before planning permission is refused, the tiered approach in Structure Plan Policy 26 should be used to determine if there is a better alternative site elsewhere. For example, if a submitted planning application for a wind farm (A) is proposed in a Tier 2 site, and a 'known' (see 'Note' below) development (B) is proposed in a Tier 4 site and has no policy constraints to such a proposal, then the submitted proposal (A) should be refused planning permission as it has been demonstrated that an alternative site exists elsewhere.

Note: The cumulative effect can be considered where there are wind energy developments either constructed, granted planning permission, in the planning process, or in the public domain (e.g. as a result of developer publicity or where a scoping opinion has been formally requested (providing information is available on the proposed location and scale of the development)).

12.7 Cumulative visual impacts have a number of categories relating to how multiple wind energy developments will be seen, and these are as follows:

- In combination: Where two or more developments are seen together from the same viewpoint, in the same arc of view.
- In succession: Where two or more developments are present in views from a particular viewpoint, but cannot be seen at the same time together i.e. observers have to turn their heads to see different developments.
- In sequence: Where two or more features are not present in views form the same viewpoint, and cannot be seen at the same time, but the observer will see different developments if they move to another location. This effect is often associated with transportation corridors and footways etc.
- Perceived: Where two or more developments are present in an area, but one or more is never seen by the observer because they are screened etc, the observer is however aware of them due to knowledge of the developments.

12.8 Further information on assessing cumulative visual impacts can be found in Appendix 1.

12.9 Wind farms and individual turbines can have an adverse impact on habitats and populations of protected species, such as bird or bats, and consideration must be given to whether the proposed development, in association with other developments in the area, will impact on protected habitats and species. The potential impact of the proposal on species of bird that are not statutorily protected should also be demonstrated.

12.10 Where a number of wind farms or individual turbines are proposed or already exist in a local area, any new development may lead to 'bird displacement' as their habitat for breeding and feeding decreases, and/or their regular flight lines are interrupted by turbines, which may also increase the risk of bird strikes.

12.11 If the national or regional numbers of bird populations are affected, as set out in the requirements of the Environmental Impact Assessment for assessing bird population impacts, then the 'cumulative effect' is present. In these circumstances, Aberdeenshire Council will adopt the precautionary approach, and planning permission will be recommended for refusal.

12.12 Consideration must also be given to the potential noise and visual impact to people within a settlement or in isolated dwellings in the countryside, the effects to traffic, aviation and defence, and hydrology.

12.13 Tables 21 and 22 refer to the sensitivities and magnitude of impact tables in the above chapters to assess the significance of cumulative impact, which should be assessed along with the comments received by the appropriate consultee. Cumulative visual impacts can be assessed using Appendix 2.

Table 21 Sensitivity: cumulative impact on views, landscape, residents, and ecological quality

Sensitivity	Definition
High	Sensitivities identified as High in Tables 2, 4, 6, 7, 9, 11, 13, 17, and 19 in the guidance.
Medium	Sensitivities identified as Medium in Tables 2, 4, 6, 7, 9, 11, 13, 17, and 19 in the guidance.
Low	Sensitivities identified as Low in Tables 2, 4, 6, 7, 9, 11, 13, 17, and 19 in the guidance.

Table 22 Magnitude of cumulative effect

Magnitude	Definition
High	A major or easily discernible change to the visual/landscape character, composition and quality. See Appendix 1, figures 1 to 13.
	The change in view is very prominent involving substantial obstruction of existing view or development would be conspicuous and distinct, and would dominate or control the view. See Appendix 2, Figures 1 to 13.
	Any number of turbines (including those already built, with planning permission, or where a formal scoping request has been made) which generate a night-time a noise level greater than 40 dB(A) $L_{A90, 10min}$ at any noise sensitive receptor (see glossary), and the cumulative noise impact is greater than 5dB(A) above background noise measured using the $L_{A90, 10\ min}$ descriptor for either day- and night-time if less than 38dB(A) $L_{A90, 10min}$.
	Where the wind turbine(s) proposed are for the applicants own use or there is a financial interest in the development, the cumulative day- and night-time noise levels at the affected property(s) exceeds 45dB(A) $L_{A90, 10min}$.
	The cumulative impact on populations of plants or animals cannot be sustained in the area, such as a significant effect on bat feeding grounds, and bird flight lines of migratory birds and feeding (flight) routes.
	Any other factors that may have an adverse cumulative impact on the sensitivities in Table 21.
Medium	A moderate (partial loss/alteration), but still discernible change to the visual/landscape character, composition and quality will be partially changed - change may be prominent but not substantially different in scale and character from the surroundings and the wider setting.
	The change in view may involve partial obstruction of the existing view, as the development may be an obvious feature in the landscape.
	A moderate effect on habitats and species, but it has been concluded that the populations of plants or animals can be sustained in the area.
	Any other factors that may have a moderate to adverse cumulative impact on the sensitivities in Table 21.
Low	A minor, but still discernible change, although the visual/landscape character, composition and quality would be largely intact.
	The change in view would be slightly distinguishable, but the development would be less apparent.
	There will be a slight effect on habitat and species.
	Any other factors that may have a minor to moderate cumulative impact on the sensitivities in Table 21.

