

## APPLICATION NO. 14/00442/EIAL

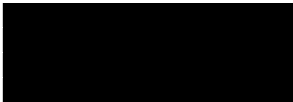
**APPLICANT: POLAR ENERGY (FINLARG) LTD ERECTION OF 4 WIND  
TURBINES OF 57 METRES TO HUB HEIGHT AND 92.5 METRES TO BLADE TIP  
AND ANCILLARY DEVELOPMENT AT FRAWNEY WIND FARM FIELD 1020M  
NORTH OF OVER FINLARG FARM OVER FINLARG  
LUMLEYDEN**

## ANGUS COUNCIL'S SUBMISSION

## CONTENTS

Ref No.	Item
1	<b>AC1 Report on Handling</b>
2	<b>AC2 Policy Tests (Angus Local Plan Review 2009)</b> Policy S1: Development Boundaries Policy S3: Design Quality Policy S4: Environmental Protection Policy S5: Safeguarding Areas Policy S6: Development Principles including Schedule 1 Policy ER1: Natura 2000 and Ramsar Sites Policy ER2: National Nature Reserves and Sites of Special Scientific Interest Policy ER3: Regional and Local Designations Policy ER4: Wider Natural Heritage and Biodiversity Policy ER5: Conservation of Landscape Character Policy ER11: Noise Pollution Policy ER12: Development Affecting Conservation Areas Policy ER16: Development Affecting the Setting of a Listed Building Policy ER18: Archaeological Sites of National Importance Policy ER19: Archaeological Sites of Local Importance Policy ER20: Historic Gardens and Designed Landscapes Policy ER34: Renewable Energy Developments Policy ER35: Wind Energy Developments
	<b>AC3 TAYplan Strategic Development Plan</b> Policy 3D: Natural and Historic Assets Policy 6C: Consider Criteria as Minimum
	<b>AC4 Other Information to Support Decision</b> Scottish National Heritage - Assessing the Cumulative Impact of Onshore Wind Energy Developments Scottish National Heritage - Siting and Designing Wind Farms in the Landscape – Version 2 Implementation Guide for Renewable Energy Proposals (Angus Local Plan Review 2009) Strategic Landscape Capacity Assessments for Wind Energy - TAY8: Ingneous Hills Appeal Decision and Appeal Information

- 3**                    **Consultation Responses**
- AC5**      Everything Everywhere (11.06.14)
  - AC6**      Head of Roads (12.06.14 & 09.07.14)
  - AC7**      Archaeology (18.06.14)
  - AC8**      Conservation Officer (18.06.14)
  - AC9**      NATS (19.06.14)
  - AC10**     Historic Scotland (20.06.14)
  - AC11**     Countryside Access Officer (24.06.14)
  - AC12**     SEPA (24.06.14)
  - AC13**     Dundee Airport Limited (25.06.14)
  - AC14**     Scottish Natural Heritage (01.07.14)
  - AC15**     Environmental Health (Parts 1 and 2) (07.07.14)
  - AC16**     Ministry of Defence (08.07.14)
  - AC17**     Tealing Community Council (07.007.14)
  - AC18**     RSPB Scotland (15.07.14)
  - AC19**     Joint Radio Company (01.08.14 & 29.08.14)
  - AC20**     National Grid (15.07.14)
  - AC21**     Countryside Officer (11.09.14)
- 4**                    **Letters of Representation**
- AC22**     Gary & Pauline McIlvary (23.06.14)
  - AC23**     Ray Gibson (02.07.14)
  - AC24**     Mr & Mrs Anthony Mitchell (04.07.14)
  - AC25**     Mrs P M Powell (04.07.14)
  - AC26**     Mr Ray Strachan (09.07.14)
  - AC27**     D R Powell (22.07.14)
  - AC28**     Andrew Vivers (16.09.14)
  - AC29**     Mrs C Walker (12.09.14)
- 5**                    **Application Drawings**
- AC30**     OS Map
  - AC31**     Refused Drawings
- 6**                    **Further Information Relevant To Assessment**
- AC32**     Decision Notice
  - AC33**     Environmental Statement Volume 2
  - AC34**     Environmental Statement Volume 3
  - AC35**     Planning Statement
  - AC36**     Volume 1 Non Technical Survey



<b>Application Number:</b>	14/00442/EIAL
<b>Description of Development:</b>	Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development
<b>Site Address:</b>	Frawney Wind Farm Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden
<b>Grid Ref:</b>	341752 : 741820
<b>Applicant Name:</b>	Polar Energy (Finlarg) Ltd

## Report of Handling

### Site Description

The application site, which measures 145 hectares in area, is located on an area of open agricultural grassland and lies between some 1.3 kilometres and 2.4 kilometres west of the A90 trunk road at its closest and furthest points. The site extends over the eastern slope of Finlarg Hill, located some 6 kilometres south east of Glamis and 8 kilometres south/southwest of Forfar, at an elevation varying from approximately 200 metres to 250 metres Above Ordnance Datum (AOD). The village of Tealing is some 3.5 kilometres to the south.

### Proposal

Full planning permission is sought for the erection of 4 wind turbines and ancillary infrastructure on land north of Over Finlarg Farm, Lumleyden, Forfar. The proposed 4 wind turbines would measure 57m to hub height, with a rotor radius of 35.5m and a maximum blade tip height of 92.5m. Each turbine would have a generating capacity of up to 2.3 Megawatts (MW), giving the wind farm an overall potential generation capacity of up to 9.2MW. The turbines would be semi-matt and grey in colour and the transformers would likely be located inside of the turbine structure.

The proposal also involves the erection of a permanent 60m tall anemometry mast, which would be located between turbines 3 and 4. Additionally, some 1385m of existing farm tracks will be upgraded and some 1425m of new access tracks will be formed around and through Over Finlarg Farm. The upgraded track comprises of the existing access at Over Finlarg, up to about 100m south of the farm complex, and a further area of track leading northeast of the farm up to the approximate location of proposed anemometry mast. The new track begins approximately 100m south of the farm buildings, heading east and north to go around the farm before connecting to and linking existing tracks in a northerly direction to serve turbines all four turbines. Planning permission is being sought for a period of 25 years, which is the indicated operational period of the turbines.

The application has not been subject of variation.

### Publicity

The application was subject to normal neighbour notification procedures.

The application was advertised in the Dundee Courier on 13 and 20 June 2014.

The environmental statement was advertised in the Dundee Courier and Edinburgh Gazette on 20 June 2014.

## Planning History

08/01489/FUL for Erection of a Temporary Wind Monitoring Mast for a Period of Three Years was determined as "Approved subject to conditions" on 8 April 2009.

12/00307/FULL for Renewal of Planning Permission 08/01489/FUL was determined as "Approved subject to conditions" on 11 May 2012.

12/00577/EIAL for Erection Of Five Wind Turbines Up To 100m Tip Height And Ancillary Infrastructure was determined as "Application Withdrawn" on 7 June 2013.

13/00532/EIAL for Erection Of Five Wind Turbines Of 56m To Hub Height And 80m To Blade Tip And Ancillary Development - Re-Application was determined as "Non Determination" on 13 January 2014.

This application was subject of an appeal against the non-determination by Angus Council to the Directorate for Planning and Environmental Appeals (DPEA) (ref: PPA-120-2032). The appeal was allowed subject to conditions. In the decision, the Reporter indicated that the proposal would contribute towards Government energy targets and overall concludes that the proposal would not result in any unacceptable impacts, including cumulative impacts, and there were no material considerations to set the conformity to development plan policies aside. This appeal decision/approval therefore represents a significant material consideration in the determination of this current application.

## Applicant's Case

The applicant has submitted the following documents to support the application:-

- An Environmental Statement (ES) including a Non-Technical Summary (NTS) and;
- Planning Statement.

The Environmental Statement (ES) submitted in support of the application is split in to 3 volumes. Volume 1 - Non-Technical Summary of the findings, Volume 2 - Report and Appendices and Volume 3 - Figures. Volume 2 is the main report, providing a description of the proposed development, a planning and environmental policy context, alternatives considered and environmental studies. The chapters of this Volume are:

1. Introduction
2. EIA Approach and Methodology
3. The Development
4. Planning and Energy Policy
5. Noise
6. Landscape and Visual
7. Ecology
8. Ornithology
9. Hydrology, Hydrogeology and Soils
10. Cultural Heritage
11. Transport and Access
12. Socio-economics and Recreation
13. Infrastructure, Aviation & Safety

As advised, the ES is supported by appendices in Volume 2 which contain methodologies and more detailed findings of the environmental assessment.

The ES advises that the planning application is presented as an alternative proposal to the consented five turbine scheme at 80m to tip (ref: 13/00532/EIAL). It states that the grant of consent for this scheme establishes the principle of a commercial wind energy development at the site. In effect the application

seeks to alter that permission by removing one of the turbines and increasing the overall height by 12.5m (with the hub being raised by 1m as part of this increase). The ES goes on to advise that this change in turbine height would increase the wind farm output from 4MW, in the approved scheme, to 9.2MW. The existing permission is therefore regarded as being highly relevant in forming part of the 'baseline' assessment - that is the existing site conditions and circumstances.

In respect of landscape and visual impact assessment (LVIA), Section 6 of the ES explains the overall approach to assessment. The methodology explains that the significance of landscape and visual effect is a product of the sensitivity of the host landscape or visual receptor and the magnitude of change from the existing situation. As the site already has an extant permission, this approval forms part of the existing situation and thus part of the baseline for the LVIA.

The ES concludes that "*... the proposed development, while slightly taller, is more contained horizontally and of greater height comparability with other consented turbines, at an adjacent point to the north. The proposal will also sit away from notable landscape fabric elements and other tall landmark structures and at an appropriate point in the landscape that will still avoid 'disruption to the principle ridgelines or adversely affect the setting of important landscape features monuments'. This has resulted in a scheme which is considered to be appropriate in scale and location within its landscape setting with a very modest residual effect compared to the consented scheme, on residential amenity...*".

## **Consultations**

**Scottish Government** - There was no response from this consultee at the time of report preparation.

**Scottish Water** - There was no response from this consultee at the time of report preparation.

**Scottish Environment Protection Agency** - has no objection to the application, subject to a planning condition being attached to any consent granted to address works that are not regulated by SEPA. This condition would require the submission of a full site specific Environment Management Plan (EMP), incorporating a Construction Method Statement (CMS) and a Site Waste Management Plan (SWMP) prior to commencement of development and the subsequent agreement of the Planning Authority, in consultation with SEPA and SNH. Unless this condition is attached SEPA would object to the application.

**Scottish Natural Heritage** - has considered the proposal in respect of landscape and visual impacts and does not object to the application. It is however noted that the current approved scheme of 5 turbines at 80 metres to tip reflects the maximum height of and capacity for turbines identified for the Sidlaw Hills in the recent 'Strategic Landscape Capacity Assessment for Wind Energy in Angus'. To introduce taller turbines would set precedence contrary to the findings of the Study. SNH reiterate its advice that the turbines at Frawney and Govals, if commensurate in height, could reduce landscape impacts. Coherence in respect of design is also highlighted as being important.

**Health & Safety Executive** - There was no response from this consultee at the time of report preparation.

**Dundee City Council** - There was no response from this consultee at the time of report preparation.

**The Environment Service Perth & Kinross Council** - has not raised any objection to the proposal. It is advised that the effect on the Perth and Kinross Council area in respect of residential amenity and landscape and visual impact would not be unacceptable. In terms of cumulative landscape and visual impact it is noted that the development would have an effect on the overall capacity of the Sidlaws, however, due to the extent of existing wind farms (or those approved, including the existing permission at Frawney) the impact on the PKC area is not substantial from this proposal.

**RSPB Scotland** - has no objection to the application. General comments are made about potential cumulative impacts of wind turbines in Angus.

**Aberdeenshire Council Archaeology Service** - Confirm that the approach and mitigation outlined in Section 10.4.2 - Cultural Heritage - of the Environmental Statement are acceptable. As such no objection is raised to the application.

**Historic Scotland - Archaeology** - Historic Scotland does not object to the current planning application. Comment is given on both the Environmental Statement (ES) and the application itself of their historic environment interests; that is scheduled monuments, category A listed buildings and their setting and gardens and designed landscapes and inventory battlefields. They are content that there are no significant impacts on the site or setting of any heritage assets within their remit, and therefore concur with the ES findings in this regard.

**Civil Aviation Authority** - There was no response from this consultee at the time of report preparation.

**Dundee Airport Ltd** - Does not object to the planning application, subject to a condition requiring aviation lighting.

**Spectrum** - There was no response from this consultee at the time of report preparation.

**Joint Radio Co Ltd** - Does not object to the planning application.

**Atkins** - has raised no objection to the proposal.

**Angus Council Environmental Health** - has no objection to the application, subject to planning conditions being attached to any permission granted.

From the information submitted in the Environmental Statement (ES) it is indicated that the Service would require a shadow flicker assessment, to be addressed through a planning condition and carried out prior to the commencement of any development.

Several private water supplies have been identified in the area. In order to ensure supply is maintained a planning condition is requested.

The ES demonstrates that appropriate noise limits can be met. However, due to potential cumulative impact from the (approved) nearby Govals wind farm it is necessary to allow an appropriate 'freeboard' for this proposal. It is considered necessary to address this matter through planning conditions. For construction noise, it is proposed to ensure this is regulated through a planning condition.

**Scottish & Southern Energy** -There was no response from this consultee at the time of report preparation.

**Police Scotland - Crime Prevention Officer** - There was no response from this consultee at the time of report preparation.

**NERL Safeguarding** - has no objection to the application.

**Ministry Of Defence** - has no objection to the proposal subject to conditions relating to a Radar Mitigation Scheme and the provision of aviation lighting.

**National Grid Plant Protection** - has raised no objection to the application.

**Cable & Wireless Communications** - There was no response from this consultee at the time of report preparation.

**BEAR Scotland Ltd** - There was no response from this consultee at the time of report preparation.

**Everything Everywhere** - No objection.

**Angus Council - Flood Prevention** - No objection.

**Scottish Gas Network** - There was no response from this consultee at the time of report preparation.

**Community Council** - Tealing Community Council objects to the application on the grounds of lack of information, lack of participation of the applicant, cumulative impact, effect on property prices, subsidies gained through the development, impact on water supplies, more significant noise levels and inaccurate visual assessment.

**Community Council** - There was no response from Inverarity Community Council at the time of report preparation.

**Angus Council - Roads** - has no objection to the application, subject to planning conditions requiring a detailed Construction Traffic Management Plan and satisfactory surfacing of the access track within 15 metres of the public road.

## **Representations**

8 letters of representation were received. 7 objected to the proposal and 1 supported the proposal.

The main points were as follows:

Points in objection (7):

- Unacceptable Landscape/Visual Impact
- Detrimental to Residential Amenity
- Detrimentally Affects Listed Building
- Noise Disturbance
- Impact on private water supply
- Insufficient Information
- No economic benefits
- Principle of Development Unacceptable
- Contrary to Development Plan

Points in support (1)

- Complies with Development Plan
- Provides Renewable Energy

A number of issues were raised that are not material and are summarised as follows:

- Turbines are inefficient - the effectiveness or efficiency of wind turbines or the appropriateness of Government targets/policy is not a matter for Council to consider in the assessing this proposal.

However, an evaluation of the environmental impact of the development balanced against the environmental benefit of renewable energy generation is provided under Planning Considerations below.

- Adverse health consequences (depression and headaches) - the Scottish Government's Specific Advice Sheet on Onshore Wind indicates that a recent report prepared for the Department of Energy and Climate Change concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines. I do not consider that the proposal should give rise to any other significant health issues provided it is capable of complying
- Lack of consultation/notification and time to comment - the application has been subject to all required publicity and consultation as required by legislation.
- Offer of community fund should not influence the planning decision - the Angus Local Plan Review makes it clear that local community benefits associated with wind farm proposals will not be considered as part of any planning application. Any community benefit offered by the applicant to the local community is a matter for the applicant and the local community.

## **Development Plan Policies**

### **Angus Local Plan Review 2009**

Policy S1 : Development Boundaries  
Policy S3 : Design Quality  
Policy S4 : Environmental Protection  
Policy S5 : Safeguard Areas  
Policy S6 : Development Principles (Schedule 1)  
Policy ER1 : Natura 2000 and Ramsar Sites  
Policy ER2 : National Nature Reserves and Sites of Special Scientific Interest  
Policy ER3 : Regional and Local Designations  
Policy ER4 : Wider Natural Heritage and Biodiversity  
Policy ER5 : Conservation of Landscape Character  
Policy ER11 : Noise Pollution  
Policy ER12 : Development Affecting Conservation Areas  
Policy ER16 : Development Affecting the Setting of a Listed Building  
Policy ER18 : Archaeological Sites of National Importance  
Policy ER19 : Archaeological Sites of Local Importance  
Policy ER20 : Historic Landscapes and Designed Landscapes  
Policy ER34 : Renewable Energy Developments  
Policy ER35 : Wind Energy Developments

### **TAYplan Strategic Development plan**

Policy 3D : Natural and Historic Assets  
Policy 6C : Consider Criteria as Minimum

The full text of the relevant development plan policies can be viewed at Appendix 1 to this report.

## **Assessment**

Sections 25 and 37(2) of the Town and Country Planning (Scotland) Act 1997 require that planning decisions be made in accordance with the development plan unless material considerations indicate otherwise.

In this case the development plan comprises: -



- TAYplan (Approved 2012)
- Angus Local Plan Review (Adopted 2009)

Section 59 of the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 requires that in considering whether to grant planning permission for development which affects a listed building or its setting special regard shall be paid to the desirability of preserving the building or its setting.

In addition to the development plan a number of matters are also materially relevant to the consideration of the application and these include: -

- National Planning Framework for Scotland 3 (NPF3);
- Scottish Planning Policy (SPP);
- Scottish Government 'Specific Advice Sheet' on Onshore Wind Turbines;
- Tayside Landscape Character Assessment;
- Angus Council Implementation Guide for Renewable Energy Proposals (2012);
- Strategic Landscape Capacity Assessment for Wind Energy in Angus (Ironsides Farrar - 2013);
- Angus Wind farms Landscape Capacity and Cumulative Impacts Study (Ironsides Farrar, 2008);
- Siting and Designing Wind Farms in the Landscape (SNH, Version 2 May 2014);
- 'Assessing The Cumulative Impact of Onshore Wind Energy Developments' (SNH, March 2012);
- Planning Advice Note 1/2011: Planning and Noise;
- Environmental information submitted in respect of this application by the applicant, third parties and consultees; and
- The planning history of the site, in particular the planning appeal allowed for the previous 5 turbine proposal at this location (13/00532/EIAL).

NPF3 states that the Government is committed to a Low Carbon Scotland and through the priorities identified in the spatial strategy set a clear direction to tackling climate change through national planning policy. Renewable energy technologies, including onshore wind, are identified as key aspects to realising this aim whilst recognising that a planned approach to development is required to find the correct balance between safeguarding assets which are irreplaceable while facilitating change in a sustainable way.

The Scottish Planning Policy (SPP, June 2014) represents a statement of government policy on land use planning. In relation to onshore wind, the SPP states that 'planning authorities should set out in the development plan a spatial framework identifying areas that are likely to be most appropriate for onshore wind farms... The spatial framework is complemented by a more detailed and exacting development management process where the merits of an individual proposal will be carefully considered against the full range of environmental, community and cumulative impacts... Proposals for onshore wind should continue to be determined while spatial frameworks and local policies are being prepared and updated'. Proposals for energy infrastructure developments should always take account of spatial frameworks for wind farms and heat maps where these are relevant. Considerations will vary relative to the scale of the proposal and area characteristics but are likely to include:

- net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities;
- the scale of contribution to renewable energy generation targets;
- effect on greenhouse gas emissions;
- cumulative impacts - planning authorities should be clear about likely cumulative impacts arising from all of the considerations below, recognising that in some areas the cumulative impact of existing and consented energy development may limit the capacity for further development;
- impacts on communities and individual dwellings, including visual impact, residential amenity, noise and shadow flicker;
- landscape and visual impacts, including effects on wild land;
- effects on the natural heritage, including birds;
- impacts on carbon rich soils, using the carbon calculator;

- public access, including impact on long distance walking and cycling routes and scenic routes identified in the NPF;
- impacts on the historic environment, including scheduled monuments, listed buildings and their settings;
- impacts on tourism and recreation;
- impacts on aviation and defence interests and seismological recording;
- impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;
- impacts on road traffic;
- impacts on adjacent trunk roads;
- effects on hydrology, the water environment and flood risk;
- the need for conditions relating to the decommissioning of developments, including ancillary infrastructure, and site restoration;
- opportunities for energy storage; and
- the need for a robust planning obligation to ensure that operators achieve site restoration.

The Scottish Government's Planning Advice Notes relating to renewable energy have been replaced by Specific Advice Sheets (SAS). The 'Onshore Wind Turbines SAS' identifies typical planning considerations in determining planning applications for onshore wind turbines. The considerations identified in the SAS are similar to those identified by policies ER34 and ER35 of the ALPR and the SPP as detailed above.

Angus Council has produced an Implementation Guide for Renewable Energy Proposals. It provides guidance for development proposals ranging from small single turbines to major windfarms. It indicates that wind developments are the primary area of renewable energy proposals in Angus and the planning considerations are strongly influenced by the scale and location of the proposal including landscape and visual impact, potential adverse effects on designated natural and built heritage sites, protected species, residential amenity, soils, water bodies and access.

Scottish Natural Heritage in conjunction with Angus and Aberdeenshire Councils commissioned Ironside Farrar to review current landscape sensitivity and capacity guidance in relation to wind energy development. The Strategic Landscape Capacity Assessment for Wind Energy in Angus (November 2013) provides updated information on landscape capacity for wind energy development and the potential cumulative impact of proposals in the context of operational and consented developments.

Proposals for wind turbine developments and associated infrastructure are primarily assessed against policies ER34 and ER35 of the local plan although other policies within the plan are also relevant. The policy position provides a presumption in favour of renewable energy developments recognising the contribution wind energy can make in generating renewable energy in Scotland. These policies also require consideration of impacts on ecology including birds; cultural heritage including listed buildings, scheduled monuments, designed landscapes and archaeology; aviation; amenity in the context of shadow flicker, noise and reflected light; landscape and visual impact including cumulative impacts; future site restoration; transmitting or receiving systems; any associated works including transmissions lines, road and traffic access/safety and the environmental impact of this. These policy tests overlap matters contained in other policies and therefore these matters are discussed on a topic by topic basis.

Bringing the above together, the key policy and material considerations in relation to the determination of the application are: -

1. Environmental and Economic Benefits;
2. Landscape Impact;
3. Visual Impact;
4. Cumulative Landscape and Visual Impact;
5. Impact on Residential Amenity;
6. Impact on Aircraft Activity;

7. Impact on Natural Heritage;
8. Impact on Cultural Heritage;
9. Socio-economic Impacts;
10. Other Development Plan Considerations;
11. Other Material Considerations;

The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 detail the information that should be contained within an Environmental Statement. The Council provided a scoping opinion in respect of this proposal in order to identify the key areas that should be addressed through the environmental impact assessment process. Having regard to responses from statutory consultees, it is considered that the submitted Environmental Statement (ES) complies with the requirements of the EIA Regulations in terms of the information included therein.

As advised earlier, the ES presents an assessment of possible significant environmental effects. The whole assessment, but particularly in relation to landscape and visual impact assessment (LVIA), is predicated on the fact that an approval for a wind farm at this site - for 5 turbines at 80m (ref: 13/00532/EIAL) - exists. This approval is accepted as forming part of the baseline conditions and this represents a material consideration in the assessment and determination of this planning application. The ES presents this current application as an alternative, and indeed a variation of the approved scheme. In assessing this proposal, therefore, cognisance will be given to this position and the assessment undertaken will consider the merits and disbenefits of the proposed scheme, with a particular focus on what affects arise from the proposed changes of increasing the height of the turbine, altering the design proportions and the deletion of one turbine.

#### Environmental and Economic Benefits

Policy 6 of TAYplan indicates that one of its aims for the city region is to deliver a low/zero carbon future and contribute to meeting Scottish Government energy and waste targets. The local plan indicates that Angus Council supports the principle of developing sources of renewable energy in appropriate locations. The SPP sets out a "commitment to increase the amount of electricity generated from renewable sources" and includes a target for the equivalent of 100% of Scotland's electricity demand to be generated from renewable sources by 2020 along with a target of 30% of overall energy demand from renewable sources by 2020. Paragraph 154 of the SPP indicates that planning authorities should help to reduce emissions and energy use in new buildings and from new infrastructure by enabling development at appropriate locations that contributes to electricity and heat from renewable sources.

In this case the ES suggests that the CO<sup>2</sup> annually displaced by the proposed wind farm would be equivalent to 8,840 tonnes. The proposed development would contribute towards generation of renewable energy and the applicant indicates that annual production would be sufficient to meet the electricity demand of 4500 homes, which is significant in the context of Angus. The rated output of the proposal is 9.2MW. The ES identifies general economic benefits associated with renewable energy development, including employment generation within the renewables sector. The ES identifies that of the proposed £14.8 million project cost, including the turbines (approximately £3.8 million excluding turbine related expenditure), around £1 million of this would be spent locally within Angus (part of £3 million in Scotland) from electrical to civil engineering companies to the use of local accommodation providers. Ongoing operational expenditure will amount to a potential £268,000 annually of services sourced in Angus (of £385,000 possible in Scotland as a whole).

It is accepted that the proposed turbines could make a contribution towards renewable energy generation and would potentially provide some local economic benefits through the construction period and, to a lesser degree, for ongoing operational requirements. As such the proposal attracts support, in principle, from the development plan. The contribution towards offsetting carbon and the energy output towards Government targets are notably higher than that of the approved scheme. Regard has been given to this contribution in undertaking the assessment of the proposal.

#### Landscape Impact

Policy 6 of TAYplan indicates that in determining proposals for energy development consideration should be given to landscape sensitivity. Local plan Policy ER5 (Conservation of Landscape Character) requires development proposals to take account of the guidance provided by the Tayside Landscape Character Assessment (TLCA), prepared for Scottish Natural Heritage (SNH) in 1999, and indicates that, where appropriate, sites selected should be capable of absorbing the proposed development to ensure that it fits into the landscape. Policy ER34 of the local plan indicates that proposals for renewable energy development will be assessed on the basis of no unacceptable adverse landscape and visual impacts having regard to landscape character, setting within the immediate and wider landscape, and sensitive viewpoints.

The application site lies within an area identified in the TLCA as the Igneous Hill Landscape Character Types (LCT). This LCT is described as a band of hard volcanic rocks that have been more resistant than surrounding beds. The remains survive as, and are split in to, two landscape units of the Ochil Hills and the Sidlaws. The Sidlaws run from Perth to Forfar and are less extensive than the Ochils. In this landscape LCT, hills are most distinct in their southern, Perthshire, end at the Braes of the Carse. They are characterised in the northern, Angus and Perthshire, end as hills that continue to present a distinctive profile of smooth rounded hills which contain the views of Strathmore. In respect of tall structures, the TLCA notes that the hills elevations and proximity to populations make them well suited as locations for telecommunications masts etc. Indeed, it is noted that hilltops in the area are crowned with these structures which introduce strong, vertical and industrial structures in the landscape that are visible over a considerable distance. Two lines of these pylons traverse the east and western boundaries of the application site.

In respect of wind turbine development, the TLCA indicates that there is potential to steer wind farm developments away from exposed and steep ridgelines and summits, and from locations where their visual influence would extend both north and south. It further indicates that consideration should be given to the use of shallow bowls and valleys away from ridges and to maximising the amount of backclothing provided by natural landform. It states that consideration should be given to steering development to areas already affected by masts, roads or forestry.

The Angus Windfarms Landscape Capacity and Cumulative Impacts Study, September 2008, prepared for the council by Ironside Farrar (IFR) also provides further information on the characteristics of the Igneous Hills LCT, its landscape capacity and the likely effect of wind development in this LCT. In terms of landscape capacity the study describes The Igneous Hills - Sidlaw Hills area as having a medium landscape character sensitivity. Visually the area is of a medium sensitivity, varying from enclosed short distance views and a low population within to being a prominent backdrop to Strathmore and Dundee when seen from outwith. There are no landscape designations but the area is of recreational value, as well housing hillforts and scattered dwellings. Overall the landscape is of a medium sensitivity. The scale and type of landscape suggests that careful siting of windfarms of a medium to small scale only would be appropriate.

The Council's Implementation Guide for Renewable Energy Proposals (June 2012) provides the following narrative on wind turbines in this LCT and states:-

*"Considered to have scope for turbines circa 80m in height which do not disrupt the principle ridgelines or adversely affect the setting of important landscape features monuments such as Kinpurney Monument and Auchterhouse hillfort."*

The Implementation Guide (IG) indicates that the existing windfarm character of the Igneous Hills LCT is 'landscape with views of windfarms'. The IG indicates that an acceptable future windfarm character for this LCT would be a 'landscape with occasional windfarms' - that is a landscape whereby visual receptor would 'experience occasional close-quarters views of a windfarm or turbines and more frequent background views of windfarms or turbines. Some turbines may or may not be perceived as being located in the landscape character area.' This type of windfarm character would lead to 'no overall perception of windfarms being a defining feature of the landscape'. The site falls within the Sidlaws landscape character

area of the Igneous Hills LCT where turbines circa 80m in height, which do not disrupt principal ridgelines or adversely affect the setting of monuments, may be acceptable.

The Strategic Landscape Capacity Assessment for Wind Energy in Angus provides guidance on the Igneous Hills LCT and more detailed guidance on the Sidlaws Landscape Character Area (LCA). The guidance on the wider Igneous Hills LCT indicates that turbines should not be located close to key skyline ridges and summits and particularly the escarpment facing south over Dundee and the Firth of Tay and north over Strathmore. Surrounding landform should be used in siting turbines to limit visibility and skylining. It states that the Sidlaws LCA has a medium underlying landscape capacity for medium/large turbines (defined as 50<80m). It indicates that the remaining capacity is the same as the underlying capacity. The study indicates that this area is 'of a medium scale and suitable for turbines up to medium/large scale. Large or very large turbines would be too tall for this scale of landform. Large groups of turbines would overwhelm other key elements of the character' while repeating the need to site turbines away from skylines and summits.

As established in the approved scheme, the site of the proposed turbines is located in a shallow bowl and is, to an extent, enclosed by hills to the west (Finlarg Hill) and north (Hayston Hill). These hills form part of the Sidlaws which provide a backdrop to Dundee and define the southern edge of Strathmore to the north. The landscape scale is medium and there exists capacity for turbines of up to 80m in height, as highlighted by the Renewable Energy Implementation Guide and more recently through The Strategic Landscape Capacity Assessment for Wind Energy in Angus.

As advised, the proposed turbines vary in height, scale and numbers to the approved scheme and to other historic proposals. This is summarised as follows:

<b>Application Ref (Status)</b>	<b>Turbines Nos.</b>	<b>Height (tip)</b>	<b>Height (hub)</b>	<b>Rotor Radius</b>	<b>Proportions (hub height/rotor length)</b>
12/00577/EIAL (Withdrawn)	5	100m	60m	40m	1.50
<b>13/00532/EIAL (Approved)</b>	<b>5</b>	<b>80m</b>	<b>56m</b>	<b>24m</b>	<b>2.33</b>
14/00422/EIAL (Current Proposal)	4	92.5m	57m	35.5m	1.61

It is noted that the turbines in the current application, compared with those approved, are 1m taller to hub height, however, the rotor radius has increased by 11.5m which translates to an overall height increase of 12.5m. More specifically it would also fundamentally alter the characteristics of the turbine appearance; as indicated by the proportion calculations, the proposed scheme would have a much a much greater rotor length in relation to hub height. The towers hubs and blades would be noticeably more substantial than those approved. The turbines would therefore bear more resemblance in size and proportion to the withdrawn 2012 application than the approved 2013 application. The number of turbines reduces from 5 to 4.

Section 6.5 of the ES assesses landscape effects; however, it is considered a weakness of the assessment that it does not consider the proposed turbines in relation to landscape scale. Scottish Natural Heritage (SNH) guidance in relation to landscape scale is contained within paragraphs 3.31 to 3.33 of "Siting and Designing Windfarms in the Landscape (version 2, May 2014)". In particular, paragraph 3.33 lists three tests to find an "appropriate scale". These are as follows:

- Of minor vertical scale in relation to the key features of the landscape (typically less than one third);
- Of minor horizontal scale in relation to the key features of the landscape Where the windfarm surrounded by a much larger proportion of open space than occupied by the development);

- Of minor size compared to other key features and foci within the landscape; or separated from these by a sufficiently large area of open space (either horizontally or vertically) so that direct scale comparison does not occur.

Having assessed the visualisations in Volume 3 of the ES, it is considered that the proposed turbines, at 92.5m to blade tip, would fail the first and third of these tests. This is considered to be best illustrated through two viewpoint examples. Viewpoint 3 - Road to West Tarbrax - is considered to demonstrate that the turbines would appear larger than the hills in the background and out of scale with the small and medium scale houses, farms, trees and field patterns. Viewpoint 9 - Carrot Hill - is considered to demonstrate that, again, the turbines would appear larger than the hills and out of scale with landscape features.

It is accepted that siting of the turbines, on lower ground away from ridges and summits, together with the deletion of turbine 5 (the east most structure), provides some mitigation in terms of the effects on the landscape. However, the vertical scale and comparative size of the turbines highlights that the turbine heights would directly conflict with the maximum height capacity of for this area of the LCT; which is stated as being 80m. This is the exact height of the approved scheme, determined by the Reporter as being acceptable for this area of the Sidlaws. The increase in overall height to 92.5m would therefore exceed both the underlying capacity of the landscape and the acceptable future capacity of the landscape. Turbines of this height would be classified as being 'Large' and of a height and scale that would be too tall for this scale of landform and would overwhelm other key elements of the landscape's medium-scale character. The matter of turbine heights commensurate with the Strategic Landscape Capacity Assessment is highlighted by SNH in its response, and SNH also expresses concern that to introduce taller turbines would set precedence contrary to the Assessment's findings. On the contrary, the retention of the approved scheme would maintain an appropriate scale of structure for the capacity of the landscape and stop such precedence occurring.

It is considered that the increase in turbine heights would increase the significance of effects on the landscape. This would be beyond that of the approved scheme and these effects would not be satisfactorily mitigated by the considerate siting and layout of the scheme. While the effect upon the landscape would mostly be experienced locally these effects are regarded as being unacceptable. The scale of the turbines relative to the landscape was also an issue raised in representation. In this respect it is considered that the proposed development is contrary to Policy 6 of TAYplan and Policies ER5 criteria (a) and (c) and ER34 criterion (b) of the Angus Local Plan Review (2009); as it would result in unacceptable adverse landscape impacts having regard to landscape character and setting within the immediate and wider landscape.

## Visual Impacts

Policy S6 of the Angus Local Plan Review requires that proposals should not give rise to unacceptable visual impacts. Policy ER34 of the Local Plan also indicates that renewable energy development will be assessed on the basis of no unacceptable adverse landscape and visual impacts having regard to landscape character, setting within the immediate and wider landscape, and sensitive viewpoints. In assessing visual impact I consider that it is appropriate to have regard to recent appeal decisions within Angus where this issue has been considered in order to secure a degree of consistency in the decision making process.

The proposed development would be located on lower ground within the Sidlaws - at around 250m AOD, with the adjacent hills being notably higher, in particular Finlurg Hill to the west being approximately 330m AOD. While the turbines are taller than the approved scheme, and therefore by extension visibility of the turbines is greater, this location and turbine siting has substantially contributed towards the visual impact within the wider landscape being more contained than would be the case with a hilltop location. The extent of this visual impact is evidenced in the Zone of Theoretical Visibility (ZTV) figures in the ES; demonstrating that views from the south would be restricted to views from higher ground or longer distances. However, from some locations the turbines would appear more obvious, owing to the taller heights and longer blades; such as from Balmashanner Hill (Viewpoint 11), along the A90(T) corridor

(Viewpoint 10) and Dundee Law (Viewpoint 13). These views demonstrate that the turbines would be observed as being larger than what could be comfortably accommodated within the visual pocket that they would occupy. Observation from these locations, and in particular the views from the A90(T), perhaps also experience the greatest effects, thus further adding to their prominence. The visibility experienced from these locations as a result in the changes to the approved scheme is regarded as being significant.

Planning appeal decisions have generally accepted that residents should be treated as of high sensitivity in assessing the significance of visual impact. The magnitude of change (and, thus, the significance of the impact they will experience) will vary with the context of the house that they occupy: its distance from the proposed wind farm and orientation in relation to it; the presence of intervening screening from vegetation and other buildings; and the presence of other significant visual features. However it is not only the views from principal rooms that are of importance as residents also use the space around their house and the impact on occupiers and visitors approaching or leaving the properties must also be considered.

Within 5km to the east and north, and within 1km to the south and west - where most of the nearby houses are located the turbines would likely dominate views. In particular, views from residential properties within 2km of the site would generally experience a slight rise in impacts - relative to the approved application - due to the increase in overall height and increase in diameter of the rotor blades and the retention of the same separation distances. This would be applicable for the dwellings to the north in and around Govals Farm and to the south at Over Finlarg. Therefore, while these receptors would benefit from experiencing a narrower horizontal extent (through the deletion of turbine 5; where the horizontal spread would reduce by half for some properties to the north and by about third to the properties to the south), the increase in scale and height of the turbines would still result in a significant impact. For the properties to the east at Nether Finlarg and Tarbrax, an increase in magnitude of change would arise from the increased heights. This would be partly mitigated by the deletion of turbine 5 - thus notably increasing the distance to the nearest turbine by approximately 200-250m. However, notwithstanding the improved separation distances, the increased turbine heights would represent an increase in the impacts experienced by residents when compared to the approved scheme. Overall properties within 2km would experience impacts that, like the approved scheme, would be significant.

It is evident that the increase in the turbine height from 80m to 92.5m would increase the overall visibility of the turbines beyond the approved scheme. This would result in significant effects being experienced from many sensitive receptors, such as the aforementioned viewpoints and residential properties. These effects are not, however, on balance, considered to be unacceptable having regard to the impacts that would be experienced as a consequence of the approved scheme. In respect of wider visibility the increased height and change of turbine scale would not be so detrimental to warrant refusal of the application, again having regard to the impacts that would be experienced as a consequence of the approved scheme. For nearby receptors, principally residential properties, there are some improvements to the design and layout which has to be balanced alongside the increased height and scale. It is considered that these elements essentially would cancel each other out and create a neutral change when compared to the approved scheme.

### Cumulative Landscape and Visual Impact

An assessment of cumulative landscape and cumulative visual effects is also required by local and national policy. SNH Guidance on 'Assessing The Cumulative Impact of Onshore Wind Energy Developments' (March 2012) indicates that cumulative landscape effects can include effects on the physical aspects of the landscape and effects on landscape character. Cumulative visual effects can be caused by combined visibility and/or sequential effects. Combined visibility may be in combination i.e. where several windfarms are in the observers arc of vision or in succession where the observer has to turn to see various windfarms. Sequential effects occur when the observer has to move to another viewpoint to see different developments.

The ES identifies the location of operational, approved and in planning wind energy schemes within a 60km radius of the application site. The ES seeks to assess the additional landscape and visual effects

arising from the proposed Frawney turbines with one or more of the schemes identified. A number of schemes are identified as having possible cumulative interaction with the proposal. It advises that consented developments are numerous, many of which are around 5km from the site, some of which are of a large scale; including Govals Farm (6 x 87m turbines at a distance of 1.3km); North Tarbrax (1 x 45m turbine, 1.7km). Tealing Airfield (1 x 93.5m, 5.2km), Wester Meathie (2 x 45.6m, 5.6km) and Ark Hill (8 x 81m, 5.7km) are all operational. A number of other projects are either consented or operational up to 40km from the site. The ES includes cumulative ZTVs for a number of these interactions. The ES concludes that further cumulative impacts (beyond the approved scheme) will be limited.

The ES considers that there will be no notable cumulative landscape effects arising from the increase in height. In respect of visual effects it considers that the pattern of development would not change from the consented scheme.

It is considered that the most significant cumulative effects upon landscape character will be within the context of other approved or operational turbines in the Igneous Hills LCT. In terms of cumulative landscape effects it is not considered that the increased turbine size would impact upon the landscape significantly to warrant refusal of the application.

In terms of cumulative visual impacts it is considered that the proposed height increases would give rise to significant effects. The closest scheme, at Govals, provides the greatest potential for significant effects. This scheme has approval (ref: 12/00270/EIAL) for 6 turbines at 87m (to tip); 60m hub height and rotor radius of 27m. As indicated, the increase in height to 92.5m would increase occurrences of the cumulative visibility and relationship of the proposal with Govals and Ark Hill. The removal of the fifth turbine does provide a simpler layout more similar to the linear form of Govals, and perhaps complements it in this regard. The ES argues that increasing the turbine height of these turbines would more closely match those approved at Govals. However, as referred to in SNH guidance, the landscape design for cumulative impacts arising from wind energy developments goes beyond considering total height only. It is also important to consider the design of the turbines and in particular the ratio of turbine height to rotor diameter. In this respect the proportions of the approved Govals scheme very closely matches that of the approved Frawney scheme; with the Govals proportion being 2.22 (height to hub of 60m and rotor length of 27m) and Frawney being 2.33 (calculated as the hub height against rotor radius). This compares to the proportions of the amended Frawney scheme of 1.61. This means that the resultant rotor diameter of the proposed scheme is much larger than that of the approved Govals scheme. This difference in proportion is best illustrated in the view from Carrot Hill (Viewpoint 9), Balmashanner (Viewpoint 11) and again from the A90(T) (Viewpoint 10). While the proposed amendments to the scheme would be closer in height (albeit 5.5m taller) to Govals, the assertion in the ES that this application seeks to match Govals through this proposal is fundamentally rejected. The new scheme would in fact create disharmony between the two schemes as the proportions of the turbines in the two schemes would be markedly different. In passing it is worth noting that the ratio of the turbines at Ark Hill to the west (which are 79.6m in height, with hubs at 55.6m and 23m rotors) are similar to those that are currently approved at Frawney and Govals.

The contrast in proportion of the turbines, coupled with the increase in height, would lead to an overall increase in cumulative visual effects; which would be a significant change beyond the approved scheme. This would be particularly acute between Frawney and Govals given the short separation distances between the schemes of 1.3km. In its responses to the various schemes SNH has repeatedly asserted that the Frawney and Govals schemes should be commensurate in height and be of a coherent design. This scheme would directly contradict that advice and recognised good practice. Concern is also held that to allow height increases and incoherent landscape design, through varying proportions of turbines, this may set precedence for further larger turbines, which would be directly contrary to the findings of the Strategic Landscape Capacity Assessment for Wind Energy in Angus. This potential impact was cautioned by SNH in their response.

The opinion expressed by SNH on the matter of design coherence is directly informed by their guidance 'Siting and Designing Wind Farms in the Landscape (SNH, Version 2 May 2014)'. Paragraph 2.6 of this document highlights the properties of turbines which are important when choosing the specification and



design of a turbine for a site, which are:

- the proportion of blade length to tower height;
- overall height to blade tip, colour and individual design
- the turbine's dynamic impact, resulting from rotation of its blades (larger, slow moving blades will have a very different impact from shorter, faster moving blades which may give the impression of increased clutter); and
- consistency with other existing and consented turbines in the vicinity.

The amendments proposed here would introduce a new typology of wind turbine design in relation to proportions which would be inconsistent with other existing (Ark Hill) and consented (Govals) turbines in the area and would therefore be in conflict with this guidance. This guidance further advises on the cumulative sensitivities of wind farm design adding that "... it has become increasingly important to consider their cumulative effects and the context in which they are seen. Of particular importance are how developments relate to each other in design". This is considered to be particularly relevant here given the very close proximity to Govals and the significant inter-visibility with that scheme. To introduce a variance of wind turbine design is further cautioned in Paragraph 3.34 of the guidance:

*"Scale indicators within a landscape affect our judgement of perspective and thus our recognition of whether a feature is small or far away, large or near. The introduction of turbines into a landscape can confuse this sense of perspective as they are of undefined size, yet often much larger than any other man-made structures that would help us judge how large and how near they are. Careful consideration is therefore needed in the siting and design of wind farms, and between wind farms, to avoid confusing our sense of perspective. This is particularly the case where different turbine sizes are used and / or where there are gaps between groups of wind turbines at varying distances to viewers."*

It is considered that the incoherence in design that would arise out of the amended scheme would lead to visual confusion and significant cumulative visual effects. These effects are considered to be unacceptable, particularly with the cumulative interaction with Govals, owing to the close distances, the increase in height and the substantial variation in the design and proportion of the proposed turbines. This harmful effect can be avoided, however, through retaining a balance between the Frawney and Govals schemes, as advocated by SNH, through the status quo of the respective approved schemes.

These differences are considered to substantially outweigh the layout improvements and lead to a conclusion that the cumulative visual impacts are unacceptable. This would have a direct effect on receptors; recreations users, transport users and households alike. As such it is considered that the proposal would be contrary to Policy 6 of TAYplan and Policies S1 (b), S6 (b), ER5 (a), ER34 (b) and ER35 (f) of the Angus Local Plan Review as it would have an unacceptable impact on the landscape and visual resource of the area.

#### Amenity (Noise/Shadow Flicker/Reflected Light)

Criterion (a) of ALPR policy ER34 requires the siting and appearance of renewable energy apparatus to be chosen to minimise its impact on amenity, while respecting operational efficiency. Criterion (c) of ALPR policy ER35 indicates wind energy developments must have no unacceptable detrimental effect on residential amenity, existing land uses or road safety by reason of shadow flicker, noise or reflected light. Criterion (a) of Schedule 1 of Policy S6 indicates that the amenity of proposed and existing properties should not be affected by unreasonable restriction of sunlight, daylight or privacy; by smells or fumes; noise levels and vibration; emissions including smoke, soot, ash, dust, grit, or any other environmental pollution; or disturbance by vehicular or pedestrian traffic. Policy ER11 deals specifically with noise pollution.

PAN 1/2011: Planning and Noise indicates there are two sources of noise from wind turbines - the mechanical noise from the turbines and the aerodynamic noise from the blades. Mechanical noise is related to engineering design. Aerodynamic noise varies with rotor design and wind speed, and is generally greatest at low speeds. Good acoustical design and siting of turbines is essential to minimise the potential to generate noise. The Scottish Governments Specific Advice Sheet for onshore wind turbines confirms that proposals should be considered against 'The Assessment and Rating of Noise from Wind Farms' (ETSU-R-97).

The ES contains a noise assessment which has been reviewed by the Council's Environmental Health Service; who are satisfied that it has been undertaken in accordance with the relevant guidance and that the findings indicate that the proposed development can meet the appropriate noise limits. It is however highlighted that potential cumulative effects could arise from the nearby Govals proposal which could impact on nearby properties. It is therefore necessary to allow an appropriate 'freeboard' for this proposal to ensure such effects are not realised. Planning conditions are proposed to ensure that noise limits are met, including setting an absolute noise limit at all noise sensitive properties, specification of the turbine, noise mitigation schemes (as necessary), control over micro-siting, require the wind farm operator to record data and investigate any noise complaints. Noise arising from construction is also proposed to be regulated by condition, to control the hours that construction activities can take place. On that basis of this assessment and controls, it is accepted that the proposal should not result in an unacceptable level of noise.

Government guidance indicates that shadow flicker should not be a problem where sufficient separation distances are provided between turbines and nearby dwellings (as a general rule 10 rotor diameters). The Environmental Health Service has indicated that a shadow flicker assessment would be required and any mitigation measures identified must be incorporated in the operation of the turbines. This could be addressed through a planning condition.

In terms of private water supplies, the ES identifies several supplies in the area. It suggests that with the implementation of best practice mitigation the residual effects on private water supplies will be minor or lower and therefore not deemed significant. The Environmental Health Service has requested a condition covering private water supplies to ensure that mitigation measures are carried out in the event of any interruption to drinking water supplies or an alternative supply provided. The Environmental Health Service has raised no concern in relation to the issue of reflected light.

Criterion (a) of policy ER34 requires the siting and appearance of renewable energy apparatus to be chosen to minimise its impact on amenity, while respecting operational efficiency. As discussed under visual impacts above it has already been concluded that the proposal would give rise to cumulative visual effects that are unacceptable. This would be particularly apparent for properties with views of both the Frawney turbines with the approved Govals scheme; which would affect properties to the north, south and east of the site. The proposal is therefore considered to be contrary to this criterion specifically for visual amenity.

### Impact on Natural Heritage

The development plan framework contains a number of policies that seek to protect important species and sites designated for their natural heritage interest and to ensure that proposals that may affect them are properly assessed. It also indicates that the Local Biodiversity Action Plans will constitute material considerations in determining development proposals. Policy ER35 specifically requires that proposals should demonstrate that there is no unacceptable interference to birds. Policy ER4 requires safeguarding of habitats protected under British and European law or other valuable habitats and species.

The ES presents the results of an Ecological Impact Assessment (EclA). This assessment included an Extended Phase 1 Habitat Survey of the site as well as; National Vegetation Classification (NVC) survey; a bat survey; otter, water vole and badger surveys; habitat assessments for red squirrel, pine marten, wildcat, reptiles and amphibians; vantage point surveys and winter walkover surveys for birds.

The surveys undertaken identified very few protected species as being present, with low bat activity and the potential presence of red squirrels across the wider survey area. Impacts due to the proposed development are not predicted to be significant. The possibility of otter and badger being present cannot be ruled out but impacts are assessed as not being significant. No significant adverse impacts for any of the bird species encountered are expected and no significant cumulative impacts are expected in combination with other wind farms schemes. A series of mitigation measures have been proposed to protect all of these species during construction and operation.

SNH and RSPB have both been consulted on the application and neither has raised an objection. Issues in relation to natural heritage/ecological impact were not considered unacceptable by Angus Council or the Reporter in relation to the approved scheme. It is considered that, subject to mitigation outlined in the ES, the altered proposal would not have any increased adverse impact on natural heritage interests.

### Cultural Heritage

The development plan provides a number of policies that seek to safeguard cultural heritage. These include policies ER16, ER18 and ER19 of the Angus Local Plan Review. Policy ER34 requires proposals for renewable energy development to have no unacceptable detrimental effect on any sites designated for natural heritage, scientific, historic or archaeological reasons. Impacts on cultural heritage can include impacts on Schedule Ancient Monuments (SAM's), Historic Gardens and Designed Landscapes (HGDL's), listed buildings, conservation areas and undesignated archaeology. The development could potentially have direct impacts on cultural heritage features or indirect effects such as impacts on the setting of such interests.

The ES indicates that there are a number of sites of archaeological interest located within and in close proximity to the application site boundary. These sites include Huntingfaulds cairn, some 2.3km south/southwest of the nearest turbine; Arniefoul cairn, some 2.6km north/northwest of the nearest turbine; and Carlunie Hill cairn which is 4.9km west. Historic Scotland has confirmed that they do not object to the planning application and concur with the view and findings of the ES in respect of these Scheduled Ancient Monuments. Aberdeenshire Council's Archaeological Service provides their services to Angus Council. It has not raised any objection to the application on the basis of impact on any archaeological sites in the area, but does agree with the ES that the identified mitigation measures identified in Section 10.4.2 ought to be carried out. No further measures regarding unknown archaeology are specified. It is therefore accepted that neither the physical features nor the setting of any archaeological interests would be adversely affected by the proposed development.

There are a number of listed buildings and a historic garden and designed landscape that could potentially be affected by the proposed development. Most notably these include the A listed Glamis Castle, the cluster of other listed building within its grounds and its associated designed landscape. These assets lie approximately 6km to the northwest of the site. Historic Scotland has considered the impact of the development on those interests and has offered no objection to the application on the basis that there would be no significant impact on the site or setting of any heritage assets within their remit.

There are a number of other B and C listed buildings identified within the study areas set in the ES, including the B listed South Tarbrax to the immediate east of the proposed development and the C listed Over Finlarg Farmhouse that is located within the application site. The impacts on all listed buildings has been assessed, and it is considered that the development would not have an adverse impact on the setting of any listed buildings or historic and designed landscapes to a magnitude that would merit refusal of the application. The nearest conservation area is located at Glamis, just over 4.5km to the northwest. It is not considered that the proposal would have any direct effect on the character or appearance of any conservation area.

Overall, it is concluded that the proposal would not give rise to any unacceptable impacts in terms of scheduled monuments, unscheduled archaeology, historic gardens and designed landscapes, listed buildings or any conservation areas. Indeed, this position replicates the neutral effects of the consented

scheme.

## Socio-economic Impacts

Policy ER30 of the Angus Local Plan Review identifies criteria against which proposals affecting agricultural land and farm units will be considered. These seek to resist irreversible use of prime quality agricultural land and protect the viability of farm units. Policy SC31 seeks to protect open space of recreational, sporting and amenity value. Policies of both the TAYplan and Angus Local Plan Review provide support for appropriate tourism development.

The proposed turbines would be located on land which is capable of producing a moderate range of crops with average to high yields of crops (Category 3.2 as classified by the Macauley Land Use Research Institute). In any case the permanent land take from agricultural use is very low and temporary interruptions during construction and operations are minimal. In this respect, Angus Council is satisfied that the proposals will not result in the loss of any Prime Quality Agricultural Land and would not disrupt existing farming operations.

Turning to recreation interests the proposal has the potential affect those enjoying the area for its recreational attributes. Those who are mostly likely to be affected are users of local footpaths or rights of way, such as riders, cyclists, hill walkers, anglers as well as visitors travelling to the attractions in Strathmore and the Angus and Perthshire Glens. The most direct effect on such interests would be as a consequence of visual impact. However no evidence has been presented to confirm that such impact would reduce visitor numbers or participation in recreational activities to an extent that would impact on the economy of the area.

It is recognised that the construction of a windfarm could potentially generate employment opportunities in the area. In the current economic climate this is an important consideration, and would be in accordance with objectives of many aspects of SPP and the Development Plan. However, in this case, it is not considered that this overrides concerns in relation to the overall unacceptable impact of the development on landscape character and visual amenity.

## Remaining Issues / Other Development Plan Considerations

Policy ER35 of the Angus Local Plan Review indicates that wind farm development should not interfere with authorised aircraft activity. No objection has been received from any aviation related consultee. However, the MoD has requested that planning conditions be attached to any permission granted to ensure a Radar Mitigation Scheme is agreed and that aviation lighting is deployed on the turbines. Similarly, Dundee Airport has requested aviation lighting in this manner. Subject to these conditions, it is considered that there is no reason to suggest that the proposal would interfere with aircraft activity.

The applicant has indicated that the grid connection for the development would be via a 33 kilovolt grid supply point. It is indicated that precise details of the connection are to be agreed and that the grid connection would require consent from Scottish Government under Section 37 of The Electricity Act and would be controlled through that process. At this stage, no unacceptable environmental impacts from that connection are anticipated.

The site is readily accessible from the A90 and relevant consultees have raised no concern regarding road safety. The Roads Service has, however, requested conditions be attached for the submission of a Construction Traffic Management Plan, which would require, amongst other things, submission of measures to ensure that any impacts of construction traffic on the road network are mitigated, and provision of an appropriate finish of the access to the public road. It is therefore not considered that the transportation or access arrangements would give rise to any significant environmental or landscape impact in their own right.

No objections have been received from technical consultees regarding the impact of the development on any existing transmitting or receiving systems. Similarly, no concerns in respect of flood risk have been

raised by SEPA or the Roads Service. It is considered that a planning condition could be used to secure the restoration of the site and the provision of a restoration bond.

In summary, for these technical issues very little has changed that would materially alter the position agreed in the approved scheme. There are no issues with compatibility with the development plan in this respect.

### Other Material Considerations

Scottish Government policy supports the provision of renewable energy development including wind farms. The SPP confirms that planning authorities should support the development of wind farms in locations where amongst other matters the technology can operate efficiently and environmental and cumulative impacts can be satisfactorily addressed. The SPP also indicates that areas identified for wind farms should be suitable for use in perpetuity. Consents may be time-limited but wind farms should nevertheless be sited and designed to ensure impacts are minimised and to protect an acceptable level of amenity for adjacent communities.

In this case it is accepted that the wind turbines would contribute to meeting government targets, and would do so at a more positive rate than the approved scheme, and in this regard attracts support from national policy and from the development plan. However, the proposal is considered to give rise to unacceptable environmental and amenity impacts discussed above.

### Conclusion

Regard has been had to the environmental information provided in the ES and comments received from consultees. Account has also been taken of all relevant representations made both in support and in opposition to these proposals and to the recent appeal decision relating to site. As discussed above the impacts associated with this development, and the changes it proposes to the approved scheme, are considered to be unacceptable and are effects that cannot be mitigated.

The development would contribute towards meeting government energy targets and government guidance confirms that schemes should be supported where the technology can operate efficiently and environmental and cumulative impacts can be satisfactorily addressed. In this case the technology would appear to have potential to operate efficiently. However, the available information suggests that environmental impacts cannot be satisfactorily addressed on this occasion.

In this case, the proposal will give rise to significant landscape and cumulative visual impacts which, having had regard to the Council's published guidance and the assessment of the proposal, are found to be unacceptable. The environmental benefits of the scheme do not outweigh this harm. It is therefore found that the proposal does not accord with the development plan and there are no material considerations to set this incompatibility aside.

### **Human Rights Implications**

The decision to refuse this application has potential implications for the applicant in terms of his entitlement to peaceful enjoyment of his possessions (First Protocol, Article 1). For the reasons referred to elsewhere in this report justifying the decision in planning terms, it is considered that any actual or apprehended infringement of such Convention Rights, is justified. Any interference with the applicant's right to peaceful enjoyment of his possessions by refusal of the present application is in compliance with the Council's legal duties to determine this planning application under the Planning Acts and such refusal constitutes a justified and proportionate control of the use of property in accordance with the general interest and is necessary in the public interest with reference to the Development Plan and other material planning considerations as referred to in the report.

### **Equalities Implications**

The issues contained in this report fall within an approved category that has been confirmed as exempt from an equalities perspective.

## **Decision**

The application is refused.

## **Reason(s) for Decision:**

1. That by virtue of the height of the proposed wind turbines, the development is contrary to Policy 6 of TAYplan and Policies S3, ER5 criteria (a) and (c) and ER34 criterion (b) of the Angus Local Plan Review as it would result in unacceptable adverse landscape impacts having regard to landscape character and setting.
2. That by virtue of the height and proportions of the proposed turbines, the development is contrary to Policy 6 of TAYplan and Policies S1 (b), S6 (b), ER34 (a) and (b) and ER35 (f) of the Angus Local Plan Review as, cumulatively with other operational and/or approved turbines, the proposal would have an unacceptable impact on the visual resource of the area and the visual amenity of receptors.

## **Notes:**

Case Officer: Jamie Scott  
Date: 2 October 2014

## **Development Plan Policies**

### **Angus Local Plan Review 2009**

Policy S1 : Development Boundaries

(a) Within development boundaries proposals for new development on sites not allocated on Proposals Maps will generally be supported where they are in accordance with the relevant policies of the Local Plan.

(b) Development proposals on sites outwith development boundaries (i.e. in the countryside) will generally be supported where they are of a scale and nature appropriate to the location and where they are in accordance with the relevant policies of the Local Plan.

(c) Development proposals on sites contiguous with a development boundary will only be acceptable where there is a proven public interest and social, economic or environmental considerations confirm

there is an overriding need for the development which cannot be met within the development boundary.

#### Policy S3 : Design Quality

A high quality of design is encouraged in all development proposals. In considering proposals the following factors will be taken into account:-

- \* site location and how the development fits with the local landscape character and pattern of development;
- \* proposed site layout and the scale, massing, height, proportions and density of the development including consideration of the relationship with the existing character of the surrounding area and neighbouring buildings;
- \* use of materials, textures and colours that are sensitive to the surrounding area; and
- \* the incorporation of key views into and out of the development.

Innovative and experimental designs will be encouraged in appropriate locations.

#### Policy S4 : Environmental Protection

Where development proposals raise issues under environmental protection regimes, developers will require to demonstrate that any environmental protection matter relating to the site or the development has been fully evaluated. This will be considered alongside planning matters to ensure the proposal would not unacceptably affect the amenity of the neighbourhood.

#### Policy S5 : Safeguard Areas

Planning permission for development within the consultation zones of notifiable installations, pipelines or hazards will only be granted where the proposal accords with the strategy and policies of this Local Plan and there is no objection by the Health & Safety Executive, Civil Aviation Authority or other relevant statutory agency.

#### Policy S6 : Development Principles (Schedule 1)

Proposals for development should where appropriate have regard to the relevant principles set out in Schedule 1 which includes reference to amenity considerations; roads and parking; landscaping, open space and biodiversity; drainage and flood risk, and supporting information.

#### Schedule 1 : Development Principles

##### Amenity

- (a) The amenity of proposed and existing properties should not be affected by unreasonable restriction of sunlight, daylight or privacy; by smells or fumes; noise levels and vibration; emissions including smoke, soot, ash, dust, grit, or any other environmental pollution; or disturbance by vehicular or pedestrian traffic.
- (b) Proposals should not result in unacceptable visual impact.
- (c) Proposals close to working farms should not interfere with farming operations, and will be expected to accept the nature of the existing local environment. New houses should not be sited within 400m of an existing or proposed intensive livestock building. (Policy ER31).

##### Roads/Parking/Access

- (d) Access arrangements, road layouts and parking should be in accordance with Angus Council's Roads Standards, and use innovative solutions where possible, including 'Home Zones'. Provision for cycle parking/storage for flatted development will also be required.
- (e) Access to housing in rural areas should not go through a farm court.
- (f) Where access is proposed by unmade/private track it will be required to be made-up to standards set out in Angus Council Advice Note 17 : Miscellaneous Planning Policies. If the track exceeds 200m in length, conditions may be imposed regarding widening or the provision of passing places where necessary.
- (g) Development should not result in the loss of public access rights. (Policy SC36)

##### Landscaping / Open Space / Biodiversity

- (h) Development proposals should have regard to the Landscape Character of the local area as set out in

the Tayside Landscape Character Assessment (SNH 1998). (Policy ER5)

(i) Appropriate landscaping and boundary treatment should be an integral element in the design and layout of proposals and should include the retention and enhancement of existing physical features (e.g. hedgerows, walls, trees etc) and link to the existing green space network of the local area.

(j) Development should maintain or enhance habitats of importance set out in the Tayside Local Biodiversity Action Plan and should not involve loss of trees or other important landscape features or valuable habitats and species.

(k) The planting of native hedgerows and tree species is encouraged.

(l) Open space provision in developments and the maintenance of it should be in accordance with Policy SC33.

#### Drainage and Flood Risk

(m) Development sites located within areas served by public sewerage systems should be connected to that system. (Policy ER22)

(n) Surface water will not be permitted to drain to the public sewer. An appropriate system of disposal will be necessary which meets the requirements of the Scottish Environment Protection Agency (SEPA) and Angus Council and should have regard to good practice advice set out in the Sustainable Urban Drainage Systems Design Manual for Scotland and Northern Ireland 2000.

(o) Proposals will be required to consider the potential flood risk at the location. (Policy ER28)

(p) Outwith areas served by public sewerage systems, where a septic tank, bio-disc or similar system is proposed to treat foul effluent and /or drainage is to a controlled water or soakaway, the consent of SEPA and Angus Council will be required. (Policy ER23).

(q) Proposals should incorporate appropriate waste recycling, segregation and collection facilities (Policy ER38)

(r) Development should minimise waste by design and during construction.