Negligible	This change in view would be barely distinguishable from its surroundings. The development would be inconspicuous and not obvious.
	The wind turbine(s) proposed are for the applicants own use or there is a financial interest in the development, the day- and night-time cumulative noise levels at the affected property(s) do not exceed 45dB(A) AND it does not affect any of the above.
	Any number of wind turbines (including those already built, with planning permission, or where a formal scooping request has been made) which generate a cumulative noise level less than 5dB(A) above background noise levels for both day- and night-time (background noise should be measured using the $L_{A90,\ 10min}$ descriptor).
	There will be little or no effect on habitat and species.
	Any other factors that may have a negligible cumulative impact on the sensitivities in Table 21.

Note: Where it is shown that there will be a cumulative impact on internationally or nationally protected species, or that that the potential impact is unknown, the precautionary principle will be adopted and the application should be recommended for refusal.

13. Wind Regime

13.1 Wind energy development should be located in areas of suitable wind speeds. Where wind speeds are beneath commercially accepted thresholds and the proposal will not be connected to the national grid and it will be for the applicants/ landowners own personal use, priority consideration should be given to alternative renewable energy facilities to provide heat and/or electricity.

13.2 Where there is concern about the siting of a wind turbine (e.g. its height or location in the built environment), the applicant must demonstrate that the wind resource availability meets recognised thresholds for commercial development i.e. that there is enough wind speed after a period of 4 to 12 months monitoring the site. This would usually require the erection of an anemometer mast which would itself require planning permission and be subject to all the policies of the Development Plan

Planning considerations

13.3 A windy location for a wind farm need not coincide with the most sensitive upland landscapes. All wind farm proposals should conform to the Four Tier Policy Areas (see in Table 2 Part 1: Guide for Applicants on pages 7 and 8).

14. Grid Network

14.1 The best wind speeds are often some distance from a national grid connection point, requiring investment in the network. There are also issues relating to the capacity of the national grid, and although this is not a matter of land use policy, many wind farm proposals may sit in abeyance for a number of years before capacity can be made available.

14.2 It is usual for national grid infrastructure (e.g. a substation or power lines) to be considered "in the round" as a part of the planning application for the proposed wind farm and for mitigation to reduce impact of both sub-stations (through design and landscaping) and cabling (through selective under-grounding and sensitive routing).

Planning considerations

14.3 All connections from an onshore and offshore wind farm to the substation should be underground to reduce visual impact, unless there are environmental reasons for not doing so. Substations and power lines connecting to the national grid should be sited with minimum ecological, cultural (e.g. archaeological sites) landscape, visual, and cumulative impacts.

15. Other Issues

a) Local Employment

15.1 Details should be provided of the local employment and/or business opportunities that may arise as a result of the wind energy development particularly in relation to civil engineering works, haulage and other non-specialist works.

b) Associated Community Benefits

15.2 A wind farm developer/owner may wish to play an active role in the community. Developers or landowners are encouraged to negotiate directly with communities rather than engaging with the local authorities on this issue, although a number of draft publications are currently being prepared by the council's Planning Gain Co-ordinator (see Chapter 18 for contact details).

c) Developer Contributions

15.3 Details should be provided on the form of developer contributions required as a result of the proposed wind energy development. The need for developer contributions will be assessed in relation to the impact of the proposed development in the locality, such as visual and road infrastructure impacts (i.e. need for new footpaths or road widening). Developers will be expected to alleviate such impacts through means agreed by the council's Planning Gain Co-ordinator (see Chapter 18 for contact details).

d) Forestry Design & Management Plan

15.4 If a wind energy development will result in the felling and reshaping of an existing woodland, a forest design plan, including felling and restructuring, proposals should be supplied as part of the application. The forest design plan should be carried out and presented in accordance with Forestry Commission guidelines.

e) Borrow Pits

15.5 Where materials for construction are to be sourced from local or onsite borrow pit(s), consideration should be given to the likely visual impact, proposed mitigation measures, and how the land will be reinstated/made good.

16. Decommisioning Options

16.1 Wind turbines are temporary structures, with an estimated life span in the region of 25 years, and decommissioning should be considered at the planning stage of the project. There will be a presumption in favour of replacing wind turbines on the same site, although a new application would be required to revoke existing decommissioning conditions and legitimise the new development. If there is no presumption by the applicant to replace any of the wind turbines, they should be decommissioned, and the sites cleared and returned as closely as possible to their original state.

16.2 A requirement for decommissioning and site clearance will be included in any planning condition and/or legal agreement upon approval of any wind energy development, which will be triggered by either the expiry of the consent or if the project ceases to operate for a specific period (PAN 45, 2002). If any single turbine is inoperative for a period of 12 months it will be deemed to have ceased working and decommissioning would be required. Sufficient funds, such as a bank bond should be available to ensure the decommissioning of the site, and estimated costs should be made available to the planning authority. If any single turbine is inoperative for a period of 12 months, or such other period as agreed in writing with the Council, it will be deemed to have ceased working and decommissioning would be required.

16.3 Conditions should be used to determine when a Decommissioning Method Statement will be required. A Decommissioning Method Statement should be prepared and agreed with the Council, which will include the following, although this list is not exclusive:

- the length of time it will take to remove all the turbines and associated tracks, cables, and buildings;
- transport and traffic requirements i.e. vehicle movements, road widening or other traffic measures;
- remedial works e.g. soil covering and reseeding; and
- the impacts on the wider environment e.g. natural habitats, recreational users, residential areas (in particular noise impacts).