#### Supporting Information

(s) Where appropriate, planning applications should be accompanied by the necessary supporting information. Early discussion with Planning and Transport is advised to determine the level of supporting information which will be required and depending on the proposal this might include any of the following: Air Quality Assessment; Archaeological Assessment; Contaminated Land Assessment; Design Statement; Drainage Impact Assessment; Environmental Statement; Flood Risk Assessment; Landscape Assessment and/or Landscaping Scheme; Noise Impact Assessment; Retail Impact Assessment; Transport Assessment.

#### Policy ER1 : Natura 2000 and Ramsar Sites

Development likely to have a significant effect on a designated, candidate or proposed Natura 2000 site (Special Protection Areas and Special Areas of Conservation), or Ramsar site and not connected with or necessary to the conservation management of the site must undergo an appropriate assessment as required by Regulation 48 of the Conservation (Natural Habitats etc.) Regulations 1994. Development will only be permitted exceptionally and where the assessment indicates that:

(a) it will not adversely affect the integrity of the site; or

(b) there are no alternative solutions; and

(c) there are imperative reasons of overriding public interest, including those of a social or economic nature.

Where proposals affect a priority habitat and/or priority species as defined by the Habitats Directive (92/43/EEC), the only overriding public interest must relate to human health, public safety or beneficial consequences of primary importance to the environment. Other allowable exceptions are subject to the views of the European Commission.

#### Policy ER2 : National Nature Reserves and Sites of Special Scientific Interest

Developments affecting National Nature Reserves and Sites of Special Scientific Interest will only be permitted exceptionally where it can be adequately demonstrated that either:-

(a) the proposed development will not compromise, destroy or adversely affect the conservation



objectives and/or particular interest for which the site was notified; or

(b) there is an overriding and proven public interest where social or economic considerations outweigh the need to safeguard the ecological, geological or geomorphological interest of the site and the need for the development cannot be met in other less damaging locations or by reasonable alternative means.

#### Policy ER3 : Regional and Local Designations

Development which would adversely affect sites containing habitats, species, and/or geological or geomorphological features of local or regional importance, whether designated or otherwise, will only be permitted where:

(a) ecological appraisals have demonstrated to the satisfaction of the Council that the overall integrity of the site and the features of natural heritage value will not be compromised; or

(b) the economic and social benefits arising from the proposal significantly outweigh the natural heritage value of the site.

#### Policy ER4 : Wider Natural Heritage and Biodiversity

The Council will not normally grant planning permission for development that would have a significant adverse impact on species or habitats protected under British or European Law, identified as a priority in UK or Local Biodiversity Action Plans or on other valuable habitats or species.

Development proposals that affect such species or habitats will be required to include evidence that an assessment of nature conservation interest has been taken into account. Where development is permitted, the retention and enhancement of natural heritage and biodiversity will be secured through appropriate planning conditions or the use of Section 75 Agreements as necessary.

#### Policy ER5 : Conservation of Landscape Character

Development proposals should take account of the guidance provided by the Tayside Landscape Character Assessment and where appropriate will be considered against the following criteria:

(a) sites selected should be capable of absorbing the proposed development to ensure that it fits into the landscape;

(b) where required, landscape mitigation measures should be in character with, or enhance, the existing landscape setting;

(c) new buildings/structures should respect the pattern, scale, siting, form, design, colour and density of existing development;

(d) priority should be given to locating new development in towns, villages or building groups in preference to isolated development.

#### Policy ER11 : Noise Pollution

Development which adversely affects health, the natural or built environment or general amenity as a result of an unacceptable increase in noise levels will not be permitted unless there is an overriding need which cannot be accommodated elsewhere.

Proposals for development generating unacceptable noise levels will not generally be permitted adjacent to existing or proposed noise-sensitive land uses. Proposals for new noise-sensitive development which would be subject to unacceptable levels of noise from an existing noise source or from a proposed use will not be permitted.

#### Policy ER12 : Development Affecting Conservation Areas

Development proposals within conservation areas or affecting the setting of such areas will be supported where they:

(a) respect the character and appearance of the area in terms of:

- \* density, scale, proportion and massing;
- \* layout, grouping and setting;
- \* design, materials and finish;

(b) contribute positively to the setting of the area and maintain important views within, into or out of the area;

(c) retain particular features which contribute to the character and appearance of the area:

- \* open spaces;
- \* walls and other means of enclosure;
- \* ground surfaces;
- \* natural features such as trees and hedgerows;
- \* accord with the Character Statement for the area.

#### Policy ER16 : Development Affecting the Setting of a Listed Building

Development proposals will only be permitted where they do not adversely affect the setting of a listed building. New development should avoid building in front of important elevations, felling mature trees and breaching boundary walls.

#### Policy ER18 : Archaeological Sites of National Importance

Priority will be given to preserving Scheduled Ancient Monuments in situ. Developments affecting Scheduled Ancient Monuments and other nationally significant archaeological sites and historic landscapes and their settings will only be permitted where it can be adequately demonstrated that either:

- (a) the proposed development will not result in damage to the scheduled monument or site of national archaeological interest or the integrity of its setting; or
- (b) there is overriding and proven public interest to be gained from the proposed development that outweighs the national significance attached to the preservation of the monument or archaeological importance of the site. In the case of Scheduled Ancient Monuments, the development must be in the national interest in order to outweigh the national importance attached to their preservation; and
- (c) the need for the development cannot reasonably be met in other less archaeologically damaging locations or by reasonable alternative means; and
- (d) the proposal has been sited and designed to minimise damage to the archaeological remains.

Where development is considered acceptable and preservation of the site in its original location is not possible, the excavation and recording of the site will be required in advance of development, at the developer's expense

#### Policy ER19 : Archaeological Sites of Local Importance

Where development proposals affect unscheduled sites of known or suspected archaeological interest, Angus Council will require the prospective developer to arrange for an archaeological evaluation to determine the importance of the site, its sensitivity to development and the most appropriate means for preserving or recording any archaeological information. The evaluation will be taken into account when determining whether planning permission should be granted with or without conditions or refused.

Where development is generally acceptable and preservation of archaeological features in situ is not feasible Angus Council will require through appropriate conditions attached to planning consents or through a Section 75 Agreement, that provision is made at the developer's expense for the excavation and recording of threatened features prior to development commencing.

#### Policy ER20 : Historic Landscapes and Designed Landscapes

Sites included in the "Inventory of Gardens and Designed Landscapes in Scotland", and any others that may be identified during the plan period, will be protected from development that adversely affects their character, amenity value and historic importance. Development proposals will only be permitted where it can be demonstrated that:

- (a) the proposal will not significantly damage the essential characteristics of the garden and designed landscape or its setting; or
- (b) there is a proven public interest, in allowing the development, which cannot be met in other less damaging locations or by reasonable alternative means.

Protection will also be given to non-inventory historic gardens, surviving features of designed landscapes, and parks of regional or local importance, including their setting.

#### Policy ER34 : Renewable Energy Developments

Proposals for all forms of renewable energy developments will be supported in principle and will be assessed against the following criteria:

- (a) the siting and appearance of apparatus have been chosen to minimise the impact on amenity, while respecting operational efficiency;
- (b) there will be no unacceptable adverse landscape and visual impacts having regard to landscape character, setting within the immediate and wider landscape, and sensitive viewpoints;
- (c) the development will have no unacceptable detrimental effect on any sites designated for natural heritage, scientific, historic or archaeological reasons;
- (d) no unacceptable environmental effects of transmission lines, within and beyond the site; and
- (e) access for construction and maintenance traffic can be achieved without compromising road safety or causing unacceptable permanent change to the environment and landscape, and
- (f) that there will be no unacceptable impacts on the quantity or quality of groundwater or surface water resources during construction, operation and decommissioning of the energy plant.

#### Policy ER35 : Wind Energy Developments

Wind energy developments must meet the requirements of Policy ER34 and also demonstrate:

- (a) the reasons for site selection;
- (b) that no wind turbines will cause unacceptable interference to birds, especially those that have statutory protection and are susceptible to disturbance, displacement or collision;
- (c) there is no unacceptable detrimental effect on residential amenity, existing land uses or road safety by reason of shadow flicker, noise or reflected light;
- (d) that no wind turbines will interfere with authorised aircraft activity;
- (e) that no electromagnetic disturbance is likely to be caused by the proposal to any existing transmitting or receiving system, or (where such disturbances may be caused) that measures will be taken to minimise or remedy any such interference;
- (f) that the proposal must be capable of co-existing with other existing or permitted wind energy developments in terms of cumulative impact particularly on visual amenity and landscape, including impacts from development in neighbouring local authority areas;
- (g) a realistic means of achieving the removal of any apparatus when redundant and the restoration of the site are proposed.

### **TAYplan Strategic Development Plan**

#### Policy 3D : Natural and Historic Assets

Understanding and respecting the regional distinctiveness and scenic value of the TAYplan area through:-

- ensuring development likely to have a significant effect on a designated or proposed Natura 2000 sites (either alone or in combination with other sites or projects), will be subject to an appropriate assessment. Appropriate mitigation requires to be identified where necessary to ensure there will be no adverse effect on the integrity of Natura 2000 sites in accordance with Scottish Planning Policy;
- safeguarding habitats, sensitive green spaces, forestry, watercourses, wetlands, floodplains (in-line with the water framework directive), carbon sinks, species and wildlife corridors, geo-diversity,

landscapes, parks, townscapes, archaeology, historic buildings and monuments and allow development where it does not adversely impact upon or preferably enhances these assets; and,

- identifying and safeguarding parts of the undeveloped coastline along the River Tay Estuary and in Angus and North Fife, that are unsuitable for development and set out policies for their management; identifying areas at risk from flooding and sea level rise and develop policies to manage retreat and realignment, as appropriate.

Policy 6C : Consider Criteria as Minimum

Local Development Plans and development proposals should ensure that all areas of search, allocated sites, routes and decisions on development proposals for energy and waste/resource management infrastructure have been justified, at a minimum, on the basis of these considerations:-

- The specific land take requirements associated with the infrastructure technology and associated statutory safety exclusion zones where appropriate;
- Waste/resource management proposals are justified against the Scottish Government's Zero Waste Plan and support the delivery of the waste/resource management hierarchy;
- Proximity of resources (e.g. woodland, wind or waste material); and to users/customers, grid connections and distribution networks for the heat, power or physical materials and waste products, where appropriate;
- Anticipated effects of construction and operation on air quality, emissions, noise, odour, surface and ground water pollution, drainage, waste disposal, radar installations and flight paths, and, of nuisance impacts on of-site properties;
- Sensitivity of landscapes (informed by landscape character assessments and other work), the water environment, biodiversity, geo-diversity, habitats, tourism, recreational access and listed/scheduled buildings and structures;
- Impacts of associated new grid connections and distribution or access infrastructure;
- Cumulative impacts of the scale and massing of multiple developments, including existing infrastructure;
- Impacts upon neighbouring planning authorities (both within and outwith TAYplan); and,
- Consistency with the National Planning Framework and its Action Programme.

**DEVELOPMENT BOUNDARIES**

1.29 Angus Council has defined development boundaries around settlements to protect the landscape setting of towns and villages and to prevent uncontrolled growth. The presence of a boundary does not indicate that all areas of ground within that boundary have development potential.

**Development boundaries:**

Generally provide a definition between built-up areas and the countryside, but may include peripheral areas of open space that are important to the setting of settlements.

**Policy S1 : Development Boundaries**

**(a) Within development boundaries proposals for new development on sites not allocated on Proposals Maps will generally be supported where they are in accordance with the relevant policies of the Local Plan.**

**(b) Development proposals on sites outwith development boundaries (i.e. in the countryside) will generally be supported where they are of a scale and nature appropriate to the location and where they are in accordance with the relevant policies of the Local Plan.**

**(c) Development proposals on sites contiguous with a development boundary will only be acceptable where there is a proven public interest and social, economic or environmental considerations confirm there is an overriding need for the development which cannot be met within the development boundary.**

**Public interest:** Development would have benefits for the wider community, or is justifiable in the national interest.

Proposals that are solely of

commercial benefit to the proposer would not comply with this policy.

## DESIGN QUALITY

1.37 High quality, people-friendly surroundings are important to a successful development. New development should add to or improve the local environment and should consider the potential to use innovative, sustainable and energy efficient solutions. A well-designed development is of benefit to the wider community and also provides opportunities to:

- create a sense of place which recognises local distinctiveness and fits in to the local area;
- create high quality development which adds to or improves the local environment and is flexible and adaptable to changing lifestyles;
- create developments which benefit local biodiversity;
- create energy efficient developments that make good use of land
- and finite resources.

1.38 Design is a material consideration in determining planning applications. In all development proposals consideration should be given to the distinctive features and character of the local area. This includes taking account of existing patterns of development, building forms and materials, existing features such as hedgerows, trees, treelines and walls and distinctive landscapes and skylines.

1.39 The preparation of a design statement to be submitted alongside a planning application is encouraged, particularly for major developments or those affecting listed buildings or conservation areas. Early contact with Planning and Transport is recommended so that the requirement for a design statement can be determined.

**Designing Places - A policy statement for Scotland – Scottish Executive 2001** This is the first policy statement on designing places in Scotland and marks the Scottish Executive's determination to raise standards of urban and rural development. Good design is an integral part of a confident, competitive and compassionate Scotland.

Good design is a practical means of achieving a wide range of social, economic and environmental goals, making places that will be successful and sustainable.

**PAN 68 Design Statements** Design Statements should explain the design principles on which the development is based and illustrate the design solution.

The PAN explains what a design statement is, why it is a useful tool, when it is required and how it should be prepared and presented.

The aim is to see design statements used more effectively in the planning process and to

### Policy S3 : Design Quality

**A high quality of design is encouraged in all development proposals. In considering proposals the following factors will be taken into account:**

- **site location and how the development fits with the local landscape character and pattern of development;**
- **proposed site layout and the scale, massing, height, proportions and density of the development including consideration of the relationship with the existing character of the surrounding area and neighbouring buildings;**
- **use of materials, textures and colours that are sensitive to**
- **the surrounding area; and**
- **the incorporation of key views into and out of the development.**

**Innovative and experimental designs will be encouraged in appropriate locations.**

## ENVIRONMENTAL PROTECTION

1.40 Effective environmental protection requires a co-ordinated approach by those with legislative responsibility for development proposals and their consequences. Planning authorities and environmental protection bodies (mainly SEPA and the Council's Environmental Protection Service) have different powers and functions that can on occasions overlap, and planning controls should not duplicate other statutory controls.

1.41 The need for collaboration between the relevant agencies is stressed in PAN 51 Planning and Environmental Protection and research published by SEDD\* in 2004. Angus Council will therefore further strengthen joint working with the other enforcing agencies to guide and control relevant forms of development. This will apply to the environmental regimes listed in PAN51 or subsequent regimes. (See also Policy S6 : Development Principles)

**SPP1 The Planning System** *The planning system should not be used to secure objectives that are more properly achieved under other legislation. The grant of planning permission does not remove the need to seek other statutory consents nor does it imply that the consents will be forthcoming.*

**\*SEDD Research Findings No. 192/2004** *'The Interaction between Land Use Planning and Environmental Regulation.'*

### Policy S4 : Environmental Protection

**Where development proposals raise issues under environmental protection regimes, developers will require to demonstrate that any environmental protection matter relating to the site or the development has been fully evaluated. This will be considered alongside planning matters to ensure the proposal would not unacceptably affect the amenity of the neighbourhood.**

## **SAFEGUARD AREAS**

1.42 Angus Council is required to consult a number of statutory agencies, such as the Health and Safety Executive (HSE) or the Civil Aviation Authority (CAA), where development proposals fall within the prescribed consultation zones of notifiable installations, pipelines or hazards. Where appropriate, the consultation areas are illustrated on the Proposals Maps.

1.43 Angus contains a number of installations handling notifiable substances, including pipelines. Whilst they are subject to stringent controls under existing health and safety legislation such as the Health and Safety at Work etc. Act 1974 and the Control of Major Accident Hazards Regulations 1999 (COMAH), it is also a requirement of European Council Directive 96/82/EC (Seveso II) to control the kinds of development permitted in the vicinity of these installations. For this reason the Planning Authority has been advised by the HSE of consultation distances for each of these installations. In determining whether or not to grant planning permission for a proposed development within these consultation distances the Planning Authority will consult with the HSE about risks to the proposed development from the notifiable installation in accordance with the Town and Country Planning (Hazardous Substances) (Scotland) Regulations 1993 (Circular 5/1993). This will take account of the requirements of the Seveso II Directive to maintain appropriate distances between establishments and residential areas, areas of public use and areas of particular natural sensitivity or interest, so as not to increase the risks to people.

### **Policy S5 : Safeguard Areas**

**Planning permission for development within the consultation zones of notifiable installations, pipelines or hazards will only be granted where the proposal accords with the strategy and policies of this Local Plan and there is no objection by the Health & Safety Executive, Civil Aviation Authority or other relevant statutory agency.**



**DEVELOPMENT PRINCIPLES**

1.44 The principles in Schedule 1 provide a 'checklist' of factors which should be considered where relevant to development proposals. They include amenity considerations; roads and parking; landscaping, open space and biodiversity; drainage and flood risk, and supporting information. The Local Plan includes more detailed policies relating to some principles set out. Not all development proposals will require to comply with all of the principles.

**Policy S6 : Development Principles**

**Proposals for development should where appropriate have regard to the relevant principles set out in Schedule 1 which includes reference to amenity considerations; roads and parking; landscaping, open space and biodiversity; drainage and flood risk, and supporting information.**

**Schedule 1 : Development Principles****Amenity**

- a) The amenity of proposed and existing properties should not be affected by unreasonable restriction of sunlight, daylight or privacy; by smells or fumes; noise levels and vibration; emissions including smoke, soot, ash, dust, grit, or any other environmental pollution; or disturbance by vehicular or pedestrian traffic.
- b) Proposals should not result in unacceptable visual impact.
- c) Proposals close to working farms should not interfere with farming operations, and will be expected to accept the nature of the existing local environment. New houses should not be sited within 400m of an existing or proposed intensive livestock building. (Policy ER31).

**Roads/Parking/Access**

- d) Access arrangements, road layouts and parking should be in accordance with Angus Council's Roads Standards, and use innovative solutions where possible, including 'Home Zones'. Provision for cycle parking/storage for flatted development will also be required.
- e) Access to housing in rural areas should not go through a farm court.
- f) Where access is proposed by unmade/private track it will be required to be made-up to standards set out in Angus Council Advice Note 17: Miscellaneous Planning Policies. If the track exceeds 200m in length, conditions may be imposed regarding widening or the provision of passing places where necessary
- g) Development should not result in the loss of public access rights. (Policy SC36)

**Landscaping / Open Space / Biodiversity**

- h) Development proposals should have regard to the Landscape Character of the local area as set out in the Tayside Landscape Character Assessment (SNH 1998). (Policy ER5)
- i) Appropriate landscaping and boundary treatment should be an integral element in the design and layout of proposals and should include the retention and enhancement of existing physical features (e.g. hedgerows, walls, trees etc) and link to the existing green space network of the local area.
- j) Development should maintain or enhance habitats of importance set out in the Tayside Local Biodiversity Action Plan and should not involve loss of trees or other important landscape features or valuable habitats and species.
- k) The planting of native hedgerows and tree species is encouraged.
- l) Open space provision in developments and the maintenance of it should be in accordance with Policy SC33.

**Drainage and Flood Risk**

- m) Development sites located within areas served by public sewerage systems should be connected to that system. (Policy ER22)
- n) Surface water will not be permitted to drain to the public sewer. An appropriate system of disposal will be necessary which meets the requirements of the Scottish Environment Protection Agency (SEPA) and Angus Council and should have regard to good practice advice set out in the Sustainable Urban Drainage Systems Design Manual for Scotland and Northern Ireland 2000.
- o) Proposals will be required to consider the potential flood risk at the location. (Policy ER28)
- p) Outwith areas served by public sewerage systems, where a septic tank, bio-disc or similar system is proposed to treat foul effluent and /or drainage is to a controlled water or soakaway, the consent of SEPA and Angus Council will be required. (Policy ER23).

**Waste Management**

- q) Proposals should incorporate appropriate waste recycling, segregation and collection facilities (Policy ER38).
- r) Development should minimise waste by design and during construction.

**Supporting Information**

- s) (s) Where appropriate, planning applications should be accompanied by the necessary supporting information. Early discussion with Planning and Transport is advised to determine the level of supporting information which will be required and depending on the proposal this might include any of the following: Air Quality Assessment; Archaeological Assessment; Contaminated Land Assessment; Design Statement; Drainage Impact Assessment; Environmental Statement; Flood Risk Assessment; Landscape Assessment and/or Landscaping Scheme; Noise Impact Assessment; Retail Impact Assessment; Transport Assessment.

## THE NATURAL ENVIRONMENT

3.6 Areas of the natural environment of Angus are of international, national and local importance for their ecological, geological and geomorphological interest. In line with Government objectives the protection and enhancement of the area's rich and varied environmental assets is central to Angus Council's approach to the sustainable use of resources.

### Ecology, Habitat and Geological Conservation

3.7 A range of sites in Angus have been recognised for their wildlife and geological interest. Those of international importance for wild birds include Ramsar sites and Special Protection Areas. Those of international importance for rare, vulnerable or endangered habitats and species of plants or animals are designated as Special Areas of Conservation. Together these form a European Community wide network of protected areas, known as Natura 2000. In addition Angus has a number of areas covered by national designations, including National Nature Reserves and Sites of Special Scientific Interest. The areas of international and national natural heritage designation are listed in Figure 3.1 and shown on the main Proposals Map.

#### Policy ER1 : Natura 2000 and Ramsar Sites

Development likely to have a significant effect on a designated, candidate or proposed Natura 2000 site (Special Protection Areas and Special Areas of Conservation), or Ramsar site and not connected with or necessary to the conservation management of the site must undergo an appropriate assessment as required by Regulation 48 of the Conservation (Natural Habitats etc.) Regulations 1994. Development will only be permitted exceptionally and where the assessment indicates that:

- (a) it will not adversely affect the integrity of the site; or
- (b) there are no alternative solutions; and
- (c) there are imperative reasons of overriding public interest, including those of a social or economic nature.

Where proposals affect a priority habitat and/or priority species as defined by the Habitats Directive (92/43/EEC), the only overriding public interest must relate to human health, public safety or beneficial consequences of primary importance to the environment. Other allowable exceptions are subject to the views of the European Commission.

#### **NPPG 14: Natural Heritage (1999):**

*The Government's objectives for Scotland's natural heritage are to conserve, safeguard and, where possible, enhance:*

- *the overall populations and natural ranges of native species and the quality and range of wildlife habitats and ecosystems;*
- *geological and physiographical features;*
- *the natural beauty and amenity of the countryside and the natural heritage interest of urban areas; and*
- *opportunities for enjoying and learning about the natural environment*

#### **Natura 2000:**

*a network of areas designated to conserve rare, endangered or vulnerable natural habitats and species of wildlife comprising:-*

#### **Special Protection Areas (SPAs):**

*areas classified by the Scottish Ministers in accordance with the EC Birds Directive for the purpose of protecting the habitats of rare, threatened or migratory bird species.*

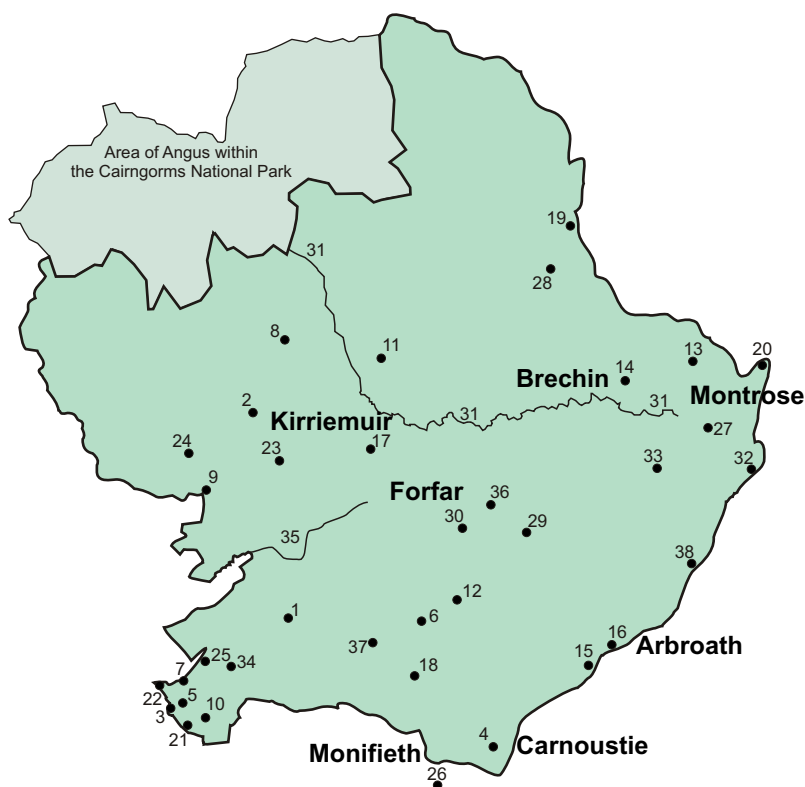
#### **Special Areas of Conservation (SACs):**

*areas designated by the Scottish Ministers 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.*

#### **Ramsar Site:**

*wetland of worldwide importance particularly those containing large numbers of waterfowl. Sites include marshes, fens, peatlands, estuaries, open water and in-shore marine areas, and their associated plant life and animals.*

Figure 3.1 - Natural Heritage Designations



REF		NNR	SAC	SPA	RAMSAR	SSSI	GCR	OTHER
1	AUCHTERHOUSE HILL					●		
2	BALLOCH MOSS					●		
3	BALSHANDO BOG					●		
4	BARRY LINKS		●	●		●	●	
5	BLACKLAW HILL MIRE					●		
6	CARROT HILL MEADOW					●		
7	CRAIGS OF LUNDIE AND ARDGARTH LOCH					●		
8	CROSSBOG PINEWOOD					●		
9	DEN OF AIRLIE*	●				●		
10	DEN OF FOWLIS					●		
11	DEN OF OGIL					●		
12	DILTY MOSS					●		
13	DRYLEY'S BRICKPIT					●	●	
14	DUN'S DISH			●	●	●		
15	EASTHAVEN					●		
16	ELLIOT LINKS					●		
17	FORESTMUIR					●		
18	GAGIE MARSH					●		
19	GANNOCHY GORGE					●	●	
20	KINNABER LINKS (part of ST. CYRUS S.S.S.I.)	●				●		
21	LITTLE BALLO					●		
22	LOCHINDORES					●		
23	LOCH OF KINNORDY			●	●	●		
24	LOCH OF LINTRATHEN			●	●	●		
25	LONG LOCH OF LUNDIE					●		
26	MONIFIETH BAY		●		●	●		
27	MONTROSE BASIN			●	●	●	●	● LNR
28	NORTH ESK & WEST WATER PALEOCHANNELS					●	●	
29	RESCOBIE AND BALGAVIES LOCHS					●		
30	RESTENNETH MOSS					●		
31	RIVER SOUTH ESK (linear)		●					
32	RICKLE CRAIG - SCURDIE NESS					●	●	
33	ROSSIE MOOR					●		
34	ROUND LOCH OF LUNDIE					●		
35	THE RIVER TAY & ITS TRIBUTARIES(linear)		●					
36	TURIN HILL (composite site)					●	●	
37	WHITEHOUSE DEN					●	●	
38	WHITING NESS - ETHIE HAVEN COAST					●	●	

**NNR** - National Nature Reserve  
**SAC** - Special Area of Conservation  
**SPA** - Special Protection Area  
**SSSI** - Site of Special Scientific Interest  
**GCR** - Geological Conservation Review Site  
 (i.e. site is partly or wholly a SSSI for its geological interest.)  
**LNR** - Local Nature Reserve  
**NSA** - National Scenic Area  
 ● Designated  
 x Candidate  
 ○ Proposed  
 \* Site in process of being de-declared as an NNR

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## **Policy ER2 : National Nature Reserves and Sites of Special Scientific Interest**

**Developments affecting National Nature Reserves and Sites of Special Scientific Interest will only be permitted exceptionally where it can be adequately demonstrated that either:**

- (a) the proposed development will not compromise, destroy or adversely affect the conservation objectives and/or particular interest for which the site was notified; or**
- (b) there is an overriding and proven public interest where social or economic considerations outweigh the need to safeguard the ecological, geological or geomorphological interest of the site and the need for the development cannot be met in other less damaging locations or by reasonable alternative means.**

### ***National Nature Reserves (NNRs):***

*areas of national or international importance for nature conservation which include some of the most important natural and semi-natural habitats in Great Britain.*

### ***Sites of Special Scientific Interest (SSSIs):***

*areas of land or water which in the opinion of Scottish Natural Heritage are of special interest by reason of their flora, fauna, or geological or physiographical features.*

### ***Local Nature Reserves:***

*areas of locally important nature conservation or amenity value which give access to the public.*

3.8 Angus also contains a number of sites of regional or local nature conservation or geological interest including Regionally Important Geological Sites, Local Nature Reserves and sites of recognised local nature conservation importance.

### **Policy ER3 : Regional and Local Designations**

**Development which would adversely affect sites containing habitats, species, and/or geological or geomorphological features of local or regional importance, whether designated or otherwise, will only be permitted where:**

- (a) ecological appraisals have demonstrated to the satisfaction of the Council that the overall integrity of the site and the features of natural heritage value will not be compromised; or**
- (b) the economic and social benefits arising from the proposal significantly outweigh the natural heritage value of the site.**

## **Wider Natural Heritage and Biodiversity**

3.9 The protection and enhancement of the natural heritage value of the wider environment beyond the confines of designated areas is necessary to promote biodiversity. Species or habitats protected under the Wildlife and Countryside Act 1981, EC Birds or Habitat Directives or identified as priorities in the UK Biodiversity Action Plan may be found outwith designated sites. Local Biodiversity Action Plans have been prepared for both Tayside and the Cairngorms with the aim of safeguarding the future of the area's habitats and species. Implementation of these LBAPs is progressing through the preparation and implementation of a series of habitat and species action plans. The Local Biodiversity Action Plans for Tayside and the Cairngorms will be material considerations in the determination of planning applications.

### **Policy ER4 : Wider Natural Heritage and Biodiversity**

**The Council will not normally grant planning permission for development that would have a significant adverse impact on species or habitats protected under British or European Law, identified as a priority in UK or Local Biodiversity Action Plans or on other valuable habitats or species.**

**Development proposals that affect such species or habitats will be required to include evidence that an assessment of nature conservation interest has been taken into account. Where development is permitted, the retention and enhancement of natural heritage and biodiversity will be secured through appropriate planning conditions or the use of Section 75 Agreements as necessary.**

## Landscape Character

3.10 The landscape of Angus is one of its most important assets. It ranges in character from the rugged mountain scenery of the Angus Glens, through the soft rolling cultivated lowland landscape of Strathmore to the sandy bays and cliffs of the coast.

3.11 A small part of north-west Angus is statutorily designated as part of a larger National Scenic Area (NSA). The character and quality of this landscape is of national significance and special care should be taken to conserve and enhance it. Part of the upland area of Angus, including the NSA, is contained within the Cairngorms National Park which is excluded from the Angus Local Plan Review. The guidance provided by the adopted Angus Local Plan will remain in force until it is replaced by a Cairngorms National Park Local Plan prepared by the National Park Authority. The Cairngorms was made a National Park in September 2003 because it is a unique and special place that needs to be cared for – both for the wildlife and countryside it contains and for the people that live in it, manage it and visit it. It is Britain's largest national park.

3.12 In seeking to conserve the landscape character of the area it is important to assess the impact of development proposals on all parts of the landscape. To assist in this the "Tayside Landscape Character Assessment (1999)" commissioned by Scottish Natural Heritage establishes landscape character zones and key character features within the local plan area to provide a better understanding of them and thus to enable better conservation, restoration, management and enhancement. Landscape Character Zones for the Local Plan Area are shown in Figure 3.2.

### **National Scenic Area:**

*Nationally important area of outstanding natural beauty, representing some of the best examples of Scotland's grandest landscapes particularly lochs and mountains.*

**National Park (Scotland) Act 2000** sets out four key aims for the park:

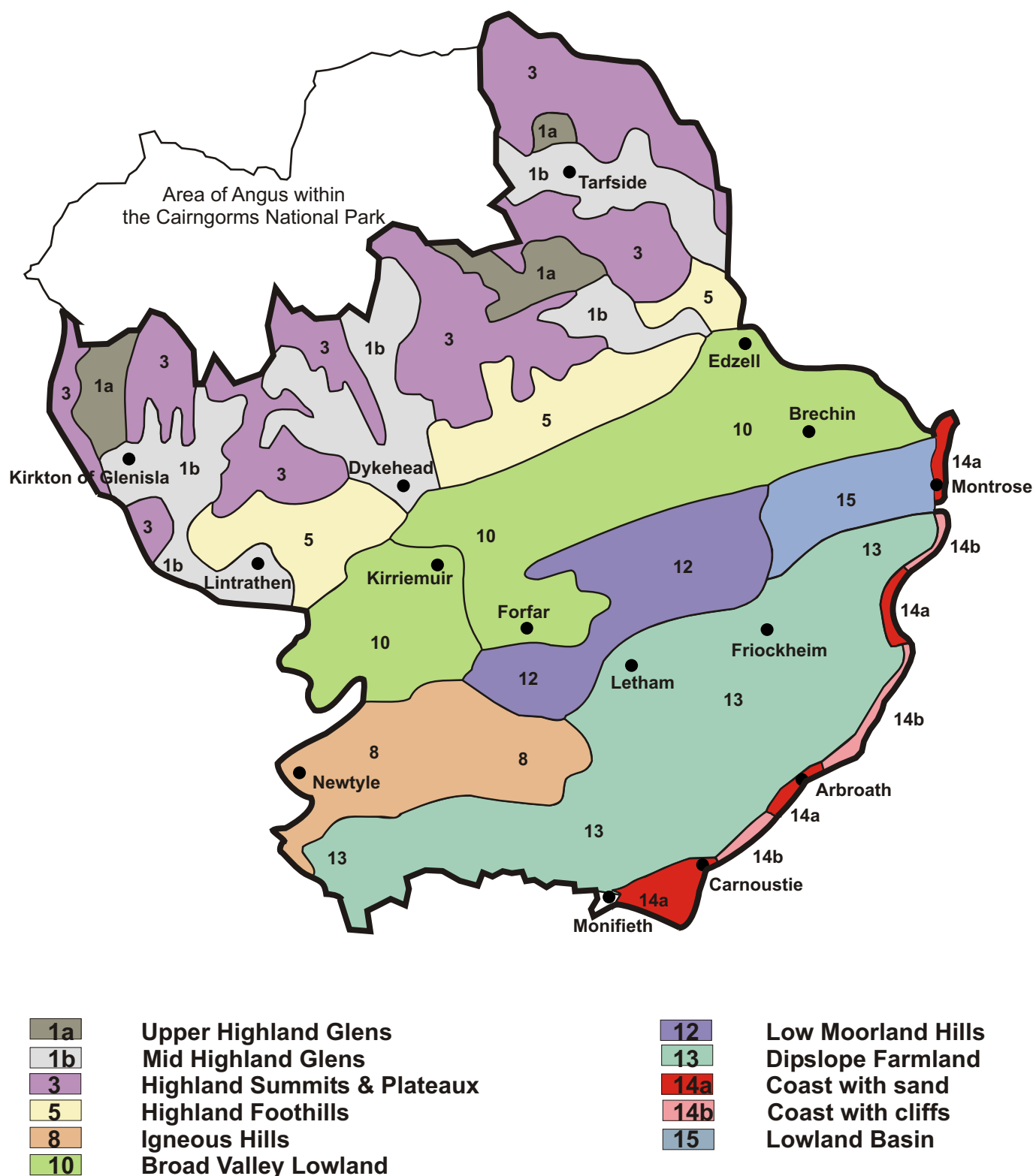
- *To conserve and enhance the natural and cultural heritage of the area;*
- *To promote sustainable use of the natural resources of the area;*
- *To promote understanding and enjoyment (including recreation) of the special qualities of the area by the public;*
- *To promote sustainable economic and social development of the area's communities.*

### **Tayside Landscape Character Assessment 1999:**

*A detailed hierarchical assessment based on variations in the Tayside landscape, with a series of management and planning guidelines designed to conserve and enhance its distinctive character.*



Figure 3.2 : Landscape Character Zones



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3.13 Where appropriate, development proposals will be considered in the context of the guidance provided by the Tayside Landscape Character Assessment. The assessment identifies different landscape character zones, considers their capacity to absorb change, and indicates how various types of development might best be accommodated to conserve characteristic landscape features and to strengthen and enhance landscape quality. Particular attention is focussed on the location, siting and design of development and the identification of proposals which would be detrimental to the landscape character of Angus.

## **Policy ER5 : Conservation of Landscape Character**

**Development proposals should take account of the guidance provided by the Tayside Landscape Character Assessment and where appropriate will be considered against the following criteria:**

- (a) sites selected should be capable of absorbing the proposed development to ensure that it fits into the landscape;**
- (b) where required, landscape mitigation measures should be in character with, or enhance, the existing landscape setting;**
- (c) new buildings/structures should respect the pattern, scale, siting, form, design, colour and density of existing development;**
- (d) priority should be given to locating new development in towns, villages or building groups in preference to isolated development.**

## Noise Pollution

3.20 Noise can have a significant impact on our health, quality of life and the general quality of the environment. The planning system has an important role in preventing and limiting noise pollution and the noise implications of development can be a material consideration in determining applications for planning permission adjacent to existing noise sensitive development or where new noise sensitive development is proposed.

### **Policy ER11 : Noise Pollution**

**Development which adversely affects health, the natural or built environment or general amenity as a result of an unacceptable increase in noise levels will not be permitted unless there is an overriding need which cannot be accommodated elsewhere. Proposals for development generating unacceptable noise levels will not generally be permitted adjacent to existing or proposed noise sensitive land uses.**

**Proposals for new noise-sensitive development which would be subject to unacceptable levels of noise from an existing noise source or from a proposed use will not be permitted.**

*Planning Advice Note 56 -  
Planning and Noise (1999)  
Noise sensitive land uses should  
be generally regarded as including  
housing, hospitals, educational  
establishments, offices and some  
livestock farms.*

## **Development Affecting Conservation Areas**

- 3.25 Development proposals in conservation areas should be sympathetic to their surroundings and will be assessed on the contribution they would make to the character or appearance of each area. Support will be given to proposals which are consistent with the aims of preservation or enhancement but equally, development proposals which are poorly designed or where the setting, scale, use of materials, colours, or finish is inappropriate, will be discouraged.

3.26 In order to fully assess the impact of a proposal, applications should be accompanied by sufficient information on the historical, architectural, environmental and archaeological significance of the site along with details of the nature of the proposed development.

### **Policy ER12 : Development Affecting Conservation Areas**

**Development proposals within conservation areas or affecting the setting of such areas will be supported where they:**

- (a) respect the character and appearance of the area in terms of:**
  - density, scale, proportion and massing;
  - layout, grouping and setting;
  - design, materials and finish;
- (b) contribute positively to the setting of the area and maintain important views within, into or out of the area;**
- (c) retain particular features which contribute to the character and appearance of the area;**
  - open spaces;
  - walls and other means of enclosure;
  - ground surfaces;
  - natural features such as trees and hedgerows;
- (d) accord with the Character Statement for the area.**

## LISTED BUILDINGS

3.34 The relationship of a listed building with the buildings, landscape and spaces around it is an essential part of its character. The setting of a listed building is, therefore, worth preserving and may extend to encompass land or buildings some distance away. Insensitive development can erode or destroy the character and/or setting of a listed building. Consequently planning permission will not be granted for development which adversely affects the setting of a Listed Building. Trees and landscaping, boundary walls and important elevations may be particularly sensitive to the effects of development.

### **Policy ER16 : Development Affecting the Setting of a Listed Building**

**Development proposals will only be permitted where they do not adversely affect the setting of a listed building. New development should avoid building in front of important elevations, felling mature trees and breaching boundary walls.**

## Ancient Monuments and Archaeological Sites

3.36 Angus has a rich heritage of archaeological remains ranging from crop marks and field systems through to structures such as standing stones, hill forts, castles and churches. They are evidence of the past development of society and help us to understand and interpret the landscape of today. They are a finite and non-renewable resource to be protected and managed.

3.37 Sites considered to be of national importance are scheduled by Scottish Ministers as Ancient Monuments. There are over 200 such sites in Angus with additional sites regularly being incorporated into the List. In addition, there are other monuments of regional or local significance. All of these sites and monuments, whether scheduled or not, are fragile and irreplaceable.

3.38 The owner or occupier of a scheduled ancient monument is required to obtain consent from Historic Scotland for repairs, alterations, demolition, or any work affecting the monument. In order therefore to protect the scheduled monument any planning application that may affect it will be notified to Historic Scotland and their comments taken into account in determining development proposals.

### **Policy ER18 : Archaeological Sites of National Importance**

**Priority will be given to preserving Scheduled Ancient Monuments in situ. Developments affecting Scheduled Ancient Monuments and other nationally significant archaeological sites and historic landscapes and their settings will only be permitted where it can be adequately demonstrated that either:**

- a) the proposed development will not result in damage to the scheduled monument or site of national archaeological interest or the integrity of its setting; or
- b) there is overriding and proven public interest to be gained from the proposed development that outweighs the national significance attached to the preservation of the monument or archaeological importance of the site. In the case of Scheduled Ancient Monuments, the development must be in the national interest in order to outweigh the national importance attached to their preservation; and
- c) the need for the development cannot reasonably be met in other less archaeologically damaging locations or by reasonable alternative means; and
- d) the proposal has been sited and designed to minimise damage to the archaeological remains.

Where development is considered acceptable and preservation of the site in its original location is not possible, the excavation and recording of the site will be required in advance of development, at the developer's expense.

### **NPPG 5: Planning and Archaeology (1994)**

*Sets out the role of the planning system in protecting ancient monuments and archaeological sites and landscapes. The Government seeks to encourage the preservation of our heritage of sites and landscapes of archaeological and historic interest. The development plan system provides the policy framework for meeting the need for development along with the need for preserving archaeological resources.*

### **PAN 42 : Archaeology – the Planning Process and Scheduled Monument Procedure (1994)**

*Archaeological remains offer a tangible, physical link with the past. They are a finite and non-renewable resource containing unique information about our past and the potential for an increase in future knowledge. Such remains are part of Scotland's identity and are valuable both for their own sake and for education, leisure and tourism. The remains are often fragile and vulnerable to damage or destruction; care must therefore be taken to ensure that they are not needlessly destroyed.*

### **Scheduled Ancient Monument (SAM):**

*The site of a scheduled monument and any other monument which in the opinion of the Scottish Ministers is of public interest by reason of its historic, architectural, traditional, artistic or archaeological interest.*



3.39 While the best examples of valuable archaeological sites are designated of national importance there are numerous examples of historic sites in both urban and rural areas that are of local significance. There are also other sites where finds may have been made in the past but no remains are known to date.

3.40 Within the mediaeval burghs of Arbroath, Brechin, Forfar and Montrose areas of primary and secondary archaeological significance were identified through the Scottish Burgh Surveys undertaken in the late 1970s. This provides an indicator for prospective developers that where redevelopment is being proposed an archaeological assessment may be required prior to commencement of works or at least a watching brief during excavations.

#### **Policy ER19 : Archaeological Sites of Local Importance**

**Where development proposals affect unscheduled sites of known or suspected archaeological interest, Angus Council will require the prospective developer to arrange for an archaeological evaluation to determine the importance of the site, its sensitivity to development and the most appropriate means for preserving or recording any archaeological information. The evaluation will be taken into account when determining whether planning permission should be granted with or without conditions or refused.**

**Where development is generally acceptable and preservation of archaeological features in situ is not feasible Angus Council will require through appropriate conditions attached to planning consents or through a Section 75 Agreement, that provision is made at the developer's expense for the excavation and recording of threatened features prior to development commencing.**



## Historic Gardens and Designed Landscapes

3.41 There are many fine examples of estates, parks and gardens, which help to form the landscape quality of Angus. The contribution of these historic and designed landscapes to the appearance of Tayside is recognised in the Tayside Landscape Character Assessment (1999).

3.42 Angus Council will seek to protect and enhance historic gardens and designed landscapes currently included in the Inventory of Gardens and Designed Landscapes in Scotland (1989), and any others that may be identified during the plan period as well as non-inventory sites of local or regional importance. Although it is recognised that non-inventory sites make an important contribution to the character of the landscape of Angus, further research is required to determine their number and location.

### ***Inventory of Gardens and Designed Landscapes in Scotland(1989):***

*A detailed list compiled by Historic Scotland and Scottish Natural Heritage as being of architectural or historic interest. Inventory sites in Angus include:*

*Airlie Castle  
Ascreavie  
Brechin Castle  
Cortachy Castle  
Edzell Castle  
Glamis Castle  
Guthrie Castle  
The Guynd  
House of Dun  
House of Pitmuies  
Kinnaird Castle*

### **Policy ER20 : Historic Gardens and Designed Landscapes**

**Sites included in the “Inventory of Gardens and Designed Landscapes in Scotland”, and any others that may be identified during the plan period, will be protected from development that adversely affects their character, amenity value and historic importance. Development proposals will only be permitted where it can be demonstrated that:**

- (a) the proposal will not significantly damage the essential characteristics of the garden and designed landscape or its setting; or**
- (b) there is a proven public interest, in allowing the development, which cannot be met in other less damaging locations or by reasonable alternative means.**

**Protection will also be given to non-inventory historic gardens, surviving features of designed landscapes, and parks of regional or local importance, including their setting.**

## Renewable Energy

3.72 The Scottish Executive is strongly supportive of renewable energies and has set a target of 17-18% of Scotland's electricity supply to come from renewable sources by 2010. NPPG6: Renewable Energy Developments (Revised 2000) considers a range of renewable energy technologies and encourages the provision of a positive policy framework to guide such developments. The Scottish Executive's aspiration is for renewable sources to contribute 40% of electricity production by 2020, an estimated total installed capacity of 6GW (Minister for Enterprise, July 2005). This will require major investment in commercial renewable energy production and distribution capacity throughout Scotland.

3.73 The Dundee and Angus Structure Plan acknowledges the advantages of renewable energy in principle but also recognises the potential concerns associated with development proposals in specific locations. Angus Council supports the principle of developing sources of renewable energy in appropriate locations. Large-scale developments will only be encouraged to locate in areas where both technical (e.g. distribution capacity and access roads) and environmental capacity can be demonstrated.

3.74 Developments which impinge on the Cairngorms National Park will be considered within the context of the National Park Authority's Planning Policy No1: Renewable Energy.

## Renewable Energy Sources

3.75 Offshore energy production, including wind and tidal methods, has the potential to make a significant contribution to the production of renewable energy in Scotland. Other than small-scale onshore support buildings, such developments currently fall outwith the remit of the planning system.

3.76 All renewable energy production, including from wind, water, biomass, waste incineration and sources using emissions from wastewater treatment works and landfill sites will require some processing, generating or transmission plant. Such developments, that can all contribute to reducing emissions will have an impact on the local environment and will be assessed in accordance with Policy ER34.

### Policy ER34 : Renewable Energy Developments

**Proposals for all forms of renewable energy development will be supported in principle and will be assessed against the following criteria:**

#### **NPPG6: Renewable Energy Developments (Revised 2000)**

*The Scottish Ministers wish to see the planning system make positive provision for renewable energy whilst at the same time:*

- *meeting the international and national statutory obligations to protect designated areas, species, and habitats of natural heritage interest and the historic environment from inappropriate forms of development; and*
- *minimising the effects on local communities.*

*Large-scale projects which may or will require an Environmental Assessment. These are defined as hydroelectric schemes designed to produce more than 0.5MW and wind farms of more than 2 turbines or where the hub height of any turbine or any other structure exceeds 15m.*

*SNH's EIA Handbook identifies 6 types of impact which may require an assessment:*

- *Landscape and visual;*
- *Ecological;*
- *Earth heritage;*
- *Soil;*
- *Countryside access; and*
- *Marine environment.*

- (a) the siting and appearance of apparatus have been chosen to minimise the impact on amenity, while respecting operational efficiency;
- (b) there will be no unacceptable adverse landscape and visual impacts having regard to landscape character, setting within the immediate and wider landscape, and sensitive viewpoints;
- (c) the development will have no unacceptable detrimental effect on any sites designated for natural heritage, scientific, historic or archaeological reasons;
- (d) no unacceptable environmental effects of transmission lines, within and beyond the site; and
- (e) access for construction and maintenance traffic can be achieved without compromising road safety or causing unacceptable permanent and significant change to the environment and landscape.

## Wind Energy

3.77 Onshore wind power is likely to provide the greatest opportunity and challenge for developing renewable energy production in Angus. Wind energy developments vary in scale but, by their very nature and locational requirements, they have the potential to cause visual impact over long distances. Wind energy developments also raise a number of environmental issues and NPPG 6 advises that planning policies should guide developers to broad areas of search and to establish criteria against which to consider development proposals. In this respect, Scottish Natural Heritage Policy Statement 02/02, Strategic Locational Guidance for Onshore Wind Farms in Respect of the Natural Heritage, designates land throughout Scotland as being of high, medium or low sensitivity zones in terms of natural heritage. Locational guidance is provided to supplement the broad-brush zones.

3.78 A range of technical factors influence the potential for wind farm development in terms of location and viability. These include wind speed, access to the distribution network, consultation zones, communication masts, and proximity to radio and radar installations. Viability is essentially a matter for developers to determine although annual average wind speeds suitable for commercially viable generation have been recorded over most of Angus, other than for sheltered valley bottoms. Environmental implications will require to be assessed in conjunction with the Council, SNH and other parties as appropriate.

### **Strategic Locational Guidance for Onshore Windfarms in Respect of the Natural Heritage - Scottish Natural Heritage Policy Statement No 02/02**

**Zone 3** – high natural heritage sensitivity. Developers should be encouraged to look outwith Zone 3 for development opportunities

**Zone 2** – medium natural heritage sensitivity. ...while there is often scope for wind farm development within Zone 2 it may be restricted in scale and energy output and will require both careful choice of location and care in design to avoid natural heritage impacts.

**Zone 1** - ...inclusion of an area in Zone 1 does not imply absence of natural heritage interest. Good siting and design should however enable such localised interests to be respected, so that overall within Zone 1, natural heritage interests do not present a significant constraint on wind farm development

Figure 3.4 : Geographic Areas



**1 Highland**

**2 Lowland and Hills**

**3 Coast**

TLCA Designation

- 1a Upper Highland Glens
- 1b Mid Highland Glens
- 3 Highland Summits & Plateaux
- 5 Highland Foothills

TLCA Designation

- 8 Igneous Hills
- 10 Broad Valley Lowland
- 12 Low Moorland Hills
- 13 Dipslope Farmland

TLCA Designation

- 14a Coast with sand
- 14b Coast with cliffs
- 15 Lowland Basin

3.79 Scottish Natural Heritage published a survey of Landscape Character, the Tayside Landscape Character Assessment (TLCA), which indicates Angus divides naturally into three broad geographic areas – the Highland, Lowland and hills and the Coast. The Tayside Landscape Character Assessment provides a classification to map these areas based on their own particular landscape characteristics (Fig 3.4).

<b>Area</b>	<b>TLCA Classification</b>	<b>Landscape Character</b>
1 Highland	1a, 1b, 3, 5	Plateaux summits, glens and complex fault line topography
2 Lowland and hills	8, 10, 12,13	Fertile strath, low hills and dipslope farmland.
3 Coast	14a, 14b, 15	Sand and cliff coast and tidal basin

The impact of wind farm proposals will, in terms of landscape character, be assessed against the TLCA classifications within the wider context of the zones identified in SNH Policy Statement 02/02.

3.80 The open exposed character of the Highland summits and the Coast (Areas 1 and 3) is sensitive to the potential landscape and visual impact of large turbines. The possibility of satisfactorily accommodating turbines in parts of these areas should not be discounted although locations associated with highland summits and plateaux, the fault line topography and coast are likely to be less suitable. The capacity of the landscape to absorb wind energy development varies. In all cases, the scale layout and quality of design of turbines will be an important factor in assessing the impact on the landscape.

3.81 The Highland and Coast also have significant natural heritage value, and are classified in SNH Policy Statement 02/02 as mainly Zone 2 or 3 - medium to high sensitivity. The development of large scale wind farms in these zones is likely to be limited due to potential adverse impact on their visual character, landscape and other natural heritage interests.

3.82 The Lowland and Hills (Area 2) comprises a broad swathe extending from the Highland boundary fault to the coastal plain. Much of this area is classified in Policy Statement 02/02 as Zone 1- lowest sensitivity. Nevertheless, within this wider area there are locally important examples of higher natural heritage sensitivity such as small- scale landscapes, skylines and habitats which will influence the location of wind turbines. In all cases, as advocated by SNH, good siting and design should show respect for localised interests.

3.83 Wind farm proposals can affect residential amenity, historic and archaeological sites and settings, and other economic and social activities including tourism. The impact of wind farm developments on these interests requires careful assessment in terms of sensitivity and scale so that the significance can be determined and taken into account.

3.84 Cumulative impact occurs where wind farms/turbines are

visually interrelated e.g. more than one wind farm is visible from a single point or sequentially in views from a road or a footpath. Landscape and visual impact can be exacerbated if wind turbines come to dominate an area or feature. Such features may extend across local authority, geographic or landscape boundaries and impact assessments should take this into account. Environmental impacts can also be subject to cumulative effect – for example where a number of turbine developments adversely affect landscape character, single species or habitat type.

3.85 SNH advise that an assessment of cumulative effects associated with a specific wind farm proposal should be limited to all existing and approved developments or undetermined Section 36 or planning applications in the public domain. The Council may consider that a pre-application proposal in the public domain is a material consideration and, as such, may decide it is appropriate to include it in a cumulative assessment. Similarly, projects outwith the 30km radius may exceptionally be regarded as material in a cumulative context.

#### **Policy ER35 : Wind Energy Development**

**Wind energy developments must meet the requirements of Policy ER34 and also demonstrate:**

- (a) the reasons for site selection;**
- (b) that no wind turbines will cause unacceptable interference to birds, especially those that have statutory protection and are susceptible to disturbance, displacement or collision;**
- (c) there is no unacceptable detrimental effect on residential amenity, existing land uses or road safety by reason of shadow flicker, noise or reflected light;**
- (d) that no wind turbines will interfere with authorised aircraft activity;**
- (e) that no electromagnetic disturbance is likely to be caused by the proposal to any existing transmitting or receiving system, or (where such disturbances may be caused) that measures will be taken to minimise or remedy any such interference;**
- (f) that the proposal must be capable of co-existing with other existing or permitted wind energy developments in terms of cumulative impact particularly on visual amenity and landscape, including impacts from development in neighbouring local authority areas;**
- (g) a realistic means of achieving the removal of any apparatus when redundant and the restoration of the site are proposed.**

#### ***NPPG6 : Renewable Energy Developments (Revised 2000)***

*Large-scale projects which may or will require an Environmental Assessment. These are defined as hydroelectric schemes designed to produce more than 0.5MW and wind farms of more than 2 turbines or where the hub height of any turbine or any other structure exceeds 15m.*

#### **Local Community Benefit**

3.86 Where renewable energy schemes accord with policies in this local plan there may be opportunities to secure contributions from developers for community initiatives. Such contributions are not part of the planning process and as such will require to be managed through other means than obligations pursuant to Section 75 Planning Agreement. Community contributions are separate from planning gain and will not be considered as part of any planning application.

## Managing TAYplan's Assets: Safeguarding resources and land with potential to support the sustainable economic growth.

Delivering the vision and objectives of this Plan requires management of land and conservation of resources. This recognises that good quality development and the right type of development in the right places can lead to a series of social, economic and environmental benefits for those areas and the TAYplan region as a whole. This Plan balances these factors with the sometimes competing nature of different land uses.

This Plan safeguards for present and future generations important resources and land with potential to support the economy. It also requires us to ensure that development and growth in the economy occur in a way that does not place unacceptable burdens on environmental capacity and increase the exposure of users or inhabitants to risks. This can be achieved by directing development to specific locations (Policies 1, 4, 5, 6 and 7); ensuring that development is fit for place (Policies 2 and 8); and, that some areas or assets are safeguarded for a specific range of land uses (Policy 3).

This is important to support the growth of emerging sectors of the economy, such as the off-shore renewable energy sector through the protection of the region's ports for port-related uses, particularly Dundee and Montrose Ports. Similarly employment land, particularly in rural areas, can be affected through redevelopment for alternative uses or by alternative uses nearby. This could hinder or even prevent the start up of businesses in the future and/or limit business operations.

The economic recovery of the region and new development will need to be supported by appropriate infrastructure, particularly transport infrastructure. This will also contribute to behavioural change and reducing reliance on the car and on road-based freight. Ensuring that this can be delivered will require land and routes to be protected from prejudicial development. It also requires the public and private sectors to work jointly to deliver infrastructure.

Supporting future food and resource security will require the protection of finite resources like minerals, forestry and prime agricultural land\* by management as one consideration in the prioritisation of land release under Policy 1.

Limiting the types of land uses that can occur within green belts at Perth and St. Andrews will contribute to protecting the settings and historic cores of those settlements from inappropriate development and prevent coalescence with neighbouring areas.

It is essential to grow the economy within environmental limits and build-in resilience to climate change, natural processes and increased risk from sea level rise. Identifying environmentally sensitive areas and important natural and historic assets where no or very limited development would be permitted, such as some coastal areas, Natura 2000\*\* sites and other locations, will contribute to this. It will also be important to ensure that plans for managed realignment of coast and other coastal management are devised in liaison with Scottish Natural Heritage and Marine Scotland.



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\*Prime agricultural land: Land classes 1, 2 and 3.1 – these are the most suited to arable agriculture.

\*\*Natura 2000: European-wide designations to protect habitats and species – special protection areas (SPAs), Ramsar sites and special areas of conservation (SACs)

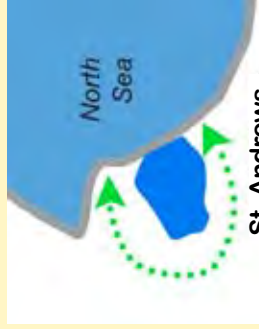
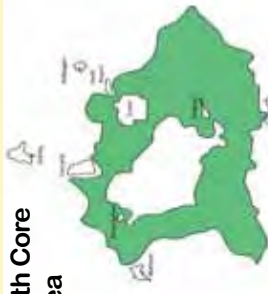
## Policy 3: Managing TAYplan's Assets

- identifying and safeguarding at least 5 years supply of employment land within principal settlements to support the growth of the economy and a diverse range of industrial requirements;
- safeguarding areas identified for class 4 office type uses in principal settlements; and,
- further assisting in growing the year-round role of the tourism sector.

### Employment Land

- continuing to designate green belt boundaries at both St. Andrews and Perth to preserve their settings, views and special character including their historic cores; assist in safeguarding the countryside from encroachment; to manage long term planned growth including infrastructure in this Plan's Proposals Map and Strategic Development Areas in Policy 4; and define appropriate forms of development within the green belt based on Scottish Planning Policy;

Perth Core Area



St. Andrews

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- using Perth green belt to sustain the identity of Scone, and provide sufficient land for planned development around key villages and settlements.

using the location priorities set out in Policy 1 of this Plan to:

- safeguard minerals deposits of economic importance and land for a minimum of 10 years supply of construction aggregates at all times in all market areas; and,
- protect prime agricultural land, new and existing forestry areas, and carbon rich soils (where identified) where the advantages of development do not outweigh the loss of productive land.

### Finite Resources

Understanding and respecting the regional distinctiveness and scenic value of the TAYplan area through:

- ensuring development likely to have a significant effect on a designated or proposed Natura 2000 sites (either alone or in combination with other sites or projects), will be subject to an appropriate assessment. Appropriate mitigation requires to be identified where necessary to ensure there will be no adverse effect on the integrity of Natura 2000 sites in accordance with Scottish Planning Policy;
- safeguarding habitats, sensitive green spaces, forestry, watercourses, wetlands, floodplains (in-line with the water framework directive), carbon sinks, species and wildlife corridors, geodiversity, landscapes, parks, townscapes, archaeology, historic buildings and monuments and allow development where it does not adversely impact upon or preferably enhances these assets; and,
- identifying and safeguarding parts of the undeveloped coastline along the River Tay Estuary and in Angus and North Fife, that are unsuitable for development and set out policies for their management; identifying areas at risk from flooding and sea level rise and develop policies to manage retreat and realignment, as appropriate.

### Greenbelts

### Natural and Historic Assets\*

Land should be identified through Local Development Plans to ensure responsible management of TAYplan's assets by:

### Transport

- safeguarding land at Dundee and Montrose Ports, and other harbours, as appropriate, for port related uses to support freight, economic growth and tourism; and,
- safeguarding land for future infrastructure provision (including routes), identified in the Proposal Map of this Plan or other locations or routes, as appropriate, or which is integral to a Strategic Development Area in Policy 4 of this Plan, or which is essential to support a shift from reliance on the car and road-based freight and support resource management objectives.

\*Natural and historic assets: Landscapes, habitats, wildlife sites and corridors, vegetation, biodiversity, green spaces, geological features, water courses and ancient monuments, archaeological sites and landscape, historic buildings, townscapes, parks, gardens and other designed landscapes, and other features (this includes but is not restricted to designated buildings or areas).



## Energy and Waste/Resource Management Infrastructure: Ensures that energy and waste/resource management infrastructure are in the most appropriate locations.

This Plan seeks to reduce resource consumption through provision of energy and waste/resource management infrastructure\* in order to contribute to Scottish Government ambitions for the mitigation of and adaptation to climate change and to achieve zero waste. It also aims to contribute towards greater regional energy self-sufficiency.

This requires us to use less energy and to generate more power and heat from renewable sources and resource recovery; and, to consider waste from start to finish; becoming better at resource management. This is strongly tied into resource security and living within environmental limits. It also presents opportunities to grow the renewable energy and waste/resource management sector as a whole within the TAYplan region. The issue is no longer about whether such facilities are needed but instead about helping to ensure they are delivered in the most appropriate locations.

Land use planning is only one of the regulatory requirements that energy and waste/resource management operators must consider. This Plan does not provide the locations for energy infrastructure; this role is for Local Development Plans. It sets out a series of locational considerations for all energy and waste/resource management infrastructure as the impacts and operations of these share similar characteristics.

This Plan ensures consistency between Local Development Plans in fulfilling Scottish Planning Policy requirements to define areas of search for renewable energy infrastructure and it applies this to a wide range of energy and waste/resource management infrastructure.

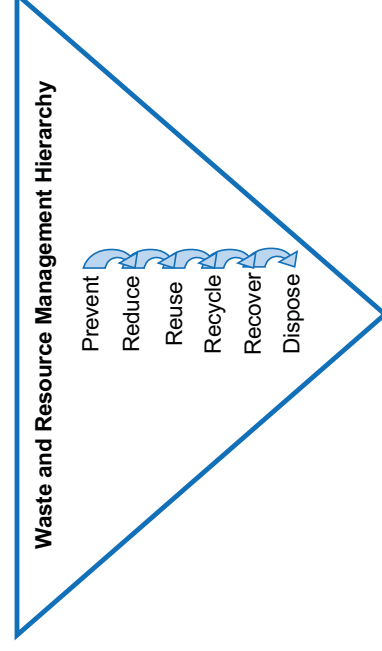
It recognises the different scales – property (eg micro-renewables or individual waste facilities), community (eg district heating and power or local waste facilities) and regional/national (eg national level schemes and waste facilities for wide areas) at which this infrastructure can be provided and both the individual and cumulative contribution that can be made, particularly by community and property scale infrastructure, to Scottish Government objectives for greater decentralisation of heat and energy.

Changes in the law allowing surplus power to be sold back to the national grid and other incentives could stimulate interest from local authorities, businesses, householders, community land trusts and other groups to obtain loans for energy infrastructure to enable development to meet local or individual needs in future. Similarly the price of materials in the global market place may continue to stimulate business interests in resource recovery.

Many of the region's existing waste management facilities have additional capacity or could be expanded in situ, including the strategic scale facilities at Binn Farm near Glenfarg and DERL at Baldovie in Dundee. No requirement for new landfill sites has been identified before 2024 and successful implementation of the Scottish Government's Zero Waste Plan and expansion of other treatment facilities could extend this to and beyond 2032.

This Plan encourages new strategic scale waste/resource management infrastructure to be within or close to the Dundee and Perth Core Areas reflecting the proximity of materials and customers for heat and other products.

Modern waste/resource management infrastructure is designed and regulated to high standards and is similar to other industrial processes. Subject to detailed site specific considerations, waste management facilities can be considered appropriate land uses within industrial and employment sites.



\*Energy and waste management infrastructure: Infrastructure for heat and power generation and transmission; and, collection, separation, handling, transfer, processing, resource recovery and disposal of waste. This includes recycling plants, anaerobic waste digesters, energy from waste plants, wind turbines, biomass plants, combined heat and power plants, solar power, hydro electric power plants and similar facilities.

## Policy 6: Energy and Waste/Resource Management Infrastructure

To deliver a low/zero carbon future and contribute to meeting Scottish Government energy and waste targets:

- A. Local Development Plans** should identify areas that are suitable for different forms of renewable heat and electricity infrastructure and for waste/resource management infrastructure or criteria to support this; including, where appropriate, land for process industries (e.g. the co-location/proximity of surplus heat producers with heat users).
- B.** Beyond community or small scale facilities waste/resource management infrastructure is most likely to be focussed within or close to the Dundee and/or Perth Core Areas (identified in Policy 1).
- C. Local Development Plans and development proposals** should ensure that all areas of search, allocated sites, routes and decisions on development proposals for energy and waste/resource management infrastructure have been justified, at a minimum, on the basis of these considerations:
- The specific land take requirements associated with the infrastructure technology and associated statutory safety exclusion zones where appropriate;
  - Waste/resource management proposals are justified against the Scottish Government's Zero Waste Plan and support the delivery of the waste/resource management hierarchy;
  - Proximity of resources (e.g. woodland, wind or waste material); and to users/customers, grid connections and distribution networks for the heat, power or physical materials and waste products, where appropriate;
  - Anticipated effects of construction and operation on air quality, emissions, noise, odour, surface and ground water pollution, drainage, waste disposal, radar installations and flight paths, and, of nuisance impacts on off-site properties;
  - Sensitivity of landscapes (informed by landscape character assessments and other work), the water environment, biodiversity, geo-diversity, habitats, tourism, recreational access and listed/scheduled buildings and structures;
  - Impacts of associated new grid connections and distribution or access infrastructure;
  - Cumulative impacts of the scale and massing of multiple developments, including existing infrastructure;
  - Impacts upon neighbouring planning authorities (both within and outwith TAYplan); and,
  - Consistency with the National Planning Framework and its Action Programme.



# Guidance

## ASSESSING THE CUMULATIVE IMPACT OF ONSHORE WIND ENERGY DEVELOPMENTS

March 2012

<b>Contents</b>	<b>Page</b>
<b>Section 1 INTRODUCTION AND SCOPE OF THE GUIDANCE</b>	<b>3</b>
Background	3
What are cumulative effects	4
Assessing cumulative impacts	4
Legislative context	5
Our approach to renewable energy and cumulative impacts	5
<b>Section 2 WHEN TO TAKE ACCOUNT OF CUMULATIVE IMPACTS</b>	<b>6</b>
Cumulative effects in Strategic planning	6
Cumulative effects in Development management	7
Which windfarms to include in the assessment	7
Timing of new proposals entering the planning system	8
Information from competing developers	9
Our advice to decision-making authorities	9
<b>Section 3 ASSESSING CUMULATIVE LANDSCAPE &amp; VISUAL IMPACTS</b>	<b>10</b>
Introduction	10
Cumulative landscape effects	10
Cumulative effects on visual amenity	11
Perceived cumulative effects	11
Undertaking a Cumulative Landscape and Visual Impact Assessment	12
Scope of detailed cumulative assessment	15
ZTV studies	16
Selecting viewpoints and assessing fixed positions for cumulative visual effects	17
Sequential visual assessment and selection of routes for analysis	17
Cumulative assessment of single turbines, or small groups of turbines	18
Illustrative methods	18
Description and assessment of cumulative landscape impacts	20
Description and assessment of cumulative visual effects	20
Offshore windfarms	21
When will cumulative landscape effects lead to an SNH objection?	21
Summary	21

<b>Section 4</b>	<b>ASSESSING CUMULATIVE IMPACTS ON BIRDS</b>	
	Background to wind farm impacts on birds	22
	The nature of cumulative impacts	22
	Types of cumulative Impacts	23
	The barrier effect	24
	Habitat loss	24
	In combination impacts	24
	Species priorities	25
	Scale at which impacts should be assessed	25
	When will cumulative effects on birds lead to an SNH objection ?	26
	Assessing cumulative impacts	26
	<b>Assessing the significance of cumulative impacts</b>	<b>29</b>
	Impacts on birds within or affecting designated sites	29
	Impacts on birds outwith designated sites	29
	Measuring cumulative impacts	31
	Data needs	33
	Summary	34
	<b>Further information and contacts</b>	<b>35</b>
<b>Annexes</b>		
<b>Annex A</b>	<b>Key references to cumulative effects in Government and SNH publications</b>	
<b>Annex B</b>	<b>Example SNH wording on cumulative effects</b>	
<b>Annex C</b>	<b>Widespread bird species potentially at risk of impacts from onshore wind farms</b>	
<b>Annex D</b>	<b>Cumulative impact assessment for bird species - Example matrix</b>	
<b>Annex E</b>	<b>References from Section 4 Cumulative impacts on birds</b>	

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## SECTION 1 INTRODUCTION AND SCOPE OF THIS GUIDANCE

### Background

1. Renewable energy is an increasingly important part of Scotland's economic, social and environmental success. The pace of renewable developments has increased rapidly in recent years and windfarms are now familiar sights in many parts of the country. Scottish Natural Heritage (SNH) supports the development of onshore windfarms and recognises the many benefits they bring. However, their cumulative impacts on the natural heritage need to be carefully considered to ensure that these are acceptable.
2. The increasing development of on-shore windfarms has led to concerns about cumulative impacts in some locations as was illustrated in the debate in the Scottish Parliament on 1 December 2011. During the debate Fergus Ewing, Minister for Energy Enterprise and Tourism observed:
 

*"The Scottish planning system is committed to delivery of increased renewable energy capacity. It also seeks to safeguard communities and the environment.....The main issue has perhaps been cumulative impact, which is already a key consideration in decision making. In determinations, planning authorities and the Scottish Government will continue to draw on planning policy and advice from SNH."*
3. [Scottish Planning Policy](#) (SPP) highlights that cumulative impacts may present an eventual limit to the extent of onshore wind development and the increased need to consider cumulative impacts in the decision making process (SPP para 189). **This guidance therefore seeks to identify methodologies which can be used to assess cumulative impacts.**
4. **The guidance is aimed at public bodies, developers and consultants involved in onshore wind energy development. It sets out methods to be used to assess cumulative impacts on landscapes and birds.** It is not possible to provide generic advice on the significance of cumulative effects, which need to be assessed on a case by case basis against other [guidance](#).
5. Although the guidance concentrates on the particular issue of assessing the cumulative effects of more than one windfarm development, the methods may also be helpful when considering the cumulative impact of other forms of development. Impacts on other natural heritage interests, such as habitats and protected species require to be addressed on a case by case basis as it is not possible to provide meaningful generic guidance
6. Cumulative impacts are just one of many issues that have to be considered in order to make good development happen in the right places. We have produced guidance on a range of other issues to be considered during the design and assessment of windfarms. Further guidance and information, for example [Siting and Designing windfarms in the landscape](#) (SNH 2009), can be found on our [website](#).

## What are cumulative impacts?

7. Cumulative impacts can be defined as the additional changes caused by a proposed development in conjunction with other similar developments <sup>1</sup> or as the combined effect of a set of developments, taken together. In practice the terms 'effects' and 'impacts' are used interchangeably.

## Assessing cumulative impacts

8. A clear, transparent and detailed assessment process is needed to understand the impacts of a proposed windfarm development when it is seen alongside others in the area. The process needs to identify the overall impacts which may arise from a group of projects and distinguish the contribution of each individual project to these. The assessment should take account of existing windfarms, and those which are consented or at application stage. Some examples are provided in Box 1 below.

### Box 1 Examples of cumulative effects

Imagine two separate developments, A and B. The cumulative effect of both developments taken together need not simply be the sum of the effect of A plus the effect of B; it may be more, or less. This is best demonstrated using some examples as shown below

- An isolated house A in the countryside has a visual impact, standing out in its natural setting. Another isolated house B has a similar visual impact, taken alone. However if the two houses are sited close together, the visual impact of the two together may be only a little greater than for either house A or B taken alone, as they will appear as a single cluster.
- Windfarm A sited on a ridge on one side of a valley is highly visible but acceptable, providing a single visual focus on an otherwise unremarkable skyline. A second windfarm B on a ridge on the other side of the valley would have a similar effect, if it were on its own. However, the effect of having two windfarms sited on either side of the valley may be to make the observer feel surrounded by development. The combined effect of both may be much greater than the sum of the two individual effects.
- Windfarm A gives rise to a low level of bird mortality, which lies well within the capacity of that bird population for regeneration and hence has little effect on the overall bird population level. The same would apply to a second windfarm B, taken on its own. However, the level of bird mortality caused by windfarms A and B taken together would exceed the capacity of the population for regeneration, in which case the population would go into decline. Whereas the impact of A and B, each on their own, was not of concern, the impact of A + B is to cause population decrease which is of concern.

9. In many parts of Scotland the level of windfarm development is now such that a large number of windfarms will have to be taken in to account. The examples above are necessarily simplified to illustrate the issues, but the principles for multiple developments are the same.

<sup>1</sup> Paraphrased from the Guidelines for Landscape and Visual Assessment (GLVIA), p85, paragraph 7.12.

## Legislative context

10. In the Scottish development planning system, the overriding principle is that each application must be determined on its own 'individual merit'. There is also a presumption in favour of development which accords with the relevant development plan, although other 'material considerations' may outweigh the plan's policies. It is increasingly recognised that cumulative impacts may be considered as 'material considerations'. For example, while individual supermarkets may not threaten the viability of a town centre or the capacity of the road network, their combined effect could exceed local spending power or the threshold of existing infrastructure (roads, sewerage etc).
11. In addition, under the terms of the [EIA Regulations 2011](#), the potential for cumulative impacts is one of the aspects to be included in Environmental Impact Assessment (EIA). This is explained in more detail in [PAN 58](#). Consideration of cumulative and synergistic effects is also a requirement of the Strategic Environmental Assessment (SEA) Directive (2001/42/EC) which is transposed into Scottish legislation by the Environmental Assessment (Scotland) Act 2005 and through the Environmental Assessment of Plans and Programmes Regulation 2004 for proposals affecting more than one part of the UK. **Annex A** lists the key references to cumulative effects contained in Government and SNH guidance.

## Our approach to renewable energy and cumulative impacts.

12. Our approach to renewable energy is set out in [Renewable Energy and the Natural Heritage \(2010\)](#) and is expanded by [02/02 Strategic locational guidance for onshore wind farms in respect of the natural heritage](#) (2009). Our approach is a supportive one, recognising the climate change, social and economic benefits that renewable energy can deliver.
13. The Strategic Locational Guidance identifies three broad zones of sensitivity to wind farms. Within these:
  - The zone of lowest natural heritage sensitivity is described as that with *"the greatest opportunity for development within which overall a large number of developments would be acceptable in natural heritage terms, so long as they are undertaken sensitively and with due regard to cumulative impact"*.
  - For the zone of medium natural heritage sensitivity, the guidance states that *"by careful choice of location...there is often scope to accommodate development of an appropriate scale, siting and design (again having regard to cumulative effects) in a way which is acceptable in natural heritage terms"*.
14. In this way SNH guidance already points firmly to the need to consider cumulative impacts, even in less sensitive locations.

## **SECTION 2: WHEN TO TAKE ACCOUNT OF CUMULATIVE IMPACTS**

15. Cumulative impacts should be considered:
- in **strategic planning** (as part of the preparation of a strategic framework for windfarms) **and**
  - in **development management** (in the context of a site specific assessment).
16. Although the two forms of cumulative assessment share common principles, it is important to distinguish between the two distinct processes.

### **Assessing Cumulative impacts in strategic planning**

17. Strategic cumulative impacts assessment should be undertaken as part of a planning authority's preparation of:
- Development Plan policies and Supplementary Planning Guidance;
  - Strategic Environmental Assessment; and
  - Renewable energy capacity assessments.
18. In all cases, the focus is on forward planning: setting out the vision for windfarm development; and determining the thresholds of acceptable change, where the most suitable locations for development are, and what might be an appropriate design and scale.
19. The strategic plans (often underpinned by a landscape capacity study) should consider a range of specific scenarios, in terms of the numbers, scale and distribution of windfarm developments to be accommodated. It should then make use of the resulting cumulative impact assessment to draw conclusions as to which of these scenarios is acceptable.
20. The area included within a strategic cumulative assessment should not be constrained by administrative boundaries. Effective assessments should cover the whole of a region, straddling more than one planning authority, or that of a natural heritage management unit such as a National Park or Firth Partnership area.
21. Planning authorities are encouraged by Scottish Planning Policy to:
- define broad areas of search suitable for large scale (>20MW) wind farms
  - identify the criteria they should meet through the development of Supplementary Planning Guidance.
22. This approach will have enhanced value if it is also associated with a view of the **capacity** of the area for such development and identification of the critical factors which are likely to present an eventual limit to development. We have recently published a [review of landscape capacity studies](#) which provides useful advice. Further guidance on critical factors can be found in our guidance '[Siting and Designing windfarms in the landscape](#)' (page 44).
23. Further guidance on cumulative impacts in strategic planning is also provided in:



- Process for preparing spatial frameworks for wind farms (Scottish Government 2011).
- [Siting and Designing Windfarms in the Landscape](#) – section 5 (SNH 2009).

### **Assessing cumulative impacts in development management**

24. Cumulative impacts should be assessed where a proposed development involves:
- a new development in combination with one or more existing or approved but unbuilt development;
  - an extension to an existing or approved but unbuilt development;
  - more than one development proposed at the same time within an area; or
  - any combination of the above.
25. An assessment is most likely to be carried out by the prospective developer, as part of an Environmental Statement or environmental information, and reviewed by the determining authority (the planning authority or the Scottish Government) and consultees (such as SNH).

### **Which windfarms to include in the assessment**

26. An assessment of cumulative impacts associated with a specific development proposal should encompass the effects of the proposal in combination with:
- existing development, either built or under construction;
  - approved development, awaiting implementation; and
  - proposals awaiting determination within the planning process with design information in the public domain. Proposals and design information may be deemed to be in the public domain once an application has been lodged, and the decision-making authority has formally registered the application.
27. The decision as to which proposals in the planning / consenting system should be included in an assessment is the responsibility of the determining authority. The determining authority may ask a developer to seek advice from SNH on which proposals are likely to have cumulative impacts on bird interests.
28. Our windfarm footprint map<sup>2</sup> can help to identify existing sites initially, but this is only updated every 12 months and may not show an up-to-date pattern. It does not show all small scale windfarm proposals which may also need to be included in a cumulative assessment.
29. We have therefore encouraged Local Authorities and the Scottish Government to log all existing, consented, applied for and formally scoped windfarm proposals on an accessible GIS system. This will allow information to be easily made available to developers and/or neighbouring Planning Authorities to use in consideration of cumulative impacts.
30. The cumulative impact assessment (including illustrative material) needs to distinguish between predicted effects in relation to each of the relevant

<sup>2</sup> available at <http://www.snh.org.uk/strategy/renewable/sr-rt01.asp>

scenarios. For example, a proposal in combination with existing and consented developments, or proposal in combination with existing, consented and planning application stage developments, etc.

31. Occasionally it may be appropriate to include proposals which are in the early stages of development in an assessment, particularly where clusters of development or “hotspots” emerge. However, a degree of pragmatism is required to enable proposals to progress to determination.
32. Cumulative impact assessment can be expensive and time consuming, as it requires knowledge, at least in outline, of the effects of each existing or proposed development within the vicinity. We therefore only seek cumulative impact assessments where it is considered that a proposal could result in significant cumulative impacts which could affect the eventual planning decision. In some situations a Habitats Regulations Appraisal may be required and this may involve a wider consideration of in combination and other impacts.
33. **The key principle for all cumulative impact assessments is to focus on the likely significant effects and in particular those which are likely to influence the outcome of the consenting process.**

#### **Timing of new proposals entering the planning / consenting system**

34. Planning authorities are empowered under EIA Regulation 19 and Article 13 General Development Procedure (S) Order 1992<sup>3</sup> to seek additional information from the applicant at any point in the determination of the application.
35. If an Environmental Statement which includes assessment of cumulative effects is nearing completion when a new planning proposal is submitted for another site in the same area, the decision-making authority may regard the new application as a material consideration.
36. However, a request at such a late stage may conflict with the applicant’s right for a decision within prescribed timescales. Thus, while it might be preferable for the potentially competing applications to be determined together, a planning authority might conclude that it would be unreasonable to defer determination of an outstanding application as successive new applications are submitted.
37. **Once an application has been submitted and is accompanied by a complete and satisfactory Environmental Statement, any further assessment to take account of new proposals is likely to cause delay. The determining authority may consider that it cannot reasonably *require* further cumulative assessment by the applicant. In some locations the level of development is such that cut off dates should be considered to enable applications to progress.**
38. The same circumstances may occur where an application becomes subject to Public Local Inquiry (PLI) proceedings. Because of the time delays inherent in the PLI process, a developer may opt to present new cumulative assessment for the PLI, updated to include all extant proposals at the time of the PLI.

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<sup>3</sup> or the relevant section of the Electricity Works EIA regulations.

39. Where an applicant makes a major change to a proposal already within the planning system, and a revised environmental assessment is required, the planning authority may wish to regard this as a revised application with a new submission date, requiring re-notification of consultees. If other proposals have entered the planning / consenting system since the original application date, it may be appropriate to request further cumulative assessment in combination with these new applications. Changes to a proposal which are minor in terms of scale, design or impacts are less likely to be regarded by the determining authority as requiring a resubmission.

### Information from competing developers

40. Cumulative impact assessments normally require details of the impacts of each development separately, (e.g. data in respect of all relevant projects in relation to proposed turbine model, dimensions and detailed grid references of proposed turbine locations). Difficulties may arise if developers are unwilling to share information.
41. Environmental Statements, once submitted to the planning authority, are public documents but subject to copyright. The information may be used by other developers but it may not be copied without permission. There is no compulsion on a developer to release any data supporting the ES, unless the planning authority formally requires that information as part of its assessment.
42. The use of confidential annexes containing environmentally sensitive information on birds should be limited to the situations described in our guidance on [Environmental Statements and Annexes of Environmentally Sensitive Bird Information](#) (September 2009). Confidential annexes should not be used to 'hide' data from neighbouring developers.
43. **Planning authorities (and the Scottish Government) are encouraged to ask developers to cooperate over the exchange of information where cumulative assessment has been identified as important and data outwith publicly available Environmental Statements is needed in order to make such assessments.**

### Our advice to decision-making authorities

44. Given that cumulative impacts can potentially present a significant constraint on wind farm development, it is important that our advice to planning authorities (and to the Scottish Government) conveys not only our views on the proposal in terms of its individual impacts, but also our view on cumulative effects. **Annex B** contains some scenarios of cumulative impacts and provides examples of wording that will be used in SNH responses.

## SECTION 3: ASSESSING CUMULATIVE LANDSCAPE AND LANDSCAPE AND VISUAL IMPACTS

### Introduction

45. The cumulative impact of windfarm development on landscape and visual amenity is a product of:
- the distance between individual windfarms (or turbines),
  - the distance over which they are visible,
  - the overall character of the landscape and its sensitivity to windfarms,
  - the siting and design of the windfarms themselves, and
  - the way in which the landscape is experienced.
46. The combination of single turbines and small clusters of turbines can raise the same issues. Where the cumulative effects of these are significant, they require assessment and this should be agreed at scoping stage.
47. The Guidelines for Landscape and Visual Impact Assessment <sup>4</sup> (GLVIA) refer to both the changes to landscape **and** visual amenity caused by the proposed development in conjunction with other developments, or with actions which occurred in the past, present or are likely to occur in the foreseeable future.

### Cumulative landscape effects

48. Cumulative landscape effects can impact on either the physical fabric or character of the landscape, or any special values attached to it. For example
- Cumulative effects on the *physical fabric* of the landscape arise when two or more developments affect landscape components such as woodland, dykes, rural roads or hedgerows. Although this may not significantly affect the landscape character, the cumulative effect on these components may be significant – for example, where the last remnants of former shelterbelts are completely removed by two or more developments.
  - Cumulative effects on *landscape character* arise when two or more developments introduce new features into the landscape. In this way, they can change the landscape character to such an extent that they create a different landscape character type, in a similar way to large scale afforestation. That change need not be adverse; some derelict or degraded landscapes may be enhanced as a result of such a change in landscape character.
49. Windfarms may also have a cumulative effect on the character of landscapes that are recognised to be of *special value*. These landscapes may be recognised as being rare, unusual, highly distinctive or the best or most representative example in a given area. This recognition may take the form of national or local designations (for example, National Scenic Areas or Special Landscape Areas), citations in development plans, community plans or other documents, or be less formally recognised, such as Search Areas for Wild Land.

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<sup>4</sup> Second Edition, paragraphs 7.12 and 7.13

## Cumulative effects on visual amenity

50. Cumulative effects on visual amenity can be caused by ‘combined visibility’ and/or ‘sequential effects’:

*Combined visibility* occurs where the observer is able to see two or more developments from one viewpoint. Assessments should consider the combined effect of all windfarms which are (or would be) visible from relevant viewpoints. Combined visibility may either be in combination (where several windfarms are within the observer’s arc of vision at the same time) or in succession (where the observer has to turn to see the various windfarms).

- *Sequential* effects occur when the observer has to move to another viewpoint to see different developments. Sequential effects should be assessed for travel along regularly-used routes like major roads, railway lines, ferry routes, popular paths, etc. Sequential effects may range from *frequently sequential* (the features appear regularly and with short time lapses between) to *occasionally sequential* (long time lapses between appearances) depending on speed of travel and distance between the viewpoints.
51. Two windfarms need not be intervisible – or even visible from a common viewpoint – to have impacts on the landscape experience for those travelling through an area. For example, it may be necessary to consider the cumulative effects of windfarms on users of scenic road routes, or routes for walkers, along their full length within the agreed study area. The area within which a cumulative assessment is required should relate to the issues involved, and should not be limited by local authority boundaries.
52. Cumulative visual effects are discussed in more detail in the GLVIA. In general, impacts will vary in degree according to:
- the sensitivity of visual receptors;
  - the landscape context (for example, an open landscape with wide panoramic views or an intimate landscape with enclosed views)
  - the activity of the receptor (e.g. residents, visitors etc) and their number;
  - the magnitude of cumulative change in terms of the scale, nature, duration, frequency of combined and sequential views (glimpses or more prolonged views; oblique, filtered or more direct views; time separation between sequential views);

## Perceived cumulative effects

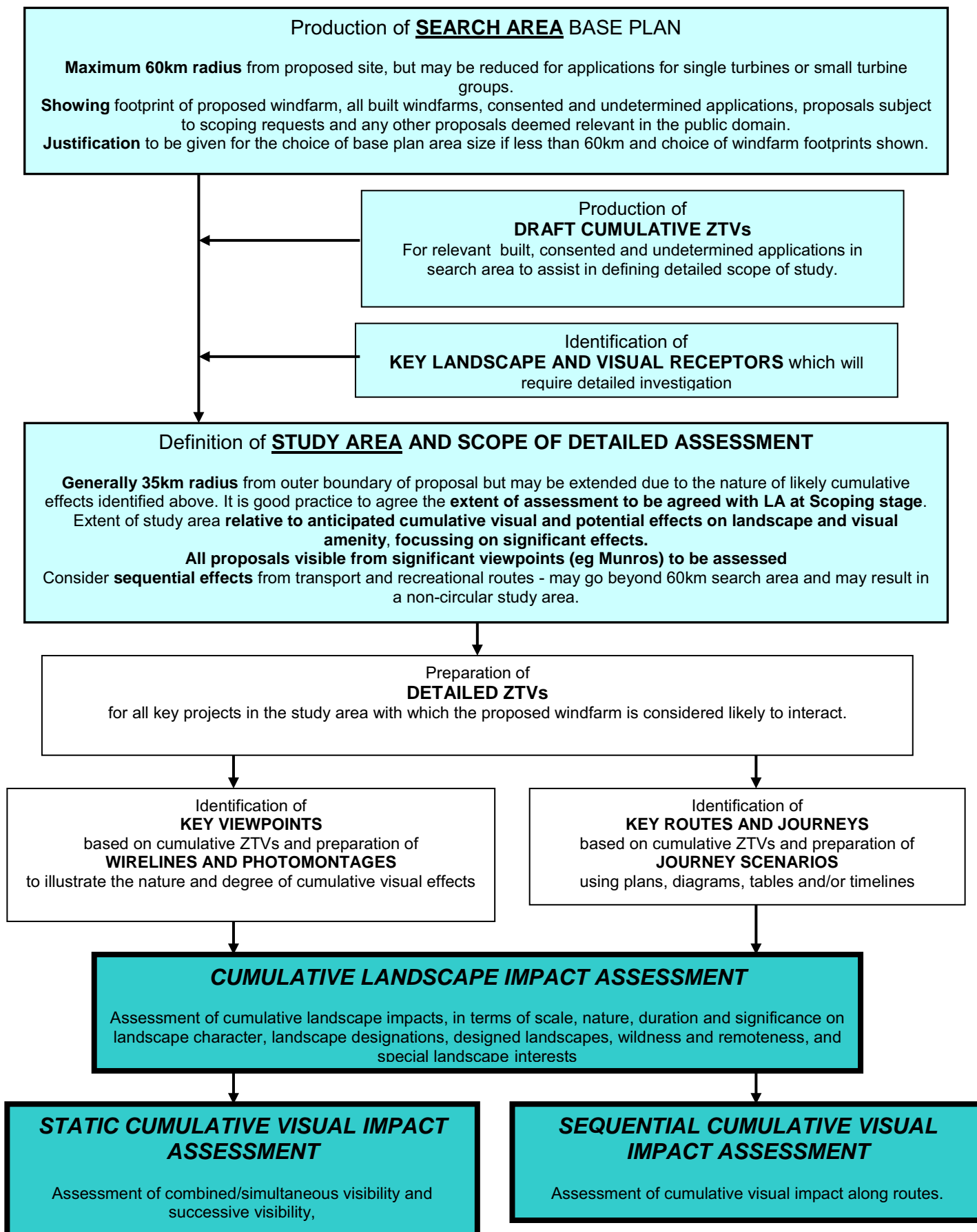
53. Perceived cumulative effects may arise;
- where two or more developments are present but one or more is never seen by the observer, for example, because they are screened, or the observer is unable or unwilling to gain a viewpoint from where they would be seen. The observer is aware that other developments are present because, for example, they may have learnt about them or seen signs to them. This effect may be significant, but can also be mistaken, where the observer's information or interpretation of it is wrong, or

- where people have formed an opinion about wind farms generally without having seen one, for example through someone else's experience. They may use this perceived effect to express a negative opinion about a development proposal near where they live.
54. Few detailed perception studies have been undertaken to date and although there is a generally good understanding among planners and Local Authority councillors of perceived effects, it is unusual for them to be considered in the context of an individual decision. This issue is therefore most appropriately addressed within the scope of strategic environmental assessment or spatial planning.

### **Undertaking a Cumulative Landscape and Visual Impact Assessment**

55. The purpose of a Cumulative Landscape and Visual Impact Assessment (CLVIA) is to describe, visually represent and assess the ways in which a proposed windfarm would have additional impacts when considered in addition to other existing, consented or proposed windfarms. It should identify the significant cumulative effects arising from the proposed windfarm.
56. The main requirement is an assessment which is proportionate to the impacts. All CLVIA should accord with the methodology outlined in the GLVIA. The emphasis, when undertaking CLVIA should always be on the production of relevant and useful information, highlighting why the proposals assessed have been included and why others have been excluded.
57. The flow chart in Figure 1 summarises the recommended CLVIA process for windfarms. The process is described in more detail below. **This is generic guidance only. The number of proposals in an area and the timing of applications give rise to development scenarios of varying complexity. Professional judgement should inform the scope of the study to be undertaken. SNH and Planning Authorities may also require different or additional information to assist in their assessment of cumulative landscape and visual impacts.**

Figure 1. Flow chart summarising CLVIA for windfarms



58. It is important to have a clear view of the context for a cumulative impact assessment in order to focus on those windfarms and/or issues where there is potential for a significant cumulative effect. A phased approach to defining the study area for a cumulative impact assessment is recommended.
59. The starting point for the assessment is preparation of a **search area base plan**. This should identify all the windfarm projects which are relevant for the subsequent CLVIA. The projects to be considered in the detailed assessment will be selected from the base plan.
60. A clear and legible search area base plan should be produced to show all of the following within a radius of up to **60 km** (depending on the individual proposal, smaller developments should use a smaller radius in agreement with the Planning Authority):
- any constructed or consented windfarm;
  - any undetermined windfarm application;
  - any windfarm proposal which has been subject to an EIA scoping request to the relevant authority; and
  - any other windfarm proposal that the Planning Authority, and/or SNH, considers relevant for study and which is within the public domain (eg as a result of a public announcement or community meeting).
- Note** – due to the very large number of small scale (fewer than 3 wind turbines) proposals currently in the system it may not be practical to include all of these in the search area base plan. The Planning Authority should be consulted for the most up to date information and to confirm which sites should be included
- Note** – installed, consented and proposed offshore windfarms should also be presented on the base plan to enable a decision on whether to include these in the assessment.
61. The precise **study area** should then be selected **from within** the search area base plan and agreed with the planning authority. The applicant must consider what the **key effects** will be within the search area, using these to propose the study area for more detailed assessment. Key considerations will include:
- Sequential effects on key routes
  - Intervisibility with other developments
  - The existing pattern of development
62. **The onus is on the applicant and their consultants to use the base plan and initial assessment to identify the likely key effects and use these to define an appropriate study area and methodology before approaching SNH for a view.**
63. Generally, for the current generation of turbine size, the study area should extend to a minimum of 35km from the outer margin of the windfarm in question. Our [“Visual Representation of Windfarms Good Practice Guidance”](#) suggests appropriate ZTV distances for smaller turbines<sup>5</sup>.

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<sup>5</sup> Table 2, Page 36 – note this guidance is currently under review



64. The size of the study area should also be influenced by the locations and ZTVs of other windfarms likely to interact with the new proposal; and by transport routes to be assessed for sequential effects. The study area may not be circular in shape but could be larger in some directions than others. Sequential impacts may need to be assessed for a distance of more than 60km from the proposed windfarm. This should be agreed at the scoping stage.

### Scope of detailed cumulative assessment

65. The list of projects to be included in the detailed assessment should be clearly set out with an explanation of how the detailed scope has been determined (e.g. ZTV analysis, checking on site, previous applications). A checklist could be used to explain this: it would set the projects against a “menu” of priorities, including distance from the proposal, certainty of construction, etc. The relevant receptors (landscape character areas, designated landscapes, designed landscapes, visual receptors, including sequential routes through the study area) should also be listed.
66. The resulting scope should be discussed with the determining authority and SNH and agreed at the scoping stage. **At every stage in the process the focus should be on the key cumulative effects which are likely to influence decision making, rather than an assessment of every potential cumulative effect.**
67. The assessment should clearly describe the baseline conditions by identifying existing windfarms and the extent to which these have altered landscape character and affected sensitivity to windfarm development. This information should be produced as part of the baseline LVIA and then considered as part of the CLVIA. However, the CLVIA should then focus on the key cumulative changes likely to be brought about by the new proposal, i.e. on key routes, views or character areas.
68. The assessment should also identify the **sensitivity of the landscape and visual amenity** resource and the predicted magnitude of cumulative change arising from each of the relevant scenarios, for example:
- the proposed windfarm with existing operational windfarm developments and those under construction;
  - the proposed windfarm with existing and consented but unbuilt windfarm development;
  - the proposed windfarm with any application stage proposals, which could include those at scoping stage;
  - the proposed windfarm with any other windfarms, along with other proposals in the planning system.
69. Predicted visibility of cumulative windfarm development should be described, informed and depicted by supporting **wireline drawings** and, where relevant, **photomontages** which should clearly distinguish between each individual project and its status within the planning system. This is best done by annotation or illustration using a different colour for each individual windfarm. These and other illustrative tools are described further below.
70. The magnitude of cumulative change may be different from the magnitude of change brought about by the development when considered on its own. The aim

of the cumulative assessment is to identify the magnitude of additional cumulative change which would be brought about by the proposed development when considered in conjunction with other windfarms. A range of parameters should be considered, including:

- the number of other windfarm projects which would be visible in the landscape in each of the different scenarios (existing, consented or application stage);
- direction to each of the projects;
- distance to each of the projects;
- the number and height of turbines at each of the projects – which may also be expressed as the horizontal and vertical angle occupied by turbines – and any access tracks and grid connections; and
- duration of the change (i.e. age of constructed windfarms and the planning status of the projects).

### **‘Zone of Theoretical Visibility’ studies**

71. ‘Zone of Theoretical Visibility’ (ZTV) analysis is the process of determining the visibility of an object in the surrounding landscape, using computer modelling and digital terrain mapping. It has a number of limitations, described within [Visual Representation of Windfarms Good Practice Guidance \(SNH 2006\)](#).
72. Cumulative ZTVs should be produced for all existing and consented developments as well as undetermined applications in the initial search area **with which the proposed windfarm is likely to interact to cause significant cumulative effects**. ZTVs provide a useful tool to assist in the refinement of the scope of a cumulative assessment. There are various ways in which the ZTVs can be presented, including the baseline and:
  - proposed site ZTV;
  - landscape character types and proposed site ZTV;
  - landscape designations and proposed site ZTV;
  - sequential routes and proposed site ZTV;
  - paired ZTV (i.e. application windfarm plus one other);
  - ZTVs which show a sub-set of projects: the proposal under consideration plus selected others – which may be chosen according to geographic proximity to one another, similarity in ZTV or in relation to status, i.e. both consented, or both at application stage;
  - comparative ZTV which illustrates the extent of additional visibility of new turbines where they are being proposed as part of a windfarm extension, or an alteration to an application.
73. Cumulative ZTVs should clearly show those areas from where one or more windfarms are likely to be seen. Each windfarm and its ZTV should be shown in a different colour and be clearly named. In the case of a ZTV showing three windfarms it will be possible to illustrate the overlapping areas using separate colours e.g. red, blue and yellow to represent each development (with corresponding overlaps of orange, green, purple etc.) or hatching in different directions.
74. Where four or more windfarms are involved, ZTVs may become difficult to interpret and a series of additional, separate cumulative ZTVs may be required to show the cumulative effects clearly.

75. **Agreement on groupings of windfarms for separate cumulative ZTVs should be reached with the relevant planning authority(ies) and SNH.**
76. Early drafts of ZTVs can help the Planning Authority and SNH to advise on the selection of viewpoints for stationary cumulative impact assessment and routes for sequential cumulative assessment. **These should be provided for pre-application requests for advice and/or meetings, and included in scoping requests where possible, even if some sites are missing.**

### **Selecting viewpoints and assessing fixed positions for cumulative visual effects**

77. Locations for viewpoints should be identified by the applicant and agreed with the Planning Authority in consultation with SNH. Detailed guidance on viewpoint selection is contained in [Visual Representation of Windfarms Good Practice Guidance \(SNH 2006\)](#).
78. The selection of cumulative viewpoints should be based on an analysis of the draft cumulative ZTVs, ideally at the initial scoping stage of the LVIA so that, as far as possible, viewpoints are selected which will serve **both** the LVIA and CLVIA. All relevant data may not be available at the outset. Additional viewpoints may be required once such data are available and have been analysed. In areas where there have already been a number of windfarm proposals it may be useful to select viewpoints that have been used for previous windfarm CLVIAs. In many locations the level of development is such that most viewpoints will now be cumulative in nature.
79. Viewpoints should be chosen to represent the following fixed position cumulative visual impact scenarios:
- *Combined or simultaneous visibility* occurs where the observer is able to see two or more developments from one viewpoint, without moving his or her head. A 90 degree arc of view should be shown and the effects represented as described below; and
  - *Successive or repetitive visibility* occurs where the observer is able to see two or more windfarms from one viewpoint but has to move his or her head to do so. Visualisations, such as 180 or 360 degree arc of view wirelines, will be useful in assessing these effects. Supporting text or tables to describe the effects will be needed.
80. A degree of pragmatism is required to limit the number of viewpoints to those which are likely to provide useful information to inform decision making.

### **Sequential visual assessment and selection of routes for analysis**

81. *Sequential cumulative effects on visibility* occur when the observer would see the proposed windfarm with other developments, either simultaneously or in succession, when moving through the landscape.
82. Routes to be assessed should be defined and agreed with the Planning Authority as part of the baseline LVIA. The extent of these study routes should be informed by the 60km search area base plan drawing and the cumulative ZTVs.

They may extend beyond this in some situations, for example particularly important or busy travel routes, or particularly sensitive locations.

83. A “**journey scenario**” should be considered for routes that may have significant cumulative effects, and the description of available views and how these may be affected by the proposal may note:
- direction of view (‘direct’, ‘oblique’, ‘aligned on route’, or ‘looking NW of route’ etc.); and
  - distance from nearest turbine; and
  - distance over which the effect would occur.
84. It can also be helpful for the assessment to identify the likely duration of the predicted effect. For example, ‘assuming an average driving speed of ‘x’, this effect will be apparent for approximately ten minutes between 12 and 8 km from the nearest turbine’. The journey scenario can be illustrated in various ways as described below.

### **Cumulative assessment of single turbines, or small groups of turbines**

85. Single or small groups of 2 or 3 commercial scale wind turbines raise specific issues for cumulative effects and their appraisal. These include:
- when cumulative issues occur with both larger windfarm development and/or other single/small scale development;
  - multiple small scale and single turbine developments being proposed in a particular region, with complex cumulative effects arising; and
  - introduction of development to landscape types which have not yet been subject to larger windfarm development.
86. SNH guidance on the preferred approach to cumulative assessment of single or small groups of turbines can be found in “[Assessing the impact of small scale wind energy proposals on the natural heritage](#)” (SNH, March 2012). This sets out indicative levels of information to be submitted by developers which, although less than that expected for larger proposals, should be of a suitable standard to enable easy appraisal by consultees.
87. Assessment of micro renewables proposals (<50kw) is detailed in our guidance “[Micro renewables and the natural heritage](#)” (SNH, October 2009). Applications at this scale are unlikely to require, or be included in CLVIA.
88. Further guidance on the siting and design issues related to small to medium turbine development (15-50 metres height to blade tip) is also available on our [website](#).

### **Illustrative Methods**

89. The predicted cumulative effects should be clearly portrayed in accordance with GLVIA (2002) and [Visual Representation of Windfarms Good Practice Guidance \(SNH 2006\)](#). All relevant proposals should be depicted (where practical) in all of the relevant illustrative material (i.e. wireframes, photomontage, study area map).

90. The range of illustrative tools which can help in cumulative landscape and visual impact assessment is constantly evolving. Some of the available tools which have been found to be of particular value are described below.
- **Wireline views** are most commonly used to show installed, consented and as yet undetermined applications in combination. It is important that the turbines, or clusters of turbines, are clearly presented and numbered, using different colours to distinguish between windfarms as necessary. Interpretive text and data should be positioned carefully to avoid cluttering the wirelines. A separate appendix showing wirelines with numbered turbines may be appropriate.
  - **Photomontages** will usually be of most value for views within 15km of a windfarm site. However this will depend on the specific windfarm design and environmental conditions and consequently this parameter should usually be discussed and agreed with the determining authority and consultees.<sup>6</sup>
91. In some circumstances it may be useful to show more distant developments in both wirelines and photomontages. Where these are so distant that they cannot meaningfully be displayed on the illustration, a note showing the location and approximate extent of the development will suffice.
92. Where the baseline has changed, it will often be necessary to provide up to date photographs from viewpoints. For example, if other windfarms (or indeed other forms of development) have been built since the original photography was taken.
93. A '**wind rose**' diagram, shaded to show the direction (arc of view) and distance of windfarms visible for 360 degrees, can often be helpful, especially from important summit viewpoints.
94. Sequential effects can also be illustrated in several ways:
- **plan** showing visibility of different projects from a route denoted by coloured arrows on mapped base;
  - **diagram** showing visibility of different projects from a route. This could take the form of a colour-coded timeline linked to the colours used in the ZTV;
  - **table** showing predicted visibility by length of route affected by each project, including commentary text on every 10km explaining where each project is visible and the nature of this visibility;
  - colour coded **sequential bar chart** or "timeline" showing distance, duration of view and whether it is direct, oblique, screened, etc., with the colours for each windfarm matching those used in the ZTV. An analysis of the significance of such quantitative data is needed.
95. Computer generated moving images ("drive throughs") or **videomontage** techniques may also be appropriate to assist CVIA, particularly in respect of cumulative sequential effects. This technique may be particularly applicable to assessment from moving receptors such as trains or ferries or in assessing windfarm extension applications where different turbines with different heights and rotor speeds are being used. Alternatively, a series of static images could be produced and viewed in time sequence.

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<sup>6</sup> Visual Representation of Windfarms Good Practice Guidance (SNH 2006), paragraph 205 – note this guidance is currently under review

## Description and assessment of cumulative landscape impacts

96. The study of potential cumulative landscape effects and related impacts should include the description and assessment of the following issues:

- **Effects on landscape character.** The cumulative (i.e. additional) effect of proposed development on existing landscape character should be described, particularly in relation to key landscape characteristics. It is likely that as more windfarms are developed they will begin to be perceived as a key landscape characteristic and will therefore change the landscape character. These effects should be objectively assessed in accordance with standard landscape character assessment guidelines (Land Use Consultants for SNH and Countryside Agency, 2002, GLVIA 2002).

Consideration should also be given to related effects on sense of distance, scale and focal points in the landscape. Relative scarcity of Landscape Character Type may also be considered as part of the assessment, especially where there are few examples of a certain Type which remain unaffected by windfarm development.

- **Effects on sense of remoteness or wildness.** The existing experience of remoteness and wildness should be described and the cumulative effects of development analysed. This should include effects on the peripheries, and therefore the setting of any wild land areas, to ensure that their extent is not diminished. Useful reference can be made to SNH's policy on '[Wildness in Scotland's Countryside](#)' (SNH, 2003) and '[Assessing the Impacts on Wild Land](#)' (SNH 2007). We are currently revising our wild land mapping and updated mapping and information is expected to be available later in 2012.
- **Effects on other special landscape interests .** The effects of additional development on the objectives, key characteristics, qualities and integrity of any relevant landscape designation should be analysed and described as should effects on other interests in the landscape. For example, this may include consideration of the effects on the landscape setting of settlements or other cultural interests (such as designed landscapes) and associations with the landscape (GLVIA 2002).

97. Other issues that are not identified above may also be relevant for assessment of cumulative landscape effects depending on the location and these should be agreed with the Planning Authority.

## Description and assessment of cumulative visual impacts

98. The study of potential cumulative visual effects and related impacts should include the description and assessment of:

- **Effects on range of visual receptors in the study area.** This may include residential settlement; outdoor recreational facilities (informal and formal) and routes through the study area.
- **Effects on views of the landscape.** For each of the relevant receptors, consider if any additional impacts on visual amenity derive from the new turbines and how this relates to other wind farms visible from the same location. For example, would the new turbines be seen above the skyline,

whilst existing wind farms are backclothed by landform? if so, what is the relationship between the turbines and the skyline?.

- **Relationships between windfarms.** Consideration should be given to the relationship between the various windfarms in the view in terms of layout, turbine hub height, rotor dimensions and related rotation speed.

99. In presenting the findings of the assessment there is a risk of focussing on a quantitative assessment of the effects. **This will be helpful, but a qualitative analysis of these is required to fully appraise the effects.** The production of extensive quantitative analysis alone is not sufficient.

### Offshore windfarms

100. There are proposals for offshore wind farms in Scottish Territorial Waters and within two 'Round 3' zones off the east coast. In some locations it may be necessary to consider onshore and offshore wind farms in the same CLVIA. This is due to both the scale of the offshore proposals and their potential to affect the same views, receptors and landscapes as onshore windfarms.

### When will cumulative impacts on landscape lead to an SNH objection ?

101. The decision on whether to object to a proposal on the grounds of cumulative impacts is complex. The key consideration for SNH is whether or not the impacts of the proposal(s) on the natural heritage raise issues of national interest, as set out in our guidance on [Identifying natural heritage issues of national interest in development proposals](#).

### Summary

102. This guidance has been updated to address the fact that in many areas of Scotland, CLVIA will require the assessment of large numbers of windfarms. In some cases more than 40 windfarms have been included in the assessment. The level of information generated can distract attention from the most significant cumulative effects which are likely to influence the consenting decision. **Assessments should therefore focus on the most significant cumulative effects and conclude with a clear assessment of those which are likely to influence decision making.**

## SECTION 4: ASSESSING CUMULATIVE IMPACTS ON BIRDS

### Background to wind farm impacts on birds

103. Operational wind farms are known to have a number of impacts on birds and bird populations. These impacts have been documented at wind farms both onshore and offshore, and can apply to one or more bird species. These are well described in the scientific literature and include:
- collision with turbine blades (moving and stationary);
  - displacement of birds due to loss of suitable feeding and/or breeding/wintering habitat;
  - disturbance within and around the turbine envelope; and
  - creating a barrier to dispersal, regular movements or migration.
104. These impacts are usually addressed in Environmental Impact Assessments (EIA) for all sensitive bird species that are present on, or adjacent to, the proposed wind farm site. [Guidance](#) published on the SNH website identifies which species should be prioritised for assessment. This is mainly based on species' conservation and legal status, both nationally and internationally.
105. However, the issue of cumulative impacts of multiple developments on sensitive species populations has received limited attention. There are many reasons for this including a lack of clear, agreed methodologies by which to undertake such assessments. A range of difficulties have been encountered which makes the process both complex and difficult to interpret.
106. The purpose of this guidance is to set out a biologically robust approach to making cumulative assessments which satisfy both planning and legal concerns. The guidance is restricted to onshore wind farms. Similar principles apply in offshore settings but these are being addressed by COWRIE<sup>7</sup> for the offshore environment. The Department of Energy & Climate Change (DECC) have also commissioned work to produce guidance on assessing cumulative impacts of onshore wind farms. Our guidance will be reviewed and amended as knowledge, understanding and practice develops.

### The nature of cumulative impacts

107. Cumulative impacts result from effects arising from two or more developments. Effects may be:
- **additive** (i.e. a multiple independent additive model), or
  - they may interact in ways that lead to cumulative impacts that are **antagonistic** (i.e. the sum of impacts are less than in a multiple independent additive model) or
  - **synergistic** (i.e. the cumulative impact is greater than the sum of the multiple individual effects e.g. CEFAS (2001), Foden, *et al.* (2010)).
108. While antagonistic or synergistic models may occur in real-life settings, the approach adopted in this guidance is the simpler additive model which sums impacts from different developments. However, summing impacts can lead to individual errors being compounded and in some cases (such as collision

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<sup>7</sup> [Collaborative Offshore Windfarm Research into the Environment](#)



mortality) correction may need to be made when receptor populations are small.

109. It is important that cumulative impacts on birds are quantified in Environmental Statements. This provides comparable data that can be combined to investigate cumulative impacts. For example, impacts on golden plover might be quantified in terms of the number of presumed territories lost (either from displacement or from habitat loss) and assessing cumulative impact simply becomes a matter of summing the individual development impacts across the geographical range being considered.
110. In practice some effects, such as levels of disturbance or the barrier effect, may need considerable additional research work to assess impacts quantitatively. A more qualitative process may need to be applied until this quantitative information is available, e.g. from post-construction monitoring or research.

### Types of cumulative impacts

111. **Collision risk** for sensitive species is frequently calculated for onshore wind farm applications in Scotland. This uses the Band Model (Band *et al.* 2007) as part of the assessment process.
112. Collision Risk Modelling (CRM) produces indicative figures for annual losses (individuals per annum) or a total sum over the lifetime of the wind farm (typically 25 years). CRM values are summed for each species across all the wind farms where calculations have been made. It is important that comparison is made on **annual** rates of collision mortality and not total estimated mortality, to adjust for the different timescales over which wind farms will be developed.
113. Birds encountering wind farm developments may take avoidance action. This can be divided into two very different behavioural responses:
  - **Behavioural avoidance** is when a bird close to an operational wind farm reacts to prevent a collision. Such behaviour implies that a bird sees a moving turbine blade, evaluates the potential risk and takes action to prevent what might be a fatal collision.
  - **Behavioural displacement** operates at a different level, in that a bird may, over time, change its range use, territory use or flight pattern between roosting areas and feeding areas, so that the range use (or flight paths) no longer brings birds into the vicinity of an operational wind farm.
114. It is the result of these behaviours which determine what, if any, impacts are likely to arise from a wind farm development proposal:
  - **Displacement** effects result in a loss of habitat for a species, and this is likely to be long term unless birds habituate to the development. Displacement is different to disturbance, the latter being short term and may occur primarily during construction, though operational disturbance should not be discounted.
  - The level of **disturbance** caused to birds is more difficult to assess because it relies on predictions of how birds will respond behaviourally.

Scenarios which assume 100% disturbance within a pre-determined distance of turbines can be derived for key species using conservative threshold disturbance distances (Whitfield & Ruddock, 2007). Empirical evidence is lacking for most species but some indication of real displacement distances can be taken from Pearce-Higgins *et al.* (2009).

- Assessments rarely address issues of **habituation** so may exaggerate actual losses from the development area. Disturbance effects may also be non-linear in their impact, with birds tolerating levels of disturbance up to a critical threshold above which they will avoid the development area. Qualitative assessments (see later) may be all that is possible in these situations.

### **The barrier effect**

115. There have been few attempts to quantify the risks to bird movements from the **barrier effect**.
116. Wind farms may act as a barrier to species that commute between a nocturnal roost site or breeding area and a feeding locality (for example wintering geese, breeding red-throated divers and colonial breeding gulls). Under this scenario birds may be forced to move round the wind farm (e.g. Masden *et al.* 2009), or gain altitude and fly well above turbine height. Regularly undertaking such movements clearly has an energetic cost.
117. Increasing numbers of turbines (resulting from several developments along such routes) could act either as an impermeable barrier to movement (as the energetic cost of going round the turbines is too high), or may force birds to fly through the turbine envelope, thus exacerbating the collision risk.
118. Wind farms placed across migration corridors, or at key landfall sites for migrants, may also act as a barrier. Many migrants that fly at turbine height during migration (for example species of waterfowl), may have limited reserves of energy to climb above, or pass round, wind farm sites on route.

### **Habitat loss**

119. The amount of habitat lost to tracks, hard-standings, buildings, quarries and other infrastructure associated with the development, is relatively simple to calculate. There will, however, be indirect habitat loss that arises from disturbance and displacement. This may be more difficult to quantify, especially if effects develop over time.
120. Behavioural effects, such as a reluctance to hunt within the turbine footprint (e.g. Walker *et al.*, 2005; Fielding & Haworth 2010) may lead to effective habitat loss even though the habitat remains suitable. It will also be important to determine the loss of habitat that might occur over time through management or hydrological changes as well as possible impacts from disturbance by both site-based operations and improved access by visitors.
121. It is important to note that, although direct habitat loss may be small for all but the biggest wind farms, indirect habitat loss may be a significant factor.

### **In combination impacts**

122. Cumulative impact assessments should not be restricted to other wind farm developments but should include all plans or projects in the area, such as mineral extraction, built development, power lines, telecommunications masts, forestry or recreational pressures. Any associated development (i.e. grid

connections or track construction) should be considered within the cumulative impact assessment.

123. Long term or chronic impacts may be difficult to factor in but, where such impacts have an adverse impact on the species conservation status, they must be considered as part of the assessment process. For species subject to hunting pressure, levels of shooting mortality may also be relevant, although the poor quality of data on hunting bags may mean that such assessments are limited in their value.

### Species Priorities

124. Information on which species should be considered when assessing impacts is set out in guidance on [Assessing significance of impacts from onshore wind farms on birds outwith designated areas](#). A list of sensitive species is given at **Annex C**.
125. The cumulative assessment within most wind farm Environmental Statements should be limited to the species which use the site at some point during their lives. All the species in Annex C are sensitive to impacts arising from wind farm construction and receive a high level of national and international legislative protection. **It is important at scoping stage that the developer seeks advice to confirm that there are no other species present in the area that might, exceptionally, also merit assessment.**
126. Where there is connectivity between the development and the qualifying interests of a [Special Protection Area](#) (SPA), these qualifying interests must be assessed in the Environmental Statement to inform a [Habitats Regulations Appraisal](#) (HRA). Further guidance will be published early 2012 on the [SNH website](#) to assist with this but advice should be sought from SNH at an early stage as to whether there is potential for connectivity with any SPA interests.
127. The Environmental Statement (ES) must include cumulative impact assessment for the full range of species that may be affected. Identifying the range of species likely to be present and likely to be affected is best done at scoping as there may be species for which an individual wind farm appears to be relatively unimportant but, when considered in combination with others nearby, could have an impact that is significant on a wider scale.
128. Cumulative assessments should be considered as part of the overall EIA and HRA processes and not as a *post hoc* assessment. However, survey work can always uncover different species on or adjacent to the site and these may need to be factored in at a later stage.
129. Data collection and presentation should be standardised as far as possible in accordance with SNH guidance on [wind farm survey methodology](#). However, where new information on avoidance rates becomes available, a degree of *post hoc* analysis may be need, using standard and up-to-date avoidance rates.

### Scale at which impacts should be assessed

130. The issue of the scale at which impacts are assessed has been dealt with in other SNH guidance, and will not be discussed in detail here. In summary, the impacts of wind farm (and other) developments on any species population can be assessed at a number of scales, ranging from the very local (e.g. on the

wind farm site); at a regional scale, such as a Natural Heritage Zone (NHZ); and at a national (i.e. Scottish), scale.

131. Given that our prime concern is to maintain the conservation status of the species population at the national scale, we aim to assess impacts upon a species' population size, its population trend and its natural range within Scotland. Therefore, we are interested in how wind farms (individually and cumulatively) are likely to affect the species either nationally, or regionally where regional impacts have national implications (where a specific region holds the majority of the national population for example). Impacts on designated sites such as SSSI or SPAs are considered separately, according to existing guidance.
132. Developments that are likely to have an effect on a SPA or Ramsar site, either alone or in combination with other plans or projects, need to be subject to a Habitats Regulations Appraisal.
133. For wind farms which do not have an impact on designated sites, SNH guidance on '[Assessing significance of impacts from onshore windfarms on birds outwith designated sites](#)' (known as the 'Wider Countryside Guidance') highlights the relevance of the Natural Heritage Zone (NHZ) as the basis for the geographical range selection. We are currently<sup>8</sup> undertaking a review of the population status of key, priority species for assessment in each of the 21 Natural Heritage Zones, which will support the assessment of impacts and their magnitude within EIA.

### When will cumulative impacts on birds lead to an SNH objection?

134. The decision to object to a proposal on the grounds of cumulative impacts is complex. The key consideration for SNH is whether or not the impacts of the proposal(s) on the natural heritage raise issues of national interest, as set out in our guidance on [Identifying natural heritage issues of national interest in development proposals](#).

### Assessing Cumulative Impacts

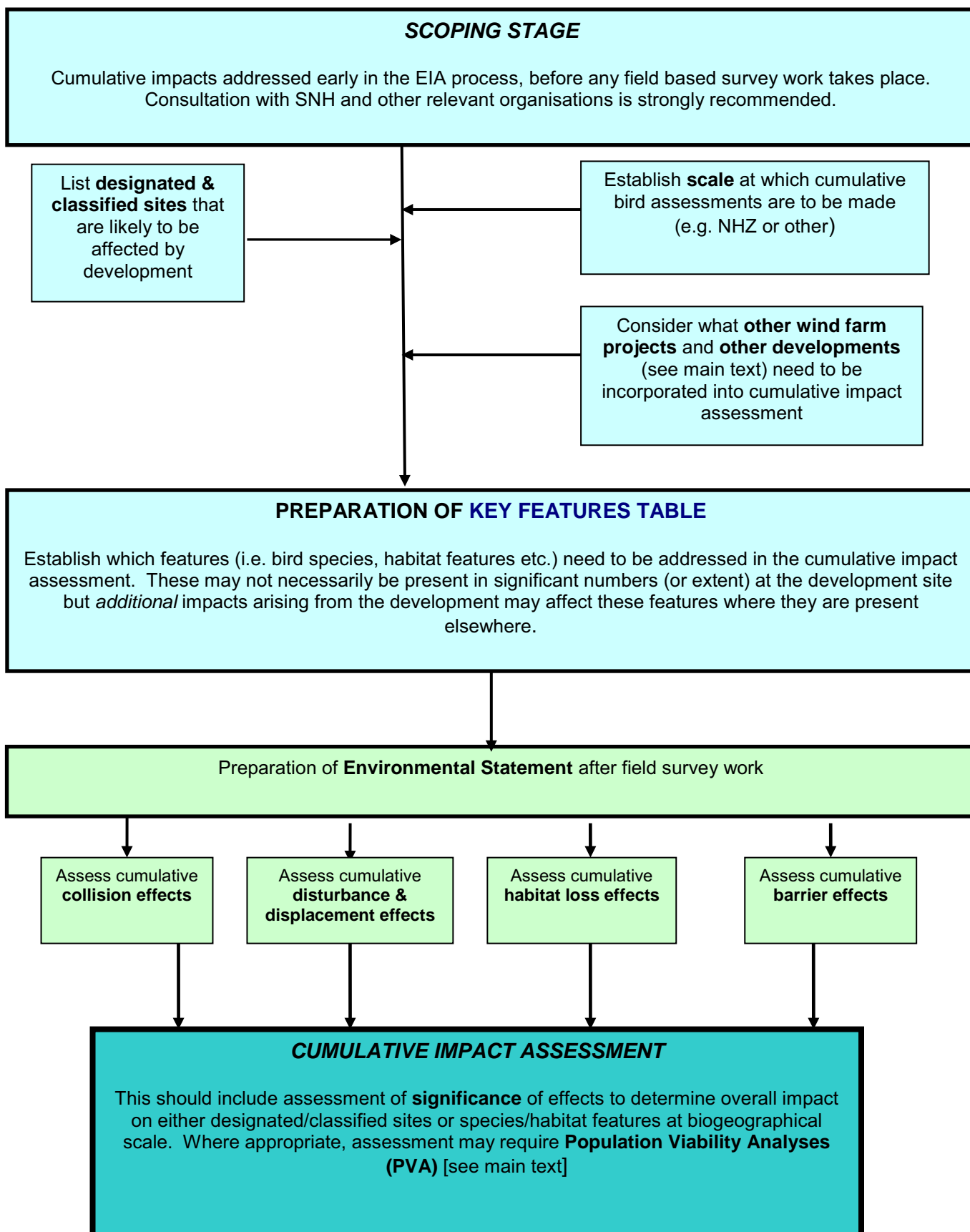
135. Consideration of the cumulative impact assessment should begin at the scoping stage. In addition to identifying and addressing the impacts on species found in significant numbers on or near the proposed development site, the process should also identify species that may be affected by other developments within the area of cumulative assessment. For example, a site may have low numbers of a particular species. Effects on the site itself may be minimal but, because neighbouring sites host significant numbers of the species, an assessment of the additional impact is required.
136. It may help to prepare a **Key Features Table** at an early stage. This summarises the species and sites potentially affected by the proposed development. The concept of this Table is developed in the COWRIE Guidance on assessing cumulative impacts of offshore wind farm developments (King *et al.* 2009).

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<sup>8</sup> The review is currently in progress for a range of species. For the latest situation readers are recommended to contact the [SNH ornithological contact](#) point.

137. Agreement on key species and features likely to be at risk will include:
- identification of key sites (SPAs and SSSIs) which may be affected;
  - definition of the relevant biogeographical population (e.g. NHZ or national level);
  - agreement and guidance on key methods used to assess impacts; and
  - guidance on data collection and analysis, particularly the treatment of 'risk' and the precautionary approach for collision risk modelling.
138. To assist with a standardised approach to scoping, parameters for early discussion could be easily defined. The flow chart below sets out the process in outline.

**Figure 2. Flow chart summarising cumulative assessment for birds**



## Assessing the significance of cumulative impacts

### Impacts on birds within or affecting designated sites

139. The need to consider the impacts of proposals on European sites is described in detail in The Habitats Regulations and [Revised Guidance Updating Scottish Office Circular 6/1995 \(SEERAD June 2000\)](#).
140. Any development that may affect a Natura site (including any Special Protection Area) requires a Habitats Regulations Appraisal (HRA). This Appraisal considers whether the work is related to management of the site for nature conservation but, as wind farm developments do not come into this category, the key steps in a HRA are:
- to consider whether a proposal is likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and, if so;
  - whether it can be determined that the proposal will not have an adverse effect on site integrity (this is the stage at which the Appropriate Assessment (AA) is undertaken).
141. Para Information to inform the HRA should be provided by developers within the Environmental Statement.
142. For an Special Protection Area (or a Ramsar site), cumulative impacts arising from other wind farm proposals and projects that could affect the site, must be incorporated into the overall assessment. The principle of this assessment is to determine that the proposal will not have an adverse effect on site integrity, including species' conservation status, whether singly or in combination with other developments. The assessment of significance, and process of determining any impact on site integrity, is described in detail in our online [guidance on habitats regulations appraisal](#).

### Impact on birds outwith designated sites

143. The concept of favourable conservation status (FCS) should be used outside designated sites to determine whether an impact on a sensitive species is likely to be significant. The concept of FCS is articulated in European Directives, such as the Habitats Directive and the Environmental Liability Directive<sup>9</sup>. The conservation status of a species includes consideration of the sum of the influences acting on it, which may affect its long-term distribution and abundance, within the geographical area of interest.
144. A species' conservation status is favourable where:
- a species' population dynamics indicate that the species is maintaining itself on a long-term basis as a viable component of its habitats; and
  - a species' natural range is not being reduced, nor is likely to be reduced for the foreseeable future; and
  - there is (and will probably continue to be) a sufficiently large habitat to maintain its population(s) on a long-term basis.
145. A cumulative adverse impact should be judged as significant at the national level where it would adversely affect the favourable conservation status of a

<sup>9</sup> See Environmental Liability (Prevention and Remediation) (Scotland) Regulations 2008: A Quick Guide <http://www.scotland.gov.uk/Publications/2008/05/14161737/50>

sensitive species or prevent a sensitive species that is recovering from reaching favourable conservation status. The premise here is that impacts from a number of developments, when assessed cumulatively, may exceed some threshold value (e.g. for loss of habitat or loss of breeding birds from collision), beyond which the impact becomes unacceptable.