16.4 When it is time to decommission the site, all turbine components, transformers, substations and associated buildings should be removed from the site. The buried concrete base for each turbine should not be removed (unless necessary), as the removal of the concrete foundations would do more damage than leaving them in situ. However, the upper sections of the turbine foundations (including any exposed concrete plugs) should be removed, as well as any other surface base. Disturbed areas, including the turbine base should be covered over in appropriate material and, where necessary, seeded to match the surrounding vegetation and/or in accordance with SNH. No visible trace of the wind farm/turbine should remain. As with any form of development care should be taken to avoid damage to the natural or historic environment during decommissioning and this will be a significant consideration in the agreement of a Decommissioning Method Statement.

16.5 Access tracks should be downgraded, if not required after decommissioning. Reinstatement to the original state through re-soiling and re-vegetating, should only be necessary where there are sound environmental benefits, such as landscape enhancement, for doing so. Proof must be given if the landowner can identify a possible new use for some or all of the tracks/roads, otherwise the land should be reinstated by being left to cover over with grass (if possible) or covered with soil and/or reseeded.

17. Monitoring

The council will regularly review the supplementary planning guidance, and take on board development changes in government guidance and the industry, in order that best practice can be appraised and kept up to date.

18 Contact List (as of March 2006)

Aberdeenshire Council	Telephone	Address
Nick Ananin: Environment Planner (Natural Heritage - Central)	01467 628254	Planning & Environmental Services Gordon House Blackhall Road Inverurie AB51 3WA
Peter Fraser: Environment Planner (Landscape)	01467 628395	
Colin Miller: Access Officer	01467 628481	
Emma Williams / Judith Cox: Environment Planner (Ecologist)	01467 628002	
Mary MacLeod: Environment Planner (Natural Heritage - South)	01569 768293	Planning & Environmental Services Viewmount Arduthie Road Stonehaven AB39 2DQ
Eleanor Munro: Environment Planner (Natural Heritage - North)	01261 813219	Planning & Environmental Services Town House Low Street Banff AB45 1AU
Stuart Robertson: Planning Gain Co-ordinator	01330 825518	Law and Administration Banchory Area Office The Square Banchory
Stuart Carrie: Development Control Manager	01569 768265	Planning & Environmental Services Viewmount Arduthie Road Stonehaven AB39 2DQ
Alison Hogge: Policy Planner	01224 665168	Planning & Environmental Services Woodhill House Westburn Road Aberdeen AB16 5GB
Charles Lindsay: Principal Environmental Health Officer	01467 628140	Planning & Environmental Services Gordon House Blackhall Road Inverurie AB51 3WA
Ewan Wallace: Transportation Manager	01224 665228	Transportation & Infrastructure Woodhill House Westburn Road Aberdeen AB16 5GB
Brian H Watt: Team Leader - Built and Cultural Heritage	01569 768290	Planning & Environmental Services Viewmount Arduthie Road Stonehaven AB39 2DQ
Ian Shepard: Principal Archaeologist	01224 664723	Planning & Environmental Services Woodhill House Westburn Road Aberdeen AB16 5GB

Aviation		
Colin Craigg: Senior Planning Manager	01293 507746	Britush Aviation Authority Group Airport Planning and Environment First Point Buckingham Gate Gatwick Airport Gatwick West Sussex RH6 0NT Colin_Cragg@baa.com
BAA Safeguarding Team - General Enquiries	(T) 01293 503879 / 504854 (F) 01293 507750 safeguarding@baa.com9	
Aberdeen Airport	01224 727177	National Air Traffic Services Ltd Room 207 Control Tower Building Aberdeen Airport Dyce Aberdeen AB21 7DU

Forestry Commission		
John Risby: The Conservator	01466 794542	Grampian Conservancy Ordiquill Portsoy Road Huntly AB54 5SJ grampian.cons@forestry.gsi.gov.uk

Historic Scotland		
	0131 6688600	Head Office Longmore House Salisbury Place Edinburgh EH9 1SH

Ministry of Defence		
Julian Chafer: Head of Safeguarding	0121 3112022	Kingston Road Sutton Coldfield West Midlands B75 7RL

North East Scotland Biological Records Centre		
Nick Littlewood: Manager	01224 273633	NESBReC University of Aberdeen 23 St Machar Drive Aberdeen AB3RY nesbrec@aberdeenshire.gov.uk

Office of Communication		
	0845 456 3000 or 020 7981 3040	Ofcom Contact Centre Riverside House 2a Southwark Bridge Road London SE1 9HA windfarmenquiries@ofcom.org.uk
John Blake: Cable & Wireless	John.Blake@cwmsg.cwplc.com	

Scottish Natural Heritage		
Ron MacDonald: Area Manager	01224 642863	16/17 Rubislaw Terrace Aberdeen AB1 1XE www.snh.gov.uk

Ornithological impacts		
Royal Society for the Protection of Birds	01224 624824	Royal Society for the Protection of Birds East Scotland Regional Office 10 Albyn Terrace Aberdeen AB10 1YP
British Trust for Ornithology	01786 466560	British Trust for Ornithology BTO Scotland School of Biological and Envionrmental Sciences Cottrell Building University of Stirling FK9 4LA

Water		
Hydrologist		Scottish Environment Protection Agency Aberdeen Office Greyhope House Greyhope Road Torry Aberdeen AB11 9RD

Cairngorms National Park Authority		
Planning Office	01339 753601	Cairngorms National Park Authority Planning Department Albert Memorial Hall Station Square Ballater Aberdeenshire AB53 5QB planning@cairngorms.co.uk

19 Further Information

Policy

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Glossary:

Amenity - The physical and social features of settlements and countryside which contribute to creating a comfortable and desirable living environment. Developments that are not 'good neighbours' have a negative impact on amenity, e.g. noisy or unsightly developments.