146. Information on additional mortality, any loss of habitat, nesting or feeding territory, and any expected loss resulting from displacement in the population likely to arise from the development should be available from all relevant environmental statements, or from developers directly. These impacts should be set out in the context of information on the total population number and distribution (where known), current annual mortality and the area of suitable habitat for the species within the Natural Heritage Zone (NHZ).
147. SNH will assist developers in obtaining relevant information *where possible*, especially in circumstances where changes in outcomes from modelling work have been identified or (for example) where parameters such as avoidance rates have changed.
148. The effects of **disturbance** can be difficult to quantify. Birds may either move from the area or they may remain, and if they do move, then effects may be transitory or they may be sufficiently severe for long term impacts to arise (e.g. causing birds to abandon an area) but assessing the transition point at which dispersal behaviour changes will be a matter of judgement unless there is previous research or experience.
149. The [SNH report on disturbance distances](#) provides a basis for these judgements. Most disturbance will arise during construction but some operational disturbance is also possible, although habituation may also occur. Assessing disturbance on the basis of disturbance distances is therefore likely to offer a precautionary approach.
150. For a species that is prone to **displacement** by wind turbines, the main impact may be a loss of habitat which will translate into a reduction in the number of birds in the area. This on its own may not affect favourable conservation status (which reflects viability, range and adequacy of habitat to keep the population viable) if birds are displaced into other areas with sufficient capacity to absorb them. However, if the cumulative loss of habitat is significant and widespread, then it should be regarded as reducing the natural range of the species.
151. Direct **loss of habitat** should be considered and, while this may be relatively easy to quantify, the difficulty arises in assessing at what level habitat loss becomes significant. Setting arbitrary thresholds is not considered appropriate (such as the loss of 1% or more of the available habitat) and it will require case-specific judgements to be made, as part of the EIA to assess the significance of any impact. This type of habitat loss does not include indirect loss of habitat (i.e. through displacement).
152. Where mortality from **collisions** can be assessed, simple deterministic population modelling (or where appropriate stochastic modelling such as Population Viability Analysis (PVA)) can be used to model population trends. In many cases, the quality of data for sophisticated analyses may not be available, but simple deterministic models, for example those based on Leslie Matrices, are often relatively easy to construct to examine different scenarios or likely impacts of additional mortality. COWRIE has provided detailed



assessment of PVA models (McLean *et al.*, 2007), which may be used in making such assessments.

153. For a species that is prone to collision risk, the main impact may be added mortality. At low levels, the effect of such collision risk may be negligible in comparison with natural mortality. However, when considered in conjunction with other sources of additional mortality, especially from other wind farms, it may initiate a population decline that cannot be reversed unless the impact is removed.
154. When assessing cumulative mortality from multiple developments, it is important to note that simply summing collision mortality across all developments may **overestimate** cumulative mortality, as once a bird has been removed from a population due to collision with one development, it cannot collide again. This is particularly pertinent where population sizes are small (i.e.  $\leq 50$  breeding pairs) and mortality can represent a significant proportion of the population. Mortality tends to be proportionately lower for larger populations and, under these circumstances, summing mortalities may provide a valid approximation.
155. Further information on how to correct cumulative mortality calculations for losses is available in Maclean & Rehfish (2008). For example if we have a population of 20 breeding pairs of a particular species in an area with multiple wind farm developments, then if one pair is lost due to collision mortality with one wind farm, that will mean that there are fewer birds remaining in the population that are then subject to a risk of further collision mortality.
156. Where a species is already in decline, the test of significant adverse impacts should be whether the proposal would add *significantly* to the factors driving the decline and to the difficulty of taking action to reverse the decline to achieve favourable condition. In some circumstances, minor adverse impacts from a wind farm proposal, while theoretically adding to existing impacts that may lead to a decline in a species' population, may in themselves be so trivial in comparison with existing mortality or habitat changes that they may be deemed not to add significantly to the existing impact.
157. In considering distribution, it is important to be aware of the wider distribution within the geographical area. These may include both strongholds and gaps, both of which add complications in using the change of distribution as an indicator of significant loss at a very local level. Stronghold areas should not be prioritised for special protection unless they are designated sites for the species in question, or are recognised as productive, source areas that are important for the maintenance of the species within the NHZ. A stronghold area will usually withstand a level of impact on the species but impacts that jeopardise the status of the strongholds might constitute an impact on the natural range. On the other hand marginal populations outside the main stronghold areas may have a special ecological importance, e.g. being a location that facilitates immigration into, or emigration from, the region. In such areas, any adverse impact may translate into an impact on the NHZ as a whole.

### Measuring cumulative impacts

158. The purpose of this guidance is to provide advice on cumulative impacts that apply in the longer-term. Short-term impacts during the construction phase may add to operational impacts but, because they are by their nature

temporary, they should be assessed separately. In many cases, management approaches will mitigate construction related impacts. Only where construction-related impacts turn out to be longer term should they be included in the assessment of impacts from operational wind farms. For example, short-term disturbance may lead to long term loss of a species from an area if it is slow to re-colonise vacant habitat.

159. Cumulative impacts are best assessed quantitatively for each eligible species. The four main impacts described earlier can be quantified:
- **Collision mortality** expressed as the number of birds of a particular species killed (usually per annum) for any particular development.
  - **Disturbance** can be expressed as the number of territories lost, or number of birds displaced, from the wind farm footprint. It can also be the extent of habitat that is (indirectly) lost as a result of disturbance. Units of measurement must be standardised across all wind farms included in the cumulative impact assessment. Displaced birds cannot collide with wind turbines and acceptance of a collision risk implies limited displacement (even if birds manage to evade moving turbine blades).
  - The **barrier effect** is more difficult to quantify. One approach is to identify the proportion, or percentage, of a species' dispersal or migration route that is occupied by wind farm developments. For individuals of a species that move within a narrow, predictable corridor, e.g. between a roost and a specific feeding location, even a single wind farm placed along the route will (or could) act as a virtual barrier (e.g. see Masden *et al.*, 2009) For species moving along a broader front such as a migration front, a combination of wind farms set roughly perpendicular to the migration axis could act as a barrier for birds migrating at turbine blade height. A shift in a migration route may be trivial in terms of increased energy expenditure (e.g. Masden *et al.* 2009) but a daily 'detour' may add significantly over time to the overall expenditure of energy.
  - **Displacement** due to direct habitat loss is relatively easy to quantify, as this can be measured in terms of hectares of habitat lost. Using data from the Environmental Statement on putative densities for the species concerned, loss of numbers can be calculated, where appropriate with confidence intervals. It is more difficult to calculate impacts arising from indirect habitat loss, such as habitat change or behavioural displacement, as these effects are less predictable without a solid foundation using individual-based modelling (e.g. Kaiser *et al.* 2006), species-habitat modelling, or radio tracking of individuals.
160. Cumulative impacts should be summarised in a table or a spreadsheet, with a separate worksheet for each species. An example is given in **Annex D**. The benefit of a spreadsheet is that the table of impacts will automatically be updated as additional wind farms are added, and various permutations of wind farm order can be developed (see later). We hold some of the required data, but it will be for developers to source and verify all data required from SNH and other sources.
161. Additional information, such as the date the consent was given or planning application was formally submitted, the turbine number, total turbine area (with buffer) should be included in the table. Other parameter values could be added where these would add value to the utility of the spreadsheet.
162. Tabulations of cumulative impacts are 'living' documents which must take account of new information or changes in important parameters (such as

avoidance rates). As post-construction studies are completed and published, generic conclusions should also be factored in where these have a material effect on earlier cumulative assessments (for example, we have revised the default avoidance rate from 95% to 98%). Earlier proposals for which CRM figures were based on 95% will require re-evaluation.

163. A critical issue when considering cumulative impacts is the order in which developments are factored in.
- Developments that are already operational, and those that are consented, and likely to be built should be considered first as the impacts arising from these are unavoidable (once mitigation has been factored in). These are the critical projects that must be included.
  - Applications that have been formally submitted to a planning authority or Scottish Government but have yet to be determined, and applications that are awaiting submission (i.e. there is an environmental impact assessment) should be factored in last of all. It should be recognised that data from such assessments will not necessarily be in the public domain unless an application has been submitted but has yet to be determined.
164. The same principles apply to other developments though their impacts will not necessarily include all of the range of impacts identified by wind farms. For example, a new power line may increase collision risk but would probably present little additional disturbance or habitat loss (unless birds avoid the power line altogether).
165. Cumulative assessment is an ongoing process. As new wind farms are proposed, or applications are determined, the spreadsheet can be updated as appropriate, until the point of submission of a valid application for consent.
166. Judgements on cumulative impacts may also be affected by mitigation or enhancement measures which are provided to offset some of the resulting adverse impacts arising from wind farm construction. Assessments need to be undertaken once tabulation of cumulative impacts have been carried out, though any such benefits that are factored in need to be demonstrable, or subject to a high degree of confidence that they will, in fact, lead to such benefits.

## Data needs

167. Under normal circumstances, we will expect the developer to undertake the cumulative impact assessment as part of the EIA process. However, it is recognised that developers will need access to data for such assessments, and that access to such data will not always be possible.
168. Data for cumulative impact assessments will generally be derived from environmental statements. Unless there is good reason not to do so, figures will be accepted as presented in the various source environmental statements. Developers should also refer to the SNH response letters to ensure they have the agreed figures, as there are occasions where we disagree with the information presented in Environmental Statements.
169. Data from environmental statements for most wind farm developments will, in general, have been lodged with SNH. We will make such data available to other developers, bearing in mind issues such as commercial confidentiality and environmental sensitivity, when this will materially assist a developer in undertaking a cumulative assessment. However, data from other

developments (such as non EIA developments which we have not commented on) may need to be gathered from other sources.

170. We can also help to identify those developments that need to be incorporated in to the cumulative assessment. Assessment of which developments should be included will be part of the scoping exercise.
171. In some cases, it may be necessary to consider **offshore** wind farms, where these may have an impact on terrestrial species populations (e.g. some gulls that use inland and coastal habitats).
172. During the SNH 2009 Cumulative Impact Assessment Sharing Good Practice Event, it was suggested by some participants that a centralised database be established to summarise impacts from different wind farms. In relation to consented wind farms, we have recently issued guidance on [post-consent monitoring of wind farms](#) that addresses this issue. However, it will be more difficult to incorporate data from wind farms that have not yet received consent and, for this, data may have to be sourced from the relevant developer.
173. The Scottish Windfarm Bird Steering Group has also recently been established. The group aims to gather, collate and assess data from constructed windfarms across Scotland and it is hoped that this will greatly assist in cumulative impact assessments in the future by providing greater access to data as well as reduced uncertainty over impacts. The group can be contacted through the research co-ordinator Gina Martin<sup>10</sup>. It is therefore essential that other wind farms and developments that should be included in any cumulative assessment are identified as early as possible (during the scoping process) so that relevant data can be acquired. This can be reviewed as part of the development process but, again, reinforces the importance of cumulative assessments as part of the overall assessment process and not as a *post hoc* exercise once the work for the EIA is complete.

## Summary

174. Cumulative impacts are an essential component of any environmental assessment of a windfarm's impact on bird populations. Cumulative impact assessment begins at scoping, when issues of scale, sensitive species and effects to be assessed should be discussed and agreed with SNH.
175. It is assumed that cumulative impacts are additive, though there are circumstances (one is identified in this guidance) where this will not be the case. However, the simple additive approach is the key starting point for cumulative impact assessment for birds.
176. A cumulative impact that is considered to compromise a species status nationally (as defined in the SNH guidance - [Identifying natural heritage issues of national interest in development proposals](#)) – may raise concerns sufficient to trigger a SNH objection to the development.

A full list of references from section 4 is available in **Annex E**

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## Further Information and contact points

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### Versions

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## Annex A: Key references to cumulative effects in Government and SNH publications

- DTI (2000) *Cumulative Effect of Windfarms*. (Prepared by ETSU)
- Dumfries and Galloway Council (1999) *Structure Plan Technical Paper (1999)*
- Land Use Consultants on behalf of SNH and the Countryside Agency (2002) *Landscape Character Assessment: Guidance for England and Scotland*
- Scottish Executive (1999) *Environmental Impact Assessment Regulations 1999 Circular 15/99* (<http://www.scotland.gov.uk/library2/doc04/eia-00.htm>)
- SNH (2010) *Renewable Energy and the natural heritage*
- SNH (2002) *Policy Statement 02/02; Strategic Locational Guidance for Onshore Wind Farms in Respect of Natural Heritage*
- SNH (2002) *Search Areas for Wild Land* (map) (available at <http://www.snh.org.uk/pdfs/polstat/wsc-m3.pdf>)
- SNH (2003) *Policy Statement 02/03: Wildness in Scotland's Countryside*
- SNH (Nov 2003) *Guidance on Scoping Issues for EIA 3<sup>rd</sup> draft*
- SNH (2009) *Siting and Designing Windfarms in the Landscape*
- SNH (2006) *Visual Representation of Windfarms – Good Practice Guidance*
- SNH (2007) *Assessing the Impacts on Wild Land*
- SNH (2008) *Natural Heritage Assessment of Small Scale Wind Energy Projects which do not require formal EIA*
- The European Parliament (1992) *Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora*. (Habitats Directive)
- The European Parliament (2001) *Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment*. (SEA Directive)
- The Landscape Institute and Institute of Environmental Management and Assessment (2002) *Guidelines for Landscape and Visual Impact Assessment 2<sup>nd</sup> Edition* Spon Press
- The Scottish Government (1998) *Planning Advice Note 58 – Environmental Impact Assessment*. (<http://www.scotland.gov.uk/Publications/1999/10/pan58-root/pan58>)
- The Scottish Government (2005) *Environmental Assessment (Scotland) Act 2005* ([www.opsi.gov.uk/legislation/scotland/acts2005/pdf/asp\\_20050015\\_en.pdf](http://www.opsi.gov.uk/legislation/scotland/acts2005/pdf/asp_20050015_en.pdf))
- United Kingdom Government (1992) *The Town and Country Planning (General Development Procedure) (Scotland) Order 1992*
- United Kingdom Government (2004) *Environmental Assessment of Plans and Programs Regulations 2004*.

## Annex B: Example SNH wording on cumulative effects

Five examples illustrate SNH advice on cumulative effects may be presented to the planning authority or other decision-maker. These examples do not set out preferred model wordings, but indicate the logic underlying the advice. Where the below examples refer to SNH objections, the assumption has been made that the impacts of the proposal(s) raise natural heritage issues of national interest and SNH has applied its balancing duty as appropriate. The examples are simplified to illustrate the approach.

- (a) A is an existing wind farm. B is proposed at application stage. We would not object to B on its own, but in combination with A, the cumulative impact is such that we would object.

*SNH advises against B on the grounds of the cumulative natural heritage impact of B when combined with A.*

- (b) A is an existing wind farm. B is proposed at application stage. We would object to B on its own. Moreover, in combination with A, the cumulative impact(s) of A and B is also significant enough for us to object.

*SNH objects to B on the grounds of*

- (i) the natural heritage impacts of B; and*
- (ii) the cumulative natural heritage impact which would result from the combined presence of A and B.*

In such a circumstance, it will be important to clarify whether the cumulative impact involves any *additional impact*, further to the impacts of A and B taken separately.

- (c) A and B are proposed windfarms, at application stage. We would not object to either A or B on their own. However, the combined effect of A and B is such that we would object.

*SNH does not object to either development A on its own or development B on its own; however SNH advises against both A and B being given consent, on the grounds of the cumulative natural heritage impact of A and B.*

- (d) A is a proposed windfarm at planning application stage. B is a windfarm at design stage, not yet a planning application but in the public domain through a scoping or screening request. SNH would not object to A. Early appraisal suggests however that B would have less impacts on the natural heritage than proposal A. However, SNH would object to A+B because of cumulative impacts.

*SNH does not object to development A, though we highlight any natural heritage impacts. SNH would object to A+B because of cumulative impacts. SNH may recommend that there is a need for a strategic view of preferred areas and appropriate scales of renewables development within the area.*

The terms of any advice by SNH should be based solely on the natural heritage impacts of the proposed development, with reference as relevant to the supporting policy context. Given that development B is in the public domain, it may be regarded as a material consideration and the weight to

be accorded to it by the planning authority will depend upon how advanced that proposal is. SNH should encourage a more strategic view by the planning authority as a basis for decisions.

- (e) A is a proposed windfarm, at application stage. Before A is determined, a second windfarm proposal B is lodged as a planning application. SNH would not object to A. Appraisal suggests however that B would have less natural heritage impacts. However SNH would object to A+B because of cumulative impacts.

*SNH does not object development A, though we highlight any natural heritage impacts. SNH recommends that decisions on A and B should be taken concurrently.*

Any advice by SNH will be based solely on the natural heritage impacts of the proposed development A, with reference as relevant to the supporting policy context. SNH will not oppose application A as a means of seeking deferral of a decision on the grounds that the later proposal, yet to be considered by the planning authority, might have less impacts on the natural heritage. However, the new application is a material consideration, and the potential cumulative effect of the two proposals should be considered by the determining authority. SNH may encourage the determining authority to consider both applications together, at which point SNH would confirm its position regarding cumulative effects and indicate which proposal would have the least natural heritage impacts.

These five examples are not intended to be comprehensive. In many locations, cumulative assessments must now consider large numbers of proposals. Where this is the case, it may no longer be feasible to present our advice in this manner. If this is the case we will offer clear advice on what the key cumulative impacts are (i.e. those which are likely to determine the outcome of a consenting decision). In other situations, the respective developments may be subject to decision by different decision-making bodies – for, example, adjacent planning authorities or one planning authority and the Scottish Government.

**We will aim to be clear about our views on the current proposal, taking into account the cumulative effects with existing or consented windfarms. We will also advise on the cumulative effects of the current proposal in association with new proposals in the planning system, and be clear as to the likely natural heritage impacts of each proposal.**



**Annex C: Widespread species potentially at risk of impacts from onshore wind farms.**

<b>Widespread Species</b>	<b>Breeding / wintering</b>	<b>EU Birds Directive: Annex I</b>	<b>EU Birds Directive: Migratory</b>	<b>WCA Schedule 1</b>	<b>BoCC Red List</b>	<b>Notes</b>
Red-throated diver	Br	*	*	*		
Black-throated diver	Br	*	*	*		
Whooper swan	W	*	*	*		
Greylag goose	Br/W		*			
Pink-footed goose	W		*			
Greenland white-fronted goose	W	*	*	*		
Barnacle goose	W	*	*	*		
Red kite	Br/W	*		*		
Hen harrier	Br/W	*		*	*	
Goshawk	Br/W	*		*		
Golden eagle	Br/W	*		*		
Osprey	Br	*	*	*		
Merlin	Br/W	*		*		
Peregrine falcon	Br/W	*		*		
Black grouse	Br/W				*	
Golden plover	Br	*				
Dunlin	Br	*	*			C.a. schinzii
Curlew	Br					On priority BAP list
Greenshank	Br		*	*		
Short-eared owl	Br/W	*				

**Restricted range species potentially at risk of impacts from onshore wind farms.**

<b>Restricted Range Species</b>	<b>Breeding / wintering</b>	<b>EU Birds Directive: Annex I</b>	<b>EU Birds Directive: Migratory</b>	<b>WCA Schedule 1</b>	<b>BoCC Red List</b>	<b>Notes</b>
Slavonian grebe	Br	*	*	*		
Bewick's swan	W	*	*	*		
Bean goose	W		*			
Light-bellied brent goose	W	*	*			
Honey buzzard	Br	*	*	*		
White-tailed eagle	Br/W	*		*	*	
Marsh harrier	Br/W	*	*	*		
Corn crake	Br	*	*	*	*	
Whimbrel	Br		*	*		
Arctic skua	Br		*			
Great skua	Br		*			
Nightjar	Br		*		*	
Chough	Br/W	*		*		
Scottish crossbill	Br/W	*		*	*	

Annex D: Cumulative impact assessment for bird species - Example matrix

Cumulative Impact Assessment for Wind Farm: {name}											
Species											
NHZ											
Designated Sites(s)											
Site	Date	Collision mortality		Displacement effects		Barrier effects		Habitat loss		Turbine number	Turbine Area
		$\Sigma$		$\Sigma$		$\Sigma$		$\Sigma$			
Cumulative Effect ( $\Sigma$ )											

## Annex E References from section 4 Cumulative impacts on birds

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Scottish Natural Heritage

# Siting and Designing Wind Farms in the Landscape

Version 2

May 2014



# Contents

<b>1 Introduction</b>	<b>2</b>
<b>2 Wind Turbine Design and Layout</b>	<b>4</b>
Turbine form and design	4
Turbine colour	5
Turbine transformer colour	7
Turbine lighting	8
Turbine size	8
Turbine scale	10
Ancillary infrastructure	10
Turbine layout/array	11
Micrositing	13
<b>3 Wind Farm Siting and Design</b>	<b>14</b>
Landscape character	14
Landscape and scenic value	15
Wild land and places with a strong sense of remoteness	15
Experiencing wind farms in the landscape	16
Wind farm siting and design in relation to landscape and visual characteristics	17
Landform	18
Landscape scale	20
Perspective	20
Land use	20
Landscape and visual pattern	21
Focal features	22
Settlements and urban/industrial landscapes	23
Coast	24
Woodland	25
Small/Community Wind Farms	25
<b>4 Designing in Landscapes with Multiple Wind Farms</b>	<b>27</b>
Relating to landscape character	29
Establishing new patterns	29
Relationship between wind farms	29
Focal point pattern and scale	31
Settlements	31
Wind farm extensions	31
<b>5 Landscape and Visual Assessment of Wind Farms</b>	<b>32</b>
What is Landscape and Visual Assessment?	32
Context for Landscape and Visual Impact Assessment	32
Landscape and visual impacts of wind farms	32
Design Statements	33
Presentation of information within landscape and visual impact assessment	33
Small wind farms and the need for assessment	33
Duration of impacts and decommissioning	34
<b>Glossary</b>	

# 1. Introduction

- 1.1 This guidance provides advice on the siting and design of wind farms in Scotland's landscapes. It draws on two decades of experience of planning for wind farms by SNH, planning authorities and landscape assessors. Design is a material consideration in the planning process and good siting and design helps to produce development which is appropriate for a landscape whilst delivering renewable energy. It should also maximise the capacity for further development by reducing negative cumulative effects.
- 1.2 In 2001 we published '*Guidelines on the Environmental Impacts of Wind farms and Small Scale Hydroelectric Schemes*', which included guidance on the siting and design of wind farms. Our understanding of the effects of wind farm siting and design has developed significantly since then and new issues, such as the cumulative impacts of multiple developments, have emerged.
- 1.3 In 2009 we published version 1 of this guidance, following extensive consultation. This new version includes new photography and we have clarified some aspects of the text. References to new guidance and research are also included. However, the basic siting and design principles are the same as version 1 as these remain relevant and have proven to be valuable in determining applications. Knowledge and understanding in this area is evolving quickly and it is expected that this guidance will need to be regularly reviewed and updated as a result.
- 1.4 Version 1 contained two parts, with Part 2 focussing on strategic planning. The Scottish Government is currently undertaking a review of Scottish Planning Policy (SPP), with a new version due in June 2014. Part 2 of this version will be revised later this year to reflect the new SPP.
- 1.5 This is guidance on landscape issues, building upon areas of SNH renewables policy. It does not refer to wider technical design considerations (such as wind speed, access to grid) or to other natural heritage issues (such as impacts on birds, other wildlife and habitats) which are also of importance. A range of other considerations such as noise, archaeology, access and transport are also relevant to the design of wind farms and guidance on these topics is available elsewhere, such as the [GPWIND](#) website.
- 1.6 This document should be used alongside our ***Strategic Locational Guidance for Onshore Wind farms*** (2002, updated March 2009), ***Assessing the Cumulative Impact of Onshore Wind Energy Developments*** (2012), and ***Visual Representation of Wind farms Good Practice Guidance*** (2006)<sup>1</sup>, available on our website. For offshore wind farms reference should be made to ***Offshore Renewables – guidance on assessing the impact on coastal landscape and seascape*** (2012).
- 1.7 Developers and those involved in wind farm design should also refer to the Spatial Frameworks being developed by Local Authorities in response to ***Scottish Planning Policy*** (SPP). When considering an individual application the adopted development plan, supplementary guidance, wind energy capacity studies and SPP provide the framework within which the application should be considered.
- 1.8 The views expressed in this document are drawn from the experience of SNH staff who have advised on wind farm applications across Scotland in many different landscape settings and at many different scales of development. They have also been informed by a public consultation exercise and a workshop held at Battleby in March 2009. The first version was published in December 2009. Since then it has been referred to extensively at Public Local Inquiries. Experienced gained at Inquiry and decisions by Scottish Government Reporters have also influenced this revision.

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<sup>1</sup> Note – this guidance is currently under review

## Background

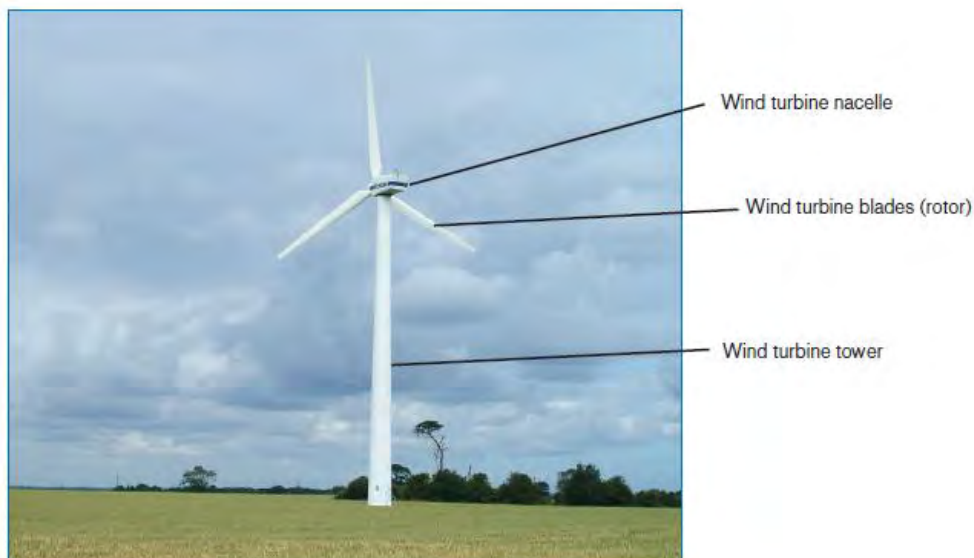
- 1.9 SNH strongly supports the adoption of renewable energy technologies, including wind farms, to address the effects of climate change. We support the Scottish Government's adopted policy in SPP and the current target of generating the equivalent of 100% of our electricity from renewables by 2020. Wind farms have an important role to play in this, taking advantage of the excellent wind resource in Scotland.
- 1.10 Our support for renewables has to be balanced with the Scottish Government's commitments and aspirations to conserve and enhance the natural heritage, including the quality and diversity of Scotland's landscapes. The purpose of this guidance is to help guide wind farms towards those landscapes best able to accommodate them and to advise on how they can be designed to minimise landscape and visual impacts.
- 1.11 Scotland is renowned for the diversity and quality of its landscapes and scenery. This contributes to the overall quality of life for all who live in or visit Scotland and provides a setting for our economic activity, including tourism. Landscape is the basis for many of our social, community and cultural values.
- 1.12 The European Landscape Convention applies to all landscapes and recognises landscape character assessment as a way of informing decisions. The Convention promotes integrated policies for landscape protection, management and planning, and encourages the involvement of the public in developing these. Our [Landscape Policy Framework](#) recognises the importance of landscape to Scotland's natural heritage and people's lives, while acknowledging that this relationship will change as landscapes evolve.
- 1.13 Wind turbines are generally large structures with the potential to have significant landscape and visual impacts. The development of wind farms, including associated infrastructure such as tracks, power-lines and ancillary buildings, has already had a major impact on many of Scotland's landscapes – arguably the biggest change since that resulting in some parts of Scotland from commercial afforestation in the 1970s and 80s. More wind farms will be needed to meet renewable energy targets and the challenge is to make sure these are sited and designed well in landscapes most suited to this form of development.
- 1.14 Wind farms should be sited and designed so that adverse effects on landscape and visual amenity are minimised and so that areas which are highly valued for their landscapes and scenery are given due protection. If wind farms are sited and designed well the capacity of our landscape to incorporate this type of development is maximised.

## 2. Wind Turbine Design and Layout

- 2.1 The landscape and visual impacts of a wind farm are strongly influenced by the design and layout of the turbines. This section focuses upon the different types of wind turbine and wind farm layout, while the following section considers how these principles relate to landscape and visual characteristics.
- 2.2 Impacts also result from infrastructure serving the development, such as access tracks and borrow pits, anemometers, control buildings, and substations (where necessary). Design and siting of this ancillary infrastructure are also considered in this section.

### Turbine form and design

- 2.3 A wind turbine comprises a tower that supports a nacelle which contains the electric generator and to which the turbine blades attach via a hub. Further guidance on wind turbines is available in the Scottish Government Planning Advice Note “[Onshore wind Turbines](#)”.



- 2.4 The landscape and visual impacts of a wind turbine vary not only with its size, but also with the make and model of the turbine proposed. Turbines of the same height may have varying appearances due to their different design and technical characteristics. There is an increasingly varied selection of turbine designs now available, especially in the lower height ranges. For further detail see our guidance on the [siting and design of small scale turbines](#).
- 2.5 It can be difficult for wind turbine developers to specify the actual model of turbine to be used because market availability, costs, and turbine technology may change during the period between submitting an application and actual construction. However, they will usually have a shortlist of preferred models for consideration and applications should include details of these. The LVIA and EIA should assess, as far as is possible, impacts of the model within the shortlist that represents the ‘worst case scenario’.



2.6 Turbine properties which are important when choosing the most appropriate model for a site include:

- the proportion of blade length to tower height;
- overall height to blade tip, colour and individual design
- the turbine's dynamic impact, resulting from rotation of its blades (larger, slow moving blades will have a very different impact from shorter, faster moving blades which may give the impression of increased clutter); and
- consistency with other existing and consented turbines in the vicinity.



The proportion of the tower to the blades should be considered as the visual effects can be quite different.

## Turbine colour

2.7 Selecting the most appropriate colour for a turbine(s) is an important part of detailed windfarm design and mitigation. It has previously been assumed that wind turbines could be painted a colour that would camouflage them against their background. Experience has shown that it is not possible to 'hide' turbines. There are a large number of variables which affect visibility of wind turbines. These include:

- the immediate landscape context and anticipated backcloth against which the turbines will be viewed predominantly (for example sky, heather moorland, woodland, sea horizon). Colour contrast is an important factor affecting visibility. Generally, the base of a turbine is seen against the land and the tower and moving blades seen against the sky, so colour choice will inevitably be a compromise between reducing contrast with the land or with the sky;
- the direction the turbines will most frequently be viewed from (including the angle of the sun and how it is likely to reflect on the wind turbines);
- the predominant weather conditions (which will dictate typical sky colour and will vary for different parts of the country);
- seasonal variation in landscape colours;

- the number and type of viewer (e.g. resident, worker, recreational) and the nature of the viewpoint;
- distance from the development. Colour is most apparent in close views, and in these situations turbines are most likely to be viewed against the sky;
- the proposed design and layout of the windfarm; and other windfarms within the area.

2.8 Colour choice is therefore likely to be an ‘on-balance’ judgement based on a clear design objective or objectives, in order for these to be tested. Examples of design objectives may include:

- reduce visual impacts;
- camouflage;
- integrate with the landscape;
- reinforce local identity;
- reduce cumulative effects; or
- make a statement.

When dealing with a situation where a large number of variables exist, it is important to focus on one or two key design objectives.

2.9 As a general rule for most rural areas of Scotland:

- a single colour of turbine is generally preferable;
- the use of graded colours at the turbine base should be avoided as public perception studies have demonstrated that aesthetic unity is viewed favourably. Therefore graduated schemes, or turbines with colour variation, should be used with caution;
- a light grey colour generally achieves the best balance between reducing visibility and visual impacts when seen against the sky, although this works less well when viewed against the land;
- the use of coloured turbines (such as greens, browns or ochres) in an attempt to disguise wind turbines against a landscape backcloth is usually unsuccessful although variation from the standard light grey colour may be successful when the wind farm is backclothed from important viewpoints or receptors. The chosen turbine colour should respond to the character of the site and its setting;
- light coloured turbines seen against a land backdrop may have greater prominence than light or dark turbines seen against the sky;
- there is more scope to vary the colour of smaller turbines, which are often located on lower ground than larger turbines, and therefore more often backclothed by land;
- paint reflection should be minimised. Texture is an important factor in reducing reflectivity, and matt or light absorbent finishes are preferable;
- for multiple wind farm groups or wind farm extensions, cumulative colour effects will be a key consideration. A strategic approach to turbine colour is desirable and the colour of turbines should generally be consistent;
- precise colour tone and the degree of paint reflectivity should be specified at the application stage. Commercial implications may be a limitation to varying turbine colour on a commercial scale, including cost, availability, lead-in-time and weathering/fading;

- colour may be subject to aviation restrictions or, for off-shore turbines, navigational requirements. For example it is a navigational safety requirement for the base of off-shore turbines to be coloured bright yellow for 25 metres above sea level.



Variable colouring of turbine bases typically does not correspond with the skyline from most viewpoints and increases contrast when seen against the sky. From some viewpoints, this effect can also make the turbines seem to 'float'



Different colour of wind turbine components creates a more complex image and means the visibility of different sections varies



Pale grey turbines will look bright in certain light conditions, but will tend to convey a positive image. This may be associated with cleanliness and existing white foci in our landscape such as white-washed cottages



Grey wind turbines will appear less prominent when seen against a grey sky, although they will rarely match the shade

## Turbine transformer colour

2.10 It is preferable to house wind turbine transformers within the turbine towers to minimise the number of elements and visual complexity of a wind farm. However, where transformers are housed separately near the turbine bases, the colour of the housing requires careful consideration. This should be site specific, relating to the surrounding land cover, but not the wind turbines, as transformers are rarely viewed against the skyline. This reduces their visibility and ensures that they are seen as a separate element to the turbine. They are less likely to detract from the simplicity of the turbine's form if well located and coloured. Browns, khakis and 'earth' colours are generally the most successful colour choices for transformers, with greens often appearing too bright.



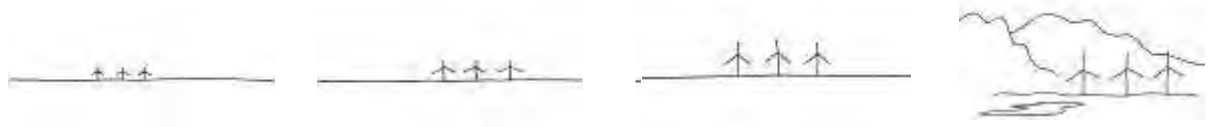
Poorly coloured external transformer units can detract from the relatively simple form of turbines and complicate the visual effect

## Turbine lighting

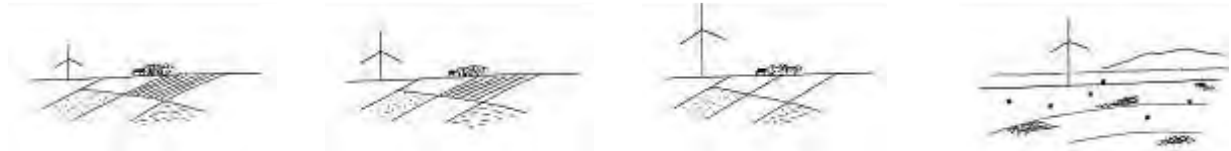
- 2.11 In some locations it may be necessary to light wind turbines for reasons of civil or military aviation safety or, for offshore wind farms, marine safety. Such lighting, typically at the top of the tower of the wind turbine, may appear prominent in night views and be incongruous in predominantly un-lit rural areas. Where lighting is necessary, it should be designed to minimise landscape and visual impacts whilst satisfying health and safety or navigation requirements. This may, for example, be achieved by incorporating shields so that the lights can only be seen from above. Developers should always refer to the [NATS](#), [CAA](#) and MoD for current requirements.
- 2.12 Lighting is predicted to become more widespread as sites are explored within flight paths and as larger turbines are considered. Current experience suggests that the main landscape and visual effects are likely to include:
- lighting visible over considerable distance. The Beatrice offshore turbines, off the Caithness coast are visible in clear conditions at distances of over 20 kilometres;
  - movement of turbine blades will create different effects depending on where the viewer is, in relation to the wind farm. If the turbine blades pass in front of the light, a flashing effect as they cut across the light is created. If the blades pass behind the light, there is a striped effect as the light runs up the passing blades. In both cases these effects draw the eye to the turbines;
  - there may be situations where constantly flashing lights are required, especially offshore;
  - in certain light conditions, lighting may appear to float above the ground even where the turbines themselves are not visible.

## Turbine size

- 2.13 Wind energy technology has developed quickly and significantly larger wind turbines are now available. Turbines typically consist of 60 – 100 metre high towers with blades of 40 metres or more, so their overall height to blade tip is between 100 – 140 metres, though larger turbines are available. Longer blades result in a greater rotor area and this, combined with the fact that they extend upwards into higher wind velocities, means that their wind capture and energy production is significantly larger than the smaller turbines. Since 2010, mainly as a result of the Feed in Tariff, slightly smaller turbines have been more readily available, measuring between 60-80 metres to blade tip. This provides greater flexibility in choosing a turbine appropriate to local landscape characteristics.
- 2.14 Choice of turbine size is an integral part of the design process. Identification of the key landscape characteristics, their sensitivity and capacity to accommodate change will inform this. Generally speaking, large wind turbines will appear out of scale and visually dominant in lowland, settled, or smaller-scale landscapes, which are often characterised by the relatively ‘human scale’ of buildings and features. They are best suited to more extensive, upland areas, and set back from more sensitive upland fringes. This can reduce effects on settled and smaller-scale valleys and lowland landscapes.
- 2.15 Turbine size is also a key issue in upland landscapes, where they are viewed against, or from, landscapes of a more intricate scale and pattern; or where it is otherwise difficult to discern the landscape scale and distance. By illustrating the scale of an upland landscape, wind turbines may seem to compromise the expansive nature of these areas.



Increase of wind turbine height is not very noticeable within moorland landscape, due to lack of size indicators; nevertheless, there may be a threshold at which larger wind turbines no longer seem to directly relate to the local area of moorland but relate more closely to the neighbouring high mountains



The size of wind turbines is clearer within a distinct landscape pattern that includes definite scale indicators. Although older/ domestic wind turbines may relate to the scale of buildings, most commercial wind turbines will seem to dominate elements of landscape pattern. There may be, however, a threshold in some landscapes at which a larger wind turbine would no longer seem associated with the underlying landscape pattern but seem 'elevated' above it, by appearing to relate to larger components.

2.16 Our experience of different landscapes greatly varies, so it is not appropriate to provide generic guidelines on the turbine sizes to be used for particular landscape types. Site-specific assessment and design is essential for each development proposal.



Buildings act as a scale indicator and can accentuate the scale of turbines

## Turbine scale

- 2.17 Size comparisons between wind turbines and other tall structures may help people visualise how tall a proposed development will appear in the landscape. Although the visibility of turbines will obviously increase with their greater height, the relationship between visual impact and turbine size is not directly proportional. This is because a wind farm is viewed within a surrounding context which varies, and because the actual size of a wind turbine is usually difficult to judge. Paragraph 3.33 provides further guidance in relation to scale relative to landform.

## Ancillary infrastructure

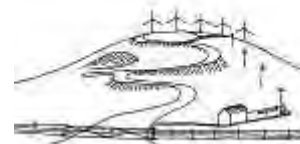
- 2.18 Ancillary elements for a wind farm development should be designed so they relate to the key characteristics of a landscape. It is important that these elements do not confuse the simplicity of the wind farm design, or act as a scale indicator for the turbines themselves. Undergrounding power lines within the wind farm, using transformers contained within tower bases (where possible), and careful siting of substations, transmission lines, access tracks, control buildings and anemometer masts will all help to achieve a coherent wind farm design. Simplicity of appearance and use of local, high quality materials will further enhance this.



Wind turbines can create an over-complex visual image in association with transmission lines and other infrastructure



Wind farm creates simple image in the landscape



Insensitive siting and design of wind farm infrastructure creates complex image and conflicts with underlying landscape character

- 2.19 There may be practical constraints in delivering large turbine components to a site, for example, due to the limitations of rural bridges, road junctions or corners. Additional landscape and visual impacts, associated with widening of roads, access tracks and corners to enable transportation of long turbine blades, should be taken into account.

- 2.20 Detailed advice on the siting and design of tracks can be found in [Constructed tracks in the Scottish Uplands](#).



Considerable road widening may be required to facilitate turbine access. These effects should be considered by the LVIA

### Turbine layout / array

- 2.21 In a wind farm, turbines can be arranged in many different layouts. The layout should relate to the specific characteristics of the landscape - this means that the most suitable layout for every development will be different. The development process typically begins with a layout that responds mainly to wind speed and wind turbine specification, sited within defined land ownership / tenure boundaries. For a small wind farm, this might comprise a single row of wind turbines along a ridge; while, for a larger development, a grid of wind turbines is often taken as the starting point, with the turbines spaced at minimum separation distances to avoid turbulence.
- 2.22 From this starting point turbines will be moved or removed due to physical constraints, such as watercourses, areas of deep peat and steep slopes, and in response to sensitive habitat or wildlife species. During this process of modification, landscape and visual issues will also inform the layout. Although some landscape and visual concerns – such as the need to avoid visibility from a particularly sensitive viewpoint - may present an absolute constraint, many landscape and visual sensitivities can be addressed through good design. This commonly involves a number of changes to create the most appropriate wind farm.

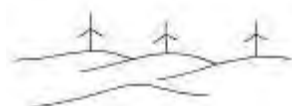


This wind farm appears linear from this angle and regular spacing between turbines helps achieve a relatively simple design

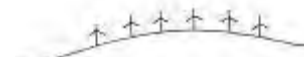
- 2.23 There are several common types of layout divided into regular or irregular formats. Generally, the fewer turbines and the simpler the layout on an even landform, the easier it is to create a positive feature - visually balanced, simple and consistent in image as it is viewed from various directions. This is most easily achieved by a simple line upon level ground. As soon as there is deviation from this, the design becomes more complicated.
- 2.24 A regular shape, such as a double line, a triangle, or a grid can appear appropriate within a wide open and level space where there is a regular landscape pattern, such as within agricultural fields. However, as you move through the landscape and see it from different directions and elevations, views of the grid change and reveal a variable effect, seemingly ordered along some rows, but in others overlapping. In addition, the rationale of the position of turbines appears confused if they are at different elevations.
- 2.25 Irregular layouts can be more appropriate in landscapes of variable elevation and pattern. However, irregular forms pose a greater challenge in terms of achieving a simple image, as the turbines will interact in varying ways with each other as well as with the underlying landscape. This can result in negative effects such as uneven visual densities of wind turbines, overlapping turbine rotors (often termed 'stacking'), partial screening behind a skyline and turbine outliers separate from the main group.
- 2.26 Wind farms should relate to underlying landscape characteristics of a similar scale and/or prominence. Wind turbines can be accommodated in areas of complex pattern, provided that their siting and design does not dominate the elements which define this. Odd numbers of turbines often present a more balanced composition than even numbers.
- 2.27 The design of offshore wind farms, with the greatest number of turbines in formal grid layouts, can lead to distinctive visual effects. From one part of the coast offshore turbines will be seen clearly in rows with the sea horizon visible between them, but by moving along the coast the design can appear more confused, with the turbines appearing as a constant mass on the horizon. It will be important to consider these design effects during project development and appraise the wind farm's image from sensitive receptors.



A wind farm layout appears simplest where it relates directly to the underlying landscape characteristics



Wind turbines relate to small-scale undulations at a local level. However, if the key views are distant, these undulations would not be obvious and the wind turbines would alternatively appear in closest association with the broad scale landform



Alternatively, the wind farm can be designed to relate to the broad scale landform



## Micrositing

2.28 Micrositing is the siting of wind turbines in small incremental distances and is used at two main stages of wind farm development:

- firstly, during the design stage to ensure that turbine layout is satisfactory from key viewpoints and achieves the design objectives. It can also be used to maximise the screening benefits of landform or landcover from key viewpoints.
- secondly, during the construction phase of a project, where previously unexpected conditions are encountered on site. This may happen, for example, where a turbine needs to be located away from an area of peat that is deeper than predicted.

2.29 Developers should seek to minimise the need for micrositing during the construction phase by conducting thorough site investigation during the design process. Micrositing is usually covered by a planning condition which limits this to 50-100m from the consented turbine location.

2.30 Micrositing during construction can have a significant effect on the appearance of a wind farm, especially those set out in regular patterns such as grids or evenly-spaced lines. Any significant changes in layout should be assessed to ensure that the overall design objectives for the site are not compromised. Decision-makers should also consider the extent of micrositing that it is appropriate to allow when consenting development.



Regular layouts require careful assessment from key viewpoints and care is required during micrositing

2.31 Where there is a clear need to maintain turbine layout in accordance with submitted plans, the permissible micrositing distances may need to be strictly limited. This is particularly important for sites of limited numbers of turbines, where there is a strongly formal layout or where micrositing may result in changing the altitude of turbines and therefore affect the wind farm's relationship with surrounding topography.

2.32 Planning permissions should therefore contain a condition limiting the distance that turbines can be microsited without a requirement for further permission. It is important that micrositing conditions are tailored to the nature and scale of the proposed development, and to the possible effects on layout and the overall visual coherence of the scheme.

## 3. Wind farm Siting and Design

- 3.1 This section applies the design principles outlined in Section 2 to landscape and visual effects. Experience has shown that the application of these principles will reduce the overall landscape and visual impacts of a wind farm.
- 3.2 Reference is made to the categories of wind farm size listed below. This grouping is for the sake of simplification: landscape and visual impacts are not directly proportional to wind turbine numbers. Turbine height is also an important consideration in design.

Wind farm size	Number of turbines
Small	1-3
Medium	3-20
Large	20-50
Very Large	50+

### Landscape character

- 3.3 The first step in the Landscape Impact Assessment (LIA) is to assess the landscape character of the study area and to identify the key characteristics relevant to wind farm development. Different places have different 'landscape character', comprised of distinct and recognisable patterns of elements. These relate to underlying geology, landform, soils, vegetation, land use and settlement. Taken together these qualities contribute to regional distinctiveness and 'sense of place'. Understanding a landscape's key characteristics and features is vital in considering how new development would affect it or, with appropriate design, could contribute to it.
- 3.4 Landscape Character Assessment (LCA) helps us understand what the landscape is like today, how it came to be like this and how it may change in the future. LCA helps to ensure that change does not undermine whatever is characteristic or valued about a particular landscape, and that ways of improving the character can be considered.
- 3.5 At a regional scale, [our Landscape Character Assessments](#) may inform this assessment. Our national programme of LCA comprises 27 studies and an overview report. These LCAs describe landscape character across the country, and also identify the main forces for change in these landscapes. It should be noted that many of the LCAs were produced during the 1990s and, although they remain relevant as descriptors of landscape character, do not necessarily address the sensitivity of particular landscape character types to wind farm development. We are currently working on refreshing the LCA suite, in order to bring the individual reports into a single digital database.
- 3.6 LIA should also include a more detailed assessment of local landscape characteristics and how they are experienced in relation to the specific proposal. Areas of transition between landscape character types are often particularly sensitive, such as the change from a lowland strath to upland foothills or scarp slopes. LIAs should include an assessment of the extent and distribution of predicted visibility within all relevant character areas.

## Landscape and scenic value

- 3.7 A landscape may be valued for many reasons, such as its landscape quality, scenic beauty, tranquillity or wildness, for its recreation opportunities, nature conservation or its historic and cultural associations. A wind farm will not necessarily be incompatible with valued qualities of a landscape; this will depend on the nature of the development and the nature of the landscape qualities.
- 3.8 LCAs do not place value on one landscape type over another, but they may point to the reasons why a landscape might be valued, because of special characteristics or the experience the landscape offers. Landscape and scenic value is recognised at national and local levels through development plan policies and designations such as National Parks, National Scenic Area (NSA) or local landscape designations including new Special Landscape Areas (SLA) and Areas of Great Landscape Value (AGLV), World Heritage Sites and Conservation Areas. In many areas, wind farm development is located outwith but close to these designations. In these circumstances the effects on the setting of the designated landscape are a key consideration.
- 3.9 Designations are usually supported by legislation and / or specific planning policies at a national and local level. The lack of any designation does not imply that a landscape has no value. Some landscapes are strongly valued in cultural heritage terms, for example, while others may be valued for their perceived lack of human influence. In line with the **European Landscape Convention** we promote an ‘all-landscapes approach’, founded on the recognition of value in all landscapes.
- 3.10 The challenge is to ascertain why a landscape is valued and by whom, and then assess the predicted impacts of the proposed development on these values. The quality of a valued landscape is often set out in a citation or description. NSAs for example are described in ‘**Scotland’s Scenic Heritage**’ and our series of **Special Qualities reports**.
- 3.11 The key test applied in relation to NSAs, but often employed for other valued landscapes too, is whether impacts would affect the *integrity* of a valued landscape. It is important to consider the effects of wind farms located just outside areas identified for their scenic quality, as these have the potential to affect the setting, and potentially the integrity, of that designation.
- 3.12 For local landscape designations, relevant information is contained within Development Plans. Where Planning Authorities have undertaken recent reviews of their local landscape designations, there may be Statements of Significance which can be referred to. However, for some valued areas, this information may not be available and the LVIA needs to first establish the quality of the valued landscape through assessment of the baseline conditions and how people use and benefit from the landscape (for example through consultation, visitor information and user websites).

## Wild land and places with a strong sense of remoteness

- 3.13 Areas of Scotland which are remote, inaccessible and rugged, with little evidence of human influence are widely referred to as ‘wild land’. These characteristics and the value they receive are discussed in ‘**Wildness in Scotland’s Countryside**’ (2002). The majority of the population think it important for Scotland to have wild places (**Public Perceptions of Wild Places and landscapes in Scotland**, 2008).
- 3.14 Some of the areas where wildness qualities predominate lie outside designated areas and therefore lack any statutory protection. However, SPP recognises their sensitivity and tasks Planning Authorities to take great care to safeguard their character through specific policies in Development Plans. In 2002, we identified ‘**Search Areas for Wild Land**’ (SAWLs) which represented the broad areas where wild land is likely to be present. Further work to update this map has been taken forward, and this section will be updated when the new SPP is published.

- 3.15 Our Strategic Locational Guidance states that the mapped SAWLs have high sensitivity to wind farms and proposals in these areas are unlikely to be compatible with their wild land qualities. Perception of wild land relies on there being no, or minimal, visibility of man-made features. Wind farms, like any built structure, will generally be out of character in these areas – and the scope for mitigating impacts is very limited. In addition, the potential visibility of wind farms, individually and cumulatively, seen from within wild land areas can be a concern. Proposals likely to affect an area of wild land merit careful consideration. Our **interim guidance** sets out a method for this assessment.
- 3.16 Where there are isolated, built features within a landscape perceived to be wild land, such as bothies, shepherds' cottages, or shooting lodges, small-scale wind turbines should be located near to these structures where possible. Care is still required to ensure that wild land qualities would not be adversely affected.

### Experiencing wind farms in the landscape

- 3.17 People's responses to wind farms vary – to some a wind farm may seem to dominate its surroundings, while others may view it as an exciting, modern addition with symbolic associations with clean energy and sustainability. Our understanding of people's responses to wind farm development is informed by a number of public attitude studies. **UK-wide research** has shown that two thirds of adults are in favour of wind power.
- 3.18 The impact of a wind farm will depend on how, and from where, it is experienced; for example, from inside a residence, while moving along a road, or from a remote mountaintop. These factors are taken into account through LVIA when determining the sensitivity of the landscape and visual resource, and the people that will be affected by the development (receptors). LVIA includes assessment of impacts upon the key users of the landscape, including residents, motorists, workers, those partaking in recreation and tourists.
- 3.19 A wind farm's impacts on local residents requires particular attention as, unlike visitors, they will experience a wind farm from different locations, at different times of the day, usually for longer periods of time, and in different seasons. Conversely, impacts on tourists and those taking part in recreation may be relatively brief, but their sensitivity to landscape change is regarded as high because their purpose is often to enjoy their surroundings.
- 3.20 It is important to take account of how a wind farm will be experienced from surrounding roads, transport, and recreational routes. Views will vary depending on proximity to the road, the mode of transport, the angle of view, and intervening landscape features. The first glimpse of a wind farm is important, and careful consideration should be given to the design of the wind farm layout in relation to these views.
- 3.21 As larger numbers of wind farms are built it has become increasingly important to consider their cumulative effects and the context in which they are seen. Of particular importance are: how developments relate to each other in design and relationship to their settings; their frequency as one moves through the landscape; and their visual separation to allow experience of the character of the landscape in-between. Further detail on this aspect of LVIA can be found in our '**Cumulative Effect of Wind Farms**' guidance.
- 3.22 The visibility and visual impacts of a wind farm are affected by the distance from which it is viewed, as well as other aspects such as weather conditions, siting and its context. In the past, several guidance notes offered generic categories of degrees of visibility and visual impact related to distance. This is no longer considered helpful as there is now such variation in turbine size and design. Wind turbines of between 100 – 150m can be visible at distances of up to 40 or 50km in some conditions; whilst single turbines of up to 50m are only visible at smaller distances. The LVIA needs to assess the likely visibility of an individual application in detail.



Views from above the wind farm should be considered if there are sensitive recreational viewpoints

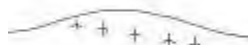
### Wind farm siting and design in relation to landscape and visual characteristics

3.23 It is important to site and design a wind farm so that it relates directly to the qualities of a specific site. The main design elements are likely to include the following:

- layout and number of wind turbines;
- size, design, and proportion of wind turbines;
- type, route and design of access tracks, including the amount of cut and fill required and the junctions with public roads;
- location, design and restoration of hardstandings
- location, design and restoration of borrow pits;
- location, design and restoration of temporary construction compounds;
- location and size of wind monitoring masts;
- positioning and mitigation of turbine lighting (if required);
- visitor facilities, including paths, signs, parking and visitor centre (if proposed); and
- land management changes, such as muirburn, woodland management or felling, fences, and stock grazing.



Line of wind turbines relates to landscape pattern



Line of wind turbines appears irrational across open hill



Cluster of wind turbines appears irrational in relation to linear elements of landscape pattern

## Landform

- 3.24 Landform is a key landscape characteristic, affecting whether it is rugged, flat, undulating or rolling, upland or lowland. In flat landscapes, any undulations tend to become accentuated so that even low hills appear substantial.
- 3.25 It is very difficult to design a wind farm upon a variable landform, such as undulating, rugged moorland or hills, without presenting a confusing image. This is because the wind turbines will be seen from different directions, at varying elevations and spacing, and against varying backdrops. To avoid this effect, it is generally preferable for wind turbines to be grouped on the most level part of a site so the development appears more cohesive, rather than as a poorly related group of turbines.



At a broad scale, moorland appears fairly simple in landform and pattern

Relative positions of wind turbines illustrates landform undulations that actually exist and, consequently, create complex image

One option is to cluster wind turbines close together upon a local area of flatter ground, so that the variation is less obvious than the image of a single collective feature

- 3.26 It is important to site and design a wind farm so that it appears visually balanced in relation to the underlying and surrounding landform. Turbines seen upon steep slopes often appear to be 'unstable'. It is also important that the scale and extent of a wind farm do not seem to overwhelm the distinctive character and scale of a landform, especially prominent landforms. Single turbines are particularly challenging to site as they are often the only major vertical forms in the landscape.



Wind visually dynamic image, seeming unstable



Wind farm appears visually unbalanced upon hill



Wind farm relates to underlying landform, creating a balanced image

- 3.27 Skylines are of critical importance. This is illustrated by the contrast between the simple, horizontal skylines of wide, flat landscapes and the more complex, vertical and diagonal components of skylines formed by mountains and hills. The viewer's eye is naturally drawn to the skyline, although the extent to which this happens depends on the nature of the skyline, the distribution and type of other elements and foci within the scene. The skyline may be especially valued if it conveys a sense of wildness; forms the backdrop to a settlement; is a particularly distinctive landform, or where notable landmarks and/or cultural features appear on it.

- 3.28 Given the prominence of skylines, it is particularly important that a wind farm avoids, or is sited and designed to relate to them. A key challenge is that the skyline will vary in relation to the

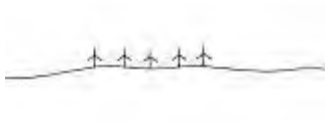
position and elevation of a viewer, and the weather. Nevertheless, the design of a wind farm from key viewpoints and routes should ensure it does not detract from the character of a distinctive skyline.

- 3.29 Care should be taken to ensure that the wind farm does not overwhelm the skyline. Distinctive and prominent skylines should not be interrupted by turbines. If the skyline is 'simple' in nature, for example over moorland and hills, it is important that wind turbines possess a simple visual relationship to this feature, avoiding variable height and spacing, the overlapping of turbines, or blade tips intermittently 'breaking' the skyline.



The relationship between a wind farm and more distant skylines should be considered, particularly in open landscape where long distance views are important

- 3.30 The landform may provide a design opportunity to limit visibility of wind turbines and site infrastructure. For example, where a wind farm is to be sited on a hill ridge, turbines may be set back from the edge and placed such that the slopes preclude visibility from below, reducing visual intrusion on the more settled lowlands, even if they may be clearly visible from adjacent hills. Narrow bands of uplands between settled and smaller-scale valleys should be avoided, if a windfarm on the hills would dominate the landscape on both sides.



Wind farm relates simply to skyline



Wind farm contrasts in character to skyline



Wind farm seems to overwhelm visible extent of skyline



Wind farm appears as isolated and minor feature on skyline

## Landscape scale

- 3.31 The term 'scale' does not refer to a definite dimension, but describes the perception of relative size between elements, for example a large-scale, open moorland or mountainous landscape and a small-scale, sheltered glen. To perceive scale, we rely on elements whose size and extent are recognisable to us – common features such as trees and houses. We use these as scale indicators to gauge the size and distance of other elements and make spatial judgements.
- 3.32 Landscape scale and openness are particularly important characteristics in relation to wind turbines because large wind turbines can easily seem to dominate some landscapes. For this reason, landscape scale can dictate the ability of an area to accommodate wind farm development, both horizontally and vertically.
- 3.33 A key design objective will be finding an appropriate scale for the wind farm that is in keeping with that of the landscape. The wind farm should be:
- of minor vertical scale in relation to the key features of the landscape (typically less than one third);
  - of minor horizontal scale in relation to the key features of the landscape (where the wind farm is surrounded by a much larger proportion of open space than occupied by the development);
  - of minor size compared to other key features and foci within the landscape; or separated from these by a sufficiently large area of open space (either horizontally or vertically) so that direct scale comparison does not occur.

## Perspective

- 3.34 Scale indicators within a landscape affect our judgement of perspective and thus our recognition of whether a feature is small or far away, large or near. The introduction of turbines into a landscape can confuse this sense of perspective as they are of undefined size, yet often much larger than any other man-made structures that would help us judge how large and how near they are. Careful consideration is therefore needed in the siting and design of wind farms, and between wind farms, to avoid confusing our sense of perspective. This is particularly the case where different turbine sizes are used and / or where there are gaps between groups of wind turbines at varying distances to viewers. Further guidance is given in [Siting and Design of small-scale wind turbines of between 15 and 50 metres in height](#).



Wind farm relates to key characteristic of the landscape, which is that it is difficult to perceive scale and distance within moorland



Visual link between wind farm and elements of known size, aid perception of scale and distance, emphasising the height of the wind turbines



Perception of scale and distance seems distorted due to variable sizes of wind turbines combined with an absence of reference points and size indicators

## Land use

- 3.35 Land use is an important aspect of landscape character, reflecting the past and current activity of an area. In turn, land use influences landscape pattern, texture, colour, foci and the framework of these elements within an area, which may be simple or complex and affect how people move through and view a landscape. Land management can also affect the condition of a landscape and the perception of its value, e.g. whether it seems neglected or well-maintained.



- 3.36 Wind energy generation may form one part of many different land uses. Existing developments vary in their location from urban areas, industrial and harbour areas, agricultural ground, woodland, and moorland. Wind energy can relate to some land uses. Conversely, wind farms are less likely to relate well to wild land areas and sensitive residential locations. A key design objective is to relate directly to the specific characteristics of the land use or, alternatively, to appear separate and removed from these, avoiding conflicts in nature and function.



This wind farm relates well to neighbouring land use and maintains the distinction between agricultural, forestry and upland character

- 3.37 Where appropriate, the development of a wind farm can act as the stimulus for restoration and/or improvement of land use within or around the site. For example the removal of commercial forestry can lead to new uses such as grazing, heathland or peatland.

### Landscape and visual pattern

- 3.38 Landscape and visual pattern are created through the presence and arrangement of key landscape elements and features. They are strongly influenced by land use. They arise from the way in which features in an area interact, be they a network of drystone dykes, hedgerows, shelter-belts, drainage channels, the distribution of drumlins along a valley, or repeated rock formations.
- 3.39 Wind energy developments should be designed to relate to landscape pattern where this contributes to landscape character and visual composition. However, the elements of landscape pattern to which a wind farm should relate will be strongly affected by their scale and prominence.
- 3.40 The distinctive character of some landscapes relies on strong contrasts of pattern, for example an intricate arrangement of fields and regular spacing of croft houses seen against a simple moorland hill backcloth. In these locations, it is important that the addition of a wind farm neither compromises the simplicity of the backcloth hills, nor the hierarchy or pattern of the lowland landscape below.



Lowland settings often have more complex landscape patterns



Distinction of lowland landscape pattern relies partly on simple backcloth that highlights this in contrast



Wind farm detached from landscape pattern. Creates a focal feature that will distract slightly from lowland landscape, but distance maintains most of simple hill backcloth.



Wind farm not only contrasts to lowland landscape pattern, but reduces distinction by crossing over into neighbouring area of simple hill.

## Focal features

3.41 Focal features can be natural features, such as mountain peaks, ridges, rock outcrops or clumps of trees; or they may be man-made structures like hill-forts, masts and towers. They can also be formed by existing wind turbines / wind farms. They may form part of landscape pattern or be seen as isolated features within a landscape. Often, where the landscape panorama is complex, there will be a hierarchy of foci that will be influenced by the relative size, distribution, position, prominence and cultural value placed upon them.

3.42 Wind farms, because of their very nature and typical location within open landscapes, often become major focal points. Their interaction with the existing hierarchy of foci needs to be considered in their siting and design, in order to minimise visual conflicts or avoid compromising the value of existing foci.



Existing focal points within landscape



Wind farm reduces focal prominence and distinction of original foci



Wind farm creates prominent focal feature, but does not seem to intrude upon or reduce distinction of existing foci due to separation

## Settlements and urban / industrial landscapes

- 3.43 Settlements and buildings within a landscape tend to be sensitive to the development of a wind farm for three main reasons:
- by being places from which people will view a wind farm and within which a key quality may be the provision of shelter and a sense of refuge that may seem impinged upon by the movement and proximity of a wind turbine;
  - because buildings act as a size indicator in views that may emphasise the much greater scale of wind turbines in comparison; and
  - because the settlement itself often forms a focal feature / landscape pattern to which a development would need to relate.
- 3.44 It is important that wind farms do not dominate or negatively affect settlements. The threshold for this effect will vary in different landscapes, for different settlements and with different wind farm and wind turbine designs.
- 3.45 Individual domestic-scale turbines can be located nearer to buildings for small-scale industry, agriculture or for residential use. These may be relatively noticeable due to the faster blade rotation of smaller machines. We have published separate [guidance](#) on the siting and design of small-scale turbines.
- 3.46 There may be some locations where larger wind turbines can be accommodated near to or within urban and industrial locations. Key issues to address in these situations will be residential amenity, noise and shadow flicker. In these settings, large wind turbines can appear most appropriate where they are separated slightly from buildings; are seen set back against an area of open space and visual simplicity; or are marginal to the urban/industrial area, for example, along a river edge, road corridor, the coast or large open space.