Ancillary - Supporting the main purpose of a development, such as access tracks, anometer(s), buildings, cables, poles, borrow pits, substations, grid connections, transformers, and forest felling.

Archaeological Site - This is a site or structure important in terms of archaeology, architectural history or history. They differ from Conservation Areas and Listed Buildings in that they are usually much older and included on sites and monuments record held by Aberdeenshire Council. Most have been recorded by the Council or through the Royal Commission on Ancient and Historic Monuments of Scotland. An archaeological site can date from the last war to 9,000 years old. See Aberdeenshire Local Plan Policy Env\19.

Biodiversity Action Plan - A document for use by all kinds of organisations to help sustain biodiversity. One is produced for the whole of the UK others are more local, e.g. North-East Scotland Local Biodiversity Action Plan.

Brownfield Sites - Normally sites within settlements which have previously been developed or used for some purpose which has ceased. Their redevelopment may encompass re-use of existing buildings by conversion; demolition and new build; clearance of derelict land and infill and various other forms of intensification. They exclude private and public gardens, sports and recreational grounds, woodlands and amenity open spaces.

Character - A combination of features which distinguish an area. A proposal would be 'out of character' if it would introduce features not in keeping with those which make up an area's existing character.

Conservation Area - Areas of special architectural or historic interest, the character or appearance of which it is desirable to protect or enhance. See Aberdeenshire Local Plan Policy Env\17.

Developer Contributions - Contributions, normally subject to an agreement between a developer and the Council, by which the developer provides services or infrastructure related to the development proposed. See Aberdeenshire Local Plan Policy Gen\3.

Discordant features - Existing features in the landscape that deter from the harmony of the landscape.

District Wildlife Sites - Sites of local importance for wildlife, which have been identified by the planning authority in conjunction with voluntary nature conservation organisations.

Diversification - The creation of alternative income generating opportunities.

Domestic scale wind turbine - A small wind turbine with no tower. It can be mounted directly onto a building, and is small enough to not be visually intrusive or noisy.

Environmental Impact Assessment - A process by which information about the effects of a proposed development is collected, assessed and used by experts in reaching a decision on whether it should go ahead.

Four Tier Policy Areas - A list of sites divided into 4 categories based mainly on their value to the environment. The top category contains sites of international importance; the next - sites of national importance; the third - sites of local importance; and the bottom - all other sites. The list varies slightly depending on the type of development it relates to. It can be seen in Appendix 12 of the Aberdeenshire Local Plan.

General Development Order - The part of the Town and Country Planning (Scotland) Act 1997 which sets out how planning applications should be made and dealt with and also what types of development are permitted.

Green Belt - An area where strict planning controls are applied to protect the rural character of the landscape surrounding Aberdeen with the intention of:
(i) maintaining the identity of communities within Aberdeen and the surrounding settlements by clearly defining their boundaries and preventing coalescence;
(ii) maintaining the landscape setting of the City; and
(iii) providing countryside for recreational purposes.

Habitat - The environment in which a species lives at any stage in its life cycle.

Historic Gardens and Designed Landscapes - Areas that have been set out and planted in the past (mostly within the last 200-300 years) and which are still recognisable as representatives of a particular style, period of quality. They are listed in the Inventory of Gardens and Designed Landscapes. See Aberdeenshire Local Plan Policy Env\20.

Historic Scotland - The body responsible for safeguarding of Scotland's built heritage. This includes giving legal protection to monuments and buildings and giving grants and advice to help sustain Scotland's built heritage.

Hydrology - the movement of water in relation to land.

Important Public Views - Views, which the public can appreciate from a generally accessible vantage point.

Inhabited building - any building regularly occupied by people (excluding holiday homes).

Landscape Character - The distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another.

Landscape Character Types -
Agricultural heartland - Intensive mixed farming on large fertile fields with scattered woodland areas, and towns and villages, linked by a network of main roads and lanes. There are many variations of an agricultural heartland due to the differences in relief, which influence patterns of field, woods and settlements. It is the most densely populated area, which will continue to grow, and their agricultural productivity generally precludes large scale forestry projects, although small scale plantations are quite common.
Farmed Moorland Edge - Is essentially a transition landscape between the Moorland Plateaux and the Agricultural Heartland and occurs as a narrow buffer between the two. It is generally a small scale, remote upland farming landscape characterised by an intricate pattern of fields and woods and a tightly undulating relief.
Coasts - May consist of huge expanses of beach and sand dunes or have high headlands that give way to sheer cliffs, pitted by waves to create jagged reefs. These areas are often cultivated up to the outermost boundaries of the land.
Plateaux- A high mountain area and can consist of bare, boulder-strewn mountain summits, generally over 800m in height. Plateaux landscapes are unsettled and this together with the huge scale of their landform contribute to the sense of them pocessing a wildland quality.
The Moorland Plateaux are typically covered by either heather moorland or coniferous woodland which forms vast cloaks over the hills and ridges; plantation woodland is totally dominant in some areas and will become so where new plantings become established. May include local areas of rough upland not associated with mountains at elevation less than 300m above sea level.
Straths and Valleys - A strath contains a major river system of the areas and are relatively low lying campared with other landscape types which border them. For example the Dee, Don, Bogie, and Deveron. The straths have long been cultivated and the landscape has been consequently shaped by man.
The straths often comprise a diverse mix of farmland, woodlands, forests and settlements, creating a variety of landscape patterns on the valley floors and lower hill slopes and providing a distinctive visual contrast with other less man influenced landscape types adjacent to them.
Uplands and Glens - May comprise of vast ranges of rolling hills generally between 400-700m in height and may partially surround a high mountain plateaux. These hills have smooth, rounded summits and evenly graded slopes, predominantly covered with heather, moor or rough grassland. This landscape type has little human settlement, which can give the uplands and glens a remote character.

Landscape Character Assessments - These are studies, which have been undertaken by, or for, Scottish Natural Heritage to define the elements, which make up the landscape character of an area.

Landscape Quality - Condition of the landscape, based on judgements about its physical state and intactness, from visual, functional and ecological perspectives.

Landscape Value - Relative value attached to different landscapes. A landscape may be valued by different communities of interest for many different reasons.

Listed Building - A building, which is included in a list compiled by Historic Scotland as being of architectural or historic interest. See Aberdeenshire Local Plan Policy Env\18.
Local Cultural Site - Sites of local historical or cultural importance not protected by legislation. See Aberdeenshire Local Plan Policy Env\21.

Local Nature Reserve - Areas of locally important nature conservation and amenity value, which give access to the public. See Aberdeenshire Local Plan Policy Env\3.

Local Plan - A statutory document prepared and adopted by each planning authority (in the case of the North East, Aberdeen or Aberdeenshire Council) providing specific planning policies and proposals for the development of land as the basis for development control. Local Plans conform with and apply the policies and general proposals of the Structure Plan.

National Nature Reserve - These are areas of national or international importance for nature conservation and include some of the most important natural and semi-natural habitats in Great Britain. See Aberdeenshire Local Plan Policy Env\2.

Natural Planning Policy Guidance (NPPG) - A series of governmental publications that provide statements of Scottish Executive policy on nationally important land use and other planning matters, supported where appropriate by a locational framework. Natural Scenic Area - These are nationally important areas of outstanding natural beauty, representing some of the best examples of Scotland's grandest landscapes, particularly lochs and mountains. See Aberdeenshire Local Plan Policy Env\5.

Nature Conservation Sites - The term used to describe all sites of nature conservation value which have a specific named designation.

Natura 2000 - The title for the framework of areas designed to conserve national habitats and species of plants and animals which are rare, endangered or vulnerable in the European Community.

NEST - (North East Scotland Together) - the Approved Structure Plan.

Planning Advice Note (PAN) - A series of governmental notes on planning issues that provide advice on good practice and other relevant information.

Planning Application - An application made to the Council for the development of land or property.

Popular viewpoints - Relating to historic buildings and other heritage landmarks, main viewpoints within the valleys.

Precautionary Principle - The principal that no action should be taken where there is doubt about possible impacts, but the damage caused by that impact could be great.

Prime Quality Agricultural Land - Land of Classes 1, 2 and 3.1 in the Land Capability for Agriculture as defined by the Macaulay Land Use Research Institute. See Aberdeenshire Local Plan Policy ENV\11.

Priority habitat or species- Habitat or species which is threatened or suffering rapid decline.

Public Open Space - Open areas with any mixture of amenity, recreation (formal and informal), habitat and shelter value which the public can access. See Aberdeenshire Local Plan Policy HOU\13.

Public path - Under the Land Reform Act 2003, all footpaths, bridal ways and cycle paths.

Receptor - A listed building or other heritage landmarks popular with visitors, a resident, outdoor worker, tourist / recreational user (walker, horse rider, cyclist, hill walker). It is defined by the zone of visual influence - the distance from each viewpoint in the EIA

Regionally important harbours - Harbours that benefit the local economy and the surrounding areas e.g. Fishing ports.

Regularly occupied building(s) - any building frequented by people, and includes all functional buildings no matter the particular use or uses, including the grounds that they occupy.

Ridge - A long narrow hilltop

Scottish Executive - National Government in Scotland.

Scottish Natural Heritage (SNH) - Public body with a remit to secure the conservation and enhancement of Scotland's unique and precious natural heritage, i.e. wildlife, habitats and landscapes.

Sequential Test - A process which gives priority to locating new retail development in defined town centres, followed by edge of centre and then out of centre. See Aberdeenshire Local Plan Policy Emp/6.

Settlement - A place defined by a settlement boundary on the Local Plan proposals maps on the basis that is contains services, facilities, or places of employment which could be sustained by new development or could contribute to this.

Site of Interest to Natural Science (SINS) - An area identified by the Council as being of local importance and representative of a particular type of biological or geological interest. See Aberdeenshire Local Plan Policy Env\3.

Site of Special Scientific Interests (SSSI) - These are areas of land or water which, in the opinion of Scottish Natural Heritage, are of special interest by reason of their flora, fauna, geological or physiographical features. See Aberdeenshire Local Plan Policy Env\2.

Special Area of Conservation (SAC) - Areas designated by the Scottish Executive in accordance with the EC Habitats Directive to ensure that rare, endangered or vulnerable habitats and species of community interest are either maintained at, or restored to, a favourable conservation status. See Aberdeenshire Local Plan Policy Env\1.