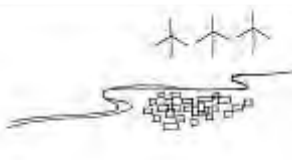
Wind farm appears to impinge upon neighbouring settlement



Wind farm separated from settlement by open space



Wind farm impinges upon space and views of adjacent settlement



Wind farm prominent in views from settlement but does not seem impinging because of separation space



Wind farm near to settlement, but seems less impinging due to adjacent open space offered by sea

- 3.47 The aim should be to minimise the sense of imposition upon buildings and more intimate spaces. This can be achieved by setting the turbines against an open background and avoiding the creation of a visually complex image. In these circumstances, careful consideration of the nature of views in and out of these areas is needed, along with appreciation of the nature of impacts from recreational areas and residences.
- 3.48 In some places, larger turbines with slower rotation of blades may be preferable to smaller turbines with faster speeds. However, there will always be a need to relate the size of the turbines to the local context, taking account of the existing buildings and foci.
- 3.49 Landscape value, which may be reflected by designations such as World Heritage Sites, Conservation Areas or areas with Tall Building Policies, will also need to be considered.



Wind turbines can fit well in an urban / industrial context but the scale of the turbine must relate to local landscape features and buildings

- 3.50 Other factors to consider within urban situations, and which should be addressed through LVIA are;
- intervisibility between urban and rural landscape;
  - setting of turbines;
  - lines of sight between well known viewpoints;
  - views to and from existing focal points; and
  - the relationship between wind turbines in urban areas and those in the surrounding landscape and seascape.

## Coast

- 3.51 Scotland has a great diversity of coastal landscapes and onshore wind farms near to the coast require careful consideration. Many are remote, isolated and undeveloped. They range from low-lying beaches with dunes to craggy intricate cliffs and headlands. An [assessment undertaken for SNH](#) characterises the coastline of Scotland into 33 seascape units. Recent

work, linked to landscape character assessment, sets out how to assess coastal character. Guidance on Coastal Character Assessment will be published later in 2014.

- 3.52 Wind farms, both on- and off-shore, should relate to the sense of openness and exposure within coastal areas. However, as Scotland's settlement pattern has a strong coastal focus, and views are typically drawn to the coast, these areas will be sensitive to wind farm location and design. These considerations relate to the inland and offshore land/seascape character and views, including views from boats and ferries. Simple, open, less settled, flat coastal areas can better accommodate wind farms than complex coastal landscapes, such as those with inlets and islands. Industrial or port areas may be considered more suitable than less developed coasts.
- 3.53 Due to the focus of views along coastlines and the typical concentration of settlements within these areas, a wind farm located near the coast will tend to create a new focal feature or landmark. For this reason, it is important that they do not detract from existing landmarks like historical or navigational features (such as lighthouses), distinctive coastal landforms, coastal settlements and areas valued for recreation.
- 3.54 Cumulative impacts can occur between onshore and offshore wind energy developments. This becomes an increasingly important design consideration as leases are granted to develop wind farms in Scottish inshore and offshore waters. From inland areas it may not be apparent that a wind farm is situated offshore if its location within the sea is screened by inland features. In turn, onshore developments may affect how those offshore are perceived. It may, for example, be undesirable to view off-shore development with onshore development in the foreground. Further guidance can be found in '[Offshore Renewables – guidance on assessing the impact on coastal landscape and seascape](#)'.

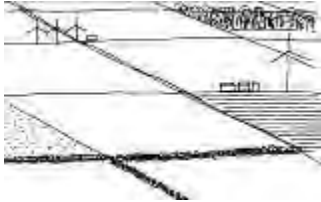
## Woodland

- 3.55 Where turbines are seen from a distance in combination with woodland, their large scale can be difficult to discern. However, where wind farms are sited immediately adjacent to, or within woodland areas, trees act as a scale indicator accentuating turbine size.
- 3.56 Trees are only likely to have a screening effect if they occur within the fore or midground of views looking towards turbines in the distance. If this occurs, the screening effect may change or be lost as one moves through the landscape. The felling or harvesting cycles of commercial forestry will determine how long screening is effective for.
- 3.57 Large-scale conifer plantations, particularly when seen from a distance and upon slopes, can create distinctive lines, colour, texture and shape. Ordinarily, the design objective would be to relate to this distinctive landscape pattern. However, in contrast to native woodland, forest plantations are less permanent features of the landscape. For this reason the designer needs to consider future plans for a forest and consider whether this, or the underlying and surrounding landscape, is of greater relevance in defining the character of the landscape to which the wind farm should relate.
- 3.58 If a wind farm is located within a forest, the clearance of trees to create open spaces for the turbine bases and access tracks can create a pattern of spaces, lines and shapes that may increase the complexity of the wind farm from distant views.

## Small / Community Wind farms

- 3.59 Small-scale community owned wind farms can make a very positive contribution to rural economic development. However, single turbines or small wind farms do not necessarily result in less landscape and visual impact than a larger development. As the efficiency of wind turbines increases this may lead to proposals with fewer yet relatively large turbines in

landscapes which have limited capacity to accommodate them. Whilst a community development may be preferred within an area due to its contribution to the local economy, the ownership of a development does not mitigate landscape and visual impacts. All wind farm development should be carefully and consistently assessed through LVIA (albeit scoped to fit the scale and nature of the development), including cumulative effects.



Single and small wind farms fitted to agricultural landscape pattern



Although individual developments are all small-scale and fitted to local characteristics, developments cumulatively become defining element of character type – a 'wind farm landscape'

- 3.60 Multiple individual wind turbines and / or small wind farms can cause considerable cumulative impacts, especially where these are randomly located or of different designs. Despite generally smaller turbine heights there is still a need for developments to be sited and designed in relation to each other in order to avoid negative impacts on landscape character and visual amenity. It is recommended that Local Authorities have robust spatial and design policies to help minimise landscape and visual impacts from smaller scale wind farm development.

## 4. Designing in landscapes with multiple wind farms

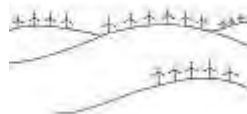
- 4.1 The previous section highlighted the factors to be considered when designing individual wind farms. In many parts of Scotland the issue is how best to plan for and accommodate multiple wind farms. Many current proposals either form extensions to operational wind farms or are independent developments lying close to operational wind farms. This is complicated by the fact that, at any one time, many developments may be consented but not built, or submitted but not determined. This means that planning, siting and designing wind farms tends to be based on constantly changing baseline conditions.
- 4.2 Cumulative impacts occur when one wind farm is proposed in the vicinity of another existing or proposed wind farm. We have published guidance on assessing the **Cumulative Effects of Wind Farms** which sets out when and how cumulative effects should be considered. This section contains design guidance to be used in circumstances where cumulative effects are expected to arise.
- 4.3 As part of the design process where other wind farms exist or are proposed, it will be important to undertake an assessment at a strategic level of the potential cumulative landscape and visual impacts. The impact of smaller wind farms, and in some cases individual turbines, will also require consideration. The methodologies contained with the Cumulative Effects of Wind farms guidance should be helpful, as may **Topic Paper 6 'Techniques and criteria for judging capacity and sensitivity'** (Natural England, 2004).
- 4.4 When designing an individual wind farm key design objectives should be developed as discussed in section 3. Where cumulative impacts are likely to occur within an area it is important to establish design objectives that can be consistently applied to all proposed developments. This should result in a similarity of design and wind farm image within an area that limits visual confusion, and reinforces the appropriateness of each development for its location. Cumulative design objectives should relate to ancillary infrastructure as well as wind turbines.



Individual wind farm relates directly to landform characteristic as single line upon horizon



Several developments relate consistently to key characteristic of the landscape, but not prevalent and thus remain as isolated features.



Multiple wind farms relate to same characteristic, to create consistent image and reinforce perceived appropriateness of each wind farm. However, by occupying every incidence of specific characteristic, will become key characteristic that affects overriding character



Additional wind farms contrast in pattern, scale and relationship to key characteristics, creating a confusing image and questioning relationship of original development to its surroundings.



The key characteristics of the landform are often illustrated most clearly by the skyline. In this open landscape, the skyline has a horizontal emphasis and uninterrupted character.



Wind farm acts as a prominent focus. Although it does not occupy a major proportion of the skyline, it contrasts to the horizontal emphasis at a local level as a single collective feature.



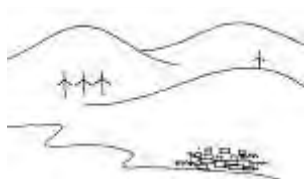
Additional development results cumulatively in major proportion of skyline being occupied by wind farms. In addition, its siting and shape does not relate to the skyline feature, nor horizontal emphasis.



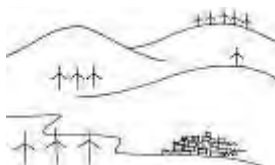
Wind farms cumulatively dominate the skyline feature, although they relate to its horizontal emphasis and simplicity of line.

#### 4.5 The development of multiple wind farms can create different types of cumulative effect if they:

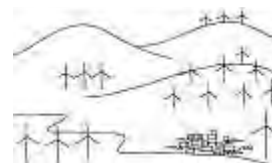
- are seen as separate isolated features within the landscape character type, too infrequent and of insufficient significance to be perceived as a characteristic of the area;
- are seen as a key characteristic of the landscape, but not of sufficient dominance to be a defining characteristic of the area;
- appear as a dominant characteristic of the area, seeming to define the character type as a 'wind farm landscape character area'.



Separate isolated features



Wind farms become key characteristic of the landscape



Wind farms become dominant characteristic of the area, creating a 'windfarm landscape'

#### 4.6 These effects can occur at varying scales, for example affecting a local character type, or at a regional level. The appropriateness of these different effects will depend on the character and value of a landscape and the objectives for change as defined in Local Authorities' capacity studies.



Dominance of landscape character by wind farms occurs at local level only. Other areas of similar character not affected.



Dominance of landscape character at wider scale, but local pockets perceived as unaffected



## Relating to landscape character

- 4.7 If wind farm development, or the visibility of wind farms, extends over several different landscape character areas or types, this can reduce the distinction between them. If wind farms already exist within a particular landscape character area or type, and it is appropriate to encourage further development, further wind farms should be limited to the same or similar types within the neighbouring area. An exception could be where these developments are of distinctly different character themselves, for example if they strongly contrast in scale.
- 4.8 The relationship of multiple developments to neighbouring landscape character types is very important, especially where developments are located near the boundary of these or will be highly visible from neighbouring landscape character types.



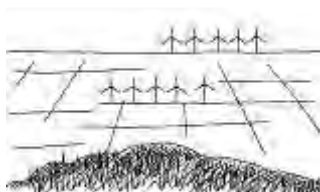
Distinct combination of contrasting character types – open hill, settlement and firth



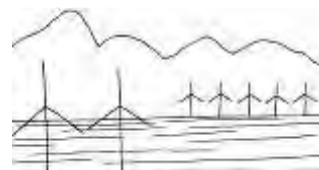
Wind farm creates new feature. This distracts from existing focus of view; however, distinction between character types is maintained.



Wind farms cross different character types, reducing the distinction between these.



Wind farm siting and design relates to simple landform and appears distant enough not to impose on nearby hills



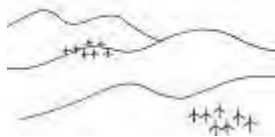
From alternative viewpoint, looking over agricultural ground, visibility of wind turbines is highlighted by backcloth. The turbines also compete with the visual prominence of the hill range.

## Establishing new patterns

- 4.9 The opportunity to introduce a new landscape pattern through consistent design of turbine arrays will be important where a 'wind farm landscape' would be established. Existing landscape scale and pattern should be respected. Where a new pattern is proposed it will be important to identify key design prompts or cues within the landscape (which may be existing wind farms) and work with these. Consideration needs to be given to how the new pattern would relate to any existing neighbouring wind farms, and adjacent landscape character.

## Relationship between wind farms

- 4.10 Where two or more wind farm proposals entering the planning system in parallel have the potential for landscape and visual effects in combination with existing or consented wind farms, this should be a material consideration in the planning process.



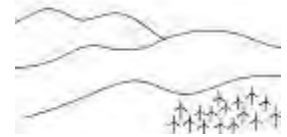
Distinct wind farm groups. Similarity of design and relationship to the landscape. With large areas of open space in between, character of underlying landscape prevails.



No clear distinction between group(s). Extending beyond skyline, it is not possible to confirm whether the groups link.



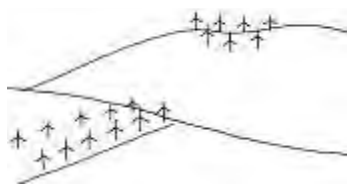
Although no clear area of space between wind farm groups, distinction highlighted due to contrasts of turbine scale and layout (variety of development type creates visual complexity).



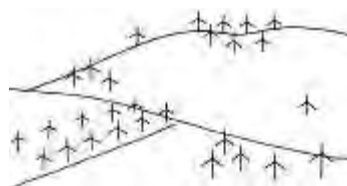
Extension to original development creates larger single wind farm. This has increased impacts in the local area, but limits the extent of impacts through the wider landscape.

4.11 A key factor determining the cumulative impact of wind farms is the distinct identity of each group. This relates to their degree of separation and similarity of design. This applies whether they are part of a single development, a wind farm extension, or a separate wind farm in a wider group. A wind farm, if located close to another of similar design, may appear as an extension; however, if it appears at least slightly separate and of different design, it may conflict with the other development. In these cases, if a landscape is unable to accommodate the scale of a combined development, wind farm groups should appear clearly separate. It is important to achieve a balance between wind farms and the undeveloped open landscape retained between them. Adequate separation will help to maintain wind farms as distinct entities. However, the separation distance required will vary according to the landscape characteristics.

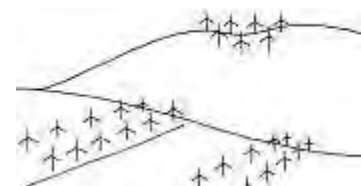
4.12 In some locations the existing pattern of wind farm development may be complex. Relating further development to a complex pattern will be challenging, but the same key principles should apply, focusing on improving the overall pattern and character of development rather than exacerbating existing conflicts between designs. Ancillary infrastructure, such as tracks, road upgrades, crane pads, fences, borrow pits and substations should be included in this assessment, as they may also cumulatively affect the character of the area.



Existing wind farm developments of contrasting design and relationship to the landscape.



Additional wind farm designs amplifies adverse cumulative impacts



Additional wind farm reinforces character of one original windfarm, although increases the sense of incongruity of the other.

- 4.13 In some circumstances, intervening topography may limit visibility and reduce the need for visual compatibility between neighbouring proposals, although site design should always be compatible with landscape character

### Focal point pattern and scale

- 4.14 As multiple wind farms are built they are more likely to 'compete' with the landscape's original foci and it may lack a sole dominating focal point as a result. The design aspiration should be to avoid visual confusion and to maintain focal point pattern and hierarchy.

### Settlements

- 4.15 Care should be taken to avoid multiple wind farms dominating the landscape setting of a settlement. Wind farms may do this if they are close to it at high elevation, surround or enclose the access and main approaches, dominate approaches through sequential cumulative effects (through the presence of several wind farms in succession), or are physically too close. How a 'wind farm landscape' relates to a settlement will depend on the design of the wind farms and their spatial relationships with each other, and how the settlement relates to its hinterland.

### Wind farm extensions

- 4.16 Proposals for extensions to existing wind farms can give rise to similar issues of consistency as those arising from adjacent wind farm developments, and similar design principles should apply. Design objectives and principles should echo those of the original wind farm. Extensions should use turbines which are compatible with those in the existing wind farm, including aspects of scale, form, colour, and rotation speed. The design rationale of the original wind farm development should not be eroded.
- 4.17 Such compatibility issues will be more important the closer the wind farms are. Extensions should not compromise the landscape setting of neighbouring wind farms and should respect existing focal points in the landscape. The potential for a wind farm extension to 'outlive' the existing wind farm (if this is decommissioned), and therefore stand on its own, should also be considered in the design process.



The turbines used in wind farm extensions should closely match the existing turbines, such as in this example (original turbines in foreground, new turbines in background)

# 5. Landscape and Visual Assessment of Wind Farms

## What is Landscape and Visual Impact Assessment?

- 5.1 Landscape and Visual Impact Assessment (LVIA) is a standard process for examining the landscape and visual impacts of a development. The methodology for this is set out in the 'Guidelines for Landscape and Visual Assessment' (GLVIA), produced by the Landscape Institute and the Institute of Environmental Management and Assessment (3rd Edition, 2013).
- 5.2 LVIA follows an iterative process by which alternative sites and designs for a development are assessed and amended (a process often referred to as mitigation). Through this, LVIA identifies the preferred siting and design option for a development, balancing different environmental issues as well as functional, technical and economic requirements. Ultimately, the final scheme is assessed for predicted residual impacts on the landscape and visual resource.
- 5.3 LVIA is usually carried out by Chartered landscape architects who apply professional judgements in a structured and consistent way based on landscape design principles. The LVIA should assist decision makers, members of the public and other interested parties by providing a clear and impartial understanding of the predicted effects of wind farm proposals.

## Context for Landscape and Visual Impact Assessment

- 5.4 LVIA is a standard process of assessment that may be presented as a separate report, or form part of an Environmental Statement (ES). While a LVIA will usually be required for every wind farm proposal, an EIA is only a statutory requirement for wind energy proposals where the proposal is likely to have significant effects on the environment. **The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011** set out when EIA may be required for wind farms.

## Landscape and visual impacts of Wind Farms

- 5.5 LVIA comprises two separate parts, Landscape Impact Assessment (LIA) and Visual Impact Assessment (VIA), although these are related processes as described within the GLVIA. LIA considers the effects of the proposal on the physical landscape which may give rise to changes in its character, and how this is experienced. This includes a consideration of the effects on landscape designations. VIA considers potential changes that arise to available views in a landscape from a development proposal, the resultant effects on visual amenity and people's responses to the changes.
- 5.6 Early in the LVIA process it should be determined which landscape and visual characteristics are particularly relevant or sensitive to the development proposal. Focussing on these, the designer can explore what the potential impact of a wind farm will be if it is sited and designed in different ways. The main design aim should be to create a wind farm that relates well to the landscape.
- 5.7 Clearly other technical and economic factors will also be important in the decision-making process, as will other environmental impacts such as effects on wildlife and habitats. Cumulative effects with other wind farms will also be a consideration, and guidance can be found in ***Assessing the Cumulative Impact of Onshore Wind Energy Developments***.

## Design Statements

- 5.8 Design Statements help communicate the issues, constraints and decision making processes behind a design. A design statement need not be a lengthy or complex document and diagrams can be used to summarise the design process. They are a valuable way for designers to explain why a particular layout or appearance has been chosen to consultation bodies, Local Authorities and the public, and their preparation is encouraged. They should examine design permutations based on the number and arrangement of turbines tested against key viewpoints and turbine height, where this could reduce landscape and visual effects. Further guidance on producing design statements is provided in [PAN 68](#).
- 5.9 Design Statements are also helpful in establishing design objectives. These may need to be referred to in the future if the scope of a scheme changes: for example for a wind farm extension, amendment of the type of wind turbines, or for another wind farm nearby. Design objectives can help to:
- maintain the integrity of a scheme in changing circumstances;
  - explain the design objectives of wind farm extensions; and
  - indicate how existing nearby wind farms or cumulative impacts have influenced the design and layout of a new proposal.

## Presentation of information within landscape and visual impact assessment

- 5.10 A number of methods are used to illustrate the potential landscape and visual impacts of a proposal. In LVIA, illustrations are used by landscape and planning professionals in four main ways to:
- record site assessment, in the form of photographs and sketches, and as an aide-memoire;
  - provide computer generated Zone of Theoretical Visibility maps (ZTVs) to show the area from which a proposal may be visible;
  - provide visualisations that show potential visibility from a specific viewpoint and aid an assessment of the magnitude of impact, typically in the form of computer-generated wireline diagrams and photomontages, and
  - illustrate key concepts and design principles using line drawings and diagrams.
- 5.11 When used on site, these illustrative tools are typically sufficient to make judgements of predicted landscape and visual impact for the LVIA. However, in addition, other illustrative techniques may be useful, such as computer generated simulations, fly-throughs and video-montage. Further guidance on the selection, production methods and use of illustrative techniques is available in the '[Visual Representation of Wind farms: Good Practice Guidance](#)' (2006) which is currently under review.

## Small wind farms and the need for assessment

- 5.12 In addition to large wind farm developments there has been a recent increase of interest (driven mainly by the Feed in Tariff) in single turbines and small groups of turbines. This is particularly evident in lowland settings, where schemes typically include between one and three turbines. If there are more than two turbines, or the turbines are more than 15m in height, they are Schedule 2 developments under [The Town and Country Planning \(Environmental Impact Assessment\) \(Scotland\) Regulations 2011](#). It is for the Planning Authority to decide whether they are likely to have significant environmental effects and therefore require an Environmental Impact Assessment (EIA).

- 5.13 Even if an EIA is not required, there is usually a need for submission of a LVIA in support of a planning application. This assessment should be carefully scoped so that it is appropriate to the size and scale of the development, and the likelihood of significant landscape and visual impacts, including cumulative effects. Our guidance on '[Assessing the impact of small-scale wind energy proposals on the natural heritage](#)' provides advice on the level of landscape and visual assessment likely to be appropriate for different scales of turbines. It is important to highlight that the landscape and visual impacts of turbines are not directly proportional to their height. We have also produced more detailed [guidance on the installation of micro wind turbines \(<50kw\)](#) and [siting and design of small scale wind turbines of between 15 and 50 metres in height](#) (2012).

### Duration of impacts and decommissioning

- 5.14 The expected lifetime of wind turbine generators is typically around 25 years, and planning permission is usually granted for this period. Decommissioning of the turbines at the end of this operational phase is often a specific condition of planning permission and is an important consideration when designing and assessing a wind farm.
- 5.15 Decommissioning commonly proposes that turbines and ancillary buildings are removed. There is the potential for some residual visible change to the landscape, even when infrastructure is removed, although this can be minimised through careful design and consideration of how decommissioning will proceed at the project outset. The use of carefully worded legal agreements or planning conditions to ensure restoration of the site is critical. We have published [research on the restoration and decommissioning wind farms](#) which explores these issues in more detail, including the issue of repowering.
- 5.16 There is likely to be continued demand for renewable energy generation for many decades ahead. It is possible that existing well-designed wind farms may remain in use well beyond 25 years, with turbines either refurbished or replaced and a planning consent renewed. However, a time-limited consent provides the opportunity for decommissioning and a change in land use, if the location is no longer considered appropriate for a wind farm.



Partial restoration of access tracks to grass

## GLOSSARY

Ancillary infrastructure	The built elements and structures of a wind farm, apart from the turbines, which serve the development, such as access tracks, borrow pits, the control building and substation.
Anemometer mast	A mast erected on a wind farm site, usually the same height as the turbine hubs, to monitor wind speed.
Borrow pit	A quarry within a wind farm site excavated to provide stone for site infrastructure.
Capacity Study	Research which attempts to identify the acceptable limits to development in a given area.
Decommissioning	The process by which a wind farm is dismantled and the site restored.
Design Statement	A document which records the design process that is undertaken for a development.
EIA	Environmental Impact Assessment, the process by which the identification, prediction and evaluation of the key environmental effects of a development are undertaken.
LCA	Landscape Character Assessment, a documented process which describes and categorises the landscape, highlighting key landscape characteristics and the main forces for change.
LIA	Landscape Impact Assessment, part of the LVIA process which explores the potential effects on the landscape of a proposed development (see below).
LVIA	Landscape and Visual Impact Assessment – a standard process for examining the landscape and visual effects of a development.
Micrositing	The movement of wind turbines by small distances within the overall wind farm layout, either at the design or construction stages of development.
PAN	Planning Advice Notes are issued by the Scottish Government, providing advice on good practice and other relevant information, e.g. PAN 68 on Design Statements.
Strategic Locational Guidance	(SLG) SNH Policy Statement which sets out a number of principles that should guide the location of onshore wind farm projects so as to minimise effects on the natural heritage. Provides broad overview at a Scottish level of where, in natural heritage terms, there is likely to be greatest scope for wind farm development, and where there are the most significant constraints.
VIA	Visual Impact Assessment, part of the LVIA process, which considers potential changes that arise to available views in a landscape from a development proposal, the resultant effects on visual amenity and people's responses to the changes.

**Angus Local Plan Review (2009)**

**Implementation Guide for Renewable Energy  
Proposals**

**Policies ER34 Renewable Energy Developments  
&  
ER35 Wind Energy Development**

**Angus Council  
June 2012**



## **PREFACE**

*There is increasing interest through both informal enquiries and planning applications for the establishment of renewable energy projects in Angus. While the majority are in connection with a range of wind turbine projects, proposals for a number of hydro schemes have also come forward.*

*The Angus Local Plan Review, formally adopted in February 2009, establishes the Council's land use planning policies in relation to dealing with renewable energy proposals. This Implementation Guide therefore clarifies and expands on Local Plan Review Policies ER34 Renewable Energy Development and ER35 Wind Energy Development and those factors that will be taken into account in considering and advising on proposals for renewable energy projects in Angus. It also directs developers and other interested parties to other relevant documents, policies, regulations and guidance.*

*The Implementation Guide has been developed through consultation with a wide range of stake holders.*

*A Strategic Environmental Assessment of the Implementation Guide has also been undertaken and the Environmental Report is published alongside the Implementation Guide and submitted to the Scottish Gateway.*

*Angus Council  
June 2012*

## Glossary

Watt (W)	a unit of power defined as one joule per second measures the rate of energy conversion
Kilowatt (kW)	equal to one thousand ( $10^3$ ) watts. One kilowatt of power is approximately equal to 1.34 horsepower. The average annual electrical energy consumption of the average UK household is approx 4,700 kilowatt-hours
Megawatt (MW)	equal to one million ( $10^6$ ) watts. A large residential or commercial building may consume several megawatts in electric power and heat. Nuclear power plants have net summer capacities between about 500 and 1300 MW
Gigawatt (GW)	equal to one billion ( $10^9$ ) watts or 1 gigawatt = 1000 megawatts. This unit is sometimes used for large power plants or power grids
Wind croft	development of group of 3 small (less than 15m) wind turbines
Wind cluster	development of group of three or four turbines 15-50m
Wind farm	development of three or more turbines over 50m
Run of river	A hydro electric scheme that abstracts water depending on the flow available within the watercourse at any given time. No storage reservoir.
ZTV	Zone of Theoretical Visibility – a mapped visualisation of the areas over which a development can theoretically be seen.
VIA	Visual Impact Assessment - part of the LVIA process, which considers potential changes that arise to available views in a landscape from a development proposal, the resultant effects on visual amenity and people's responses to the changes
LVIA	Landscape and Visual Impact Assessment - a standard process for examining the landscape and visual effects of a development.
SAS	Scottish Government on-line planning Specific Advice Sheet
Sensitive Properties	Residential properties including care homes; educational buildings, hospitals, cemeteries; some visitor facilities and accommodation; and proposed development areas
EIA	Environmental Impact Assessment - the process by which the identification, prediction and evaluation of the key environmental effects of a development are undertaken, and by which the information gathered is used to reduce likely negative effects during the design of the project and then to inform the decision-making process.
ALPR	Angus Local Plan Review 2009
DASP	Dundee and Angus Structure Plan 2002
HSE	Health and Safety Executive

## Contents

	Page
<b>Preface</b>	<b>3</b>
<b>Glossary</b>	4
<b>1. Purpose and Scope of the Implementation Guide</b>	<b>7</b>
<b>1.1 Context</b>	7
<b>1.2 Supporting Documents</b>	7
<b>2. Renewable Energy Overview</b>	<b>9</b>
<b>2.1 Hydro</b>	9
<b>2.2 Bioenergy</b>	9
<b>2.3 Landfill Gas</b>	10
<b>2.4 Solar/Photovoltaics</b>	10
<b>2.5 Anaerobic Digestion</b>	10
<b>2.6 Onshore Wind</b>	10
<b>2.7 Offshore Wind</b>	10
<b>3. Guidance for Applicants</b>	<b>11</b>
<b>3.1 Land use Planning Context</b>	12
<b>3.2 Development Plan Context</b>	13
<b>3.3 Application Checklist</b>	14
<b>3.4 Additional Guidance</b>	
• <b>Policy ER 34: Renewable Energy Developments</b>	22
• <b>Policy ER 35: Wind Energy Development</b>	31
<b>4. Landscape and Visual Assessment for Wind Energy Proposals</b>	<b>38</b>
<b>5. Noise Assessment for Wind Energy Proposals</b>	<b>46</b>
 <b>Figures</b>	
1 Wind Energy Development Geographic Areas	39
2 Scale Buildings in Angus	45
3 Wind Turbine Components	45
 <b>Tables</b>	
1 Land Use Planning Context	12
2 Application Checklist	14

3	Landscape Classification	40
4	Levels of Acceptable Landscape Character Change	42

## **Appendices**

1	Renewable Development within Angus	48
2	Development Plan – Renewable Energy Policies	51
3	List of other relevant development plan policies	52

### 4 Print Version Maps\*

Map 1 ALPR Boundary

Map 2 International Designations

Map 3 National Designations

Map 4 Local Designations

Map 5 Other Considerations

\*The print maps are illustrative of detailed information that can be accessed via the web-based version of the Implementation Guide, They are intended to indicate the location and range of International, National and Local designation within the ALPR area.

## 1. Purpose and Scope of this Implementation Guide

### 1.1 Context

Tackling climate change is, potentially, one of the biggest challenges we face. In 1992 the United Nations Framework Convention on Climate Change (<http://unfccc.int/2860.php>) was adopted as the basis of a global response to the problem. Signatory governments have since agreed to reduce emissions which contribute to climate change and global warming. To help achieve this, the Scottish Government set initial targets to generate 80% of Scotland's electricity (8GW) from renewable sources by 2020, with an interim target 31% by 2011 (5GW). In May 2011 the Scottish Government announced that the 2011 interim target had been exceeded and raised the renewable energy target for 2020 to 100% and 16GW of installed capacity. The planning system will contribute to achieving these targets by ensuring that projects are well located and designed.

The Angus Local Plan Review establishes the development plan policies to be taken into account when assessing proposals for renewable energy projects – policies ER34 Renewable Energy Development and ER35 Wind Energy Development.

In support of the development plan position the Implementation Guide provides:-

- more detailed information and clarification of the main factors that will be taken into account in considering and determining renewable energy proposals in Angus;
- an application checklist (Section 3.3);
- specific guidance for landscape and visual assessment issues in relation to wind turbines (Section 4); and
- specific guidance for guidance on noise assessment in relation to wind turbines (Section 5).

Commentary on technical constraints such as landform, access to the transmission network, accessibility, etc is included as these may have implications for effective development. The Implementation Guide also directs developers and other interested parties to relevant documents, policies and regulations.

Angus Council has reservations about mapping specific areas of search and constraint for wind energy proposals. The identified constraints will naturally restrict development opportunity, but need not prevent it. Applying cumulative impact as a significant constraint is problematic - as each planning application approved alters the potential cumulative impact. Also, there is not a direct correlation between the number of wind energy proposals and the degree of impact. It is appropriate to consider each proposal within the development context of each application rather than apply a theoretical limit. (The Council expressed concerns during the consultation on SPP 6 Renewable Energy Development in 2006, relating to the 20MW threshold in the Location Framework given that the area, turbine size and siting are the cause of impact, not output. Committee Report 1196/06 can be viewed at [www.angus.gov.uk/ccmeetings/reports-committee2006/infrastructure/1196.pdf](http://www.angus.gov.uk/ccmeetings/reports-committee2006/infrastructure/1196.pdf) )

### 1.2 Supporting Documents

This Implementation Guide has been prepared under the provisions of the Town and Country Planning (Scotland) Act 1997 and is subject to the following supporting assessments:-

- **Strategic Environmental Assessment**  
This Implementation Guide qualifies for the requirements of a Strategic Environmental Assessment (SEA) under the Environmental Assessment (Scotland) Act 2005. An Environmental Report (ER) has been prepared which illustrates the SEA process and all potentially significant environmental effects associated with the Implementation Guide.
- **Habitats Regulation Assessment**  
Consideration has been given to the requirements of the EC Habitats Directive (92/43EEC) as applied in Scotland through the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). The Angus Local Plan Review 2009 and the policies that are the subject of this Implementation Guide (ER 34 and ER35) have been subject to an Appropriate Assessment.

There is no requirement to apply the Regulations to the Implementation Guide. The existing local plan policies aim to protect all sites designated for their natural heritage value from adverse impacts. In addition, any subsequent proposals for renewable energy development will be subject to specific environmental regulation.

- **Equalities Impact Assessment screening determined full Equality Impact Assessment in not required.**

## 2. Renewable Energy Overview

Planning permission will be required for most renewable energy developments from either the local planning authority or the Scottish Government. Some small scale renewable energy proposals on both domestic and non domestic buildings are allowed under Permitted Development Rights as defined in Planning Circular 2/2010 <http://www.scotland.gov.uk/Publications/2010/03/05114236/0> and as amended in 2010 [http://www.oqps.gov.uk/legislation/ssi/ssi2010/ssi\\_20100027\\_en\\_1](http://www.oqps.gov.uk/legislation/ssi/ssi2010/ssi_20100027_en_1) and Circular 2/2011 <http://www.scotland.gov.uk/Publications/2011/03/17092643/0>

There are a wide range of renewable energy technologies which may be considered, and in many cases the scale of the proposal correlates with the scale of potential planning matters that may arise. It should be noted that some developments will also require to be considered under other legislation including, noise, emissions, pollution control which are not part of the planning process and may therefore require additional consents or licences.

### 2.1 Hydro

The primary source of hydroelectric power in Angus is anticipated to be run of river schemes where water is abstracted from a water course, diverted through pipes to a turbine and returned to the water course. The main elements for the panning system include:-

- Water abstraction – usually by a low, ground or underwater intake weir;
- Pipeline route;
- Turbine house and ancillary structures;
- Water return – usually in the form of a tailrace;
- Access routes; and
- Effect on the water course and its ecology.

Where dams are constructed these are likely to be small scale and planning matters will include:-

- Location and scale of the dam itself;
- Turbine house and other associated structures;
- Outflow/spillway; and
- Hydrogeology.

In all cases the transmission of power, construction works/compound and access routes, and environmental impact should be considered by the applicant.

Landscaping and planting proposals may reduce landscape and/or visual impact and improve biodiversity.

### 2.2 Bio-energy

Bio-energy or biomass ranges from small scale domestic boilers up to major commercial generators. The main issues will relate to commercial electricity generation, but proposals for domestic bio-energy facilities will still require to demonstrate there are no unacceptable adverse effects, particularly emissions. For commercial generators, not only are there the effects of the plant itself to consider, but the Scottish Government has indicated that fuel source over the life of the plant will be a valid planning consideration to ensure sustainable bio-energy can be sourced. While woody biomass is the major source, there are projects based on straw, distillery waste etc. These later sources are likely to be utilised in smaller facilities, often based around an existing business and reducing their energy costs. The primary planning issues relating to large biomass plants will include:-

- Scale, design and location;
- Emissions;
- Fuel Source;
- Access; and
- Storage facilities.

### 2.3 Landfill Gas

There will be limited opportunity for this method of generation in Angus, given limited landfill sites and the current waste to heat plant in operation at Lochhead Landfill site. The main planning issues will relate to:-

- Suitability of the location in terms of design and compatibility with surrounding land uses etc. Obviously the choice of location will be restricted by where landfill sites are located;
- Emissions; and
- Design.

### 2.4 Solar/photovoltaics

There has been no large scale commercial proposal in Angus to date. The primary interest is for roof mounted or free standing arrays associated with existing or proposed properties. In many cases small scale proposals are permitted development, but localised planning concerns can arise and include:-

- Visual impact and surrounding amenity;
- Visual impact where the property is a Listed Building or within a Conservation Area and compatibility with these designations;

### 2.5 Anaerobic Digestion

This generation method is likely to be of interest to the agriculture and food processing sectors in Angus, where biodegradable waste and farm slurry can be used to generate methane to produce heat and/or electricity. It is a constant and manageable process with a product that can produce energy for onsite or offsite use.

The primary planning considerations relate to:-

- Siting and location;
- Fuel source and the implications of importing material to the proposed site;
- Landscape and visual impact; and
- Proposed management and mitigation measures.

There are three types of digester which relate to the temperature of the process:

1. Psychrophilic (15-25<sup>0</sup>C) – stable and easy to manage but slow.
2. Mesophilic (35-40<sup>0</sup>C) – process takes 15 to 20 days, but process robust, simple and relatively cheap.
3. Thermophilic (50-60<sup>0</sup>C) – 12 to 15 days with higher conversion but more complex and costly.

Mesophilic or thermophilic digesters provide higher yields, and can require less space. The process and plant are flexible enough to meet the needs of farm units, through food processing to municipal organic waste disposal.

Proposals may also require to meet regulations relating to emissions, odour and noise.

### 2.6 Onshore Wind

Development proposals range from small single turbines to major windfarms subject to S36 of the Electricity Act, which are the responsibility of the Energy Consents and Deployment Unit of the Scottish Government. This is the primary area of renewable



energy proposals in Angus and the planning considerations are strongly influenced by the scale and location of the proposal including:-

- Landscape and visual impact;
- Potential adverse effects on designated natural and built heritage sites, protected species;
- Impact on residential amenity, soils and water bodies; and
- Access

## **2.7 Offshore Wind**

Applications for offshore wind farms are submitted to and processed by Marine Scotland. Angus Council has the opportunity to feed into this process through consultation at all stages and to date input has been made on the proposals at Inchcape, Seagreen Phase 1, 2 and 3, and Neart na Gaoithe. The Council is also actively involved in the development for the landfall and transmission of the energy from Seagreen and Inchcape in Angus.

### 3. Guidance for Applicants

#### 3.1 The land use planning context

The context for renewable development proposals is summarised below.

**Table 1: Land Use Planning Context**

<p>The <b>National Planning Framework 2 (NPF2)</b></p> <ul style="list-style-type: none"> <li>• aims to 'realise the potential of Scotland's renewable energy resources and facilitate the generation of power and heat from clean, low carbon sources, including ... producing heat and power from renewable sources ...'</li> <li>• requires 'landscape and visual impacts ... to be important considerations in decision-making on developments'</li> <li>• identifies major infrastructure projects needed to deliver the national strategy, including the electricity grid through Angus. <a href="http://www.scotland.gov.uk/Resource/Doc/278232/0083591.pdf">http://www.scotland.gov.uk/Resource/Doc/278232/0083591.pdf</a>;</li> </ul>
<p><b>Scottish Planning Policy (SPP 2010)</b> - planning is about:-</p> <ul style="list-style-type: none"> <li>• where development should happen;</li> <li>• where it should not; and</li> <li>• how it interacts with its surroundings.</li> </ul> <p>This involves promoting and facilitating development while protecting and enhancing the natural and built environment in which we live, work and spend our leisure time. <a href="http://www.scotland.gov.uk/Resource/Doc/300760/0093908.pdf">http://www.scotland.gov.uk/Resource/Doc/300760/0093908.pdf</a></p>
<p><b>Planning Advice Notes (PANs)</b> provide information and advice on technical planning matters including:-</p> <ul style="list-style-type: none"> <li>• web based Renewables Advice <a href="http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/renewables">http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/renewables</a></li> <li>• PAN 45 Annex 1 Planning for Micro Renewables (2006) <a href="http://www.scotland.gov.uk/Publications/2006/10/03093936/0">http://www.scotland.gov.uk/Publications/2006/10/03093936/0</a></li> </ul>
<p><b>Dundee and Angus Structure Plan:-</b> makes positive provision for renewable energy generating developments where they are compatible with other environmental and community interests.</p>
<p><b>Angus Local Plan Review</b> aims to promote:-</p> <ul style="list-style-type: none"> <li>• renewable energy development and</li> <li>• low or zero carbon emissions in new development. <a href="http://www.angus.gov.uk/localplan/">www.angus.gov.uk/localplan/</a></li> </ul>
<p>The <b>Implementation Guide</b> aims to:-</p> <ul style="list-style-type: none"> <li>• clarify and expand policies ER34 : Renewable Energy Development and ER35 : Wind Energy Development: and</li> <li>• support the Council's climate change commitment</li> </ul>
<p>Under the <b>Electricity (Scotland) Act 1989</b>, Scottish Ministers determine applications for large scale renewable energy (Section 36) and overhead power lines and associated infrastructure (Section 37). Further information on Section 36 and Section 37 consents</p>

procedures can be found at [www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/](http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/)

The established thresholds are as follows:-

<b>Scottish Ministers</b>	<b>Local Authorities</b>
onshore windfarms > 50MW	onshore windfarms < 50MW
	offshore wind farms < 1MW
Wave, tidal and hydroelectric schemes >50MW	Wave, tidal and hydroelectric schemes <50MW
overhead power lines and associated infrastructure	
large oil and gas pipelines	

### 3.2 Development Plan Context

The statutory development plan provides the basis for assessing development proposals and determining applications including those for renewable energy development. In Angus it comprises:-

- Dundee and Angus Structure Plan 2002 (DASP) - establishes strategic policy, and reflects national planning policy at the time. It makes positive provision for renewable energy generating developments where they are compatible with other environmental and community interests. Environmental Resources Policy 10: Renewable Energy also requires local plans to establish detailed criteria based policy, locational guidance and where appropriate areas of search for individual sources of renewable energy. [www.angus.gov.uk/structureplan/](http://www.angus.gov.uk/structureplan/)
- Angus Local Plan Review 2009 (ALPR) - establishes the detailed policy basis for development management in Angus, including renewable energy development. That part of Angus within the Cairngorms National Park is excluded. [www.angus.gov.uk/localplan/](http://www.angus.gov.uk/localplan/)
- Cairngorms National Park Local Plan (2010) - applies to the Upper Angus Glens (see Figure 1) and is not covered by this Implementation Guide. <http://www.cairngorms.co.uk/park-authority/planning/>

The Planning etc. (Scotland) Act 2006 introduces Strategic Development Plans (SDPs) for the four City Regions of Aberdeen, Dundee, Edinburgh and Glasgow and Local Development Plans (LDPs) to replace current structure and local plans. The Strategic Development Plan Authority for the Dundee City Region is a partnership of Angus, Dundee City, Fife and Perth & Kinross Councils. When approved, TAYplan (the Strategic Development Plan) will replace the current approved Structure Plans of the four local authorities. Progress on TAYplan can be viewed at [www.tayplan-sdpa.gov.uk](http://www.tayplan-sdpa.gov.uk)

The Development Plan is supportive of renewable energy in principle, and the ALPR establishes criteria against which renewable energy proposals will be assessed. Policy ER34 addresses potential adverse impacts that could arise. Development proposals for wind energy are also considered within the context of ER35 and related text. The full wording of the policies is set out in Appendix 2. These policies provide the basis for the more detailed guidance contained within this Implementation Guide. The ALPR contains a range of other policies against which any development proposal is considered, and where relevant the Implementation Guide will refer to these in the context of renewable energy projects.

Although community owned renewable energy generation is supported in principle where proposals are compatible with development plan policy, it must be made clear that negotiating or securing local community benefit is wholly separate from the planning application process. Angus Council's position is set out in Para 3.86, page 97 of the adopted Angus Local Plan Review. It is however recognised that where renewable energy schemes accord with the development plan there may be opportunity to secure contributions from developers for local community initiatives. However any such negotiations between the community and developers and any local contributions secured are totally separate from the land use planning and planning gain processes and will not be considered as part of any planning application. Such local community benefit initiatives will therefore not fall within the obligations required under Section 75 Planning Agreements and will require to be managed by other means.

Proposals for renewable energy development in that part of Angus within the Cairngorms National Park, will be determined by the Cairngorms National Park Authority (CNPA) within the context of the policies of the Cairngorms National Park Plan. Renewable Energy proposals within Angus that may affect the National Park, or its setting, will be referred to the CNPA for comment, and their views taken into account by Angus Council in the determination of any planning application.

### **3.3 Applications Checklist**

In accordance with the Land Use Planning Context outline above, Table 2: Applications Checklist summarises the supporting information that may be required to accompany a planning application for renewable energy development. This is an aid for applicants, and for detailed information should be read in conjunction with the rest of this Implementation Guide, the Development Plan and other relevant legislation, policy and advice.

**Table 2: Applications Checklist**

The checklist is designed to identify the supporting information required to determine a planning application for renewable energy development. The information should be proportionate to the proposal, and the checklist indicates the requirements for different technologies and scales of development. It is intended as an aid to applicants, and whilst it aims to be comprehensive there may be site specific considerations or changes to legislation or guidance from the Scottish Government and statutory agencies. Applications will be considered in the context of current guidance.

	Wind Energy Development (Height to blade tip unless otherwise stated)			Other Renewable Energy Development
	Turbine height up to 15m	Turbine height 15 - 50m	Turbine height greater than 50m OR groups of 6 or more turbines in excess of 25m height	
<b>Landscape and Visual Representation</b>	<p>Technical information from the turbine supplier often adequate. Photomontage may be requested to illustrate relationship. Eight figure grid reference for each proposed turbine</p>	<p>Basic level of VIA should include :-</p> <ul style="list-style-type: none"> <li>ZTV map covering an area up to 20km (radius) from the turbine;</li> <li>wireline drawings and/or photomontages from a limited number of key viewpoints;</li> <li>viewpoints to be agreed with Angus Council, and SNH where appropriate;</li> <li>design statement may be required in the case of multiple turbines; and</li> <li>eight figure grid reference for each proposed turbine</li> </ul>	<p>Full Landscape and Visual Impact (LVIA) should address the sensitivity, magnitude and significance of landscape and visual impact and include:</p> <ul style="list-style-type: none"> <li>ZTV map covering an area up to 35km (radius) from the turbine;</li> <li>wireline drawings and/or photomontages from key viewpoints;</li> <li>assessment of landscape sensitivity, magnitude of change and residual impacts.</li> <li>viewpoints to be agreed with Angus Council, and SNH where appropriate;</li> <li>design statement identifying design objectives and process; and</li> <li>eight figure grid reference for each proposed turbine.</li> </ul>	<p>VIA or LVIA may be required for larger structures depending on scale, type and location of the proposal.</p>

	Wind Energy Development (Height to blade tip unless otherwise stated)			Other Renewable Energy Development
	Turbine height up to 15m	Turbine height 15 - 50m	Turbine height greater than 50m OR groups of 6 or more turbines in excess of 25m height	
		Where proposals are within the ALPR area but may affect the Cairngorms National Park or its setting, applicants are advised to consult the Cairngorms National Park Authority. Applications.		
<b>Cumulative Assessment</b>	<p>A significant constraint to potential wind energy development. The proposals eligible for inclusion in a Cumulative Assessment is dynamic. An appropriate date for baseline data should be agreed with the authority and relevant proposals identified and agreed with Angus Council prior to commencement.</p> <p>Cumulative assessments will normally be required where turbines are &gt;50m to blade tip. The assessment will require to take account of agreed existing/proposed developments over 50m. They may also require to consider agreed existing/proposed smaller turbines where they visually interact with the proposal.</p> <p>Cumulative assessments have not normally been required where turbines are 25-50m to blade tip, but as more turbines under 50m are constructed, a cumulative assessment may be required if turbine density within the area of a ZTV map is deemed to have a potentially unacceptable cumulative impact.</p>			Depending on scale, type and location of the proposal there may be a requirement to assess its impact in conjunction with other existing or proposed development.
		<p>A cumulative ZTV (CZTV) should be produced on a clear and legible 1:50k Ordnance Survey Base plan. The CZTV would typically have a radius of up to 60km, in accordance with SNH guidance. The CZTV should:-</p> <ol style="list-style-type: none"> <li>1. include all consents and operational turbines over 50m to blade tip;</li> <li>2. include extant planning consents and submitted applications which pre-date the submission and which are assessed by the Council to have a realistic expectation of a decision within 12 months;</li> <li>3. include turbines under 50m (applications at an advanced stage, consents or operational) depending on their scale and location in relation to the application site i.e. visual interaction. This will only apply in specific circumstances;</li> </ol>		

	Wind Energy Development (Height to blade tip unless otherwise stated)			Other Renewable Energy Development
	Turbine height up to 15m	Turbine height 15 - 50m	Turbine height greater than 50m OR groups of 6 or more turbines in excess of 25m height	
			<p>4. include consented and proposed offshore proposals;</p> <p>5. other relevant proposals in the public domain;</p> <p>6. viewpoints for cumulative assessment; selected to provide representative views of all intervisible turbines, not from viewpoints selected to assess the application site. For example, a viewpoint may provide views in succession as defined by SNH (SNH Cumulative Effect of Windfarms (revised 2005)); and</p> <p>7. Cumulative assessments to address effects in combination; in succession; in sequence and perceived in accordance with SNH Cumulative Effect of Windfarms (revised 2005) <a href="http://www.snh.gov.uk/docs/A305440.pdf">http://www.snh.gov.uk/docs/A305440.pdf</a></p> <p>Following the production of a CZTV, proposed viewpoints should be added and submitted to Angus Council for approval prior to carrying out the assessment. Angus Council does not use file share software. All submissions should be provided in a format which permits high resolution images to be provided. The use of CDs is advised.</p>	
<b>Environmental Impact Assessment (EIA)</b>	An EIA will not generally be required.		<p>Environmental Impact Assessment (EIA) may be required under the terms of The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011:-</p> <ul style="list-style-type: none"> <li>a Screening Opinion should be sought for turbines over 15m; more than 2 turbines; or located in a 'sensitive area' to determine whether the development requires EIA under the terms of Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011, taking account of the selection criteria in Schedule 3 of the Regulations as laid reproduced in ANNEX A of Planning Circular The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 <a href="http://www.scotland.gov.uk/Publications/2011/06/01084419/10">http://www.scotland.gov.uk/Publications/2011/06/01084419/10</a></li> <li>scoping for the Environmental Report should be prepared in accordance with ANNEX B of Planning Circular The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011</li> </ul>	EIA may be required under the terms of The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011

	Wind Energy Development (Height to blade tip unless otherwise stated)			Other Renewable Energy Development
	Turbine height up to 15m	Turbine height 15 - 50m	Turbine height greater than 50m OR groups of 6 or more turbines in excess of 25m height	
			<ul style="list-style-type: none"> <li>• an EIA will require to demonstrate potential impacts, including length and significance of effect and mitigation measures for all components of an application</li> <li>• where EIA is not be required, environmental information may still be required to consider agreed impacts.</li> </ul> <p>* Sensitive Areas are defined in the Regulations as :- Sites of Special Scientific Interest; Land subject to Nature Conservation Orders; International Conservation Sites; National Scenic Areas; World Heritage Sites; Scheduled Monuments; and National Parks.</p>	
			Formal screening requests and determination will be publically available. Screening Determinations are valid for 12 months.	
<b>Natural Heritage Designation</b>	Applicants can use SNHi to check protected areas .	Applicants are advised to refer to SNH Small Scale Wind Energy Guidance and to use SNHi to check protected areas within a 20km radius of the proposal. <a href="http://www.snh.gov.uk/publications-data-and-research/snh-information-service/">http://www.snh.gov.uk/publications-data-and-research/snh-information-service/</a>		
	International and National Designation – Supporting information must demonstrate that proposals (including all associated works) will not affect such sites to an unacceptable degree. Where proposals may have a significant effect on European Sites (SAC or SPA), they should be screened in accordance with the Habitats Regulations Directive. A Habitats Regulation Appraisal may be required. Where mitigation measures are proposed these must be shown to be:- <ul style="list-style-type: none"> <li>• achievable;</li> <li>• agreed with SNH and any organisation responsible for managing the designated site or with responsibility for the maintenance of</li> </ul>			



<p>the site and the integrity of the reason for its designation; and</p> <ul style="list-style-type: none"> <li>• subject to planning conditions or a Section 75 agreement as appropriate.</li> </ul>	<p>Other Natural Heritage designations should be accorded appropriate protection and/or mitigation  <a href="http://www.taysidebiodiversity.co.uk/">http://www.taysidebiodiversity.co.uk/</a></p>
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	Wind Energy Development (Height to blade tip unless otherwise stated)			Other Renewable Energy Development
	Turbine height up to 15m	Turbine height 15- 50m	Turbine height greater than 50m OR groups of 6 or more turbines in excess of 25m height	
<b>Historic Environment</b>	Supporting information should identify historic and archaeological sites affected by the proposal, proportionate with the scale and number of turbines; the effect of the proposal and all associated works on the integrity of a site, its setting; requirements for archaeological survey and recording; and any proposed mitigation measures.			
	Guidance on assessing impacts on historic views has recently been published by English Heritage and may be used to inform the Council's assessment of wind energy developments. <a href="http://www.english-heritage.org.uk/content/publications/docs/seeing-history-in-view.pdf">http://www.english-heritage.org.uk/content/publications/docs/seeing-history-in-view.pdf</a>			
<b>Noise Assessment</b>	Where a noise assessment is required the methodology and cumulative considerations must be agreed with Angus Council Environmental and Consumer Protection. Failure to agree the methodology or to provide sufficient information may result in the application being recommended for refusal on the basis of lack of information. (See Section 5)			
<b>Peat and soils</b>	Where proposals affect peat soils, applicants should demonstrate carbon savings are calculated in accordance with Scottish Government advice and that SEPA and SNH have been consulted. <a href="http://www.scotland.gov.uk/Resource/Doc/229725/0062213.pdf">http://www.scotland.gov.uk/Resource/Doc/229725/0062213.pdf</a> A peat depth survey will be required where appropriate.			
	Development should minimise disruption to soils in accordance with the Scottish Soils Framework <a href="http://www.scotland.gov.uk/Resource/Doc/273170/0081576.pdf">http://www.scotland.gov.uk/Resource/Doc/273170/0081576.pdf</a>			
<b>Water Environment</b>	Development proposals should not lead to the deterioration in the condition of any water body, in accordance with the Tay Area Management Plan.			
	Where proposals are within the source catchment area of any private water supply potential impact must be considered and, if necessary, mitigation measures implemented			

	Supporting information should include a drainage assessment as appropriate.
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	Wind Energy Development (Height to blade tip unless otherwise stated)			Other Renewable Energy Development
	Turbine height up to 15m	Turbine height 15 - 50m	Turbine height greater than 50m OR groups of 6 or more turbines in excess of 25m height Projects > 50MW (Section 36 applications)	
	Identify pollution risk and mitigate through the provision of buffer zones to protect wetland and private water supplies as appropriate			
<b>Air Quality</b>				Proposals for bio-energy and anaerobic digestion may require an air quality impact assessment
<b>Residential Amenity</b>	Assessment to include properties agreed with Angus Council subject to:-		Assessment to include properties within a 2km radius of the proposed turbine(s) subject to:-	Amenity to be addressed within the context of Policy S6 and Schedule 1 as appropriate. Other amenity controls will be enforced through the relevant agencies including SEPA and HSE
	<ul style="list-style-type: none"> <li>• scale of turbine and blade size;</li> <li>• existence of buffers including woodland, buildings, landform; and</li> <li>• location and aspect of primary rooms and garden ground,</li> </ul>			
	Turbines should generally be a minimum of 10 times rotor diameter* from sensitive properties* to avoid the potential effects of shadow flicker.			
	* Sensitive properties include:- residential properties including care homes; educational buildings, hospitals, cemeteries; some visitor facilities and accommodation; and proposed development areas			

	Wind Energy Development (Height to blade tip unless otherwise stated)			Other Renewable Energy Development
	Turbine height up to 15m	Turbine height 15 - 50m	Turbine height greater than 50m OR groups of 6 or more turbines in excess of 25m height	
<b>Access and Traffic Management</b>	Access likely to be feasible within existing road network Angus Council Roads Division will be consulted.	Access to be agreed with Angus Council Roads Division.	Access arrangements and traffic management plan and suitable route for large vehicles to be agreed with Angus Council Roads Division. Any required road improvements to be implemented prior to commencement of construction.	Access to be agreed with Angus Council Roads Division, including management plan and suitable route for large vehicles where necessary.
	Any new tracks to be included in the planning application, supporting information and decommissioning /reinstatement agreement.			
	Transport Scotland advise that a wind turbine should be located no closer than 1.5 x the Wind Turbine height to the nearside Trunk Road kerb line. For the avoidance of doubt the nearside kerb line is either the kerb of the live carriageway or the nearside heel kerb of the Trunk Road footway if present. Angus Council will apply this principle to all turbine proposals adjacent to a public road, for reasons of road safety.			
<b>Other</b>	Supporting information should include reasons for site selection and evidence of viability			
	Where proposals are within the Cairngorms National Park Area, they will be referred to, and may be called in for determination by, the Cairngorms National Park Authority.			
	Where proposals are located on the coast, applications should demonstrate they have been assessed within the context of the developer/undeveloped coast as defined in the SPP and Angus Local Plan Review and Shoreline Management Plan for Angus. Advice on the sustainable use of the Tay Estuary and adjacent coastal waters can be found in the Management Plan published by the Tay Estuary Forum ( <a href="http://www.dundee.ac.uk/crsem/TEF/PDFS/Management%20Plan%20Final.pdf">http://www.dundee.ac.uk/crsem/TEF/PDFS/Management%20Plan%20Final.pdf</a> )			

### 3.4 Additional Guidance for ALPR Policies ER34 and ER35

Sections 3.4 and 3.5 expand on each of the two main policies and the specific criteria and sets out in more detail those matters that will be taken into account in considering and assessing development proposals. Interconnection with other policies and background information sources is also highlighted.

#### **Policy ER34: Renewable Energy Developments**

This policy sets the criteria against which all renewable energy proposals will be assessed, and where wind turbines are proposed should be read in conjunction with policy ER35. Other development plan policies will be applied where appropriate.

**Policy ER34: Renewable Energy Developments *Proposals for all forms of renewable energy developments will be supported in principle and will be assessed against the following criteria:-***

In all instances 'renewable energy developments' encompass all works associated with the proposal including formation and extension of, or improvement to, access tracks, areas of hard standing/external storage areas, borrow pits, landscaping and bunding, foundations, sub-stations, equipment cabins and any other related or ancillary works and structures . The following policy guidance applies to all renewable energy proposals as appropriate:-

#### **Criterion (a)**

***'the siting and appearance of apparatus have been chosen to minimise the impact on amenity, while respecting operational efficiency;'***

The choice of apparatus and its siting can significantly affect the appearance/impact of a renewable energy installation. 'Apparatus' includes generating equipment and ancillary structures such as transformer houses, transmission infrastructure, and storage facilities.

Wind and water powered renewable energy schemes, tend to be located within the rural landscape and their design should reflect this. Well sited and designed developments can, at best, enhance their setting or at least minimise potential impacts. Poorly sited or designed development can do the opposite – and may have an adverse impact on amenity for decades to come. Appropriate landscaping and planting can help a building or other appropriately scaled structure to blend into the landscape.

Where development proposals will impact on residential or recreational amenity, the choice of equipment may be of particular importance. Wind turbines for example should be chosen to reflect the scale of the landscape, light and visibility conditions and should respect residential amenity including noise and shadow flicker. Hydro-electric dams should be designed to respect the scale, colours and contours of the surrounding landscape.

It is accepted that wind energy technology is advancing rapidly and that there is a wide range of turbines available to the market. Initial discussions between the Council and developers should however seek to establish some basic characteristics such as proposed number and size of turbines, height (hub and blade tip), blade

number, colour and style although it is recognised that this may be amended as the project feasibility is developed. Similarly where a full planning application is submitted this must include details of all aspects of the proposal. Where a specific proposal has been approved by the Council any alteration to that project must be agreed in writing with the Council prior to implementation.

#### **Other Relevant ALPR policies**

Policy S3: Design Quality

Policy S6: Development Principles and Schedule 1: Development Principles

Policy ER10: Light Pollution

Policy ER11: Noise Pollution

#### **Additional information**

Tayside Landscape Character Assessment

<http://www.snh.org.uk/pubs/detail.asp?id=310>

#### **Criterion (b)**

***there will be no unacceptable adverse landscape and visual impacts having regard to landscape character, setting within the immediate and wider landscape, and sensitive viewpoints;***

Landscape and visual impact varies with the location, scale and type of renewable energy scheme proposed. For example wind turbines tend to be in exposed locations, and visible over a long distance; while hydroelectric schemes may be contained within a river valley; and solar panels fitted to an existing property roof tend to have a localised impact. As the extent and degree of landscape and visual impact increases so to does the need to assess potential cumulative issues and mitigation measures. The supporting information and accompanying visual/graphic information should be commensurate with the scale and location of the proposal.

It is likely the small hydro proposals will continue to come forward, and where they can be accommodated without detriment to the local environment and water courses, will be supported. Larger schemes can generate greater impact on water courses, fish, and the surrounding area as the diversion of water is much greater and more evidence of impact and mitigation will be required in order to determine any planning application. . Where river dams and associated buildings are proposed landscaping, contouring and planting can help structures blend into their setting, whilst also promoting biodiversity and habitat creation/enhancement. A range of advice is available for applicants considering hydro schemes including landscape and visual impacts. Consideration of associated infrastructure (pump house, tailrace, access, transmission, pipe routes etc) should be included in supporting information.

All forms of renewable energy development should be considered within their landscape context where applicable, Policy S6: Development Principles and Schedule 1 : Development Principles will form the basis for the assessment of small scale proposals, which have a local impact only. Scottish Natural Heritage has developed a series of Advice Notes on assessing the landscape impact of a range of renewable energy developments on the landscape, and their advice will be sought by the Council as appropriate.

#### **Landscape and Visual Impact of Wind Turbines**

Wind turbines are likely to have the greatest landscape and visual impact over the greatest distance and this aspect is addressed in Section 4 Landscape and Visual Assessment of Wind Energy Proposals.

#### **Other Relevant ALPR policies**

ER5: Conservation of Landscape Character  
 ER12: Development Affecting Conservation Areas  
 ER16: Development Affecting the Setting of a Listed Building  
 ER18: Archaeological Sites of National Importance  
 ER19: Archaeological Sites of Local Importance  
 ER20: Historic Gardens and Designed Landscapes  
 ER29: Coastal Development

#### **Additional information**

Scottish Natural Heritage (SNH) provides a comprehensive range of advice regarding landscape and visual impact on the natural heritage while Historic Scotland, Architecture and Design Scotland (ADS) and the local planning authority can advise on the built environment. Design statements can help applicants preparing development proposals to consider and articulate the processes undertaken in reaching final layout, siting and design and help inform the decision making process.

SNH Policy Statement 02/02 Strategic Locational Guidance for Onshore Windfarms in respect of Natural Heritage (updated 2009).