Special Protection Area (SPA) - Areas classified by the Scottish Executive in accordance with the EC Birds Directive for the purpose of protecting the habitats of rare, threatened or migratory bird species. See Aberdeenshire Local Plan Policy Env\1.

Structure Plan - Guides the physical growth of communities for the next 10-15 years, establishing a broad framework for development and the way in which the use of land should evolve. It is approved by the Scottish Executive.

Town and Country Planning (Scotland) Act 1997 - The Act of Parliament for the planning system in Scotland.

Vernacular Building - A building which forms a distinctive part of the town or country scene by reason of its traditional design, use of materials and building techniques. Such buildings are often agricultural in nature and over 100 years old.

Wind energy development - A wind farm or an individual wind turbine with or without a tower/hub.

Wind energy development extension - Where a proposed wind energy development will use the same access roads, sub station etc, as an existing wind energy development; and/or is for the same end user (e.g. where the electricity generated is not put on the national grid, but to one or more end users directly).

Appendix 1 Built Heritage and Archaeology

1.1 The built heritage of Aberdeenshire contributes towards the identity of the area, and features such as castles, archaeological sites, and the granite townscapes help give Aberdeenshire a distinctive character and a tangible link to history. It is also an educational asset, and attracts visitors and tourists thereby contributing to the economic wellbeing of the area.

1.2 Listed buildings are one means of preserving part of the built heritage. They are afforded statutory protection under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997. At the time of writing this guidance, there are 3642 listed buildings in Aberdeenshire. As a matter of policy these buildings are assigned to one of three categories according to their relative importance. The categories are:

Category A: Buildings of national or international importance, either architectural or historic, or fine-altered examples of some particular period, style or building type.

Category B: Buildings of regional or more than local importance, or major examples of some particular period, style or building type which may have been altered.

Category C(S): Buildings of local importance, lesser examples of any period, style, or building type, as originally constructed or altered; and simple, traditional buildings which group well with others in categories A and B or are part of a planned group such as an estate or an industrial complex.

1.3 The historic environment of Aberdeenshire has been radically affected by people over the last nine thousand years. Ritual monuments, settlements or forts, historic field patterns/land uses or pollen preserved in wetland areas should be protected wherever possible.

1.4 A Scheduled Ancient Monument is an archaeological site of national importance which has been given legal protection under the Ancient Monuments and Archaeological Areas Act 1979. There are (at the time of writing this Strategy) 458 Scheduled Ancient Monuments within Aberdeenshire. There are 13,563 other archaeological sites on the Sites and Monuments Record, which is maintained by the Archaeological Service section in Aberdeenshire Council.

1.5 Conservation Areas are "areas of special architecture or historic interest, the character of which it is desirable to preserve or enhance". There are 34 conservation areas in Aberdeenshire, 13 of which are classes as outstanding conservation areas, for example Huntly, Portsoy, Ballater and Old Deer.

1.6 Historic gardens and designed landscapes are an important resource for recreation and tourism in Scotland. They can be defined as 'grounds in which, either singly or in combination, flowers, fruits, vegetables, trees and shrubs are consciously laid out for artistic effect, to create a beautiful prospect of for public resort'. The Inventory of Historic Gardens and Designed Landscapes in Scotland includes designed or ornamental landscapes in Scotland, such as private gardens of varying size, the policies of country estates, public parks, cemeteries, botanical gardens and plant collections. The key considerations in selection are historical, architectural, archaeological, horticultural and arboricultural value, nature conservation interest, scenic interest both in themselves and for the often major contribution they make to the scenic quality of much wider areas, the quality and innovation of the design, and the significance of garden and other ornamental features. Many gardens and landscapes provide the setting for important listed buildings whose contribution to the design is acknowledged in the site assessment Consultation on such sites would be required with both Historic Scotland and SNH.

1.7 The Inventory of Historic Gardens and Designed Landscapes in Scotland is currently under review. However, over 300 designed landscapes have been defined in the Historic Landuse Assessment, which have been included in the Sites and Monuments Record. Further landscapes are being considered for inclusion in a series of supplementrary volumes. Historic Scotland should be contacted for further information on such sites in Aberdeenshire.

Appendix 2 Assessing Cumulative Visual Impact - principles adopted

2.1 Cumulative impacts are best assessed by comparing the zone of theoretical visibility (ZTV) of two or more proposals, but this is a three stage process:

1. A Base Map showing the 'footprint' or overlapping ZTVs of each existing or proposed wind energy development, or projects that are the public domain (e.g. post scoping exercise) from the proposed wind farm.
2. Cumulative ZTV maps.
3. Detailed impacts assessments:

- Static cumulative visual impacts assessment.
- Sequential cumulative visual impacts assessment.
- Cumulative landscape impacts assessment.

2.2 Where the cumulative ZTV of other wind energy developments overlap, there is the potential for cumulative impact. Only if one or both wind farms are 'minor elements in the landscape' will the cumulative impact be acceptable.

2.3 In the case of cumulative impact, developers should have an increasingly flexible approach to the siting of each turbine within the proposed wind farm. This is in order to co-ordinate separate layouts, when seen together from key sensitive viewpoints. The rate at which turbines rotate on neighbouring sites should also be consistent.

2.4 Comprehensive and accurate visual information is required in terms of photomontages etc, to demonstrate cumulative impact from key viewpoints. The visual effect will be dependent on a range of factors, including the distance over which the wind energy development may be viewed, the character of the development and the landscape and nature of the visibility.

2.5 Table 23 shows a general guide to the effect which distance has on the perception of a wind energy development in an open landscape.

Table 23 General perception of a wind farm in an open landscape

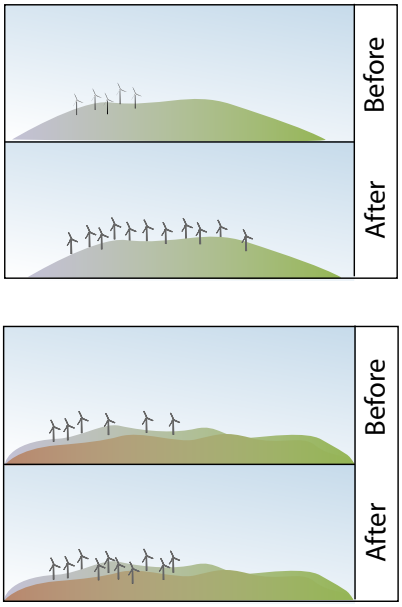
Distance	Perception
Up to 2km	Likely to be a predominant feature
2-5km	Relatively prominent
5-15km	Only prominent in clear visibility - seen as part of the wider landscape
15-30km	Only seen in very clear visibility - a minor element in the landscape

Source: PAN 45

2.6 The following figures provide illustrative examples of unacceptable 'static' and 'sequential' cumulative visual impacts:

1. visual coalescence - when more than one wind farm is viewed from a viewpoint, resulting in merging. The following examples are given below:

a) when several wind farms visually coalesce and appear as one, large wind farm (similar effects are likely to be similar when expanding a wind farm), as shown in Figures 1 and 2:



Figures 1 and 2 Visual coalescence (when two wind farms appear as one)

- The balance between developed and less developed land will be altered: in areas of low relief and reduced horizontal scale, this effect will become significant quickly; and/or in landscapes where the horizontal scale is relatively expansive, this effect is likely to impact most quickly on sense of openness, the distinction of suitable land form, and from perceived wilderness.

b) When the balance between individual landscape characteristics and elements may be altered, as shown in Figure 3.

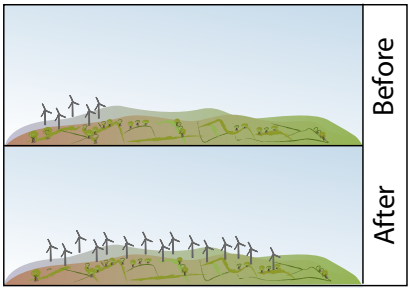


Figure 3 Visual coalescence (change in landscape characteristics)

- Wind farms may dominate the landscape, and the existing elements within it, resulting in a change of character; and this consequence is relevant to other effects also.

c) When different sizes of turbines are merged together, it may be difficult to interpret the landscape scale, as shown in Figure 4.

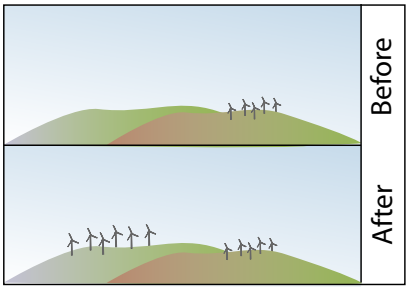


Figure 4 Visual coalescence (different sizes of turbines affecting landscape scale)

- This may lead to visual confusion; the perception of distance in the landscape maybe difficult to read; and/or the scale of the vertical relief (hillside) in the landscape may be difficult to understand.

f) When the merged wind farms may be viewed as a confused mass rather than individual elements, as shown in Figure 5.

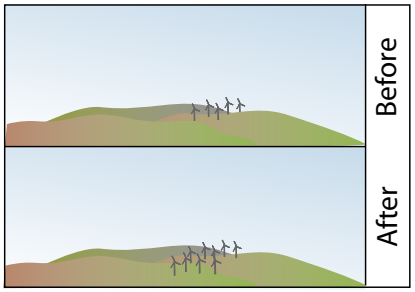


Figure 5 Visual coalescence (confused mass)

- Distinct outlines and form of topography may be obscured by the mass of structures; and/or visual confusion may be further exacerbated by movement.

2. Simultaneous visibility - when more than more wind farm is visible in the same arc of view from one viewpoint. The following examples are given below:

a) when the balance between wind farms and less developed land is altered by the continuous introduction of wind farms, as shown in Figure 6.

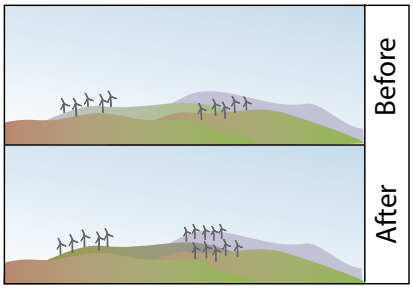


Figure 6 Simultaneous visibility (continuous introduction of wind farms)

- Wind farms can become a dominant characteristic in the landscape; the existing dominant characteristics may be diminished; and/or a dominant wind farm may accelerate this scenario.
- Need to consider the scale and design of the proposed wind farm - smaller and fewer wind turbines may be more appropriate.

b) When an established pattern of wind farms in a landscape may not be followed by subsequent developments, as shown in Figure 7.