[www.snh.gov.uk/docs/A247182.pdf](http://www.snh.gov.uk/docs/A247182.pdf)

Associated Maps –

[www.snh.gov.uk/docs/C208971.pdf](http://www.snh.gov.uk/docs/C208971.pdf)

[www.snh.gov.uk/docs/C208972.pdf](http://www.snh.gov.uk/docs/C208972.pdf)

[www.snh.gov.uk/docs/C208973.pdf](http://www.snh.gov.uk/docs/C208973.pdf)

[www.snh.gov.uk/docs/C208974.pdf](http://www.snh.gov.uk/docs/C208974.pdf)

[www.snh.gov.uk/docs/C208975.pdf](http://www.snh.gov.uk/docs/C208975.pdf)

SNH Visual Representation of Windfarms (2006)

[www.snh.gov.uk/docs/A305436.pdf](http://www.snh.gov.uk/docs/A305436.pdf)

SNH Visual Assessment of Windfarms Best Practice (2002)

[www.snh.gov.uk/docs/A305437.pdf](http://www.snh.gov.uk/docs/A305437.pdf)

SNH Siting and designing Windfarms in the Landscape (2009)

[www.snh.gov.uk/docs/A317537.pdf](http://www.snh.gov.uk/docs/A317537.pdf)

Renewable energy technologies and the potential impacts on landscape and nature

<http://www.snh.gov.uk/planning-and-development/renewable-energy/>

Guidance on Hydro electric Schemes and the Natural Heritage

<http://www.snh.gov.uk/docs/C278964.pdf>

Aiding the Hydro-scheme development process - web-links to useful information sources

<http://www.snh.gov.uk/docs/C252875.pdf>

Tayside Landscape Character Assessment

[www.snh.org.uk/pubs/detail.asp?id=310](http://www.snh.org.uk/pubs/detail.asp?id=310)

Angus Windfarms – Landscape Capacity and Cumulative Impacts Study (2008)

[www.angus.gov.uk/devcontrol/LandscapeCapacityandCumulativeImpactAssessmentFinal.pdf](http://www.angus.gov.uk/devcontrol/LandscapeCapacityandCumulativeImpactAssessmentFinal.pdf)

Historic Scotland - Scottish Historic Environment Policy (SHEP)

[www.historic-scotland.gov.uk/index/heritage/policy/shep.htm](http://www.historic-scotland.gov.uk/index/heritage/policy/shep.htm)



**Criterion (c)**

***the development will have no unacceptable detrimental effect on any sites designated for natural heritage, scientific, historic or archaeological reasons;***

There are a number of sites throughout Angus designated for their built, cultural, biodiversity, and natural heritage qualities. These range in scale from individual listed properties up to extensive areas such as Montrose Basin or that part of Angus designated as part of the Cairngorms National Park. Their value is established, and they are safeguarded for present and future generations, through legislation. The integrity of such designations may be affected by activity beyond site boundaries and even into other authorities. Much will depend on the details of an individual proposal – scale, location and type. In assessing development proposals, priority will be given to the maintenance of the quality of the built and natural heritage. Where appropriate, mitigation measures should be investigated and their efficacy demonstrated to ensure compatibility with protected sites.

**Natural heritage and scientific designations** are subject to a range of legislation, policy, and guidance. Development proposals must be able to demonstrate that there will be no unacceptable direct or indirect adverse effects on the integrity of designated sites or the reason for their protection. There is a hierarchy of designated sites, habitats and species ranging from international to local significance with levels of protection proportionate to status. Where remediation measures can successfully redress potential adverse impact, these must be agreed with the relevant advisory agency and subject to a planning condition or legal agreement.

There are no international designations within the ALPR area, but there are a number of European sites (SPAs and SCAs) including The River Tay, River South Esk and Firth of Tay SACs and SPAs at Montrose Basin, Kinnordy and Lintrathen Lochs and the Firth of Tay.

There are no local nature conservation sites designated within Angus to guide developers, but where locally important habitat or beauty spots are affected, these should be afforded appropriate protection. Local factors will be assessed as part of the consideration of development proposals and where identified through EIA screening and scoping studies should be addressed by supporting information.

Where a proposal affects a designated site an Environmental Impact Assessment may be required, depending on the scale of the proposal and anticipated impact. Proposals which come within the provisions of the Electricity Act 1989 will require to meet the terms of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000.

[www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Guidance/EIA-Guidance](http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Guidance/EIA-Guidance)

**Sites and areas designated for historic and archaeological reasons** are also subject to a range of policy, guidance and legislation. No World Heritage Sites have been identified within Angus, and Historic Scotland is responsible for the protection of sites of national and international status. Angus Council is responsible for determining applications for Listed Building Consent (LBC) and the identification of Conservation Areas and their subsequent protection. Protection of the built heritage extends beyond the actual property and curtilage to encompass its character and setting. This includes Historic Gardens and Designed Landscapes; all listed buildings; and scheduled ancient monuments. Historic Scotland and the Council's

Archaeological Service are consulted as appropriate. Where local archaeological sites and areas are known, or suspected, the Council will seek advice on the assessing and recording of any features.

#### Appropriate Level of Assessment

Proposals of more than two turbines or a hub height more than 15m tall, or and hydroelectric scheme with a capacity of over 0.5MW, fall within Schedule 2 of the Environmental Impact Assessment (Scotland) Regulations 2011. Such applications and those within or affecting:

- Sites of Special Scientific Interest
- Land subject to Nature Conservation Orders
- International Conservation Sites
- National Scenic Areas
- World Heritage Sites
- Scheduled Monuments and their settings
- National Parks.

may require a screening opinion from the planning authority to determine whether a formal EIA of the proposed development is required.

Where appropriate, proposals will be judged in conjunction with the consultation agencies as to whether a formal EIA is required. While only a small proportion of development proposals are likely to require EIA, an EIA is *not* discretionary if significant effects on the environment are likely and should be prepared in accordance with the relevant legislation and guidance listed below.

Where a development is of a scale or in a location where a formal EIA is deemed not necessary, the applicant must submit a planning statement on impact, including any proposed mitigation measures. In the case of wind turbines, the statement should address the constraints identified in the SAS for Onshore Wind Turbines. The level of detail should also reflect the scale and location of the proposal.

Guidance can be obtained from SNH, in their publication Hydroelectric Schemes and the Natural Heritage <http://www.snh.gov.uk/docs/C278964.pdf>

#### **Other Relevant ALPR policies**

Policy ER1: Natura 2000 and Ramsar Sites

Policy ER2: National Nature Reserves and Sites of Special Scientific Interest

Policy ER3: Regional and Local Designations

Policy ER4: Wider Natural Heritage and Biodiversity

#### **Policy and Legislation**

Scottish Government

Planning Circular 3 The Town and Country Planning (Environmental Impact Assessment)(Scotland) Regulations (2011)

<http://www.scotland.gov.uk/Publications/2011/06/01084419/10>

PAN 58 Environmental Impact Assessment (1998)

<http://www.scotland.gov.uk/Publications/1999/10/pan58-root/pan58>

EIA Screening Checklist - <http://www.scotland.gov.uk/Resource/Doc/212607/0117167.pdf>

PAN 2/2011 Planning and Archaeology

<http://www.scotland.gov.uk/Publications/2011/081041322003/0>

Scottish Government – web based Renewables Specific Advice Sheets

<http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/renewables>

The Electricity Works (Environmental Impact Assessment) (Scotland) Amendment Regulations 2008 (Revised 2009)

<http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Guidance/EIA-Amendment-Regs-2008>

Town and Country Planning (Scotland) Act 1997 (As Amended)  
Environmental Impact Assessment (Scotland) Regulations 2011

EU Birds Directive and Annex1  
EU Habitats Directive and Annexes 1 and 2  
[Habitats/protectedareas/NATURA](http://www.natura2000.gov.uk/Habitats/protectedareas/NATURA)

### **Additional information**

#### **IEEM**

Guidelines for Ecological Impact Assessment in the United Kingdom  
<http://www.ieem.net/ecia/impact-assess.html>

#### **SNH**

Handbook of Environmental Assessment (2009 Draft)

<http://www.snh.gov.uk/docs/B460796.pdf>

SNH Renewable Energy Information page

<http://www.snh.gov.uk/planning-and-development/renewable-energy/>

Wild Land

<http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-policy-and-guidance/wild-land/>

Guidance on Assessing Connectivity with Special Protection Areas (SPAs)

<http://www.snh.gov.uk/docs/A675474.pdf>

Soils and Natural Heritage

<http://www.snh.gov.uk/docs/A327906.pdf>

SNH, Perth and Kinross Council, SEPA and Angus Council  
River Tay Special Area of Conservation (SAC) – Advice to Developers

<http://www.snh.org.uk/pdfs/publications/designatedareas/River%20Tay%20SAC.pdf>

SNH, SEPA and Angus Council

River South Esk Special Area of Conservation (SAC) – Advice to Developers

<http://www.snh.org.uk/pdfs/publications/designatedareas/River%20South%20Esk%20SAC.pdf>

#### **Historic Scotland**

Scottish Historic Environment Policy

<http://www.historic-scotland.gov.uk/index/heritage/policy/shep.htm>

Environmental Assessment

<http://www.historic-scotland.gov.uk/index/heritage/policy/environmental-assessment.htm>

Gardens and Designed Landscapes

<http://www.historic-scotland.gov.uk/index/heritage/gardens.htm>

Scottish Government

Historic Environment

<http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/historic>

Natural Environment

<http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/natural-heritage>

Angus Council

State of the Environment Report

[www.angus.gov.uk/sustainability/pdfs/StateofEnvironment2011.pdf](http://www.angus.gov.uk/sustainability/pdfs/StateofEnvironment2011.pdf)

Cairngorms National Park Authority  
<http://www.cairngorms.co.uk/resource/docs/boardpapers/22072011/CNPA.Paper.4440.Planning%20Committee.Paper.8.-.Appe.pdf>

**Criterion (d)**

***no unacceptable environmental effects of transmission lines, within and beyond the site;***

Ancillary works required to transmit electricity from the site should form part of any renewable energy development proposal to ensure their inclusion in any EIA. Where deemed necessary by the planning authority, consideration will be given to undergrounding of cables and pipe work.

Most overhead power lines will be determined by Scottish Government under S37 of the Electricity (Scotland) Act 1989.

**Criterion (e)**

***access for construction and maintenance traffic can be achieved without compromising road safety or causing unacceptable permanent change to the environment and landscape,***

Renewable energy projects, by their very nature, may promote sites which have limited or no existing vehicular access. The construction, repair, maintenance and decommissioning will normally require access by heavy and/or long vehicles over the life of the project. In some cases, there may be a continuation of the life of a scheme with consequent renewal, replacement or upgrading in the longer term.

Any project proposal must therefore prepare and submit a route assessment and traffic management plan, which demonstrates:-

- how access is to be achieved;
- selected routes have been assessed and are capable of accommodating traffic generated;
- traffic management over the construction phase; and
- longer term access requirements.

If road improvements are required, these must be approved by Angus Council Roads division, part of Infrastructure Services. Site access should allow all vehicles visiting the site to have space to manoeuvre to ensure safe access and egress.

The formation of new, or upgrading of existing, tracks over open countryside/uplands should be designed to avoid generating run off/surface water flooding and be re-instated on completion of construction, where they will not be regularly in use.

Provision must be made for the re-instatement of any existing and proposed tracks when the site is decommissioned.

**Other Relevant ALPR policies**

Policy S2: Accessible Development

Policy S3: Design Quality

Policy S4: Environmental Protection

## Policy S6: Development Principles and Schedule 1: Development Principles

**Additional information**

SNH – Constructed Tracks in the Scottish Uplands (2005)

<http://www.snh.gov.uk/docs/A308736.pdf>

SNH and Forestry Commission Scotland – Floating Roads on Peat

<http://www.roadex.org/uploads/publications/Seminars/Scotland/FCE:SNH%20Floating%20Roads%20on%20Peat%20report.pdf>

Scottish Renewables, SNH, SEPA and Forestry Commission Scotland – Good Practice During Windfarm Construction

<http://www.snh.org.uk/pdfs/strategy/renewables/Good%20practice%20during%20windfarm%20construction.pdf>

**Angus Council**

The Roads Division is part of the Infrastructure Services Department, Angus Council, County Buildings, Market Street, Forfar, Angus, DD8 3LG

Contact: [ROADS@angus.gov.uk](mailto:ROADS@angus.gov.uk)

**Criterion (f)**

***that there will be no unacceptable impacts on the quantity or quality of groundwater or surface water resources during construction, operation and decommissioning of the energy plant.***

Ground and surface water – including coastal waters, water courses, standing water, peat soils, wetlands and ground water – is an important environmental and commercial asset in Angus. Their identification and quality classification has been established through the Water Framework Directive and the Tay Area Management Plan sets the framework for development that affects them. Applicants will require to demonstrate that development proposals should maintain or enhance ground and surface waters features, not cause deterioration. Groundwater wetlands should be incorporated in Phase 1 Habitat surveys and where appropriate include a buffer zone of 100m between features and roads, tracks and trenches, increasing to 250m for borrow pits and foundations.

Water Supply

The protection of drinking water, both public and private supplies, will be a priority. Where a development proposal is deemed to affect a potable supply the applicant will require to demonstrate there are no unacceptable adverse effects, or how these can be mitigated if feasible. This may include the requirement for a buffer zone of 100m between features and roads, tracks and trenches, increasing to 250m for borrow pits and foundations. Any works within these distances should demonstrate (e.g. through a hydrogeological assessment) that impacts on abstractions are acceptable.

Flooding

The SPP [www.scotland.gov.uk/Resource/Doc/300760/0093908.pdf](http://www.scotland.gov.uk/Resource/Doc/300760/0093908.pdf) establishes a risk framework which provides a basis for planning decisions where there is a potential flood risk. Development proposals located within, or affecting known flood risk areas, will be considered within the context of this framework and referred to SEPA where necessary. Angus Council Roads are the Flood Prevention Authority and advise on flood prevention and flood risk standards for new roads, car parks and footpaths.

SEPA have produced an Indicative River and Coastal Flood Map which can be viewed at [www.sepa.org.uk/flooding/flood\\_map/view\\_the\\_map.aspx](http://www.sepa.org.uk/flooding/flood_map/view_the_map.aspx)

#### Water Quality

The water environment is a potential constraint to renewable energy development, particularly in relation to construction works. Applicants should demonstrate that

- no unacceptable damage to the water environment will result from their development;
- all pollution risks and mitigation measures during construction, operation and decommissioning have been identified;
- developments are designed to avoid engineering activities (such as culverts) in the water environment; and
- project management is in place to mitigate potential adverse impacts during the construction phase.

#### Peat Soils

Where peat soils are affected by potential renewable energy development applicants should consider:-

- Ground water contamination;
- Damage to peatland habitat, especially on or adjacent to designated sites. Early consultation with SNH and SEPA is advised where a proposed development is likely to affect peatland or mire systems;
- In relation to wind energy proposals Scottish Government advice on calculating carbon savings should be used when preparing applications. Information on this is available at <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17852-1/CSavings> ;
- Measures to minimise soil disturbance during construction, operation and decommissioning to maximise carbon balance savings; and
- Potential for slippage;
- Need for a peat depth survey to demonstrate that the layout and design of the proposal avoids areas of deep peat and minimises disturbance to other areas of peat.; and
- Procedures for any extraction and disposal of peat during construction.

Applicants should consult SNH and SEPA at an early stage where proposed development is likely to affect peatland or mire systems

#### **Other Relevant ALPR policies**

Policy ER27: Flood Risk – Consultation

Policy ER28: Flood Risk Assessment

Policy ER25: Water Resource Protection

#### **Policy and Legislation**

Scottish Government

Water Framework Directive in Scotland (WFD)

[www.scotland.gov.uk/Topics/Environment/Water/15561/WFD](http://www.scotland.gov.uk/Topics/Environment/Water/15561/WFD)

Flood Risk Management (Scotland) Act 2009

[www.scotland.gov.uk/Topics/Environment/Water/Flooding/FRMAct](http://www.scotland.gov.uk/Topics/Environment/Water/Flooding/FRMAct)

A Policy Statement on Hydropower and Water Environment Protection

[www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17851-1/HydroPolicy](http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17851-1/HydroPolicy)

#### **Additional information**

Scottish Environment Protection Agency

The Tay Area Management Plan 2009 - 2015

[www.sepa.org.uk/water/river\\_basin\\_planning/area\\_advisory\\_groups/idoc.ashx?docid=442c3ee6-588d-468f-bbd5-97cbc7de9e38&version=-1](http://www.sepa.org.uk/water/river_basin_planning/area_advisory_groups/idoc.ashx?docid=442c3ee6-588d-468f-bbd5-97cbc7de9e38&version=-1)

Guidance for hydropower development

[www.sepa.org.uk/water/hydropower.aspx](http://www.sepa.org.uk/water/hydropower.aspx)

Planning Advice

<http://www.sepa.org.uk/planning/energy.aspx>

Controlled Activities Regulations (CAR); Guidance for Applicants on Supporting Information requirements for Hydropower Applications

<http://www.sepa.org.uk/water/idoc.ashx?docid=358677fe-61f7-4fc9-baab-79cb93671387&version=-1>

Engineering Activities in the Water Environment

[http://www.sepa.org.uk/planning/engineering-water\\_environments.aspx](http://www.sepa.org.uk/planning/engineering-water_environments.aspx)

Scottish Government

Wind Farms and Carbon Savings on Peatlands

<http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17852-1/CSavings>

### **Angus Council**

Environment and Consumer Protection and Roads Division are part of the Infrastructure Services Department, Angus Council, County Buildings, Market Street, Forfar, Angus, DD8 3LG

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[ENVHEALTH@angus.gov.uk](mailto:ENVHEALTH@angus.gov.uk)

## Policy ER 35 Wind Energy Development

Onshore wind turbines are the main subject of renewable energy proposals in Angus. The scale, location and impacts of wind energy developments raise a number of specific issues for consideration and Policy ER35 establishes criteria to aid the assessment of such planning applications.

The ALPR addresses additional issues raised by wind energy development. It identifies three geographic areas –Highland (1); Lowland and Hills (2); and Coast (3) - based on the landscape classification that was developed in the Tayside Landscape Character Assessment (1999) [www.snh.org.uk/pdfs/publications/review/122.pdf](http://www.snh.org.uk/pdfs/publications/review/122.pdf) and SNH Policy Statement 02/02 [www.snh.gov.uk/docs/A247182.pdf](http://www.snh.gov.uk/docs/A247182.pdf). The broad geographic areas are shown in Figure 1 (see page 39). The ALPR recognises that the open and exposed nature of the Coast and Highland areas are sensitive to potential landscape and visual impact from turbines. The Lowland and Hills area is recognised as of generally lower sensitivity to turbines in terms of visual, landscape and natural heritage interests. However, there may be areas within the Lowland and Hills Area where large turbines would have an unacceptable impact, or where properly sited and designed wind energy development can be accommodated in areas of higher natural heritage, landscape and visual sensitivity.

**Policy ER 35: Wind Energy Development: *Wind energy developments must meet the requirements of Policy ER34 and also demonstrate:-***  
(policy criteria a) - g) are set out and discussed below)

**Criterion (a)**  
***the reasons for site selection;***

Applicants should present their rationale for site selection. Applicants should demonstrate that proposals are in locations where the technology can operate efficiently. Where a consent lapses, that proposal will be deleted from the Council's database of active proposals. Any re-application will be subject to full cumulative assessment in relation to visual, landscape and environmental impact as appropriate.

Applicants should demonstrate that site selection considered all technical, environmental, amenity, visual and landscape impact and mitigation where feasible.

### Other Land Uses

Applicants should demonstrate that their selected site is compatible with other existing land uses and economic activities including:-

- tourism - proximity to visitor attractions such as historic properties, visitor centres, hotels, viewpoints and 'beauty spots';
- leisure and recreation (particularly outdoors) – foot and cycle paths, facilities (particularly outdoors) such as golf courses, activity centres;
- forestry – impact of felling for access and turbine clearance;
- quiet or remote places valued for their tranquillity;
- ancient woodland; and
- tourist routes and viewpoints.

Applicants should also demonstrate where site selection can enhance an area, and provide added value. This could include improving access, parking provision, visitor facilities on site such as interpretative facilities and amenities.



Residential Amenity

Applicants must be able to demonstrate that the site was selected to avoid unacceptable impact on the amenity of occupied residential property. The SPP advises a 2km separation distance between areas of search for windfarms over 20MW and the edge of towns and villages, and confirms the development up to this distance is likely to be a prominent feature in open landscapes. When considering potential visual impact of wind energy proposals on residential amenity, Angus Council will use 2km as a guide. Within 2km of residential properties information required will depend on the scale and location of the individual proposal.'

Applicants should be able to demonstrate that factors such as scale, location and topography will allow the development without unacceptable detrimental effect. Views from principal rooms looking towards a proposed turbine, and extent and location of garden ground will be factors in considering potential impact on residential amenity.

Additional Information

SNH

Historic and Ancient Woodlands

[www.snh.gov.uk/land-and-sea/managing-the-land/forestry-and-woodlands/history/](http://www.snh.gov.uk/land-and-sea/managing-the-land/forestry-and-woodlands/history/)

**Criterion (b)**

***that no wind turbines will cause unacceptable interference to birds, especially those that have statutory protection and are susceptible to disturbance, displacement or collision;***

This criterion applies to areas designated under the European Habitats and the European Birds Directives for their significance to birds (Natura 2000 sites), and to the flight paths of protected species; and those protected under the Convention on Wetlands of International Importance (Ramsar sites). As well as these internationally designated sites, there are a number of nationally important sites such as Sites of Special Scientific Interest (SSSIs) and RSPB significant bird habitats (which are adjacent to and support designated sites at Kinnordy Loch and Montrose Basin). The protection afforded to these sites extends beyond their boundaries to allow for foraging, roosting and flight paths.

There is a growing body of experience on the management and design of wind farms to reduce or prevent unacceptable impact on birds which may help in the design and layout of a proposed wind farm. SNH will advise on bird surveys and guidance on assessing the impacts of wind farms on birds is available on their website at [www.snh.gov.uk/planning-and-development/renewable-energy/onshore-wind/](http://www.snh.gov.uk/planning-and-development/renewable-energy/onshore-wind/)

Other Relevant ALPR policies

Policy ER1: Natura 2000 and Ramsar Sites (4)

Policy ER2: National Nature Reserves and Sites of Special Scientific Interest

Policy ER3: Regional and Local Designations

Policy ER4: Wider Natural Heritage and Biodiversity

Policy and legislation

EU Habitats Directive and Annexes 1 and 2

EU Birds Directive and Annex1

[Habitats/protectedareas/NATURA](http://Habitats/protectedareas/NATURA)

**Additional information**

The RSPB and SNH have produced a Bird Sensitivity Map. Details can be found at: [www.rspb.org.uk/news/details.aspx?id=tcn:9-179628](http://www.rspb.org.uk/news/details.aspx?id=tcn:9-179628)

**Criterion (c)**

***there is no unacceptable detrimental effect on residential amenity, existing land use or road safety by reason of shadow flicker, noise or reflected light;***

**Shadow Flicker and Reflected Light**

Shadow flicker is where the moving shadow flicker appears through a narrow window opening. The occurrence of flicker can be predicted by calculation, and is therefore identifiable and can be addressed. Scottish Government on-line guidance for Onshore Wind Turbines advises that in most cases the problem can be resolved through separation between wind turbines and nearby dwellings (as general rule 10 rotor diameter).

Turbines can also cause flashes of reflected light, which can be visible for some distance. It is possible to ameliorate the flashing but not to eliminate it. Careful choice of blade colour and surface finish can help reduce the effect.

**Noise**

There are two sources of noise from wind turbines - the mechanical noise from the turbines and the aerodynamic noise from the blades. Mechanical noise can be reduced through engineering design. Good acoustical design and siting of turbines is essential to ensure there is no significant increase in ambient noise levels as they affect the environment and any nearby sensitive property/receptors. Where appropriate planning conditions will be imposed to control any impact to within reasonable levels. The evaluation of noise will be addressed on a site specific basis, given the range of factors to be considered and further detailed guidance is provided in Section 5 : Noise Assessment for Wind Energy Proposals

**Other Relevant ALPR policies**

Policy ER11: Noise Pollution

**Policy and Legislation**

Scottish Government – 1/2011 Planning and Noise

<http://www.scotland.gov.uk/Publications/2011/02/28153945/0>

Scottish Government - web based Renewables Specific Advice Sheets

<http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/renewables>

**Additional Information**

Working Group on Noise and Turbines, Final Report 1996 – ETSU-R-97

[www.semantise.com/~lewiswindfarms/FOV1-00021BAE/FOV1-00021BD2/1996:00:00%20ETSU-R-97%20-%20Exec%20Summary.pdf?FCItemID=S000C081A](http://www.semantise.com/~lewiswindfarms/FOV1-00021BAE/FOV1-00021BD2/1996:00:00%20ETSU-R-97%20-%20Exec%20Summary.pdf?FCItemID=S000C081A)

The Influence of Colour on the Aesthetics of Wind Turbine Generators' – ETSU W/14/00533/00/00

**Angus Council** Environmental and Consumer Protection is part of the Infrastructure Services Department, Angus Council, County Buildings, Market Street, Forfar, ANGUS DD8 3LG

Contact: [ENVHEALTH@angus.gov.uk](mailto:ENVHEALTH@angus.gov.uk)

Further information turbine noise level prediction can also be found in Section 5 : Noise Assessment for Wind Energy Proposals

**Criterion (d)**  
***that no wind turbines will interfere with authorised aircraft activity;***

#### Military Aircraft

There are MOD bases, RAF Leuchars in Fife and RM Condor at Arbroath, with flight paths for landing and take-off which affect Angus. Parts of the area are also subject to low fly zones. Barry Buddon Camp is an army training facility, with live firing capacity.

The approach zones for the Air Traffic Control Radar at RAF Leuchars affect areas across south Angus.. The MOD has commented on/objected to a number of wind energy proposals in South Angus on the grounds of interference with radar resulting in false signals being recorded by air traffic controllers, which can threaten aircraft safety. The safety of military personnel and aircraft will be taken into account by Angus Council in considering planning applications.

Where radar interference is identified as a potential constraint and effective mitigation measures have been agreed with the MOD, these must be submitted in writing to Angus Council. Only where a scheme is demonstrated to be deliverable or can be secured through application of a condition, will planning permission be granted

Contact details and further information can be found at:

[www.mod.uk/DefenceInternet/MicroSite/DE/WhatWeDo/Operations/ModSafeguarding.htm](http://www.mod.uk/DefenceInternet/MicroSite/DE/WhatWeDo/Operations/ModSafeguarding.htm)

#### Civilian Aircraft

There are two civilian facilities which affect Angus - Dundee Airport and the Gliding Club at Roundyhill, between Glamis and Kirriemuir.

No unofficial safeguarding maps are known to have been lodged with the Council e.g. for local emergency service Air Support Units or a former unlicensed airfield in the vicinity of Montrose.

Applicants must consult NERL Safeguarding, the Civil Aviation Authority (CAA) and the local authority before submitting a planning application. The applicant should provide an analysis of possible impact, and appropriate measures to alleviate any identified adverse effects on broadcast communications and signals. These consultees may advise on aircraft safety, including lighting. Where this is the case their advice will be acted upon by Angus Council.

There is an international civil aviation requirement for all structures of 91.4 metres or more to be charted on aeronautical charts. This is achieved by notifying Defence Geographic Centre prior to the construction/erection of wind turbines and/or anemometer/meteorological masts.

Any structure of 150 metres or more must be lit in accordance with the Air Navigation Order and should be appropriately marked. Smaller structures may also be required to be lit by aviation stakeholders particularly if they fall under Section 47 of the Aviation Act

#### **Contacts:**

Civil Aviation Authority	NERL Safeguarding
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CAA House 45-59 Kingsway London WC2B 6TE	NATS-CTC Mailbox 23 4000Parkway Solent Business Park Whitely Hampshire PO15 7FL
Dundee Airport Riverside Dundee DD2 1UH	

### **Policy and Legislation**

Scottish Government

Circular 2/2003 Safeguarding of Aerodromes, Technical sites and Military Explosives Storage Areas.

<http://www.scotland.gov.uk/Resource/Doc/47021/0026439.pdf>

### **Additional Information**

Civil Aviation Authority

Guidance on CAA Planning Consultation Requirements

[http://www.caa.co.uk/docs/33/DAP\\_GuidanceOnCAAPanningConsultationRequirements.pdf](http://www.caa.co.uk/docs/33/DAP_GuidanceOnCAAPanningConsultationRequirements.pdf)

CAP 764

CAA Policy and Guidelines on Wind Turbines

<http://www.caa.co.uk/docs/33/Cap764.pdf>

### **Criterion (e)**

***that no electromagnetic disturbance is likely to be caused by the proposal to any existing transmitting or receiving system, or (where such disturbances may be caused) that measures will be taken to minimise or remedy any such interference;***

Wind turbines have the potential to interfere with electronic communication media, which includes television and radio (which may cause interference, loss of sound or picture and 'ghosting'), and micro wave links (which may be affected by reflection, diffraction or blocking). Operators suggest a minimum distance of 100m between the alignment of the microwave and any turbine to prevent interference. These interference effects can be reduced through changes to turbine siting and discussion with operators will confirm an appropriate distance.

Applicants must consult Ofcom (Office of Communication - which acts as the central point of contact for any television and radio broadcasting, telecommunication and wireless communication issues); the emergency services; utility companies; and the local authority before submitting a planning application.

The applicant should provide details of possible adverse effects, and proposed measures to mitigate adverse effects on broadcast communications and signals.

Applicants should contact:

Ofcom Riverside House 2a Southwark Bridge Road London	Wind Farm Team The Joint Radio Company Limited, Dean Bradley House 52 Horseferry Road
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<p>SE1 9HA</p> <p>Further information is available at <a href="http://www.ofcom.org.uk/">www.ofcom.org.uk/</a></p>	<p>London SW1P 2AF</p> <p>Telephone: +44 20 7706 5197</p> <p>Further information on The Joint Radio Company Limited is available at <a href="http://www.jrc.co.uk">www.jrc.co.uk</a></p>
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**Criterion (f)**

***that the proposal must be capable of co-existing with other existing or permitted wind energy developments in terms of cumulative impact particularly on visual amenity and landscape, including impacts from development in neighbouring local authority areas;***

Although a number of consents have been granted in Angus for wind turbines of around 90m to blade tip, only one has yet been constructed. There are a number of large scale turbines close to the boundary of Angus; in Perth and Kinross (Drumderg 16 x 107m), Dundee (Michelin 2 x 120.5m) and Aberdeenshire (Tullo 8 x 100m). These developments are clearly visible from parts of Angus, but no cross local authority boundary landscape/capacity assessment has been undertaken as those commissioned are normally for and by individual local authorities or refer to a specific proposal. Major landscape features such as the highland boundary fault however can extend across several council areas.

The SAS for Onshore Wind Turbines identifies potential cumulative impact as a significant constraint for wind farms, but as noted previously, there is no cross boundary context. The potential impact changes as each development is constructed and the actual scale and potential impact of a windfarm or large turbine will vary depending on the site, layout and turbines selected. Cumulative effects of wind energy developments are a matter of great significance in determining any application. Assessment of landscape and visual impact is contentious and every effort should be made to provide accurate visual representations and to ensure potential cumulative impact on the natural and built environment is fully addressed.

The assessment of cumulative impact will reflect the operational, consented and planning applications for turbines, as well as the specific site characteristics. As this will be different for each application and over the passage of time, it is increasingly difficult to map areas of constraint imposed by cumulative impact. Each proposal should demonstrate how its particular characteristics relate to other proposals at the assessment stage. Regard should be given to the extensive advice available on assessing and representing potential cumulative visual and landscape impact.

**Ecology, Ornithology and Hydrology**

There is also potential for the combined effect of wind energy development to increase impact on sensitive habitats and/or protected species to an unacceptable level. Where existing development already affects a protected or vulnerable habitat, applicants must demonstrate subsequent proposals through the combined effect of development, will not cause impacts to be intensified to an unacceptable level. This will be particularly important where sites are designated as of international or national importance, but damage to all vulnerable habitats and species should be avoided. (Natura 2000 sites may require a Habitats Regulation Assessment (HRA) by Angus Council as competent authority)

## Cumulative Impact

Cumulative ecological impact should be addressed through a formal EIA or an environmental statement, the terms of which should be agreed with the local authority, and other agencies as appropriate. Where the responsibility lies with the local authority to determine acceptable level of impact or viability of mitigation measures, advice will be sought from relevant agencies.

Where mitigation measures are proposed and agreed, these will be subject to the application of conditions or legal agreement as appropriate. Post operational monitoring of impact on habitat and species may be required and will be subject to the application of conditions or legal agreement as appropriate.

Cumulative landscape and visual assessments should establish search area identifying:-

- any constructed or consented windfarm;
- any undetermined windfarm application;
- any windfarm proposal which has been subject to an EIA scoping request to the relevant authority; and
- any other windfarm proposal that the Planning Authority, and/or SNH, considers relevant for study and which is within the public domain (eg as a result of a public announcement or community meeting).

Installed, consented and proposed offshore windfarms should also be presented on the base plan to enable a decision on whether to include these in the assessment.

The cumulative landscape and visual effect will be those which are additional to an agreed baseline of wind energy developments reflecting the scale of the development under consideration. The search area considered will relate to the height of the proposed turbine and the visual interaction with other turbines within an agreed distance

For larger turbines the study area should extend to a minimum of 35km from the outer margin of the application site. The size of the study area should also be influenced by the locations and ZTVs of other windfarms likely to interact with the new proposal; and by transport routes to be assessed for sequential effects. The study area may not be circular in shape but could be larger in some directions than others. Sequential impacts may need to be assessed for a distance of more than 60km from the proposed windfarm.

For smaller proposals appropriate distances will be agreed with the developer in accordance with SNH guidance

### **Policy and Legislation**

Scottish Government - web based Renewables Specific Advice Sheets

<http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/renewables>

SNH

Assessing the Cumulative Impacts of Onshore Wind Energy Developments

<http://www.snh.gov.uk/docs/A675503.pdf>

Visual Representation of Windfarms Good Practice Guidance

<http://www.snh.gov.uk/docs/A305436.pdf>

<b>Criterion (g)</b>
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***a realistic means of achieving the removal of any apparatus when redundant and the restoration of the site are proposed.***

The anticipated lifespan of a wind farm/turbine is currently around 25 years. Once established the operational capacity and equipment is likely to be reviewed. Extension of existing consents will be assessed in accordance with legislation and guidance pertaining at that time, and continued use of an existing location may be an appropriate option. Where time of operation is extended, the decommissioning statement and re-instatement plan will also be reviewed, updated to contemporary standards, and extended.

The applicant will be required by planning conditions or legal agreement to ensure acceptable re-instatement standards. A decommissioning statement and reinstatement plan should be submitted detailing removal of all apparatus and associated works; restoration of the site and any after care arrangements; and timescale. It is likely a financial bond will be required by Angus Council to ensure restoration is implemented should the applicant/operator cease to trade. The decommissioning statement should be updated prior to the cessation of energy generation.

Where a site has been inactive for six months, the planning authority will require the instigation of the decommissioning process within the six months of the site being confirmed inactive.

## 4. Landscape and Visual Assessment of Wind Energy Proposals

The potential landscape and visual impact of wind turbines, both individually and cumulatively is a major factor in the assessment of any planning application.

The Tayside Landscape Character Assessment (TLCA) was prepared by Land Use Consultants in 1999, as part of a series of assessments for Scotland prepared on behalf of SNH and the local authorities. It develops a landscape classification which identifies and describes a range of character areas. It also provides guidance on accommodating development and land use change. Whilst some of this guidance has been superseded, the definition of the landscape character areas and their vulnerability to some types of development remains valid, and should be used in conjunction with the evolving SNH guidance.

The landscape character areas form the basis of The Wind Energy Geographic Areas in the ALPR as follows (Figure 1, page 39):-

- Area 1 Highland - primarily the Angus Glens along and to the north of the Highland Boundary Fault;
- Area 2 Lowland and Hills - mainly rolling farmland and low hills;
- Area 3 Coast - a mix of sand, cliffs and, around Montrose, lowland basin.

The ALPR identifies areas 1 Highland and 3 Coast as having a greater potential sensitivity to the landscape and visual impact of large turbines. This principle is developed in the Landscape Capacity and Cumulative Impacts Study undertaken by Ironside Farrar on behalf of the Council in 2008. This study primarily considered landscape capacity and cumulative impact in Angus at a strategic level in order to assist in the determination of two planning applications for wind turbines and based on the TLCA character area it identifies Landscape Capacity for Windfarms and current windfarm character type.

[www.angus.gov.uk/devcontrol/LandscapeCapacityandCumulativeImpactAssessmentFinal.pdf](http://www.angus.gov.uk/devcontrol/LandscapeCapacityandCumulativeImpactAssessmentFinal.pdf)

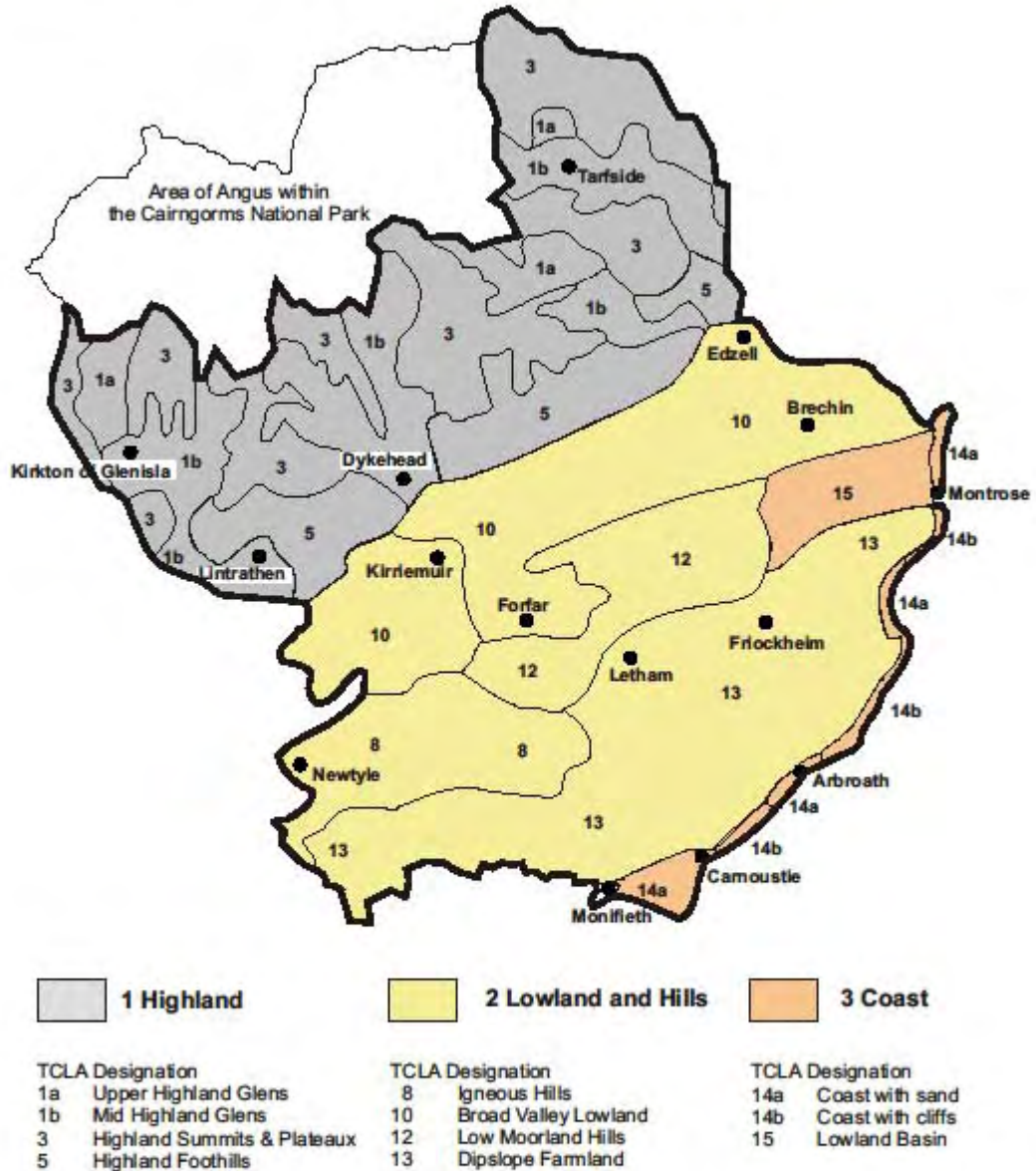
Area 3 Coast also has specific locational factors such as coastal flooding potentially exacerbated in future by rising sea levels, the protection of the undeveloped coast, shoreline management and the interrelationship with off-shore proposals. Development proposals on the coast will be required to address these issues as appropriate in any applications and supporting information.

The ALPR and TLCA form the basis for the strategic assessment of landscape capacity and potential visual and landscape impact. Applicants will require to establish the parameters for their individual site assessment with the Council taking cognisance of the detailed landscape and visual implications and suitable representations. Where proposals are for turbines between 15 and 50m are proposed a basic VIA should be submitted and for turbines over 50m a full LVIA should be undertaken as detailed in Table 2.

Scottish Natural Heritage has developed a series of Advice Notes on the impacts of windfarms on the landscape, and their advice will be sought by the Council as appropriate.



Figure 1 - Wind Energy Development Geographic areas



Map extract from Angus Local Plan Review (adopted Feb 2009)  
 © CROWN COPYRIGHT, ANGUS COUNCIL 100023404, 2011.

The 'Landscape Capacity and Cumulative Impacts Study' is a strategic level study providing a context for the consideration of the cumulative effects of existing and potential future windfarm developments. It develops a classification of landscape types in terms of the degree of wind turbine development (Table 3) which is applied in Table 4: Levels of Acceptable Landscape Character Change.

**Table 3: Landscape Classification**

<b>Landscape</b>	<b>Type</b>	<b>Landscape Character Visual Experience</b>
<b>Landscape with no Windfarms</b>	A landscape type or area in which no windfarms or wind turbines are present and none are clearly visible from neighbouring areas	There would be no discernable effects on visual receptors.
<b>Landscape with Views of Windfarms</b>	A landscape type or area within which, or immediately adjacent, there are no windfarms or wind turbines physically located, but from which windfarms are clearly visible in a separate landscape character area. Character may vary considerably according to proximity and scale of neighbouring windfarm(s).	The experience of a visual receptor would be noticeably affected, but windfarms are a background feature clearly not associated with the landscape in which the receptor is located. Visual effects may vary considerably according to proximity and scale of neighbouring windfarm(s)
<b>Landscape with Occasional Windfarms</b>	A landscape type or area in which windfarms or wind turbines are located or are very close to and visible. However they are not of such a size, number, extent or contrast in character that they become one of the defining characteristics of the landscape's character.	Visual receptors would experience occasional close-quarters views of a windfarm or turbines and more frequent background views of windfarms or turbines. Some turbines may or may not be perceived as being located in the landscape character area. No overall perception of windfarms being a defining feature of the landscape.
<b>Landscape with Windfarms</b>	A landscape type or area in which a windfarm, windfarms or wind turbines are located and visible to such an extent that they become a defining characteristic of the Landscape Character. However, they are clearly separated and not the single most dominant characteristic of the landscape	Visual receptors would experience frequent views of windfarms or wind turbines as foreground, mid-ground or background features, affecting their perception of the landscape character. However there would be sufficient separation between windfarms and turbines and sufficient areas from which wind turbines are not visible such that they would not be seen as dominating the landscape over all other landscape features.
<b>Windfarm Lands</b>	A landscape type or area in which windfarms or wind turbines are extensive, frequent and nearly always visible. They become the dominant, defining characteristic of the landscape. Nevertheless there is a clearly defined separation between developed areas.	Visual receptors would experience views of windfarms as foreground, mid-ground and background features, to the extent that they are seen to dominate landscape character. Few areas would be free of views of wind turbines
<b>Windfarm</b>	Landscape fully developed as a windfarm with no clear separation between groups of turbines. Few if any areas where turbines not visible.	Visual receptors would always be close to and nearly always in full view of wind turbines.

Table 4: Levels of Acceptable Landscape Character Change also incorporates the SNH classification of landscape and visual cumulative effects :-

- a) *'in combination - where two or more features are seen together at the same time from the same place, in the same (arc of) view where their visual effects are combined;*

- b) *in succession* - where two or more features are present in views from the same place (viewpoint) but cannot be seen at the same time, together because they are not in the same arc of view - the observer has to turn to see new sectors of view whereupon the other features unfold in succession;
- c) *in sequence* - where two or more features are not present in views from the same place (viewpoint) and cannot, therefore, ever be seen at the same time, even if the observer moved round the arc of view, the observer has to move to another viewpoint to see the second or more of them, so they will then appear in sequence. The frequency of occurrence in the sequence may be highly variable, ranging from frequently sequential when the features keep appearing regularly and with short time lapses between (clearly speed of travel influences this as well as distance between the viewpoints) down to occasionally sequential where there may be long time lapses between appearances, because the observer is moving very slowly and / or there are large distances between the viewpoints (even if not between the features);
- d) *perceived* - where two or more features are present but one or more is never seen by the observer, for example, because they are screened, or the observer is unable or unwilling to attend a viewpoint from where they would be seen. However, the observer is aware that others are there because, for example, they may have read or heard about them or seen signs to them; this is an apprehended or perceived effect but can be strongly felt; it could also, nevertheless, be mistaken because the observer's information or interpretation of it is wrong.' (David Tyldesley for SNH at PLI – Proposed Windfarm, An Suidhe, Inveraray, Argyll. November 2002).

New large scale proposals close to established wind farm or turbine development in landscape and/or visual terms should consider their relationship with existing turbine type, scale, colour and layout from all directions from which the wind farms or turbines are viewed in combination.

As the number of sites generating energy from wind increase, so does potential for conflict between different scales of development, and between proposed and existing development. Where proposals are submitted, the relative height and style of turbine (e.g. tower construction, number of blades, blade length) should increasingly reflect those already consented to promoted a harmonious development pattern.

The Levels of Acceptable Landscape Character Change established in Table 4 provides guidance on the Councils assessment of the potential impact of wind energy development in Angus.

#### **Additional Information**

SNH Cumulative Effect of Windfarms (revised 2005)

<http://www.snh.gov.uk/docs/A305440.pdf>

**Table 4: Levels of Acceptable Landscape Character Change**

Within **Development Boundaries** (as defined in the ALPR) it is not possible to define maximum turbine heights. Proposals for turbine development in towns and villages will be considered in the context of the ALPR policies and take account of the following considerations:

- Scale and location
- Landscape setting
- Residential amenity including noise, shadow flicker, visual impact etc
- Historic environment including townscape
- Compatibility with adjacent uses
- Proximity to sensitive receptors such as educational buildings, open space and leisure facilities, hospitals, residential care homes, cemeteries, visitor facilities and accommodation and proposed development areas
- Access
- Design
- Security of equipment/facility
- Ancillary works

**Outwith development boundaries**, in countryside locations it is considered that there is scope for turbines to be accommodated within the following defined landscape types. The guide heights are extrapolated from sources including the Tayside Landscape Character Assessment, the Landscape Capacity and Cumulative Impacts Study, Reporters findings from planning appeals, responses from statutory consultees and reflect the particular scale and landscape of Angus.

There may be scope for turbines of greater height, where this can be demonstrated by the applicant. This will be strongly influenced by the elevation of the turbine site, the scale of the landscape and proximity of scale features and buildings.

ALPR Zone	Landscape Type (LT) Landscape Units (LU)	Existing Windfarm Character	Acceptable Future Windfarm Character	Guidance (Height to blade tip unless otherwise stated)
1	1a. Upper Highland Glens <ul style="list-style-type: none"> <li>• Glen Isla</li> <li>• Glen Lethnot</li> <li>• Milton and Upper Tarf Valley</li> </ul>	Landscape with no Windfarms & Views of Windfarms	Landscape with Views of Windfarms	This LT is of medium scale; predominantly unsettled; with wild/slightly tamed level of naturalness and with narrow corridor views. Accordingly, it is considered to have no scope for turbines other than domestic scale turbines (less than 25m in height).

<b>ALPR Zone</b>	<b>Landscape Type (LT) Landscape Units (LU)</b>	<b>Existing Windfarm Character</b>	<b>Acceptable Future Windfarm Character</b>	<b>Guidance (Height to blade tip unless otherwise stated)</b>
	1b. Mid Highland Glens <ul style="list-style-type: none"> <li>• Glen Esk</li> <li>• West Water Valley</li> <li>• Glen Clova</li> <li>• Glen Prosen</li> <li>• Glen Isla</li> </ul>	Landscape with no Windfarms & Landscape with Views of Windfarms	Landscape with Occasional Windfarms	Due to the small to medium scale of this LT and the corridor nature of views, it is considered to have scope for turbines circa 50m in height.
	3. Highland Summits & Plateaux <ul style="list-style-type: none"> <li>• Caenlochan Forest/ Glen Doll Forest</li> </ul>	Landscape with Views of Windfarms	Landscape with Views of Windfarms	Considered to have no scope for wind turbines.
	5. Highland Foothills <ul style="list-style-type: none"> <li>• Alyth Foothills</li> <li>• Kirriemuir Foothills</li> <li>• Menmuir Foothills</li> <li>• Edzell Foothills</li> </ul>	Landscape with Views of Windfarms	Landscape with Occasional Windfarms	The Highland Foothills provide a dramatic transition between highland and lowland. The contrast between the rolling topography of Strathmore (LT 10) and the foothills is important in defining the character of both LT 10 & 5. Whilst the Foothills appear big next to Strathmore, they are relatively low lying hills. In order to avoid the risk of turbines adversely affecting perceived scale, it is considered that there is scope for turbines less than circa 80m tall located on lower ground only, where they do not adversely affect the setting of landscape features and monuments such as Airlie Monument and the White & Brown Caterthuns.
	8. Igneous Hills <ul style="list-style-type: none"> <li>• Sidlaws</li> </ul>	Landscape with Views of Windfarms	Landscape with Occasional Windfarms	Considered to have scope for turbines circa 80m in height which do not disrupt the principle ridgelines or adversely affect the setting of important landscape features monuments such as Kinpurney Monument and Auchterhouse hillfort.
	2			

ALPR Zone	Landscape Type (LT) Landscape Units (LU)	Existing Windfarm Character	Acceptable Future Windfarm Character	Guidance (Height to blade tip unless otherwise stated)
3	10. Broad Valley Lowland • Strathmore	Landscape with Views of Windfarms	Landscape with Occasional Windfarms	Considered to have scope for turbines circa 80m in height.
	12. Low Moorland Hills • Forfar Hills	Landscape with Views of Windfarms	Landscape with Occasional Windfarms	Considered to have scope for turbines circa 80m in height which do not disrupt the principle ridgelines or adversely affect the setting of important landscape features and monuments such as Balmashanner Monument; and Finavon and Turin hillforts.
	13. Dipslope Farmland • SE Angus Lowland	Landscape with Views of Windfarms	Landscape with Occasional Windfarms	Considered to have scope for turbines circa 80m in height.
	14a. Coast with Sand • Barry Links • Elliot • Lunan Bay • Montrose	Landscape with Views of Windfarms	Landscape with Views of Windfarms	Due to the often open nature of the Angus coastline and in order to avoid the risk of turbines being visually prominent and therefore adversely affecting the character of the undeveloped coast, it is generally considered there is scope for domestic turbines of circa 25m in height.
	14b. Coast with Cliffs • Carnoustie • Auchmithie • Usan	Landscape with Views of Windfarms	Landscape with Views of Windfarms	
	15. Lowland Basins • Montrose Basin	Landscape with Views of Windfarms	Landscape with Views of Windfarms	

Figure 3: Wind Turbine Components

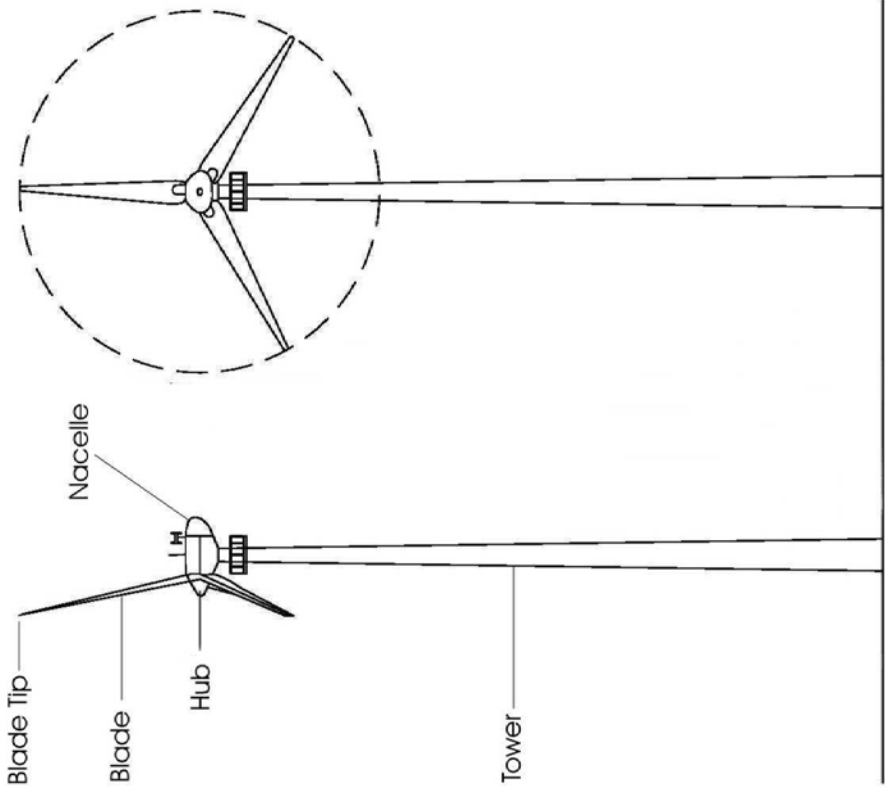
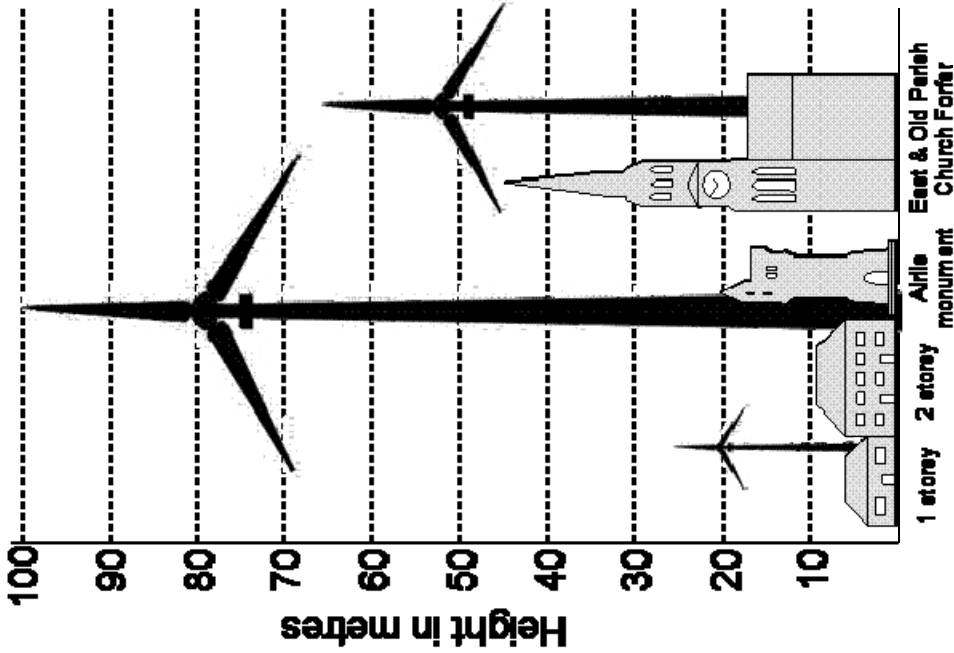


Figure 2: Scale Buildings in Angus



## 5. Noise Assessment for Wind Energy Proposals

Noise from wind turbines can be an important factor in the assessment of wind energy developments. Applicants are advised to contact the Environmental and Consumer protection Service at Angus Council at an early stage to establish an agreed methodology for noise assessment. Initial guidance is outlined below:-

### Assessment Criteria

1. Subject to the points below the criteria specified in ETSU-R-97; the assessment and rating of noise from wind farms should be used as appropriate noise assessment criteria.
2. If absolute lower noise limits are to be used then the significance of these in relation to the existing background noise levels should be considered.
3. Amplitude modulation should be considered in terms of the current level of technical knowledge on the subject. Angus Council will consider the use of appropriate Planning Conditions to control AM on a case by case basis.
4. Where it is suggested that any property benefits financially from the scheme and the higher absolute lower limit of 45 dB(A) maybe applied to that property, full details of the financial benefit and how the occupiers of the relevant property will receive that benefit for the life of the development should be clearly stated. A valid financial benefit is considered to be one which relates directly to the power or income generated by the turbine. One-off lump sum payments are unlikely to be considered acceptable because occupiers could change during the life of the development.
5. Where criteria are derived from background noise measurements the additional points below should be taken into account.
6. It is generally considered that the ETSU-R-97 simplified method criteria is not suitable for small wind turbines i.e. those with a rotor diameter of less than 16m. For developments involving small turbines a noise limit of 40 dB LAEQ(10mins) assessed using the BWEA method referred to below is considered appropriate.

### Background noise measurements

1. It is recommended that the type of noise meter, microphone and protection kit for each monitoring location is agreed. An appropriate windshield (usually double skinned) is required in order to prevent any wind over the microphone affecting readings.
2. It is recommended that the exact position of the monitoring equipment is agreed not just the general location and photographic evidence of the location is taken. Where monitoring data is to be used for more than one property this should be agreed before hand in order to ensure that sufficient locations are monitored to represent all of the neighbouring properties. It is recommended that a list of properties is drawn up and monitoring positions allocated to each for discussion.
3. Monitoring should be avoided next to running water or trees in leaf (unless the measurement location solely represents a single property and the noise environment is not likely to alter seasonally) or on the noisy side of a building (unless it faces the proposed turbine location)
4. It is recommended that the method for determining periods of heavy rainfall and the measurement period to be excluded due to heavy rain is agreed prior to the commencement of monitoring. Heavy rainfall should be taken to mean periods of more than 4mm per hour.
5. The period of monitoring should be sufficient to obtain a reasonable amount of data at each wind speed from 3-12m/s. Depending upon weather conditions this can take longer than 7 days so this should be considered a minimum only.



6. The method for Simultaneous wind speed measurement should be agreed before hand with Environmental & Consumer protection Service. Derived not measured 10m high wind speeds may need to be used to take account of site specific wind shear.

## Turbine noise level prediction

1. Wind turbine noise predictions should follow the methodology used in ISO 9613 and take into account the detailed guidance published in The Institute of Acoustics bulletin Vol 34 no 2 2009.
2. For small wind turbines i.e. those with a rotor diameter of less than 16m the BWEA small wind turbine performance and safety standard, Feb 2008 guidance maybe used as an alternative methodology to predict the separation distance required to comply with the relevant noise criteria.
3. Turbine noise data must be referenced to test reports.
4. Where any type of noise calculator is used a detailed explanation of the formulae used and the data used should be given.
5. The noise level prediction should take into account the cumulative impact of other turbines.

## Appendices

### APPENDIX 1: Renewable Energy Development in Angus

Renewable Energy provides opportunities to develop locally based sources of power, with minimal impact on the local, national and global environment. It can aid progress towards sustainable development, reduce dependence on energy imports, broaden the energy supply base, and create jobs and investment. The growing number of development enquiries and proposals reflects increasing awareness of renewable energy capacity, financial incentives and technological advances all contributing to renewable energy generation across Angus. The current position is set out below.

#### Planning Applications and Consents (as at May 2012)

The following Tables will provide the base line for monitoring the Implementation Guide and future renewable energy development within Angus.

**Table 1 - Status of Applications for Single Turbines (May 2012)**

Year	<25m			25-50m			>50		
	App	Ref	Pen	App	Ref	Pen	App	Ref	Pen
2004	1	1	-	-	-	-	-	-	-
2005	2	-	-	-	-	-	-	-	-
2006	9	-	-	-	-	-	-	-	-
2007	8	-	-	-	-	-	-	-	-
2008	9	-	-	-	-	-	-	-	-
2009	10	1	-	-	-	-	2	-	-
2010	13	2	-	2	-	-	2	-	-
2011	6	1	-	7	1	8	3	3	4
2012	-	-	3	4	1	1	-	-	2
<b>Total</b>	<b>58</b>	<b>5</b>	<b>3</b>	<b>13</b>	<b>2</b>	<b>9</b>	<b>7</b>	<b>3</b>	<b>6</b>

App – planning application approved

Ref – planning application refused

Pen – decision pending

**Table 2 - Status of Applications for Multiple Turbines (May 2012)**

Year	No of turbines 2			No of turbines 3-6			No of turbines >6		
	App	Ref	Pen	App	Ref	Pen	App	Ref	Pen
2004	-	-	-	-	-	-	1	-	-
2005	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	3	-	-	1	-
2008	-	-	-	-	-	-	-	-	-
2009	-	-	-	-	4	-	-	-	-
2010	4	-	1	1	-	-	-	-	-
2011	12	1	2	-	-	1	-	-	2
2012	2	-	1	-	-	1	-	-	-
<b>Total</b>	<b>18</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>

App – planning application approved

Ref – planning application refused

Pen – decision pending

**Table 3 – Operating and Consented Onshore Renewable Energy Development in Angus (May 2012)**

Generation Method	Location	Capacity (MW*)	Status
<b>Wind Turbines</b>			
Wind farm/cluster - over 50m or 3 x 15m	Ark Hill (8 x 81m turbine)	10.4	Approved
	Scotston Hill, Auchterhouse (1 x 80m turbine)	0.8	Operational
	Former Tealing Airfield (1 x 93.5m turbine)	2.5	Approved
	Cononsyth, Arbroath (1 x 67m turbine)	0.33	Approved
	East Memus (1 x 86.6)	0.8	Approved
	Castleton of Eassie (3 x 25)	0.33	Approved
<b>Total</b>		<b>15.16</b>	
<b>Landfill Gas</b>			
	Lochhead Landfill Site	1.0	Operational
<b>Total</b>		<b>1.0</b>	
<b>Hydro</b>			
Run of River	Rottal Estate, Glen Clova	0.45	Operational
	Glenmarkie, Glen Isla	0.75	Operational
	Clova Farms, Glen Clova	0.18	Approved (CNPA)
	Glamis Sawmill	0.06	Operational
	WWTP, Tannadice, Forfar	0.78	Approved
<b>Total</b>		<b>2.12</b>	
<b>Biomass- commercial</b>			
Fuel Production Unit	Padnaram, By Forfar		Operational
<b>All Operational and/or approved</b>		<b>18.28</b>	

**Table 4 – Other Renewable Energy Proposals in Angus (November 2011)**

Generation Method	Location	Capacity (MW*)	Status
<b>Wind Turbines</b>			
Wind farm/cluster over 50m or 3 x 15m	Nathro Hill (S36)	50+	Scoping
	Carrach	7.2	Application
	Land at Nether Kelly (Corse)	17.5	Application
<b>Total</b>		<b>74+</b>	

## Other Energy Related Projects

### Transmission Network

SHETL has indicated that once the Beaulieu-Denny transmission line has been upgraded, the upgrade along the western side of Strathmore will proceed. This will utilise existing towers and renew cables and insulation to increase capacity from 275 to 400KV. Grid access licences are normally subject to this upgrade being implemented.

## **APPENDIX 2: Development Plan – Renewable Energy Policies**

### **Dundee and Angus Structure Plan Environmental Resources Policy 1: Renewable Energy**

Proposals for renewable energy development will be favourably considered where they deliver quantifiable environmental and economic benefits and any significant or cumulative adverse impacts on the natural and historic environment, landscape and local communities can be satisfactorily addressed.

Development proposals will be considered in the context of the wider environmental policies of the Structure Plan. Detailed criteria based policy, locational guidance and, where appropriate, areas of search for individual sources of renewable energy will be established by Local Plans. An Environmental Statement will be required for all large scale proposals or where development is likely to have significant effects on the environment.

### **Angus Local Plan Review Policy ER34: Renewable Energy Developments**

Proposals for all forms of renewable energy developments will be supported in principle and will be assessed against the following criteria:

- (a) the siting and appearance of apparatus have been chosen to minimise the impact on amenity, while respecting operational efficiency;
- (b) there will be no unacceptable adverse landscape and visual impacts having regard to landscape character, setting within the immediate and wider landscape, and sensitive viewpoints;
- (c) the development will have no unacceptable detrimental effect on any sites designated for natural heritage, scientific, historic or archaeological reasons;
- (d) no unacceptable environmental effects of transmission lines, within and beyond the site; and
- (e) access for construction and maintenance traffic can be achieved without compromising road safety or causing unacceptable permanent change to the environment and landscape, and
- (f) that there will be no unacceptable impacts on the quantity or quality of groundwater or surface water resources during construction, operation and decommissioning of the energy plant.

### **Angus Local Plan Review Policy ER35: Wind Energy Development**

Wind energy developments must meet the requirements of Policy ER34 and also demonstrate:

- (a) the reasons for site selection;
- (b) that no wind turbines will cause unacceptable interference to birds, especially those that have statutory protection and are susceptible to disturbance, displacement or collision;
- (c) there is no unacceptable detrimental effect on residential amenity, existing land uses or road safety by reason of shadow flicker, noise or reflected light;
- (d) that no wind turbines will interfere with authorised aircraft activity;
- (e) that no electromagnetic disturbance is likely to be caused by the proposal to any existing transmitting or receiving system, or (where such disturbances may be caused) that measures will be taken to minimise or remedy any such interference;
- (f) that the proposal must be capable of co-existing with other existing or permitted wind energy developments in terms of cumulative impact particularly on visual amenity and landscape, including impacts from development in neighbouring local authority areas;
- (g) a realistic means of achieving the removal of any apparatus when redundant and the restoration of the site are proposed.

### APPENDIX 3: Other Relevant Development Plan Policies

#### Dundee and Angus Structure Plan (2002)\*

The Structure Plan was approved by Scottish Ministers in October 2002. The document can be viewed and down loaded at <http://www.angus.gov.uk/structureplan/>

The main policies relevant to energy proposals are listed below:

Environmental Resources Policy 1: Natural Heritage Designations  
 Environmental Resources Policy 2: The Wider Natural Heritage  
 Environmental Resources Policy 3: Coastal Development and Protection  
 Environmental Resources Policy 4: Flooding and Development  
 Environmental Resources Policy 5: Historic Environment

#### Angus Local Plan Review (2009)\*

The Angus Local Plan was adopted by Angus Council in February 2009. The document can be viewed and downloaded at [www.angus.gov.uk/localplan](http://www.angus.gov.uk/localplan)

The main policies that may be relevant to energy proposals are listed below under the document headings:

##### General Policies

S1: Development Boundaries  
 S2: Accessible Development  
 S3: Design Quality  
 S4: Environmental Protection  
 S5: Safeguard Areas  
 S6: Development Principles and Schedule 1 : Development Principles

##### Building Sustainable Communities

SC19: Rural Employment

##### Environment and Resources

ER1: Natura 2000 and Ramsar Sites  
 ER2: National Nature Reserves and Sites of Special Scientific Interest  
 ER3: Regional and Local Designations  
 ER4: Wider Natural Heritage and Biodiversity  
 ER5: Conservation of Landscape Character  
 ER6: Trees, Woodlands and Hedgerows  
 ER7: Trees on Development Sites  
 ER10: Light Pollution  
 ER12: Development Affecting Conservation Areas  
 ER16: Development Affecting the Setting of a Listed Building  
 ER18: Archaeological Sites of National Importance  
 ER19: Archaeological Sites of Local Importance  
 ER20: Historic Gardens and Designed Landscapes  
 ER25: Water Resource Protection  
 ER27: Flood Risk – Consultation  
 ER28: Flood Risk Assessment  
 ER29: Coastal Development  
 ER30: Agricultural Land

\*Hard copies of these documents can also be viewed at Angus Council libraries and ACCESS offices; and at Planning & Transport Reception County Buildings Forfar

## **APPENDIX 4: Print Version Maps**

The print maps are illustrative of detailed information that can be accessed via the web-based version of the Implementation Guide, They are intended to indicate the location and range of International, National and Local designations and other considerations within the ALPR area.

Map 1 ALPR Boundary

Map 2 International Designations

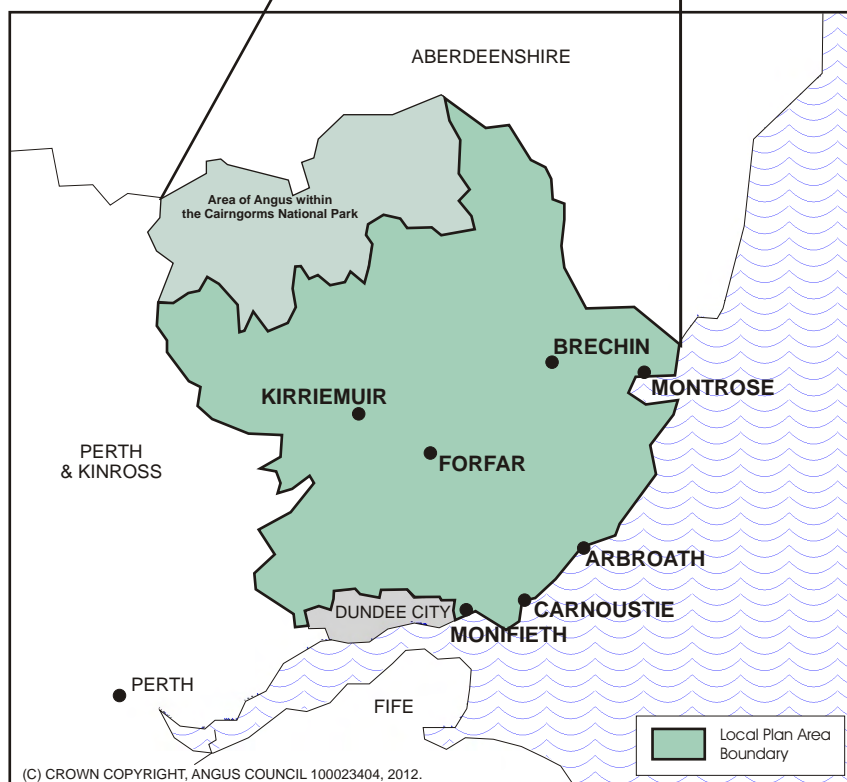
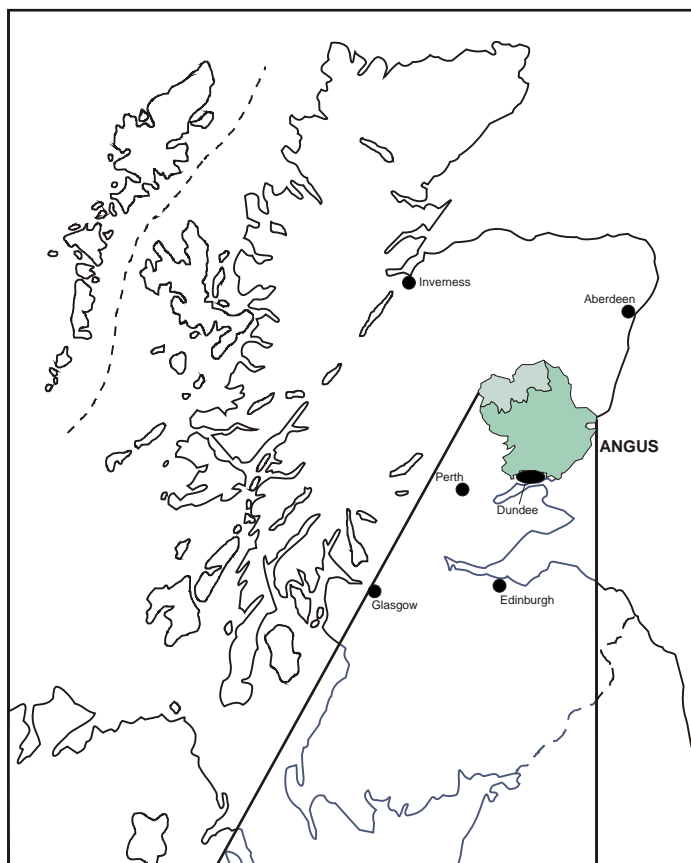
Map 3 National Designations

Map 4 Local Designations

Map 5 Other Considerations

# Angus - Location





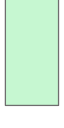
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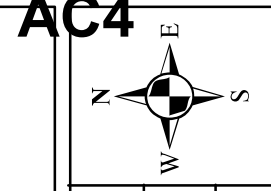
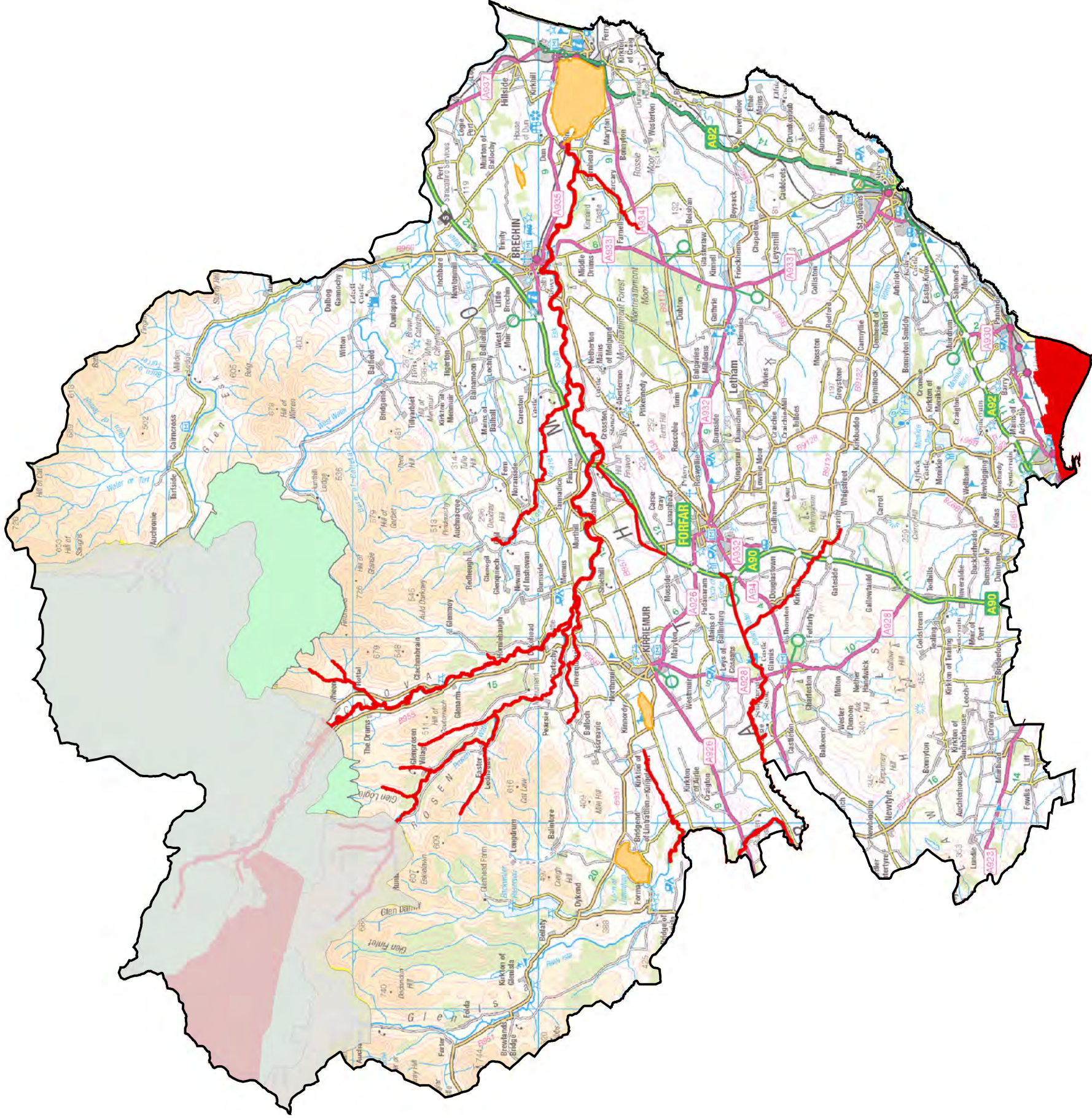


Note: The Angus Local Plan Review excludes that part of northern Angus which lies within the designated boundary of the Cairngorms National Park.



# International Designations

-  Angus Council Boundary
-  Area of Angus within Cairngorms National Park
-  Special Areas of Conservation (SAC)
-  RAMSAR sites
-  Special Protection Areas (SPA)



Infrastructure Services  
 Planning & Transport  
 County Buildings  
 Market Street  
 Forfar  
 DD8 3LG

Map 2 - International Designations

Date Produced: 30/01/2012

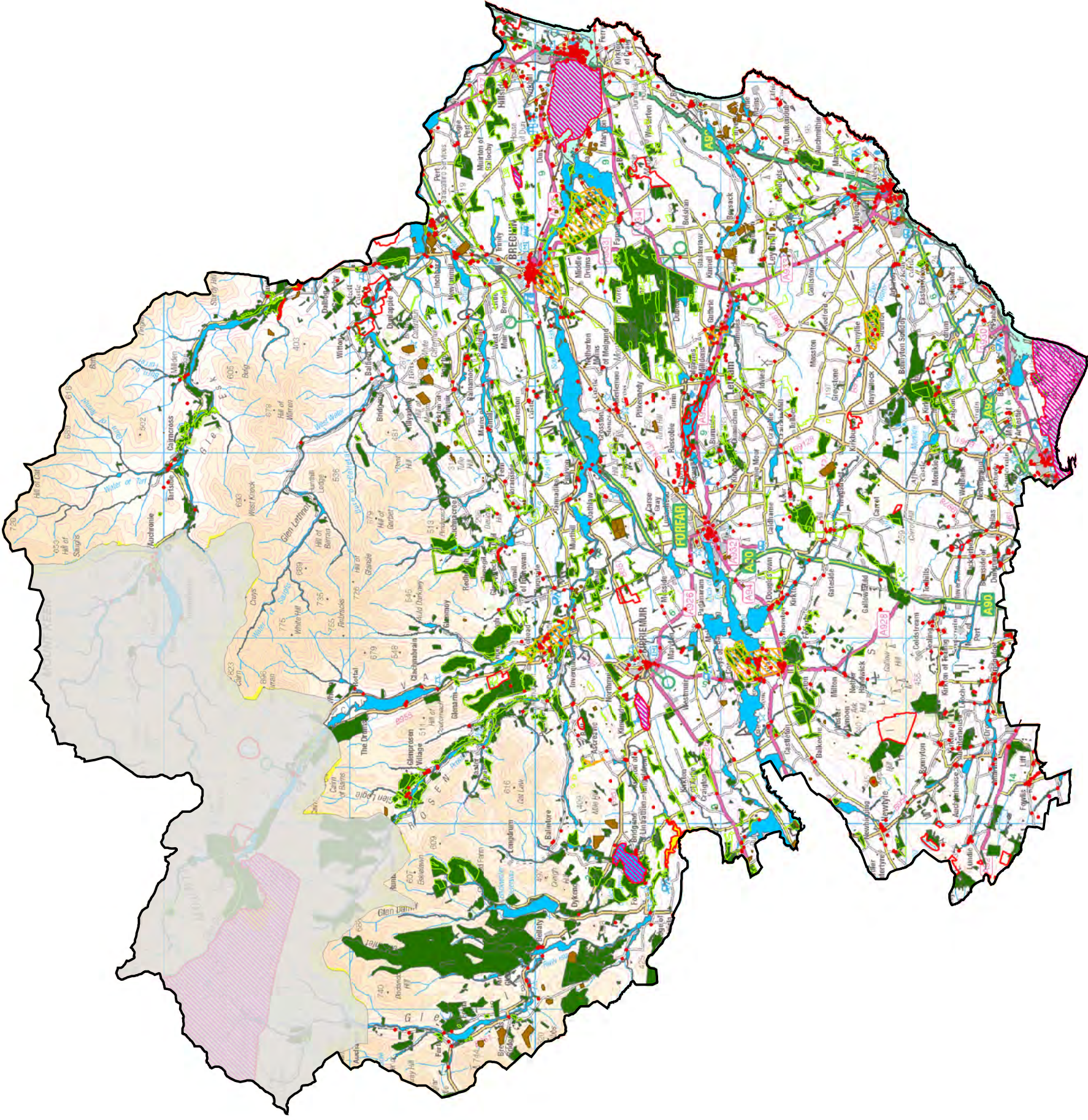
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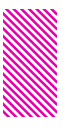



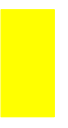





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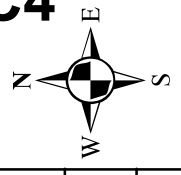
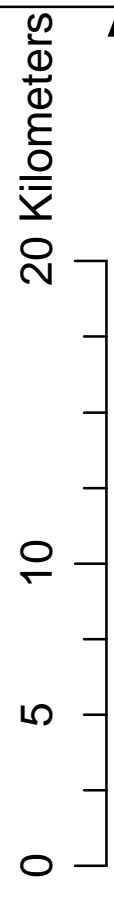


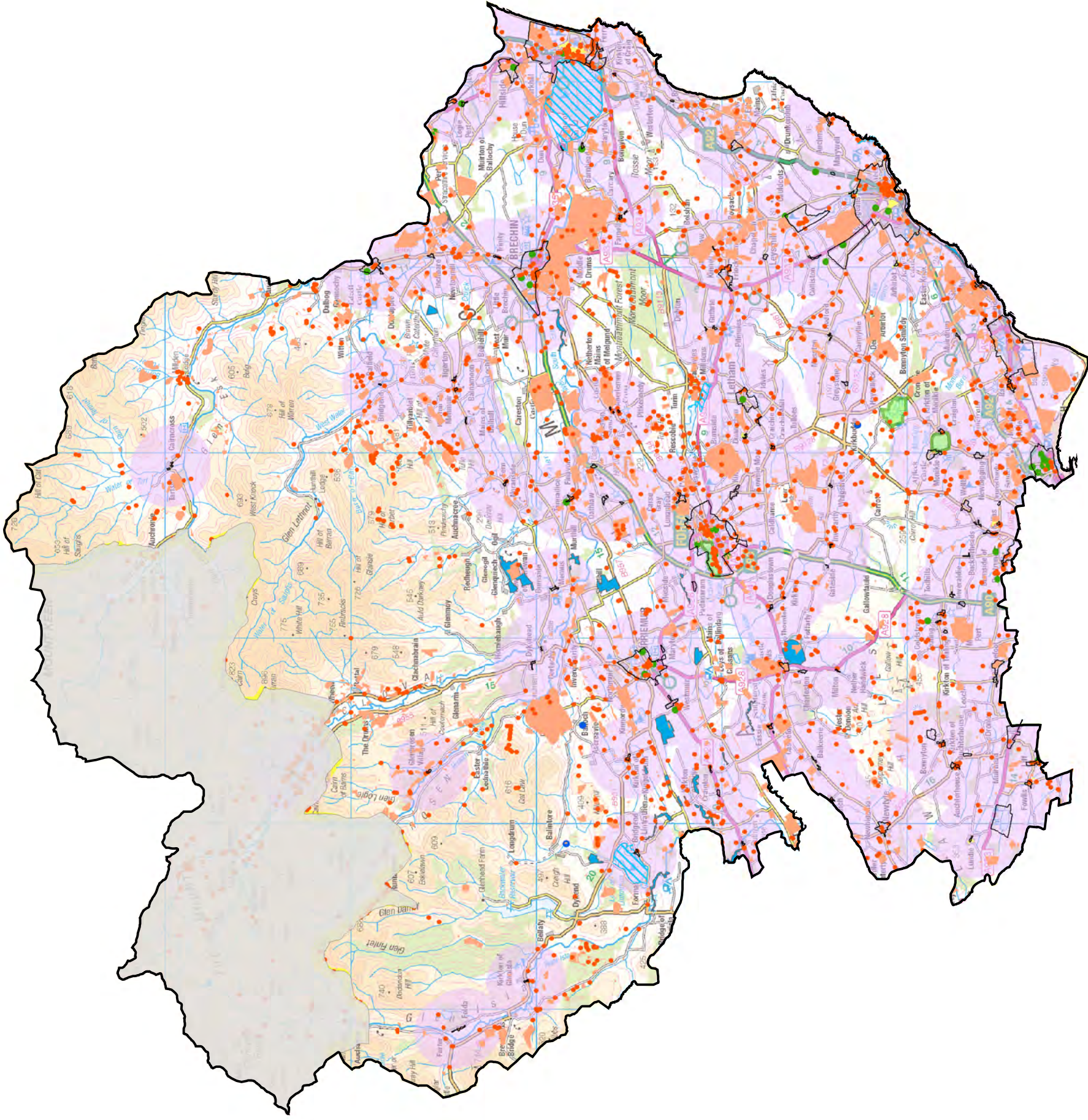
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# National Designations

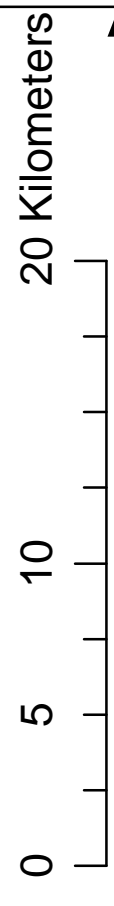
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-  Area of Angus within Cairngorms National Park
-  RSPB Important Bird Areas
-  Historic Scotland Listed Buildings
-  Sites of Special Scientific Interest (SSSI)
-  Historic Scotland Scheduled Ancient Monuments
-  National Nature Reserves (NNR)
-  Scotland Ancient Woodland Inventory
-  Historic Gardens and Designated Landscapes (HGDL)
-  Woodland Map of Scotland
-  200yr SEPA map Coastal Flooding
-  200yr SEPA map Fluvial Flooding


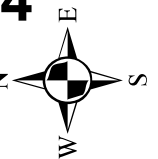


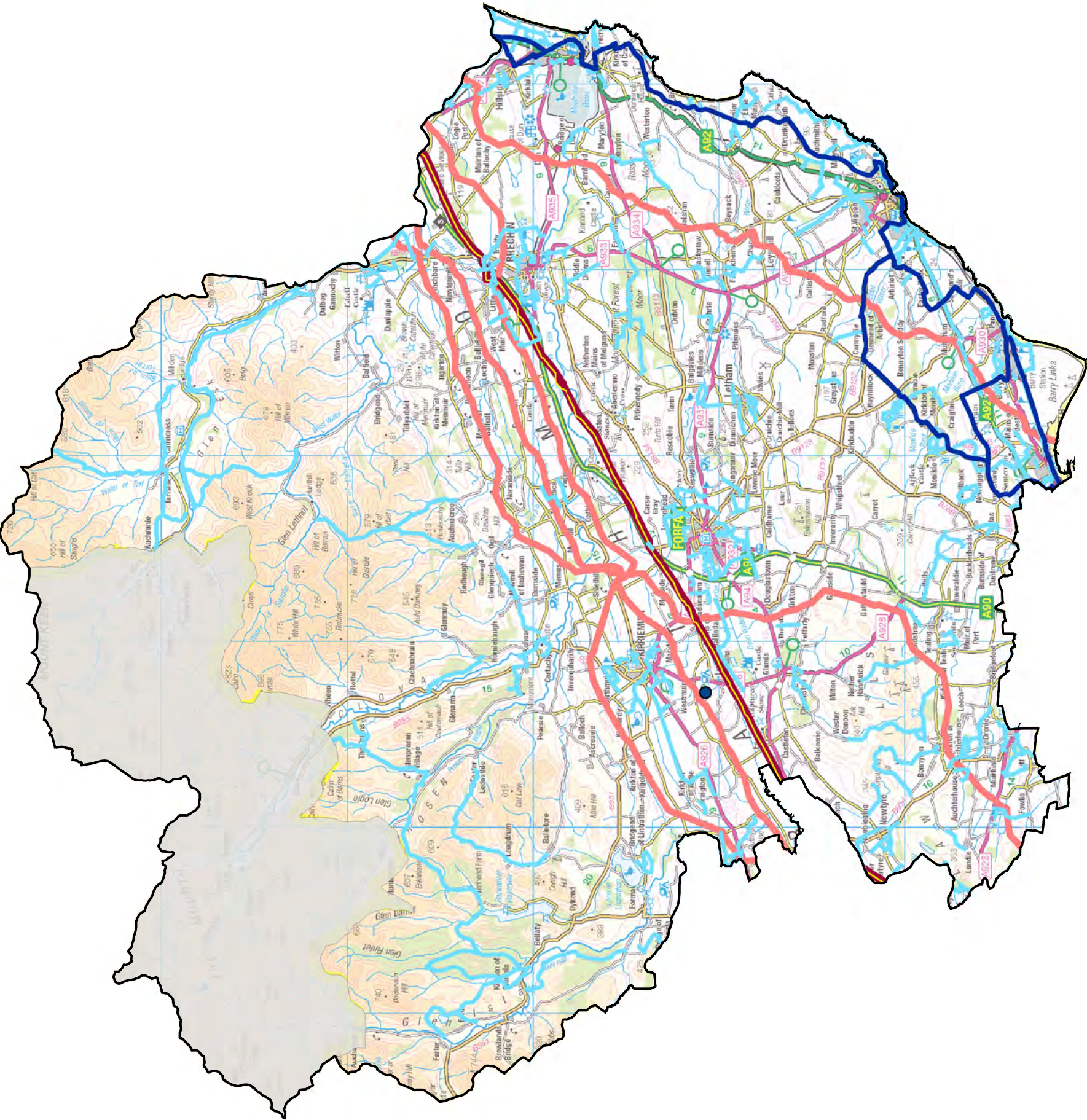


# Local Designations









- Angus Council Boundary
- Area of Angus within Cairngorms National Park
- Development Boundaries
- Scottish Wildlife Trust Reserves
- Archaeological Points
- Country Parks
- Archeological Areas
- Angus Wildlife Sites (Points)
- Angus Wildlife Sites (Areas)
- Tree Preservation Orders (Point)
- Tree Preservation Orders (Polygons)
- Conservation Areas
- Local Nature Reserves
- Development Boundaries Plus 2km

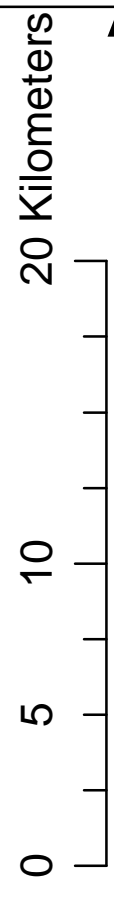


	<b>Map 4 - Local Designations</b>	<b>AC4</b>	
	Infrastructure Services Planning & Transport County Buildings Market Street Forfar DD8 3LG	Date Produced: 30/01/2012 Drawn by: CM Scale: 1:250,000	
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# Other Considerations

-  Angus Council Boundary
-  Area of Angus within Cairngorms National Park
-  Private Airfields
-  National Cycle Network
-  Adopted Core Paths
-  Shell Pipeline
-  BP Pipeline
-  National Grid High Pressure Gas Pipe



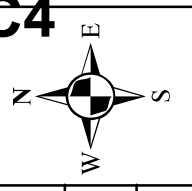
Infrastructure Services  
 Planning & Transport  
 County Buildings  
 Market Street  
 Forfar  
 DD8 3LG

Map 5 - Other Considerations

Date Produced: 30/01/2012

Drawn by: CM

Scale: 1:250,000



AC4

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## Appeal Decision Notice

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Decision by Richard Dent, a reporter appointed by the Scottish Ministers

- Planning appeal reference: PPA-120-2032
- Site address: land north of Over Finlarg Farm, Over Finlarg, Lumley Den, Angus
- Appeal by Polar Energy (Finlarg) Ltd against the failure to give a decision by Angus Council
- Application for planning permission (reference 13/00532/EIAL) dated 7 June 2013
- The development proposed: 5 wind turbines (56m to hub and 80m to blade tip) and ancillary development (Frawney wind farm)
- Drawings: see Schedule 1
- Date of site visit by reporter: 4 December 2013

Date of appeal decision: 13 January 2014

## Decision

I allow the appeal and grant planning permission subject to the 25 conditions set out in Schedule 2. Attention is drawn to the noise limits tables to be read in conjunction with condition 14, the noise guidance notes which relate to conditions 14-21 and the advisory notes which follow Schedule 2.

## Reasoning

1. The determining issues in this case are whether the proposed turbine and ancillary development would result in any unacceptable environmental impacts, including cumulative impacts, or face technical constraints. This assessment must be undertaken in the context of the development plan.
2. The council has accepted that the development would not raise any issues in respect of technical matters. In particular, the council is content that matters relating to noise generation, shadow flicker, aviation, transportation and telecommunications would not present a problem or could be controlled by appropriate conditions. A number of third parties have expressed concern about various technical considerations but those consulted on these matters have raised no objections. In some instances conditions would be required. For example, the Ministry of Defence indicated a need for aviation lighting.

3. I am satisfied that these matters, including noise levels and the potential for shadow flicker, have been appropriately assessed and conclude that the proposal would not be faced with any significant technical constraints.
4. Insofar as natural heritage is concerned, the council has indicated that the provision and implementation of an ecological mitigation strategy along with an environmental monitoring plan would ensure the proposal would not have an adverse impact. I have noted the concern of third parties about potential impacts, particularly on bats and birds. However, as the council points out, Scottish Natural Heritage (SNH) has reviewed the environmental statement and supplementary information, including a bat survey report, and agrees with the ecological and ornithological assessments. SNH has also indicated that the proposal would be unlikely to have a significant effect on the qualifying interests of nearby goose Special Protection Areas and an “appropriate assessment” is not required.
5. I attach weight to the opinion of SNH and conclude that the proposal would not have a significant adverse impact on natural heritage.
6. The council is content that the development would not have a significant adverse impact on the setting of any listed buildings or designed landscapes. Having noted the assessment in the environmental statement, I share this conclusion.
7. Although third parties fear a socio-economic impact, particularly in terms of the tourist industry, the council points out that there is no persuasive evidence to support this claim. The environmental statement indicates that studies of the impact of wind farms on tourism have not shown there to be an adverse impact.
8. I acknowledge the importance of tourism. However, I agree with the council that there is no compelling evidence to suggest the development would be harmful to tourism. Equally, despite the concern of some third parties, I do not believe the wind farm would threaten the wider socio-economic structure of Angus. Indeed, I note the council acknowledges the potential for employment creation.
9. Turning to landscape character impact, I recognise that many third parties cherish the landscape of the Angus countryside. Nevertheless, the site is not the subject of any formal landscape designation. It lies within the “Igneous Hills” landscape character type within which SNH indicates that, subject to careful siting, there is the ability to accommodate wind farm development. In response to an earlier proposal at this location involving turbines up to 100 metres to tip height, SNH considered there would be significantly adverse but generally localised impacts on landscape character. A reduction in height was recommended although SNH has not made a definitive comment on the smaller structures now proposed.
10. The appellant believes the development is in an area of simple, open scale with few landscape features. The proposal would be screened by Finlarg Hill to the west, not exceeding the overall elevation, and there would be no intrusion on principal ridgelines. There are already other large structures with two lines of pylons, one of which is higher up the slope of the hill.

11. The council accepts that from more distant viewpoints the turbines would be broadly in scale with the landscape but, more locally, they would appear large and out of scale. This would lead to domination of the existing landscape features and create a discordant relationship of scale between landscape elements. Accordingly, the turbines would not satisfy SNH guidance on the siting and design of wind farms.

12. I accept that the turbines would have a locally significant adverse impact on landscape character. Indeed, the appellant does not dispute the potential for local impact. However, I do not believe that the size and scale of the development would threaten the wider landscape character type. I concur with the appellant's assessment of the site location and believe that the adverse impact on landscape character would be limited in extent and, overall, would not have a significant impact on the character of either the Igneus Hill type or the adjacent Low Moorland Hills or Dipslope Farmland landscape character types.

13. I am aware that a wind farm development comprising six turbines (no greater than 87 metres to the blade tip) has recently been approved on appeal (DPEA reference PPA-120-2027) at Govals Farm to the north-west of the Over Finlarg Farm site. If constructed, the two developments would have a cumulative impact on landscape character. Because of topography and the additional height of the turbines, I believe the Govals Farm development would be more dominant in the landscape.

14. I have already accepted that the turbines at Over Finlarg Farm would have a locally adverse landscape character impact. Nevertheless, even when read together, I think the two wind farms could be accommodated within the landscape and would not create a cumulatively unacceptable impact. In reaching this conclusion I have taken account of smaller individual turbines in the vicinity and the relative proximity of the existing Ark Hill wind farm but they do not alter my assessment.

15. Clearly the proposed turbines at Over Finlarg Farm would have a significant visual impact, particularly locally. Again the appellant accepts there would be an impact. The council argues that a number of the viewpoints have under-assessed the sensitivity of several locations and receptors. For example, the council considers various A class roads should be assessed as having medium sensitivity rather than medium-low. I agree that medium sensitivity is usually applied to road users and accept that an under-estimation of impact could be the result if a lower category is used.

16. I have noted the council's comments on the visual impact assessment including the detailed comments in respect of viewpoints 2, the A928, 8 and 10, the A90, 9, Carrot Hill, and 11, Balmashanner Hill. Overall, in recognising the criticism of the council, I consider that the proposed turbines would have a significant visual impact in many views. However, when viewed in the wider landscape, the distance from the site would in many cases reduce the impact. In some views, the topography of the site with a backdrop of the Sidlaw Hills would also lessen the impact. Overall, whilst recognising the importance attached to such locations as Carrot Hill, I conclude the level of visual impact would not be such as to warrant the refusal of the development.

17. I have also considered the visual impact cumulatively taking into account, particularly, the recently approved development at Govals Farm. Again topography would be important

and I believe that the Govals Farm turbines, if constructed would have the greater visual impact. On this basis, should the turbines at Over Finlarg Farm also be erected, they would be visually subservient and I do not believe the cumulative visual impact would be such as to merit refusal. Again, although I have noted the Ark Hill wind farm and other smaller turbines in the general vicinity, my conclusion on the cumulative visual impact is unaltered.

18. Residential property is a receptor of high sensitivity in terms of visual impact. The environmental statement identifies 20 properties within two kilometres of the site although only three, Govals Cottage, Nether Finlarg Cottages and, to a lesser degree, Muirside Cottage, are considered to experience a significant effect. The appellant believes that the disposition of the lines of pylons passing either side of the proposed turbines would ensure that there is no fundamental change in the relationship between the properties and the existing “built influences”. I accept that a number of structures in the vicinity including the pylons and a smaller turbine along with more distant telecommunications equipment ensure that the proposed turbines would not constitute entirely new vertical elements in the view.

19. Nevertheless, particularly in the vicinity of Nether Finlarg, I do not believe the existing structures would offset the impact to the extent suggested by the appellant. In my opinion the visual impact would be significant, the nearest turbine being in the order of 800 metres from the properties. As pointed out by third parties, the impact extends to features such as balconies and the garden ground around houses.

20. I have carefully considered the likely level of impact and believe that the scale would not be overwhelming or dominant to the extent that it would become unacceptable. In any event, although the current situation would change significantly, there is not a right to a view or an unchanging outlook. The planning system is not intended to protect views, come what may. I therefore conclude that the visual impact on the properties at Nether Finlarg would not justify withholding permission for the turbines. In reaching this conclusion I have once more taken account of the approved development at Govals Farm which also would be clearly visible to the north-west. However, the cumulative impact would also not be of a level to lead to the refusal of planning permission. I have reached similar conclusions in respect of the other properties identified as being within two kilometres of the development where I believe the significance of the impact would be less than at Nether Finlarg.

21. On the foregoing basis, I conclude that the visual impact of the turbines on residential amenity would not be unacceptable.

22. All in all, I conclude that the proposal would not result in any unacceptable impacts, including cumulative impacts, and would not face any insurmountable technical constraints. In turn, I further conclude that the proposal complies with the provisions of the development plan. In terms of strategic guidance I believe the proposal accords with Policy 6 of TAYplan. In respect of the Angus Local Plan Review, the proposal gains the support in principle of Policy ER34, Renewable Energy Developments, when judged against the specified criteria. The proposal also complies with Policy ER35, Wind Energy Development. Although the council has also referred to Policy S1, Development Boundaries, section (b), and Policy S6, Development Principles, I see no conflict in these respects.



23. These conclusions point to the granting of planning permission and it is therefore necessary to assess material considerations to determine whether any such considerations would justify the rejection of the proposal.

24. In the first instance I have considered the Scottish Government energy policy which requires the equivalent of 100% of Scottish power to be provided by renewable energy sources by 2020 with an interim target of 50% by 2015. The Scottish Government believes onshore wind power will be an important component in reaching these targets. On this basis there is clearly very strong support for the principle of the development. It is not within my remit to consider further the views of those third parties who question the very basis of wind generated electricity in terms of either efficiency or cost.

25. I also do not accept the suggestion that the renewable energy contribution of the proposed wind farm to the target would not be worthwhile. Even a single turbine provides a contribution and the installed capacity of the five turbines proposed would offer a meaningful input to the total. The environmental statement indicates the potential generation of 9,250 megawatt hours of electricity a year which could displace 99,500 tonnes of carbon dioxide over the lifetime of the wind farm.

26. Insofar as Scottish Planning Policy is concerned, my conclusions in terms of impacts are such that the locational qualifications of the guidance are fulfilled. Equally, I believe that other guidance, including that prepared by SNH and the council's Implementation Guide for Renewable Energy Proposals, is met by the proposal.

27. I have noted the significant number of objections submitted by third parties. Various valid matters have been raised and these I have considered in the context of my assessment of the proposal. Other issues, including the claimed impact on property values are not relevant to the planning consideration of the appeal. I have noted the concern expressed about procedure but I have no reason to believe that the appeal has not been processed in accordance with the regulations.

28. Some criticism of presentational material has been made but I was able to gain first hand knowledge of the appeal site and the surrounding areas by means of a site inspection. Substantive evidence has not been provided to support claims in respect of threats to human health and animal welfare. A condition has been included to establish procedures for interruptions to private water supplies – a concern of some – although the appellants believe such an eventuality to be remote.

29. The council has referred to a number of other appeals but I agree with the appellant that, although the general principles might bear a degree of similarity, the individual aspects of any particular proposal are important in the determination of an appeal.

30. No material considerations lead me to alter my conclusions in respect of the conformity of the proposal to the provisions of the development plan. This leads me to allow the appeal and grant planning permission. The permission is subject to the conditions contained in Schedule 2. Subject to some minor adjustments, these conditions are, for the most part, essentially related to those commended by the council and commented on by the appellant. I have made some amendments:

- in respect of condition 3, I have accepted the council’s suggestion of a six-month period but allowed the possibility of an extension;
- condition 7 is included as proposed by the council although the reason has been amended;
- condition 9 has been amended to require details to be approved by the planning authority;
- condition 13 has been adjusted to ensure the agreement in writing of the planning authority for the financial measures proposed;
- condition 14 has been amended to reflect the suggestion adjustment by the appellant as this appears to have merit;
- an addition has been made to condition 15 to allow for the possibility of an alternative method of data provision, again as suggested by the appellant;
- condition 18 has been amended to reflect the suggestions of the appellant as these appear to offer a reasonable approach to the determination and application of a protocol;
- condition 23 is retained as proposed by the council on the basis that there is provision for allowing micro-siting closer to Govals Cottage but only subject to the written approval of the planning authority;
- condition 24 has been amended to reflect the likelihood of there being no shadow flicker impact.

31. The claim for an award of expenses by the appellant is dealt with in a separate notice.

*Richard Dent*  
Reporter



**SCHEDULE 1**

## DRAWINGS

Figure 1-1: Site Location, drawing 4603/LP/055b

Figure 3-2: Site Layout, drawing 4603/SL/049b

The Frawney Wind Farm Environmental Statement, June 2013 includes the following drawings:

Figure 3-3: Typical Turbine and Meteorological Mast

Figure 3-4: Typical Foundations, Construction Compound and Installation Area

Figure 3-5: Typical Control building/Substation

Figure 3-6: Typical Access Track and Cable Trench

**SCHEDULE 2**

## CONDITIONS

1. The wind turbines hereby approved shall be removed from the site no later than 26 years after the date when electricity is first generated unless otherwise approved by the planning authority through the grant of a further planning permission following submission of an application. Written confirmation of the commencement date of electricity generation shall be provided to the planning authority within one month of that date.

*Reason: to limit the permission to the expected operational lifetime of the wind farm and to allow for the restoration of the site.*

2. At least two months prior to the commencement of any works in connection with the planning permission hereby approved, the following shall be submitted to and approved in writing by the planning authority:

(i) precise location, size and external finish materials of the control building; precise location of access tracks and cable routes; and precise details of any other associated plant or equipment;

(ii) details of the temporary site compound and temporary storage area, any portable cabins, lighting and fencing to be used during the construction period and a scheme for their subsequent removal. Within 12 months of the commissioning of the wind farm, all such temporary structures, together with soil and materials stockpiles shall be removed from the site and the ground fully reinstated in accordance with the approved details;

(iii) a survey of existing radio and television signal reception in the area against which to assess the impact of the wind turbines. Thereafter, within six weeks of the first wind turbine becoming operational, and subsequently at the reasonable request of the planning authority following receipt of a complaint, a report assessing the effect of the turbines on local radio or television signal reception ('the report') shall be submitted to the planning authority. If

any impact on radio or television reception signal is detected, the report shall include detailed measures to overcome reception interference. In the event that interference with radio or television signals occurs, the operation of the turbines shall cease until measures to mitigate any such interference are implemented. Should such measures fail to address the radio or television interference the operation of the turbines shall cease until otherwise approved in writing by the planning authority;

(iv) a scheme for the decommissioning and restoration of the site including aftercare measures. The scheme shall set out the means of reinstating the site to agricultural land following the removal of the components of the development. The applicants shall obtain written confirmation from the planning authority that all decommissioning has been completed in accordance with the approved plan and (unless otherwise agreed in writing by the planning authority) works for removal of site apparatus shall be completed within twelve months of the final date electricity is generated at the site and in any case before the expiry of the time period set by condition 1 of this planning permission;

(v) a full, site specific Environmental Management and Monitoring Plan (EMMP), incorporating a Construction Method Statement (CMS) and a Site Waste Management Plan (SWMP), which must be approved in writing by the planning authority, in consultation with the Scottish Environment Protection Agency and Scottish Natural Heritage;

(vi) a full, site specific Ecological Mitigation Strategy (EMS) which must be approved in writing by the planning authority, in consultation with and Scottish Natural Heritage.

The development shall be undertaken in full accordance with the approved plans, statements and strategies.

*Reason: (i) in order to ensure any environmental impacts associated with ancillary development are appropriately mitigated; (ii) in order to ensure that any impacts associated with the siting of construction compounds are fully considered; (iii) in order to ensure any adverse impacts on television reception resulting from the development are addressed; (iv) to ensure that the site is satisfactorily restored following the end of the operational life of the development; (v) in order to minimise environmental risk from activities on site; (vi) to control pollution of air, land and water.*

3. Unless otherwise agreed in writing by the planning authority, should any turbine cease to generate electricity for a period of six months it shall be removed and the site of the turbine be restored to its previous condition in accordance with the restoration scheme approved under condition 2(iv) above. The restoration works shall be completed no later than twelve months following the date that the turbine has ceased to generate electricity or as otherwise agreed in writing by the planning authority.

*Reason: in order to ensure that any turbine that is no longer operational is removed within a reasonable period (unless otherwise agreed) and the land restored to its previous condition in the interests of the visual amenity of the area.*

4. Prior to the commencement of development, the applicant shall provide the Ministry of Defence (Defence Estates – Safeguarding) and NATS with the following information, a copy

of which shall also be submitted to the planning authority:

- proposed date of commencement of construction;
- estimated date of completion of construction;
- maximum height of any construction equipment;
- the latitude and longitude of the structures.

*Reason: in the interests of aviation safety.*

5. No development shall commence unless and until an Air Traffic Control Radar Mitigation Scheme to address the impact of the wind farm upon air safety has been submitted to and approved in writing by the planning authority.

The Air Traffic Control Radar Mitigation Scheme is a scheme designed to mitigate the impact of the development upon operation of the primary surveillance radar at RAF Leuchars (“the Radar”) and the air traffic control operations of the Ministry of Defence (MoD) which is reliant upon the Radar. The Air Traffic Control Radar Mitigation Scheme shall set out the appropriate measures to be implemented to mitigate the impact of the development on the Radar and shall be in place for the operational life of the development provided the Radar remains in operation.

No turbines shall become operational unless and until all measures required by the approved Air Traffic Control Radar Mitigation Scheme to be put into effect prior to the operation of the turbines have been implemented to the approval and written confirmation of the planning authority. The development shall thereafter be operated fully in accordance with the approved Air Traffic Control Radar Mitigation Scheme.

*Reason: in the interests of aviation safety.*

6. The developer shall install MoD-accredited 25 candela omni-directional aviation lighting OR infrared warning lighting with an optimised flash pattern of 60 flashes per minute of 200ms to 500ms duration at the highest practicable point on all turbines. Each turbine shall be erected with this lighting remaining operational throughout the duration of this consent.

*Reason: in the interests of aviation safety.*

7. Except as otherwise provided for and amended by the terms of this permission; the developer shall construct and operate the development in accordance with the provisions of the planning application, the Frawney Wind Farm Environmental Statement, June 2013, by Atmos Consulting, and all approved plans (see Schedule 1).

*Reason: in order to ensure that the development is undertaken as approved and therefore minimising environmental impacts.*

8. Prior to the commencement of any works in connection with this permission a Traffic Management Plan shall be submitted to and approved in writing by the planning authority. Thereafter the development shall be undertaken in accordance with the approved details of the plan. The Traffic Management Plan shall include:

- (i) the routing for abnormal loads as agreed with the council as Roads Authority in liaison with Transport Scotland;
- (ii) the type and volume of vehicles to be utilised in the delivery of construction materials;
- (iii) assessment of the suitability of the proposed routes, including bridge capacities, to accommodate the type and volume of traffic to be generated by the development. The assessment shall include details of swept path analyses and include, as appropriate, DVD and/or video route surveys;
- (iv) mitigation measures on public roads, including carriageway widening, junction alteration, associated drainage works, protection to public utilities, temporary or permanent traffic management signing and temporary relocation or removal of other items of street furniture;
- (v) the restriction of delivery traffic to agreed routes;
- (vi) the timing of construction traffic to minimise impacts on local communities, particularly at school start and finish times, during refuse collection, at weekends and during community events;
- (vii) a code of conduct for HGV drivers, including provision to allow queuing traffic to pass;
- (viii) liaison with the Roads Authority regarding winter maintenance;
- (ix) contingency procedures, including names and telephone numbers of persons responsible for dealing with vehicle breakdowns;
- (x) a dust and dirt management strategy, including sheeting and wheel cleaning prior to departure from the site;
- (xi) the location, design, erection and maintenance of warning or information signs for the duration of the works at site accesses and crossovers on private haul roads or tracks used by construction traffic and pedestrians, cyclists or equestrians;
- (xii) contingencies for unobstructed access for emergency services;
- (xiii) co-ordination with other major commercial users of the public roads on the agreed routes in the vicinity of the site;
- (xiv) traffic management in the vicinity of the temporary construction compounds;
- (xv) the provision of data from traffic counters, installed at locations and at intervals to be agreed with the Roads Authority, at the applicant's expense;
- (xvi) arrangements for the monitoring, reviewing and reporting on the implementation of the approved plan; and

(xvii) procedures for dealing with breaches or non-compliance with the approved plan.

A recognised quality assurance traffic management consulting company must undertake any additional signing or temporary traffic control measures deemed necessary and approved by Transport Scotland before delivery commences. Thereafter the Traffic Management Plan shall be implemented in accordance with the approved details.

*Reason: to minimise interference and maintain the safety and free flow of traffic on the public road network (including the A90 trunk road) as a result of the traffic moving to and from the development; to ensure that the transportation will not have any detrimental effect on the road and structures along the route. All in the interest of road safety.*

9. That prior to any construction works being undertaken relating to the wind turbines, the surface of the existing access track shall be reconstructed for a distance of at least 15 metres from its junction with the public road (A928). Details shall be submitted for the written approval of the planning authority.

*Reason: to provide a safe and satisfactory standard of access and to retain an adequate level of residential amenity at Over Finlurg.*

10. The developer shall secure the implementation of an archaeological watching brief, to be carried out by an archaeological organisation acceptable to the Aberdeenshire Council Archaeology Service on behalf of the planning authority, during any groundbreaking and development work associated with the turbine foundations, access tracks, or construction compound. The retained archaeological organisation shall be afforded access at all reasonable times and allowed to record and recover items of interest and finds. Terms of Reference for the watching brief will be supplied by the Aberdeenshire Council Archaeology Service. The name of the archaeological organisation retained by the developer shall be provided to the planning authority and to the Aberdeenshire Council Archaeology Service in writing not less than 14 days before development commences.

*Reason: to allow the recording and/or recovery of items of archaeological interest.*

11. For the avoidance of doubt, no borrow pits shall be formed on site unless otherwise approved through the express grant of planning permission.

*Reason: in order that any environmental impacts associated with the formation of borrow pits can be considered and mitigated.*

12. That unless otherwise first approved in writing by the planning authority, the turbines hereby approved shall: -

(i) all rotate in the same direction – that is, all clockwise or anticlockwise;

(ii) have no symbols, signs, logos or other lettering by way of advertisement displayed on any part of the wind turbine structure;

(iii) not be illuminated other than for the purposes of aviation safety;

(iv) shall be finished in a non-reflective semi-matt pale grey colour, and that the colour shall not be altered thereafter unless previously approved in writing by the planning authority.

*Reason: in the interests of the visual amenity of the area.*

13. Before the start of the development, the developer shall provide to the planning authority details of a bond or other financial provision which it is proposed to put in place to cover all decommissioning and site restoration costs. Work shall not commence on the site until the developer has provided documentary evidence that the proposed bond or other financial provision is in place and written confirmation has been given by the planning authority that proposed financial measures are satisfactory. The developer shall ensure that the approved bond or other financial provision is maintained throughout the duration of this permission.

*Reason: to ensure that there are sufficient funds available throughout the life of the development to carry out the full restoration of the site.*

14. The rating level of noise immissions from the combined effects of the wind turbines hereby approved (including the application of any tonal penalty) when determined in accordance with the attached Guidance Notes shall not exceed, at any property lawfully existing at the date of this planning permission, the LA90 dB (A) levels, shown in tables A & B during the respective periods described in these tables. Where there is more than one property at a location the noise limits apply to all properties at that location.

Where the occupiers of a property have a financial interest in the development, the absolute lower limit of the above noise levels may be increased to 45dB (A).

For the avoidance of doubt “financial interest” is defined as either:

(a) owning, or having a share in ownership, of the land on which the turbines are to be sited;

(b) leasing the land on which the turbines are sited; which lease shall be for a period exceeding 20 years; or

(c) being a share holder or owner of the applicant company (or their successors as operators of the wind turbine)

*Reason: in order to safeguard the residential amenity of noise sensitive property located close to the development.*

15. The wind farm operator shall continuously record and log power production, wind speed and wind direction, all in accordance with Guidance Note 1(d). These data shall be retained for a period of not less than 24 months. The wind farm operator shall provide this information in the format set out in Guidance Note 1(e) to the planning authority on request, within 14 days of receipt in writing of such a request. Subject to the written approval of the



planning authority, data may be provided by the operator in conjunction with an agreement with the turbine manufacturers.

*Reason: in order to safeguard the residential amenity of noise sensitive property located close to the development.*

16. No electricity shall be exported until the wind farm operator has submitted to the planning authority for written approval, a list of proposed independent consultants who may undertake noise compliance measurements in accordance with this permission. Amendments to the list of approved consultants shall be made only with the prior written approval of the planning authority.

*Reason: in order to facilitate noise compliance measurements.*

17. Within 21 days of receipt of a written request from the planning authority following a complaint from an occupant of a dwelling alleging noise disturbance at that dwelling, the wind farm operator shall, at its own expense, employ a consultant approved by the planning authority (under condition 16) to assess the level of noise immissions from the wind farm at the complainant's property in accordance with the procedures described in the attached Guidance Notes. The written request from the planning authority shall set out at least the date, time and location that the complaint relates to and any identified atmospheric conditions, including wind direction, and include a statement as to whether, in the opinion of the planning authority, the noise giving rise to the complaint contains or is likely to contain a tonal component.

*Reason: in order to safeguard the residential amenity of noise sensitive property located close to the development.*

18. The assessment of the rating level of noise immissions shall be undertaken in accordance with an assessment protocol that shall previously have been submitted to and approved in writing by the planning authority prior to first electricity generation. The protocol shall remain in place throughout the lifetime of the development unless otherwise agreed in writing by the planning authority. The protocol shall include the proposed measurement locations for each of the properties detailed in Tables A and B identified in accordance with the Guidance Notes. Where noise monitoring is proposed at locations not detailed in the protocol, these locations shall be agreed with the planning authority prior to measurements being undertaken.

The protocol should also consider the order and method of investigation where noise giving rise to the complaint contains or is likely to contain a tonal component, and also the range of meteorological and operational conditions (which shall contain a range of wind speeds, wind directions, power generation and times of day) to determine the assessment of rating level of noise immissions.

*Reason: in order to safeguard the residential amenity of noise sensitive property located close to the development.*

19. Where a dwelling to which a complaint is related is not listed in the tables attached to

these conditions, the wind farm operator shall submit to the planning authority for written approval proposed noise limits to be adopted at the complainant's dwelling for compliance checking purposes. The proposed noise limits are to be those limits selected from the Tables specified for a listed location which the independent consultant considers as being likely to experience the most similar background noise environment to that experienced at the complainant's dwelling. The rating level of noise immissions resulting from the combined effects of the wind turbines when determined in accordance with the attached Guidance Notes shall not exceed the noise limits approved in writing by the planning authority for the complainant's dwelling.

*Reason: in order to safeguard the residential amenity of noise sensitive property located close to the development.*

20. The wind farm operator shall provide to the planning authority the independent consultant's assessment of the rating level of noise immissions undertaken in accordance with the Guidance Notes within two months of the date of the written request of the planning authority for compliance measurements to be made undertaken, unless the time limit is extended in writing by the planning authority. The assessment shall include all data collected for the purposes of undertaking the compliance measurements, such data to be provided in the format set out in Guidance Note 1(e). The instrumentation used to undertake the measurements shall be calibrated in accordance with Guidance Note 1(a) and certificates of calibration shall be submitted to the planning authority with the independent consultant's assessment of the rating level of noise immissions.

*Reason: in order to safeguard the residential amenity of noise sensitive property located close to the development.*

21. Where a further assessment of the rating level of noise immissions from the wind farm is required pursuant to Guidance Note 4(c), the wind farm operator shall submit a copy of the further assessment within 21 days of submission of the independent consultant's assessment pursuant to paragraph (d) above unless the time limit has been extended in writing by the planning authority.

*Reason: in order to safeguard the residential amenity of noise sensitive property located close to the development.*

22. Prior to the commencement of development the make and model of the turbine selected for use in the development shall be submitted for the written approval of the planning authority. In the event that any turbine other than the candidate turbine is selected for use the developer's submission shall be accompanied by any supporting information considered necessary by the planning authority. Once approved, all turbines shall be operated and maintained in accordance with the approved specification.

*Reason: for clarification and the avoidance of misunderstanding and because the technical assessment of the planning application has been based on this specific type of turbine.*

23. No wind turbine shall be micro sited any nearer to Govals Cottage than is shown in Figure 3-2 Site layout in Volume 3 of the Environmental Statement dated June 2013 unless

approved in writing by the planning authority.

*Reason: in the interest of residential amenity.*

24. Prior to the commencement of development a mitigation scheme to address any impacts caused by shadow flicker shall be submitted for the written approval of the planning authority. Alternatively, if following the any micro-siting adjustments to the turbine locations it is determined that shadow flicker impacts will not occur, appropriate confirmation shall be submitted to the planning authority for written approval.

*Reason: in the interests of residential amenity.*

25. In the event of a pollution incident or interruption to supply, caused by the wind farm development, affecting or likely to affect any private water supply, the wind farm operator shall provide an immediate temporary supply to those affected until permanent mitigation can be effected to the satisfaction of the planning authority. Any replacement supply shall be of a quality to meet the private water supplies (Scotland) Regulations 1992 or any other appropriate Regulation in force at the time. In any case, a permanent replacement supply or mitigation measures shall be provided no later than one month after the supply is first affected.

*Reason: in order to protect any private water supplies that may be affected by the development, in the interests of residential amenity.*

**Condition 14 tables:****Noise Limits Table A: Between 2300hrs – 0700hrs**

Location	Standardised 10m Height Wind Speed (m/s)									
	4	5	6	7	8	9	10	11	12	
Govals Farmhouse	38	38	38	38	39	42	44	47	49	
Govals Cottage	38	38	38	38	39	42	44	47	49	
1-4 farm cottages, Nether Finlarg	38	38	38	38	39	41	44	46	49	
Nether Finlarg farmhouse	38	38	38	38	39	41	44	46	49	
Over Finlarg (bungalow)	38	38	38	38	41	45	48	52	55	
Over Finlarg (old farmhouse)	38	38	38	38	41	45	48	52	55	
1-2 Over Finlarg Cottages	38	38	38	38	41	45	48	52	55	
Over Finlarg (new farmhouse)	38	38	38	38	41	45	48	52	55	

**Noise Limits Table B: At all other times**

Location	Standardised 10m Height Wind Speed (m/s)									
	4	5	6	7	8	9	10	11	12	
Govals Farmhouse	37	37	37	38	39	41	43	46	49	
Govals Cottage	37	37	37	38	39	41	43	46	49	
1-4 farm cottages, Nether Finlarg	40	40	40	41	39	41	46	48	51	
Nether Finlarg farmhouse	40	40	40	41	39	41	46	48	51	
Over Finlarg (bungalow)	39	39	40	42	45	48	51	54	56	
Over Finlarg (old farmhouse)	39	39	40	42	45	48	51	54	56	
1-2 Over Finlarg Cottages	39	39	40	42	45	48	51	54	56	
Over Finlarg (new farmhouse)	39	39	40	42	45	48	51	54	56	

**Guidance Notes for Noise Conditions (Conditions 14-21)**

These notes are to be read with and form part of the noise condition. They further explain the condition and specify the methods to be employed in the assessment of complaints about noise immissions from the wind farm. The rating level at each integer wind speed is the arithmetic sum of the wind farm noise level as determined from the best-fit curve described in Guidance Note 2 of these Guidance Notes and any tonal penalty applied in accordance with Guidance Note 3. Reference to ETSU-R-97 refers to the publication entitled “The Assessment and Rating of Noise from Wind Farms” (1997) published by the Energy Technology Support Unit (ETSU) for the Department of Trade and Industry (DTI).

**Guidance Note 1**

(a) Values of the LA90,10 minute noise statistic should be measured at the complainant’s property, using a sound level meter of EN 60651/BS EN 60804 Type 1, or BS EN 61672 Class 1 quality (or the equivalent UK adopted standard in force at the time of the measurements) set to measure using the fast time weighted response as specified in BS

EN 60651/BS EN 60804 or BS EN 61672-1 (or the equivalent UK adopted standard in force at the time of the measurements). This should be calibrated in accordance with the procedure specified in BS 4142: 1997 (or the equivalent UK adopted standard in force at the time of the measurements). Measurements shall be undertaken in such a manner to enable a tonal penalty to be applied in accordance with Guidance Note 3.

(b) The microphone should be mounted at 1.2 – 1.5 metres above ground level, fitted with a two-layer windshield or suitable equivalent approved in writing by the planning authority, and placed outside the complainant’s dwelling. Measurements should be made in “free field” conditions. To achieve this, the microphone should be placed at least 3.5 metres away from the building facade or any reflecting surface except the ground at the approved measurement location. In the event that the consent of the complainant for access to his or her property to undertake compliance measurements is withheld, the wind farm operator shall submit for the written approval of the planning authority details of the proposed alternative representative measurement location prior to the commencement of measurements and the measurements shall be undertaken at the approved alternative representative measurement location.

(c) The LA90, 10 minute measurements should be synchronised with measurements of the 10-minute arithmetic mean wind and operational data logged in accordance with Guidance Note 1(d), including the power generation data from the turbine control systems of the wind farm.

(d) To enable compliance with the conditions to be evaluated, the wind farm operator shall continuously log arithmetic mean wind speed in metres per second and wind direction in degrees from north at hub height for each turbine and arithmetic mean power generated by each turbine, all in successive 10-minute periods. Unless an alternative procedure is previously agreed in writing with the planning authority, this hub height wind speed, averaged across all operating wind turbines, shall be used as the basis for the analysis. All 10 minute arithmetic average mean wind speed data measured at hub height shall be ‘standardised’ to a reference height of 10 metres as described in ETSU-R-97 at page 120 using a reference roughness length of 0.05 metres. It is this standardised 10 metre height wind speed data, which is correlated with the noise measurements determined as valid in accordance with Guidance Note 2, such correlation to be undertaken in the manner described in Guidance Note 2. All 10-minute periods shall commence on the hour and in 10- minute increments thereafter.

(e) Data provided to the planning authority in accordance with the noise condition shall be provided in comma separated values in electronic format.

(f) A data logging rain gauge shall be installed in the course of the assessment of the levels of noise immissions. The gauge shall record over successive 10-minute periods synchronised with the periods of data recorded in accordance with Note 1(d).

## Guidance Note 2

(a) The noise measurements shall be made so as to provide not less than 20 valid data points as defined in Guidance Note 2 (b)

(b) Valid data points are those measured in the conditions specified in the agreed written protocol under paragraph (d) of the noise condition, but excluding any periods of rainfall measured in the vicinity of the sound level meter. Rainfall shall be assessed by use of a rain gauge that shall log the occurrence of rainfall in each 10 minute period concurrent with the measurement periods set out in Guidance Note 1. In specifying such conditions the planning authority shall have regard to those conditions which prevailed during times when the complainant alleges there was disturbance due to noise or which are considered likely to result in a breach of the limits.

(c) For those data points considered valid in accordance with Guidance Note 2(b), values of the LA90, 10 minute noise measurements and corresponding values of the 10- minute wind speed, as derived from the standardised ten metre height wind speed averaged across all operating wind turbines using the procedure specified in Guidance Note 1(d), shall be plotted on an XY chart with noise level on the Y-axis and the standardised mean wind speed on the X-axis. A least squares, “best fit” curve of an order deemed appropriate by the independent consultant (but which may not be higher than a fourth order) should be fitted to the data points and define the wind farm noise level at each integer speed.

### Guidance Note 3

(a) Where, in accordance with the approved assessment protocol, noise immissions at the location or locations where compliance measurements are being undertaken contain or are likely to contain a tonal component, a tonal penalty is to be calculated and applied using the following rating procedure.