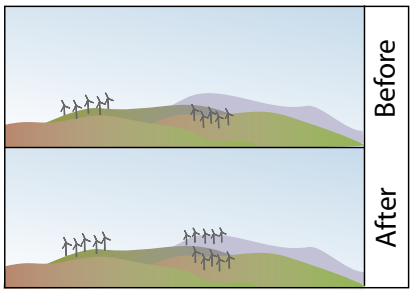


Figure 7 Simultaneous visibility (disturbing an established pattern of wind farms)

- A consistent pattern may be fragmented by a wind farm, which does not follow similarities, scale and layout adopted by existing wind farms.

c) When a wind farm which was accepted as a focal point in the landscape may become one of several, as shown in Figure 8.

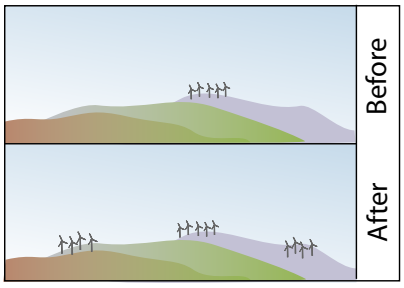


Figure 8 Simultaneous visibility (focal point)

- This may lead to visual confusion, as the eye 'jumps' between the foci; and/or the reasons why existing wind farms have been accepted may be diminished by the addition of new wind farms.

d) When an increase in a turbines height may confuse perceived distance and height, as shown in Figure 9.

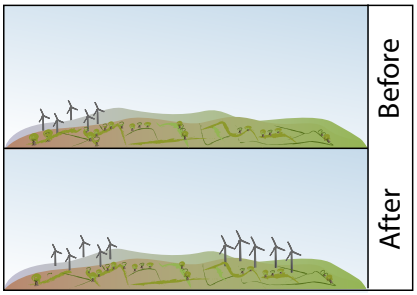


Figure 9 Simultaneous visibility (increasing turbine height)

- Existing wind farms may have been accepted in the landscape partly because the turbines were smaller; and in landscapes of low relief, this effect is likely to become more significant more quickly.

e) When different styles and sizes of structures may accumulate within a view as technology develops, as shown in Figure 10.

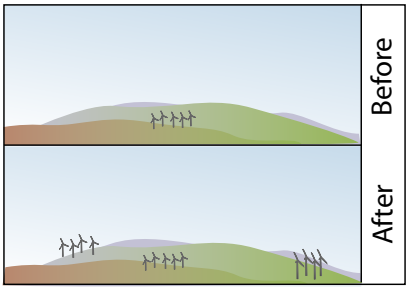


Figure 10 Simultaneous visibility (different styles and scales of turbines)

- This may result in visual confusion, which may fragment a simple landscape, or alternatively result in an overload in an already busy landscape.

3. Successive visibility - when more than one wind farm is visible as the viewer turns his or her head. This may also be known as a perceptive cumulative visual impact. The following example is given below:

a) When wind farms appear to encircle a glen, settlement or viewpoint, as shown in Figure 11.

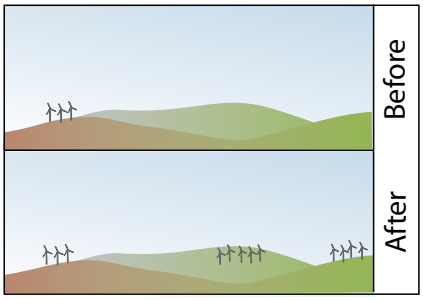


Figure 11 Successive visibility (encircling effect)

- This can be perceived as encroachment or even 'threat'.

4. Intervisibility - when, while standing at one wind farm, other wind farms are visible. The following example is given below:

a) When the characteristics of nearby wind farm structures may be projected onto other visible wind farms, as shown in Figure 12.

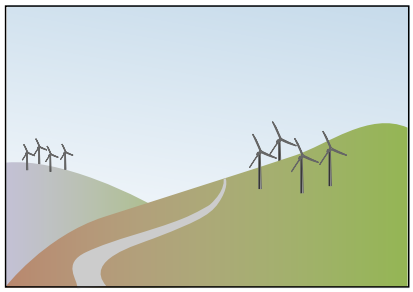


Figure 12 Intervisibility (when viewed from a wind farm)

- people are likely to perceive distant wind turbines as being the same size as those near by; the perception of relative scale will be influenced by the size of nearby structures; and/or other wind farm characteristics may be projected onto distant wind farms.

5. Sequential visibility - when wind farms are revealed in sequence to a viewer traversing a road, footpath, ferry crossing or linear route. The following example is given below:

a) When one, or several, wind farms may be visible along a specific road or walking route, as shown in Figure 13.

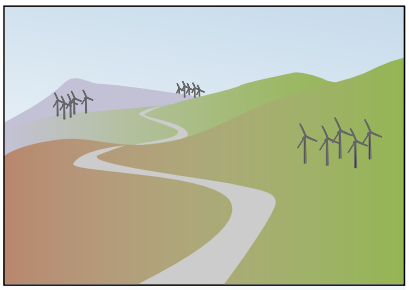


Figure 13 Sequential visibility (when travelling along a route)

- Wind farms may become the key characteristic of the landscape; the experience of a number of wind farms in sequence will influence people's perception of willingness to use the route; and\or all previous effects could be experienced in such a sequence.

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