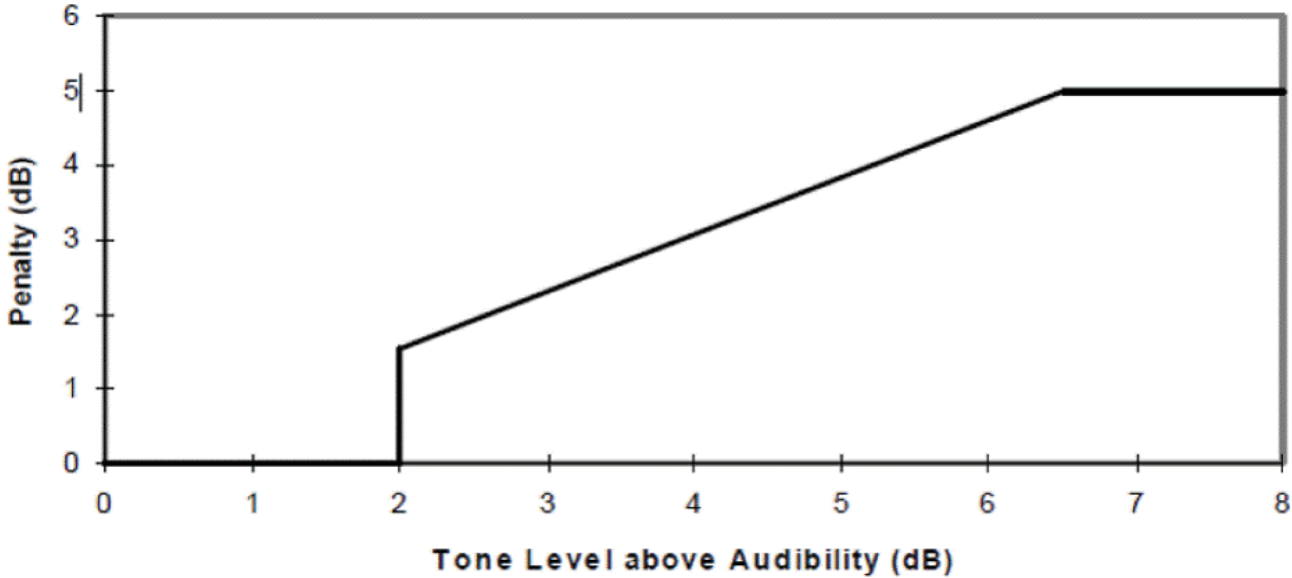
(b) For each 10 minute interval for which LA90, 10 minute data have been determined as valid in accordance with Guidance Note 2 a tonal assessment shall be performed on noise immissions during 2 minutes of each 10 minute period. The 2 minute periods should be spaced at 10 minute intervals provided that uninterrupted uncorrupted data are available (“the standard procedure”). Where uncorrupted data are not available, the first available uninterrupted clean 2 minute period out of the affected overall 10 minute period shall be selected. Any such deviations from the standard procedure, as described in Section 2.1 on pages 104-109 of ETSU-R-97, shall be reported.

(c) For each of the 2 minute samples the tone level above or below audibility shall be calculated by comparison with the audibility criterion given in Section 2.1 on pages 104-109 of ETSU-R-97.

(d) The tone level above audibility shall be plotted against wind speed for each of the 2 minute samples. Samples for which the tones were below the audibility criterion or no tone was identified, a value of zero audibility shall be used.

(e) A least squares “best fit” linear regression line shall then be performed to establish the average tone level above audibility for each integer wind speed derived from the value of the “best fit” line at each integer wind speed. If there is no apparent trend with wind speed then a simple arithmetic mean shall be used. This process shall be repeated for each integer wind speed for which there is an assessment of overall levels in Guidance Note 2.

(f) The tonal penalty is derived from the margin above audibility of the tone according to the figure below.



**Guidance Note 4**

(a) If a tonal penalty is to be applied in accordance with Guidance Note 3 the rating level of the turbine noise at each wind speed is the arithmetic sum of the measured noise level as determined from the best fit curve described in Guidance Note 2 and the penalty for tonal noise as derived in accordance with Guidance Note 3 at each integer wind speed within the range specified by the planning authority in its written protocol under paragraph (d) of the noise condition.

(b) If no tonal penalty is to be applied then the rating level of the turbine noise at each wind speed is equal to the measured noise level as determined from the best-fit curve described in Guidance Note 2.

(c) In the event that the rating level is above the limit(s) set out in the Tables attached to the noise conditions or the noise limits for a complainant’s dwelling, the independent consultant shall undertake a further assessment of the rating level to correct for background noise so that the rating level relates to wind turbine noise immission only.

(d) The wind farm operator shall ensure that all the wind turbines in the development are turned off for such period as the independent consultant requires undertaking the further assessment. The further assessment shall be undertaken in accordance with the following steps:

(e). Repeating the steps in Guidance Note 2, with the wind farm switched off, and determining the background noise (L3) at each integer wind speed within the range requested by the local planning authority in its written request and the approved protocol.

(f) The wind farm noise (L1) at this speed shall then be calculated as follows where L2 is



the measured level with turbines running but without the addition of any tonal penalty:

$$L_1 = 10 \log \left[ 10^{L_2/10} - 10^{L_3/10} \right]$$

(g) The rating level shall be re-calculated by adding arithmetically the tonal penalty (if any is applied in accordance with Note 3) to the derived wind farm noise L1 at that integer wind speed.

(h) If the rating level after adjustment for background noise contribution and adjustment for tonal penalty (if required in accordance with note 3 above) at any integer wind speed lies at or below the values set out in the Tables attached to the conditions or at or below the noise limits approved by the planning authority for a complainant's dwelling then no further action is necessary. If the rating level at any integer wind speed exceeds the values set out in the Tables attached to the conditions or the noise limits approved by the planning authority for a complainant's dwelling then the development fails to comply with the conditions.

### Advisory Notes

- 1. The length of the permission:** This planning permission will lapse on the expiration of a period of three years from the date of this decision notice. (See section 58(1) of the Town and Country Planning (Scotland) Act 1997 (as amended).)
- 2. Notice of the start of development:** The person carrying out the development must give advance notice in writing to the planning authority of the date when it is intended to start. Failure to do so is a breach of planning control. It could result in the planning authority taking enforcement action. (See sections 27A and 123(1) of the Town and Country Planning (Scotland) Act 1997 (as amended).)
- 3. Notice of the completion of the development:** As soon as possible after it is finished, the person who completed the development must write to the planning authority to confirm the position. (See section 27B of the Town and Country Planning (Scotland) Act 1997 (as amended).)



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DPEA case reference (type of case)	PPA-120-2032 (Planning Permission Appeal)
Case URL <a href="#">Bookmark</a>	<a href="http://www.dpea.scotland.gov.uk/CaseDetails.aspx?id=94401">http://www.dpea.scotland.gov.uk/CaseDetails.aspx?id=94401</a>
Site address	Frawney Wind Farm In Field 1020M North Of Over Finlarg Farm, Over Finlarg, Lumleyden
Case Detail	Erection Of 5 Wind Turbines Of 56M To Hub Height & 80M To Blade Tip & Ancilliary Development
Type of application submitted to authority	Detailed Planning Permission
Date of receipt to DPEA	21 Oct 2013
Authority (and reference)	Angus Council (13/00532/EIAL)
Date of application	13 Jun 2013
Main Contact	Polar Energy (Finlarg) Ltd
Agent	Mr Philip Lewis
Reason for appeal	Failure to give a decision
How the case is to be decided	Site Inspection
Case Status	Decision issued
Name of case owner (contact no. and e-mail)	Robertson, Jane (Tel: 01324 696467 - Email: <a href="mailto:Jane.Robertson@scot.gov.uk">Jane.Robertson@scot.gov.uk</a> )
Name of reporter	Mr Richard Dent
DPEA target date	13 Jan 2014
Date decision issued (Decision of Case)	13 Jan 2014 (Appeal Allowed )
Case characteristics	Wind Farm (two or more turbines),

All [3]	Appeal Documentation [1]	<b>Decision / Outcome [2]</b>			
<b>Date of Receipt</b>	<b>Date of Publication</b>	<b>Type of Publication</b>	<b>Document Name</b>	<b>Size</b>	<b>Bookmark</b>

	13 Jan 2014	Decision Notice	<a href="#">decision notice - dated 13 January 2014</a>	136KB	<a href="#">Bookmark (URL Details)</a>
	13 Jan 2014	Expenses Decision Notice	<a href="#">expenses decision notice - claim from Polar Energy (Finlarg) Ltd against council - dated 13 January 2014</a>	53KB	<a href="#">Bookmark (URL Details)</a>

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## McWilliamIA

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**From:** Solihull, Windfarms (NSN - Global) [windfarms.solihull@nsn.com]  
**Sent:** 11 June 2014 13:23  
**To:** CaneyV  
**Cc:** office@atmosconsulting.com  
**Subject:** FW: Consultation for Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden  
**Attachments:** WfF20140611-Over Finlarg-ATMOS CONSULTING-TOM PARKYN-ANGUS-1400442EIAL.xls

Good afternoon Veronica,

Our network planning team have completed their assessment of the attached proposal. There are **No** OUK microwave links affected by this application.

If you have any queries or if I can be of any further assistance, please do not hesitate to contact me.

Br.

John Hughes

Delivery Manager

Mobile Broadband, Networks

NOKIA

[john.hughes@nsn.com](mailto:john.hughes@nsn.com)

THIS ASSESSMENT IS FOR ORANGE LINKS ONLY AND DOES NOT INCLUDE T-MOBILE. YOU WILL NEED TO CONTACT T-MOBILE TO SEE IF ANY OF THEIR LINKS ARE AFFECTED [tech.services-tx@ericsson.com](mailto:tech.services-tx@ericsson.com)





# Memorandum

## Communities (Roads)

TO: PLANNING & PLACE  
Jamie Scott, Senior Planning Officer, Development Standards

FROM: ROADS  
Neil Young, Design Engineer, Engineering & Design Services

YOUR REF: 14/00442/EIAL

OUR REF: NY/FJ CF1.1

DATE: 12 June 2014

**SUBJECT: TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997  
PLANNING APPLICATION REF NO. 14/00442/EIAL  
TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT  
ASSESSMENT) (SCOTLAND) REGULATIONS 2011  
ERECTION OF 4 WIND TURBINES OF 57 METRES TO HUB HEIGHT AND 92.5  
METRES TO BLADE TIP AND ANCILLARY DEVELOPMENT AT FIELD 1020M  
NORTH OF OVER FINLARG FARM OVER FINLARG LUMLEYDEN  
GRID REFERENCE NO: 364142 742243**

---

I have considered the above planning application and have the following observations with regard to the disposal of surface water within the context of Sustainable Urban Drainage Systems (SUDS) and flood risk to the site:

### Observations

1. The location of the proposed developments lies out with the medium probability flood envelope, as given on SEPA's indicative flood map. They are therefore unlikely to be at risk of flooding during an event of this return period.

## Conclusion

I have no objection to this proposal.

Should you have any further queries please call me on extension 3173.



Neil Young  
Design Engineer (Engineering & Design Services)

CC Walter Scott, Design Manager, Engineering & Design Services, County Buildings  
Adrian Gwynne, Traffic Engineer, Traffic Management, County Buildings  
Alasdair Milne, Senior Planning Officer, Planning Service, SEPA, Strathearn House,  
Broxden Business Park Perth PH1 1RX



# Memorandum

Communities, Roads, County Buildings, Forfar Telephone 01307 461460

**TO:** HEAD OF PLANNING & TRANSPORT

**FROM:** HEAD OF ROADS

**OUR REF:** GH/AGG/CT TD1.3

**DATE:** 9 JULY 2014

**SUBJECT:** **PLANNING APPLICATION REF. NO. 14/00442/EIAL – PROPOSED ERECTION of 4No 80m WIND TURBINES AT OVER FINLARG FARM LUMLEY DEN FOR POLAR ENERGY (FINLARG) LTD**

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I refer to the above planning application which is similar to previous applications 12/00577/EIAL and 13/00532EIAL.

The site is located on the north of the A928 Kirriemuir –Todhills Road at Over Finlarg Farm, Lumley Den.

The proposed wind turbines are located on Finlarg Hill and will be accessed via the A90(T) Dundee – Aberdeen Trunk Road and the A928 Kirriemuir –Todhills Road.

It is anticipated that the wind turbines will be delivered to the Port of Dundee prior to arrival on site. Although construction traffic will increase flows on the A90 (T) and A928, the predicted flows are within the operational capacity of these roads.

I have considered the application in terms of the traffic likely to be generated by it, and its impact on the public road network. As a result, I do not object to the application but would recommend that any consent granted shall be subject to the following conditions:

- 1 That, prior to the commencement of development, a Construction Traffic Management and Routing Plan shall be submitted for the written approval of the Planning Authority. The details of the plan should consider arrangements for the following:
  - (i) agreement with the Roads Authority on the routing for abnormal loads;
  - (ii) the type and volume of vehicles to be utilised in the delivery of construction materials;
  - (iii) assessment of the suitability of the proposed routes, including bridge capacities, to accommodate the type and volume of traffic to be generated by the

development. The assessment shall include details of swept path analyses and include DVD video route surveys;

- (iv) mitigating measures on public roads, including, carriageway widening, junction alterations, associated drainage works, protection to public utilities, temporary or permanent traffic management signing, and temporary relocation or removal of other items of street furniture;
- (v) the restriction of delivery traffic to agreed routes;
- (vi) the timing of construction traffic to minimise impacts on local communities, particularly at school start and finish times, during refuse collection, at weekends and during community events;
- (vii) a code of conduct for HGV drivers to allow for queuing traffic to pass;
- (viii) liaison with the roads authority regarding winter maintenance;
- (ix) contingency procedures, including names and telephone numbers of persons responsible, for dealing with vehicle breakdowns;
- (x) a dust and dirt management strategy, including sheeting and wheel cleaning prior to departure from the site;
- (xi) the location, design, erection and maintenance of warning/information signs for the duration of the works, at site accesses and crossovers on private haul roads or tracks used by construction traffic and pedestrians, cyclists or equestrians;
- (xii) contingencies for unobstructed access for emergency services;
- (xiii) co-ordination with other major commercial users of the public roads on the agreed routes in the vicinity of the site;
- (xiv) traffic management, in the vicinity of temporary construction compounds;
- (xv) the provision of data from traffic counters, installed at locations and at intervals to be agreed with the Roads Authority, at the applicant's expense;
- (xvi) arrangements for the monitoring, reviewing and reporting on the implementation of the approved plan; and
- (xvii) procedures for dealing with non-compliance with the approved plan.

The Construction Traffic Management and Routing Plan shall be implemented in accordance with the approved details.

*Reason: to ensure the free flow of traffic, in the interests of road safety and for the convenience of road users.*





- 2 That, prior to the construction of the wind turbines, the running surface of the existing access track shall be reconstructed in for a distance of at least 15 metres from its junction with the public road (A928).

*Reason: to provide a safe and satisfactory standard of access.*

The application affects the A90(T) Dundee to Aberdeen trunk road and should be referred to Transport Scotland.

I trust the above comments are of assistance but should you have any further queries, please contact Adrian Gwynne on extension 3393.

*p.p.*



**FS 58789**



**LeslieA**

---

**From:** Claire.Herbert@aberdeenshire.gov.uk  
**Sent:** 18 June 2014 12:09  
**To:** PLNProcessing  
**Cc:** ScottJ  
**Subject:** EIA Consultation 14/00442/EIAL - Archaeology response  
**Ref:** 14/00442/EIAL

**The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011**

**Proposal: Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development**

**Address: Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden**

Dear Jamie,

Following on from your letter of the 10th June 2014 seeking comments on the above Environmental Statement, I can confirm that the approach outlined in the Cultural Heritage chapter of the EIA along with the mitigation measures proposed, in section 10.4.2, are acceptable.

Should you have any comments or queries on the above then please do not hesitate to contact me,

Kind regards  
Claire

Claire Herbert MA(Hons) MA AIFA

Archaeologist  
Archaeology Service  
Infrastructure Services  
Aberdeenshire Council  
Woodhill House  
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Aberdeen  
AB16 5GB

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Archaeology Service for Aberdeenshire, Moray & Angus Councils

<http://www.aberdeenshire.gov.uk/archaeology>

<http://www.aberdeenshire.gov.uk/smrpub>

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www.aberdeenshire.gov.uk

18/06/2014



**ScottJ**

---

**From:** MacariK  
**Sent:** 18 June 2014 11:45  
**To:** ScottJ  
**Subject:** Frawney Wind Farm 14/00442/EIAL

Jamie,

**Frawney Wind Farm, Field 1020M North of Over Finlarg Farm, Over Finlarg, Lumleyden,**

I have considered the information submitted for the above application for the erection of 4 wind turbines to 57 metres hub and 92.5 metres to blade tip along with ancillary development.

The assessment considered for impact on cultural heritage including listed buildings is equivalent to what was considered with application 13/00028/NONDET and 13/00532/EIAL. It is noted that the previous application was allowed for the erection of 5 wind turbines to 56 metres hub and 80 metres to blade tip. I have reviewed the information submitted in section 10, Cultural Heritage of the Environmental Statement.

I agree with the assessment noted in table 10-6 – Potential Effects on Cultural Heritage Setting. This does not have a significant alteration to impact given the increased height as the impact of Magnitude was already considered dominant regarding South Tarbrax Inn.

I therefore do not consider the opinion on impact and effect to be altered regarding the cultural heritage with this application with the reduction of one turbine and height increase of the other four.

Regards

Kirsty

Kirsty Macari, Planning Officer (Conservation), Communities, Planning, William Wallace House, Orchard Loan, Orchardbank Business Park, Forfar, DD8 1WH Tel: (01307) 473265



**ScottJ**

---

**Subject:** FW: Your Ref: 14/00442/EIAL (Our Ref: SG19163)

---

**From:** ALLEN, Sarah J [<mailto:Sarah.ALLEN@nats.co.uk>] **On Behalf Of** NATS Safeguarding

**Sent:** 19 June 2014 08:29

**To:** PLANNING

**Subject:** Your Ref: 14/00442/EIAL (Our Ref: SG19163)

The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.

However, please be aware that this response applies specifically to the above consultation and only reflects the position of NATS (that is responsible for the management of en route air traffic) based on the information supplied at the time of this application. This letter does not provide any indication of the position of any other party, whether they be an airport, airspace user or otherwise. It remains your responsibility to ensure that all the appropriate consultees are properly consulted.

If any changes are proposed to the information supplied to NATS in regard to this application which become the basis of a revised, amended or further application for approval, then as a statutory consultee NERL requires that it be further consulted on any such changes prior to any planning permission or any consent being granted.

Yours faithfully,

Sarah Allen  
Technical Administrator  
On behalf of NERL Safeguarding Office

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NATS means NATS (En Route) plc (company number: 4129273), NATS (Services) Ltd (company number 4129270), NATSNAV Ltd (company number: 4164590) or NATS Ltd (company number 3155567) or NATS Holdings Ltd (company number 4138218). All companies are registered in England and their registered office is at 4000 Parkway, Whiteley, Fareham, Hampshire, PO15 7FL.

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Mr Iain Mitchell  
 Service Manager, Planning  
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 Andrew.Fulton@scotland.gsi.gov.uk

Our ref: AMN/16/TA  
 Our Case ID: 201401557  
 Your ref: 14/00442/EIAL

20 June 2014

Dear Mr Mitchell,

**Town and Country Planning (Scotland) Act 1997 (As Amended)**  
**Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011**  
**Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development at Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden.**  
**Planning Application Reference : 14/00442/EIAL**

Thank you for your letter of 10 June regarding the above application, and the accompanying Environmental Statement (ES). This letter contains our comments on both the ES and the application itself under the terms of the Development Management Procedure Regulations for our historic environment interests. That is scheduled monuments and their setting, category A listed buildings and their setting and gardens and designed landscapes and battlefields included in their respective Inventories. May I suggest you seek comments on matters including impacts on unscheduled archaeology and category B and C(S) listed buildings from your Council's archaeology and conservation services if you have not already done so.

I understand that this proposal is a re-application for an amended scheme, and that the key changes to the proposals are a reduction in the number of turbines from five to four and an increase in turbine height from 80m to 92.5m (blade tip). The four turbines are indicated as occupying the same positions as four of the five in the previous planning application (13/00532/EIAL).

Our comments on the current application and ES are consistent with those issued for the previous planning application 13/00532/EIAL (our letter reference 201301873 /201301874 dated 27 June 2013). Historic Scotland does not object to the current planning application. We are content that there are no significant impacts on the site or setting of any heritage assets within our remit. We note that the Environmental Statement findings concur with this view and therefore have no further comment to



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offer. Should you wish to discuss any issue raised in this response please do not hesitate to contact me.

Yours sincerely



**Andrew Fulton**

Senior Heritage Management Officer, SEA

Cc Alex Kerr, Planning Decisions (North), Planning and Architecture Division, SG

**ScottJ**

---

**From:** ClarkPR  
**Sent:** 24 June 2014 14:55  
**To:** PLNProcessing  
**Cc:** ScottJ  
**Subject:** Consultation response 14/00442/EIAL

**Consultation Response - 14/00442/EIAL, ERECTION OF 4 WIND TURBINES OF 57 METRES TO HUB HEIGHT AND 92.5 METRES TO BLADE TIP AND ANCILLARY DEVELOPMENT AT FIELD 1020M NORTH OF OVER FINLARG FARM OVER FINLARG LUMLEYDEN**

The proposed development is located within enclosed farmland, and there appear to be no significant paths or tracks leading through the site. Levels of public access within the site are therefore likely to be relatively low. Temporary restrictions to public access during the construction period are not therefore likely to significantly affect public access.

There may be higher levels of public access through the enclosed fields to the west of the site, which form the ridgeline between Finlarg Hill and Kincaldrum Hill, and in the less intensively farmed moorland to the west of this ridge, as there is likely to be some desire from walkers to follow this ridge. The development will not directly affect such access, but the visual effects of the development may be a consideration.

Paul Clark, Countryside Access Officer, Planning and Transport, Communities, Angus Council, County Buildings, Market Street, FORFAR, DD8 3LG. Telephone: 01307 473220



Our ref: PCS/134031  
Your ref: 14/00442/EIAL

Jamie Scott  
Angus Council  
Planning & Transport  
County Buildings  
Market Street  
Forfar  
DD8 3LG

If telephoning ask for:  
Alasdair Milne

24 June 2014

By email only to: [ScottJ@angus.gov.uk](mailto:ScottJ@angus.gov.uk)

Dear Sir

**Town and Country Planning (Scotland) Acts**  
**Planning application: 14/00442/EIAL**  
**Erection of 4 Wind Turbines of 57 metres to Hub Height and 92.5 metres to Blade Tip and Ancillary Development**  
**Field at 1020M North of Over Finlarg Farm, Over Finlarg, Lumleyden**

We ask that the planning **condition** in Section 1.4 be attached to the consent. If this will not be applied, then please consider this representation as an **objection**. Please also note the advice provided below.

**Advice for the planning authority**

**1. Construction Environmental Management Plan (CEMP) and pollution prevention**

- 1.1 Our principle area of concern is centred on construction activities and the creation of access roads. We would highlight that the production of a Construction Method Statement (CMS) is essential. Before compilation of the CMS, it is essential that baseline information is available for all environmental receptors on the site considered to be "at risk" from the development. It is important to identify ephemeral ditches and field drains that tend only to flow in wetter conditions and which may easily be overlooked during site survey work.
- 1.2 The effectiveness of proposed mitigation measure must be assessed through regular environmental monitoring on site and comparison with conditions on site prior to any works commencing. We would expect to see the inclusion of monitoring proposals within the CMS.
- 1.3 Having a Construction Method Statement will only be effective if it is fully implemented by all operators on site. When work commences, it is essential that there is a named person responsible for the CMS who has the necessary expertise and authority to control works on site.

Continued....



Chairman  
David Sigsworth  
Chief Executive  
James Curran

**Strathearn House**  
Broxden Business Park,  
Lamberkine Drive, Perth, PH1 1RX  
tel 01738 627989 fax 01738 630997  
[www.sepa.org.uk](http://www.sepa.org.uk)

A named responsible person should always be on site whenever works are in progress.

- 1.4 Some of proposed mitigation measures set out within the Environmental Statement relate to works which may be regulated by us. However, many of the works will not be regulated by us and need to be covered by condition. Therefore, we object unless a planning **condition** is attached ensuring that no development can commence until a full site specific Environmental Management Plan (EMP) incorporating a Construction Method Statement (CMS) and a Site Waste Management Plan (SWMP) is submitted at least one month prior to commencement of development and approved by the planning authority, in consultation with SEPA and other agencies such as SNH.
- 1.5 The environmental mitigation measures and techniques outlined in our Pollution Prevention Guidelines should be incorporated into the CMS. This document should be agreed through discussion with us and it is imperative that it is seen as a 'live' document and is used to advise and educate all site operatives including sub-contractors working at the wind farm site. We would stress that the watercourses in the vicinity of the site are small upland streams and are sensitive ecosystems and form headwaters for larger watercourses and it is crucial that all necessary mitigation measures are taken to preserve their good status.
- 1.6 Additionally, we recommend the use of an accident management plan during construction which takes account of best practice, statutory requirements and sensitive areas in providing a site spill response procedure, emergency contact details and equipment inventories and their location.

## **2. Waste Management**

- 2.1 The cut and fill of the borrow pit with soils, stones and rocks produced from within site boundary from the excavation of the turbine/ access road foundations does not fall within the terms of Waste Management Licensing. However; it should be noted that the activity of infilling the borrow pit with any other waste like peat, shrubbery, fencing materials or any imported 3rd party waste, as part of the works, is regarded as a waste disposal activity and therefore requires SEPA authorisation.
- 2.2 If the developer wishes to import inert wastes to assist the formation and construction of the access roads they would be required to submit a Paragraph 19 Waste Management Licence exemption from the requirement of holding a full waste management licence for the use of the waste material for "relevant work".

## **3. Ecology**

- 3.1 The development area is designated a Drinking Water Protected Area (Groundwater) under the Water Framework Directive and is a designated Nitrate Vulnerable Zone under the Nitrates Directive.
- 3.2 Watercourses in the area include the Gallowfauld Burn which drains to the Kerbert Water and then to the Dean Water. Ultimately, these watercourses drain to the River Tay SAC, the boundary being 5.5km downstream of the proposed development area. The River Tay is designated a SAC for its populations of Salmon, Lamprey species and Otters.

Continued....

It is important to ensure that there is no deterioration in water quality of the receiving waterbodies from siltation and possible pollution impacts during the construction phase of the development.

- 3.3 Two small areas of Ground Water Dependent Ecosystem were identified through the survey work carried out within the development area. These were M23 *Juncus subnodulosus-Cirsium palustre* fen meadow and MG10 *Holcus lanatus-Juncus effusus* rush pasture. However, upon further assessment by the surveying contractor and the hydrology survey supplied, it was established that neither of these areas were groundwater dependent as the locally raised water levels were considered to be a direct result from the manipulation of natural surface water drainage to increase productive agricultural land.
- 3.4 In summary, we do not have any concerns regarding the ecological impacts of this proposal as long as our Pollution Prevention Guidelines are followed, appropriate licences are in place and suitable mitigation measures are employed to reduce impacts to any receiving waterbodies.

#### **4. Site Drainage**

- 4.1 Any discharge of surface water to the water environment arising from all activities and infrastructure must comply with the terms of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) (as amended). All activities in relation to surface water run-off will be subject to the CAR General Binding Rules (GBR's) and pollution control measures such should be employed wherever there is an identifiable risk to the water environment. Further information on this matter can be found on our website at [www.sepa.org.uk/water/water\\_publications.aspx](http://www.sepa.org.uk/water/water_publications.aspx)
- 4.2 All treatment areas likely to give rise to sediment laden run-off should be treated in accordance with the principles of the SUDS Manual (C697) which was published by CIRIA in March 2007.
- 4.3 Should a discharge to the water environment be necessary then our operations staff should be contacted to discuss any necessary authorisations under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR).
- 4.4 It is the responsibility of the operator to comply with the legislative requirements of CAR in all aspects of this proposal. Monitoring locations are the also the responsibility of the operator and should issues arise or it transpires that they do not comprehensively represent the sensitive areas, we should be contacted to discuss possible amendments.
- 4.5 A robust surface water management plan should be included in the Construction Environmental Management Plan (CEMP) and we should be informed of any updated designs as they become available.
- 4.6 We would highlight that bridge crossings are to be encouraged where possible so that they span the edge of the river banks.

Continued....

## 5. The Groundwater Environment

- 5.1 No significant hydrogeological issues with the proposed development have been identified at this stage, provided that the detailed design and management of the works is undertaken appropriately.
- 5.2 Impacts on Private Water Supplies (PWS) have been assessed by the developer. From the data provided it is considered unlikely that the proposed development will have an adverse impact on PWS in the area.

### Detailed advice for the applicant

## 6. Good Practice during Windfarm Construction

- 6.1 SEPA, SNH and the windfarm industry have worked together to produce [Good practice during wind farm construction](#). The document provides guidance to prospective windfarm operators, planning authorities and other interested parties on pollution prevention, nature conservation, landscape, hydrological and related issues and complements the advice provided in this Guidance Note.

## 7. Environmental Management Plan

- 7.1 Please note that we have requested that a planning condition is attached to any consent requiring the submission of an environmental management plan (EMP) to be submitted at least two months prior to the proposed commencement of development. The EMP should incorporate detailed pollution prevention and mitigation measures for all construction elements potentially capable of giving rise to pollution during all phases of construction, reinstatement after construction and final site decommissioning. Full details of what should be included in the EMP can be found on our website.
- 7.2 In relation to tendering, please refer to CIRIA C648 which states that, "One of the main drivers for environmental improvements is pressure applied by clients through standards laid down in contract documentation. Contracts should specify exact requirements for water pollution prevention in order to encourage high standards and to allow for like for like tender evaluation".

### Regulatory advice for the applicant

## 8. Regulatory requirements

- 8.1 With regard to watercourse crossings for access roads, the applicant should note that the type of watercourse and the type of crossing proposed ultimately determines the level of authorisation under CAR. For example; more environmentally destructive options like the construction of a ford or causeway across a watercourse would be regulated as a licensable activity while a minor bridge with no construction on the bed or the banks of a watercourse would be regulated by means of GBR 6.

Continued....



-5-

- 8.2 With regard to water crossings for cables, we would highlight that if there are any watercourses on site that are crossed by cables, such crossings will be regulated by either GBR 7, a registration or a licence depending on the type of crossing proposed. The details of the rules of GBR 7, registration and licence can be found within the CAR Practical Guide which is available on our website.
- 8.3 Details of regulatory requirements and good practice advice for the applicant can be found on our website at [www.sepa.org.uk/planning.aspx](http://www.sepa.org.uk/planning.aspx). If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the operations team in your local SEPA office at:

62 High Street, Arbroath, DD11 1AW, tel 01241 874370

If you have any queries relating to this letter, please contact me by telephone on 01355 575665 or e-mail at [planning.se@sepa.org.uk](mailto:planning.se@sepa.org.uk)

Yours faithfully

Alasdair Milne  
Senior Planning Officer  
Planning Service

eCopy to: [office@atmosconsulting.com](mailto:office@atmosconsulting.com)

*Disclaimer*

*This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at the planning stage. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. If you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found in [How and when to consult SEPA](#), and on flood risk specifically in the [SEPA-Planning Authority Protocol](#).*



## LeslielA

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**From:** Anne Phillips [APhillips@hial.co.uk]  
**Sent:** 25 June 2014 13:13  
**To:** PLNProcessing  
**Subject:** Plan App 14/00442/EIAL - Erect 4 x Wind Turbines Field 1020m North of Over Finlarg Farm Finlarg Lumleyden  
**Your Ref:** 14/00442/EIAL  
**Our Ref:** 2014/0072/DND

Dear Sir/Madam,

**PROPOSAL: Erect 4 x Wind Turbines (max height 93m to blade tip)**  
**LOCATION: Field 1020m North of Over Finlarg Farm Finlarg Lumleyden**

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With reference to the above, our calculations show that, at the given position and height, this development would not infringe the safeguarding surfaces for **Dundee Airport**. However, due to its height and position, a red obstacle light will be required to be fitted at the hub height of Turbine 2.

Provided that this condition is met Dundee Airport Limited would not object to this proposal.

As a minimum the Civil Aviation Authority (CAA) recommend that all proposed developments over 90m in height should be notified to the CAA through:

Off Route Airspace 5  
Directorate of Airspace Policy  
Civil Aviation Authority  
CAA House  
45-59 Kingsway  
London WC2B 6TE  
Email [marks.smailes@caa.co.uk](mailto:marks.smailes@caa.co.uk)

Regards

**Anne Phillips**  
**Operations Manager**  
**on behalf of Dundee Airport Limited**  
**c/o Highlands and Islands Airports Limited**  
Head Office, Inverness Airport, Inverness IV2 7JB  
☎ 01667 464244 (DIRECT DIAL)  
✉ [safeguarding@hial.co.uk](mailto:safeguarding@hial.co.uk) 🌐 [www.hial.co.uk](http://www.hial.co.uk)





## Scottish Natural Heritage Dualchas Nàdair na h-Alba

All of nature for all of Scotland  
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Angus Council  
Communities - Planning  
County Buildings  
Market Street  
Forfar  
DD8 3LG  
**For the attention of: Jamie Scott**

Date: 01 July 2014  
Our ref: CNS/REN/WF/Frawney  
Your ref: 14/00442/EIAL

Dear Sir

**Town and Country Planning (Scotland) Act 1997 (as amended)**  
**Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011**  
**Frawney wind farm - Erection of 4 wind turbines of 57 metres to hub height and 92.5 metres to blade tip and ancillary development at field 1020 metres north of Over Finlarg Farm, Over Finlarg, Lumleyden**  
**Planning application reference: 14/00442/EIAL**

I refer to your letter of 10 June 2014 advising of the planning application and associated Environmental Statement for the above proposal.

### Background

In 2012 SNH advised Angus Council on the potential impacts of a similar proposal at the Frawney site for 5 turbines up to 100 metres to blade tip in height (ref: 12/00577/EIAL). We advised that;

The proposal was unlikely to have a significant effect on the qualifying interests of nearby goose Special Protection Areas (SPA) either directly or indirectly. An appropriate assessment was therefore not required.

We advised that the proposal would have significant and adverse but generally localised impacts on landscape and visual amenity. We recommended that the scheme could be improved to achieve a better landscape and visual relationship with the proposed Govals wind development (ref: 12/00570/EIAL) by reducing the height of the turbines at Frawney to be commensurate with those at the Govals proposal (i.e. no greater than 87 metres to blade tip height).

The Frawney proposal (12/00577/EIAL) was subsequently withdrawn and the Govals scheme (12/00570/EIAL) has been allowed through appeal (ref: PPA-120-2027). At Frawney a re-application was made in 2013 for 5 turbines at 80 metres to blade tip height (ref: 13/00532/EIAL). This application was allowed through appeal (ref: PPA-120-2032). The current application, if



Scottish Natural Heritage, Alexander Fleming House, 8 Southfield Drive, Elgin, IV30 6GR  
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Office email: [tayside\\_grampian@snh.gov.uk](mailto:tayside_grampian@snh.gov.uk)

approved, would result in only 4 of the 5 consented turbine locations being developed but the height of these turbines increasing from 80 metres to 92.5 metres to blade tip.

## **SNH advice on current application**

We do not intend to offer detailed advice on this application and are content that Angus Council identifies any other natural heritage impacts and addresses these without further reference to SNH.

- **Landscape and visual impacts**

We have advised previously for 2 scales of scheme at Frawney. The lesser scheme for 5 turbines at 80 metres to blade tip height has been approved, establishing that development of this nature and scale is acceptable in this location. This maximum height of turbine also reflects design guidance as outlined in the recently completed 'Strategic Landscape Capacity Assessment for Wind Energy in Angus'. In this Study, the Sidlaw Hills character area has been assessed as having capacity for turbines up to a height of 80 metres. To introduce taller turbines into this character area would set a design precedent contrary to the findings of this Study. We see no reason not to reiterate our original 2012 advice that the turbines at both Frawney and Govals, if commensurate in height, could reduce the landscape and visual impacts. Equally the design specification of turbine is probably as important as turbine height, to give the 2 schemes coherence.

Yours faithfully

Jennifer Heatley  
Operations Officer - Tayside and Grampian  
[jennifer.heatley@snh.gov.uk](mailto:jennifer.heatley@snh.gov.uk)

**ScottJ**

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**From:** ThomsonSD  
**Sent:** 07 July 2014 09:59  
**To:** ScottJ  
**Subject:** 14/00442/EIAL - Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development at Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden  
**Attachments:** Frawney draft conditions .doc

Jamie I refer to the above application passed to me for comment and I advise as follows;

## Shadow Flicker

The Environmental Statement (ES) includes an assessment of the impact from shadow flicker based on a separation distance of 710m which is the equivalent to 10 rotor diameters in accordance with the general guidance on this issue. The ES refers to a report published by the Department of Energy and Climate Change "Update of UK Shadow Flicker Evidence Base" - 16 March 2011 but then ignores one of the important conclusions. The aim of this report was to present an update of the evidence base which was produced by carrying out a thorough review of international guidance on shadow flicker, an academic literature review and by investigating current assessment methodologies employed by developers and case study evidence. The report highlighted that while the 10 rotor diameter rule is generally acceptable, there is a need to differentiate between appropriate assessment areas at different latitudes and further research was necessary. I would also advise that this department has witnessed first hand that properties further away than 10 rotor diameters can be affected by shadow flicker and that it is not always the case that the properties closest to the turbine will be the ones most affected, as this is ultimately dependant on how close the property is to the shadow zone i.e. the position of the property in relation to the turbines and the sun.

Due to this potential effect this service would require a shadow flicker assessment to be carried out to include all properties a minimum of 1km from any turbine and therefore a revised assessment should be submitted. I am however satisfied that shadow flicker could be adequately controlled by the use of a planning condition being attached to any permission and accordingly I attach a draft for your consideration.

## Private water supplies

Several Private water supplies have been identified in the vicinity of the development by the applicant's consultant however it is concluded that the use of good construction practices will prevent any impact resulting from the development. In order however to ensure that a water supply to surrounding houses is maintained in the event of the existing supply being effected I would suggest that a condition should be attached to any Planning permission and I have included a draft condition to that effect for your consideration.

## Construction Noise

Construction noise levels have been predicted using an appropriate methodology and levels shown to be below recognised noise limits in all cases. In order to ensure that construction noise is regulated I would recommend that noise limits are imposed should permission be granted and therefore I include a draft condition to that effect for your consideration.

## Operational wind farm noise

# AC15

Operational wind turbine noise has been assessed using the methodology specified in ETSU-R-97; the assessment and rating of noise from wind farms, in conjunction with additional guidance contained in The Institute of Acoustics guide to the application of ETSU-R-97 dated May 2013 and includes a cumulative noise impact assessment to take into account proposed turbines at Govals and Nether Finlarg and an existing turbine also at Nether Finlarg. Noise limits have been derived from background noise readings and also where appropriate amended to allow for higher noise limits where the occupier of a property has a financial involvement in the development. NB the noise limits for Govals Farmhouse were increased due to the assumed financial involvement of the occupier of this property with the Govals wind farm which is considered appropriate in the context of the cumulative assessment however when it comes to setting limits for the Frawney wind farm the Govals farmhouse is not financially involved with this development and therefore cannot be granted the higher noise levels and this is reflected in the limits suggested in the draft conditions. It should also be noted that the noise limits used in the assessment and recommended in the draft conditions are higher than those specified in the reporter's decision notice regarding application ref 13/00532/EIAL. There are two reasons for this; firstly the applicants agent has reverted to the ETSU-R-97 night time lower limit of 43dba instead of the 38dba used in the previous application and secondly the recent IOA guidance has required that wind shear is taken into account in the prediction of wind turbine noise levels instead of in the background noise derived limits.

Noise predictions have been carried out for a candidate turbine which demonstrates that appropriate limits can be complied with however due to the potential cumulative impact from the other wind farm developments it is essential for the Frawney wind farm development to allow sufficient freeboard between predicted levels and the proposed noise limits. Previous attempts were made to try to apportion noise limits between the various developments however neither developer proposed an acceptable method for this and there were difficulties due to the derivation of different limits. As the Govals development has been granted Planning permission there is no longer an opportunity to apportion the noise limit budget. Accordingly despite the assessment being based on a candidate turbine it is necessary to specify by condition that this is the turbine that is used or where another is proposed it is subject to the written approval of the planning authority and a detailed noise assessment is submitted to demonstrate that the impact, including the cumulative impact, is acceptable.

In conclusion I advise that I would not object to the above proposal subject to the permission being granted including conditions controlling issues related to shadow flicker, protection of water supplies and noise and I attach above draft conditions for your consideration.

If you have any queries please do not hesitate to contact me.

Regards  
steve

[Steve Thomson, Senior EHO Angus Council, Communities Department, County Buildings, Market Street, Forfar DD8 3WA Telephone: 01307 473331](#)



1. The rating level of noise immissions from the combined effects of the wind turbines (including the application of any tonal penalty) when determined in accordance with the attached Guidance Notes (to this condition), shall not exceed at any property lawfully existing at the date of this planning permission

(a) the  $L_{A90}$  dB (A) 10min levels, shown in tables A & B, during the respective periods described in these tables; where there is more than one property at a location the noise limits apply to all properties at that location or

(b)  $L_{A90}$  35dB (A) 10min at wind speeds up to 10 m/s at 10m height at any other location.

Where the occupiers of a property have a financial interest in the development, the absolute lower limit of the above noise levels may be increased to 45dB (A)

The developer shall, prior to the commencement of the development, satisfy the planning authority that the following properties have a financial interest in the development;

1. Nether Finlarg Farmhouse
2. Over Finlarg Old Farmhouse

Should the occupiers of these properties, at any time, no longer have a financial interest in the development then the noise levels shall revert to those referred to at 1(a) and/or 1(b) above.

For the avoidance of doubt "Financial Interest" is defined as either:-

(a) owning, or having a share in ownership, of the land on which the turbine is to be sited;

(b) leasing the land on which the turbine is sited; which lease shall be for a period exceeding 20 years; or

(c) being a share holder or owner of the applicant (or their successors as operators of the wind turbine)

2. Prior to the commencement of development the make and model of the turbine selected for use in the development shall be submitted for the written approval of the Planning Authority.
3. In the event that any turbine other than the candidate turbine i.e. an Enercon E-70 E4, Operational mode II with 2300KW rated power and 57m hub height is to be installed, a detailed noise assessment, including a cumulative assessment taking into account any existing wind turbine developments approved prior to the date of this permission, demonstrating that the noise limits specified by this permission shall not be exceeded shall be submitted for the written approval of the Planning Authority.
4. In the event that any wind turbine is required to operate in a reduced power mode in order to comply with the noise limits specified by this permission a scheme for the mitigation of noise shall be submitted for the written approval of the Planning Authority.
5. No wind turbine shall be micro sited any nearer to Govals cottage than is shown in Figure 3-2 Site layout in volume 3 of the Environmental statement dated JUNE 2014 unless approved in writing by the Planning Authority
6. The wind farm operator shall continuously log power production, wind speed and wind direction, all in accordance with Guidance Note 1(d). This data shall be retained for a period of not less than 24 months. The wind farm operator shall provide this information in the format set out in Guidance Note 1(e) to the Local Planning Authority on its request, within 14 days of receipt in writing of such a request.

7. No electricity shall be exported until the wind farm operator has submitted to the Local Planning Authority for written approval a list of proposed independent consultants who may undertake noise compliance measurements in accordance with this permission. Amendments to the list of approved consultants shall be made only with the prior written approval of the Local Planning Authority.
8. Within 21 days from receipt of a written request from the Local Planning Authority following a complaint to it from an occupant of a dwelling alleging noise disturbance at that dwelling, the wind farm operator shall, at its expense, employ a consultant approved by the Local Planning Authority to assess the level of noise immissions from the wind farm at the complainant's property in accordance with the procedures described in the attached Guidance Notes. The written request from the Local Planning Authority shall set out at least the date, time and location that the complaint relates to and any identified atmospheric conditions, including wind direction, and include a statement as to whether, in the opinion of the Local Planning Authority, the noise giving rise to the complaint contains or is likely to contain a tonal component.
9. The assessment of the rating level of noise immissions shall be undertaken in accordance with an assessment protocol that shall previously have been submitted to and approved in writing by the Local Planning Authority. The protocol shall include the proposed measurement location identified in accordance with the Guidance Notes where measurements for compliance checking purposes shall be undertaken, whether noise giving rise to the complaint contains or is likely to contain a tonal component, and also the range of meteorological and operational conditions (which shall include the range of wind speeds, wind directions, power generation and times of day) to determine the assessment of rating level of noise immissions. The proposed range of conditions shall be those which prevailed during times when the complainant alleges there was disturbance due to noise, having regard to the written request by the Local Planning Authority to investigate a complaint, and such others as the independent consultant considers likely to result in a breach of the noise limits.
10. Where a dwelling to which a complaint is related is not listed in the tables attached to these conditions, the wind farm operator shall submit to the Local Planning Authority for written approval proposed noise limits to be adopted at the complainant's dwelling for compliance checking purposes. The proposed noise limits are to be those limits selected from the Tables specified for a listed location which the independent consultant considers as being likely to experience the most similar background noise environment to that experienced at the complainant's dwelling. The rating level of noise immissions resulting from the combined effects of the wind turbines when determined in accordance with the attached Guidance Notes shall not exceed the noise limits approved in writing by the Local Planning Authority for the complainant's dwelling.
11. The wind farm operator shall provide to the Local Planning Authority the independent consultant's assessment of the rating level of noise immissions undertaken in accordance with the Guidance Notes within 2 months of the date of the written request of the Local Planning Authority for compliance measurements to be undertaken, unless the time limit is extended in writing by the Local Planning Authority. The assessment shall include all data collected for the purposes of undertaking the compliance measurements, such data to be provided in the format set out in Guidance Note 1(e) of the Guidance Notes. The instrumentation used to undertake the measurements shall be calibrated in accordance with Guidance Note 1(a) and certificates of calibration shall be submitted to the Local Planning Authority with the independent consultant's assessment of the rating level of noise immissions.

12. Where a further assessment of the rating level of noise immissions from the wind farm is required pursuant to Guidance Note 4(c), the wind farm operator shall submit a copy of the further assessment within 21 days of submission of the independent consultant's assessment pursuant to condition 8 above unless the time limit has been extended in writing by the Local Planning Authority.
13. Prior to the commencement of development a shadow flicker assessment shall be submitted for the written approval of the Planning Authority. The aforementioned assessment shall consider any sensitive receptors a minimum of 1km from any proposed turbine. Where under worst case conditions any property is predicted to be affected by shadow flicker for more than 30 minutes per day or more than 30 days per year then a scheme of mitigation shall be submitted for the written approval of the Planning Authority. Once approved the operation of the wind farm shall take place in accordance with the said scheme unless the Planning Authority gives written consent to any variation. For the avoidance of doubt sensitive receptors includes all residential properties, hospitals, schools and office buildings.
14. That in the event of a pollution incident or interruption to supply, caused by the wind farm development, affecting or likely to affect any private water supply, the wind farm operator shall provide an immediate temporary supply to those affected until permanent mitigation can be effected to the satisfaction of the Planning Authority. Any replacement supply shall be of a quality to meet the private water supplies (Scotland) Regulations 1992 or any other appropriate Regulation in force at the time. In any case a permanent replacement supply or mitigation measures shall be provided no later than one month after the supply is first affected.
15. Noise associated with construction operations including the movement of materials, plant and equipment shall not exceed the noise limits shown in table C below for the times shown. At all other times noise associated with construction operations shall be inaudible at any sensitive receptor. For the avoidance of doubt sensitive receptors includes all residential properties, hospitals, schools and office buildings.

**Table A: Operational wind turbine noise between 2300hrs – 0700hrs**

Location	Standardised 10m Height Wind Speed m/s									
	4	5	6	7	8	9	10	11	12	
Govals Farmhouse	43	43	43	43	43	44	44	44	44	
Govals cottage	43	43	43	43	43	44	44	44	44	
1-4 farm cottages Nether Finlarg	43	43	43	43	43	44	44	44	44	
Nether Finlarg Farmhouse	43	43	43	43	43	44	44	44	44	
Over Finlarg ( bungalow)	43	43	43	43	45	48	48	48	48	
Over Finlarg ( old Farmhouse)	43	43	43	43	45	48	48	48	48	
1-2 Over Finlarg Cottages	43	43	43	43	45	48	48	48	48	
Over Finlarg ( new farmhouse)	43	43	43	43	45	48	48	48	48	

**Table B: Operational wind turbine noise at all other times**

Location	Standardised 10m Height Wind Speed m/s									
	4	5	6	7	8	9	10	11	12	
Govals Farmhouse	37	37	38	39	41	43	43	43	43	
Govals cottage	37	37	38	39	41	43	43	43	43	
1-4 farm cottages Nether Finlarg	40	40	41	42	44	46	46	46	46	
Nether Finlarg Farmhouse	40	40	41	42	44	46	46	46	46	
Over Finlarg ( bungalow)	39	40	42	45	48	51	51	51	51	
Over Finlarg ( old Farmhouse)	39	40	42	45	48	51	51	51	51	
1-2 Over Finlarg Cottages	39	40	42	45	48	51	51	51	51	
Over Finlarg ( new farmhouse)	39	40	42	45	48	51	51	51	51	

**Table C: Construction Noise limits**

Day	Time	Average Period (t)	Noise limit
Monday-Friday	0700-0800	1 hour	55 dBA Leq
Monday-Friday	0800-1800	10 hour	65 dBA Leq
Monday-Friday	1800-1900	1 hour	55 dBA Leq
Saturday	0700-0800	1 hour	55 dBA Leq
Saturday	0800-1800	10 hour	65 dBA Leq
Saturday	1800-1900	1 hour	55 dBA Leq
Sunday	0800-1800	10 hour	55 dBA Leq

## Guidance Notes for Noise Conditions

These notes are to be read with and form part of the noise condition. They further explain the condition and specify the methods to be employed in the assessment of complaints about noise immissions from the wind farm. The rating level at each integer wind speed is the arithmetic sum of the wind farm noise level as determined from the best-fit curve described in Guidance Note 2 of these Guidance Notes and any tonal penalty applied in accordance with Guidance Note 3. Reference to ETSU-R-97 refers to the publication entitled "The Assessment and Rating of Noise from Wind Farms" (1997) published by the Energy Technology Support Unit (ETSU) for the Department of Trade and Industry (DTI).

### Guidance Note 1

(a) Values of the LA90,10 minute noise statistic should be measured at the complainant's property, using a sound level meter of EN 60651/BS EN 60804 Type 1, or BS EN 61672 Class 1 quality (or the equivalent UK adopted standard in force at the time of the measurements) set to measure using the fast time weighted response as specified in BS EN 60651/BS EN 60804 or BS EN 61672-1 (or the equivalent UK adopted standard in force at the time of the measurements). This should be calibrated in accordance with the procedure specified in BS 4142: 1997 (or the equivalent UK adopted standard in force at the time of the measurements). Measurements shall be undertaken in such a manner to enable a tonal penalty to be applied in accordance with Guidance Note 3.

(b) The microphone should be mounted at 1.2 – 1.5 metres above ground level, fitted with a two-layer windshield or suitable equivalent approved in writing by the Local Planning Authority, and placed outside the complainant's dwelling. Measurements should be made in "free field" conditions. To achieve this, the microphone should be placed at least 3.5 metres away from the building facade or any reflecting surface except the ground at the approved measurement location. In the event that the consent of the complainant for access to his or her property to undertake compliance measurements is withheld, the wind farm operator shall submit for the written approval of the Local Planning Authority details of the proposed alternative representative measurement location prior to the commencement of measurements and the measurements shall be undertaken at the approved alternative representative measurement location.

(c) The LA90,10 minute measurements should be synchronised with measurements of the 10-minute arithmetic mean wind and operational data logged in accordance with Guidance Note 1(d), including the power generation data from the turbine control systems of the wind farm.

(d) To enable compliance with the conditions to be evaluated, the wind farm operator shall continuously log arithmetic mean wind speed in metres per second and wind direction in degrees from north at hub height for each turbine and arithmetic mean power generated by each turbine, all in successive 10-minute periods. Unless an alternative procedure is previously agreed in writing with the Planning Authority, this hub height wind speed, averaged across all operating wind turbines, shall be used as the basis for the analysis. All 10 minute arithmetic average mean wind speed data measured at hub height shall be 'standardised' to a reference height of 10 metres as described in ETSU-R-97 at page 120 using a reference roughness length of 0.05 metres. It is this standardised 10 metre height wind speed data, which is correlated with the noise measurements determined as valid in accordance with Guidance Note 2, such correlation to be undertaken in the manner described in Guidance Note 2. All 10-minute periods shall commence on the hour and in 10- minute increments thereafter.

(e) Data provided to the Local Planning Authority in accordance with the noise condition shall be provided in comma separated values in electronic format.

(f) A data logging rain gauge shall be installed in the course of the assessment of the levels of noise immissions. The gauge shall record over successive 10-minute periods synchronised with the periods of data recorded in accordance with Note 1(d).

## Guidance Note 2

(a) The noise measurements shall be made so as to provide not less than 20 valid data points as defined in Guidance Note 2 (b)

(b) Valid data points are those measured in the conditions specified in the agreed written assessment protocol, but excluding any periods of rainfall measured in the vicinity of the sound level meter. Rainfall shall be assessed by use of a rain gauge that shall log the occurrence of rainfall in each 10 minute period concurrent with the measurement periods set out in Guidance Note 1. In specifying such conditions the Local Planning Authority shall have regard to those conditions which prevailed during times when the complainant alleges there was disturbance due to noise or which are considered likely to result in a breach of the limits.

(c) For those data points considered valid in accordance with Guidance Note 2(b), values of the LA90,10 minute noise measurements and corresponding values of the 10- minute wind speed, as derived from the standardised ten metre height wind speed averaged across all operating wind turbines using the procedure specified in Guidance Note 1(d), shall be plotted on an XY chart with noise level on the Y-axis and the standardised mean wind speed on the X-axis. A least squares, "best fit" curve of an order deemed appropriate by the independent consultant (but which may not be higher than a fourth order) should be fitted to the data points and define the wind farm noise level at each integer speed.

## Guidance Note 3

(a) Where, in accordance with the approved assessment protocol, noise immissions at the location or locations where compliance measurements are being undertaken contain or are likely to contain a tonal component, a tonal penalty is to be calculated and applied using the following rating procedure.

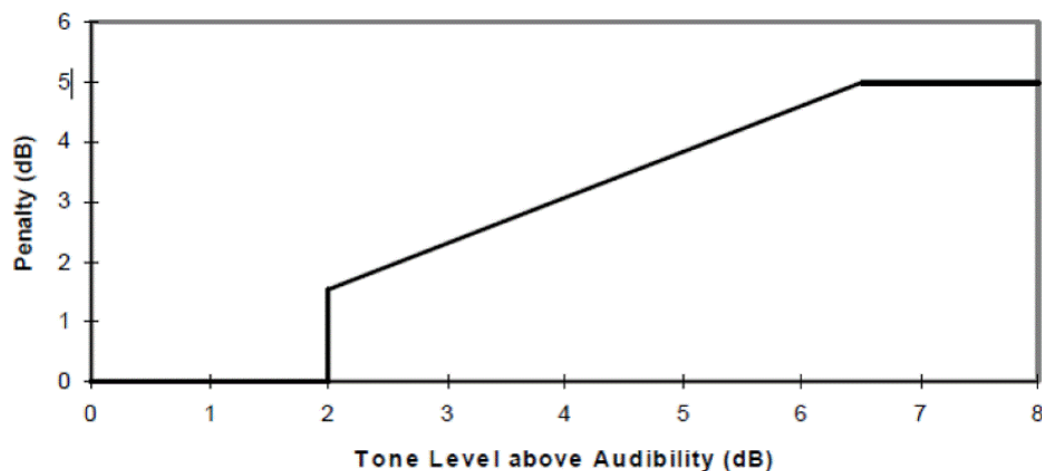
(b) For each 10 minute interval for which LA90,10 minute data have been determined as valid in accordance with Guidance Note 2 a tonal assessment shall be performed on noise immissions during 2 minutes of each 10 minute period. The 2 minute periods should be spaced at 10 minute intervals provided that uninterrupted uncorrupted data are available ("the standard procedure"). Where uncorrupted data are not available, the first available uninterrupted clean 2 minute period out of the affected overall 10 minute period shall be selected. Any such deviations from the standard procedure, as described in Section 2.1 on pages 104-109 of ETSU-R-97, shall be reported.

(c) For each of the 2 minute samples the tone level above or below audibility shall be calculated by comparison with the audibility criterion given in Section 2.1 on pages 104-109 of ETSU-R-97.

(d) The tone level above audibility shall be plotted against wind speed for each of the 2 minute samples. Samples for which the tones were below the audibility criterion or no tone was identified, a value of zero audibility shall be used.

(e) A least squares "best fit" linear regression line shall then be performed to establish the average tone level above audibility for each integer wind speed derived from the value of the "best fit" line at each integer wind speed. If there is no apparent trend with wind speed then a simple arithmetic mean shall be used. This process shall be repeated for each integer wind speed for which there is an assessment of overall levels in Guidance Note 2.

(f) The tonal penalty is derived from the margin above audibility of the tone according to the figure below.



#### Guidance Note 4

(a) If a tonal penalty is to be applied in accordance with Guidance Note 3 the rating level of the turbine noise at each wind speed is the arithmetic sum of the measured noise level as determined from the best fit curve described in Guidance Note 2 and the penalty for tonal noise as derived in accordance with Guidance Note 3 at each integer wind speed within the range specified by the agreed written assessment protocol.

(b) If no tonal penalty is to be applied then the rating level of the turbine noise at each wind speed is equal to the measured noise level as determined from the best fit curve described in Guidance Note 2.

(c) In the event that the rating level is above the limit(s) set out in the Tables attached to the noise conditions or the noise limits for a complainant's dwelling, the independent consultant shall undertake a further assessment of the rating level to correct for background noise so that the rating level relates to wind turbine noise immission only.

(d) The wind farm operator shall ensure that all the wind turbines in the development are turned off for such period as the independent consultant requires to undertake the further assessment. The further assessment shall be undertaken in accordance with the following steps:

(e). Repeating the steps in Guidance Note 2, with the wind farm switched off, and determining the background noise (L3) at each integer wind speed within the range requested by the Local Planning Authority in its written request and the approved protocol.

(f) The wind farm noise (L1) at this speed shall then be calculated as follows where L2 is the measured level with turbines running but without the addition of any tonal penalty:

$$L_1 = 10 \log \left[ 10^{L_2/10} - 10^{L_3/10} \right]$$

(g) The rating level shall be re-calculated by adding arithmetically the tonal penalty (if any is applied in accordance with Note 3) to the derived wind farm noise L1 at that integer wind speed.

(h) If the rating level after adjustment for background noise contribution and adjustment for tonal penalty (if required in accordance with note 3 above) at any integer wind speed lies at or below

# AC15

the values set out in the Tables attached to the conditions or at or below the noise limits approved by the Local Planning Authority for a complainant's dwelling then no further action is necessary. If

the rating level at any integer wind speed exceeds the values set out in the Tables attached to the conditions or the noise limits approved by the Local Planning Authority for a complainant's dwelling then the development fails to comply with the conditions.





## Defence Infrastructure Organisation

Claire Duddy  
Assistant Safeguarding Officer  
Ministry of Defence  
Safeguarding – Wind Energy  
Kingston Road  
Sutton Coldfield  
West Midlands B75 7RL  
United Kingdom

Your Reference: 14/00442/EIAL

Telephone [MOD]: +44 (0)121 311 3714

Facsimile [MOD]: +44 (0)121 3112218

Our Reference: DIO/SUT/43/10/1/6986

E-mail: DIO ODC-IPS [SG2a1@mod.uk](mailto:SG2a1@mod.uk)

Jamie Scott  
Angus Council  
Planning and Transport  
County Buildings  
Market Street  
Forfar  
DD8 3LG

8<sup>th</sup> July 2014

Dear Mr Scott,

**Erection of 4 wind turbines of 57 metres to hub height and 92.5 metres to blade tip and ancillary development at field 1020m north of Over Finlarg Farm, Over Finlarg, Lumleyden**  
**Planning Application Reference: 14/00442/EIAL**

Thank you for consulting the Ministry of Defence (MOD) on the above proposal in your communication dated 10<sup>th</sup> June 2014. We understand this is a revised submission of planning applications 12/00577 and 13/00532/EIAL, both of which have previously been commented on by ourselves.

The MOD objected in a letter to Angus Council dated 17<sup>th</sup> August 2012 to planning application 12/00577 on the grounds that the proposed development would have an unacceptable impact upon the Air Traffic Control (ATC) radar at RAF Leuchars. The MOD noted that if the developer is able to overcome these unacceptable impacts that all turbines should be fitted with appropriate aviation lighting.

As you are aware, the MOD has previously been in discussions with the applicant with a view to reaching agreement on appropriate mitigation to address the unacceptable impacts of this development. The letter from MOD to Angus Council dated 26<sup>th</sup> October 2012 stated that the MOD had approved in principle a radar mitigation strategy with the applicant. The letter also stated that the MOD was willing to remove their objection subject to the imposition of the enclosed planning conditions, as agreed with the applicant.

The MOD has undertaken a full assessment of the revised proposal and the assessment has confirmed that the turbines will be 21.8km from, in line of site to, and will cause unacceptable interference to the ATC radar at RAF Leuchars. As such the MOD would object to this revised proposal.

In light of the outcome of the assessment, the mitigation proposal previously submitted to the MOD has also been reviewed. This mitigation proposal has been accepted by the MOD, and I can confirm that the MOD will raise no objection to this revised planning application subject to the inclusion of the planning conditions at Annex A on any forthcoming consent.

The proposed conditions at Annex A have been revised since the submission of the letter dated 26<sup>th</sup> October 2012 to the Council; however these revisions have been agreed by the applicant. Should the Council be minded to amend any of the conditions in Annex A, the MOD would welcome the opportunity to discuss these amendments with the Council.

Please do not hesitate to contact me should you require any further information.

Yours sincerely

*Claire Duddy*

Claire Duddy  
Assistant Safeguarding Officer – Wind Energy  
Defence Infrastructure Organisation

**SAFEGUARDING SOLUTIONS TO DEFENCE NEEDS**

## Annex A

### Air Traffic Control radar

No development shall commence unless and until an Air Traffic Control Radar Mitigation Scheme to address the impact of the wind farm upon air safety has been submitted to and approved in writing by the Local Planning Authority.

The Air Traffic Control Radar Mitigation Scheme is a scheme designed to mitigate the impact of the development upon the operation of the Primary Surveillance Radar at RAF Leuchars ("the Radar") and the air traffic control operations of the Ministry of Defence (MOD) which is reliant upon the Radar. The Air Traffic Control Radar Mitigation Scheme shall set out the appropriate measures to be implemented to mitigate the impact of the development on the Radar and shall be in place for the operational life of the development provided the Radar remains in operation.

No turbines shall become operational unless and until all those measures required by the approved Air Traffic Control Radar Mitigation Scheme to be implemented prior to the operation of the turbines have been implemented and the Local Planning Authority has confirmed this in writing. The development shall thereafter be operated fully in accordance with the approved Air Traffic Control Radar Mitigation Scheme.

### Aviation Lighting

The Company shall install MOD-accredited 25 candela omni-directional aviation lighting OR infrared warning lighting with an optimised flash pattern of 60 flashes per minute of 200ms to 500ms duration at the highest practicable point on all turbines. East turbine will be erected with this lighting installed and the lighting will remain operational throughout the duration of this consent.



**Tealing Community Council  
c/0 6 Dalziel Road, Inveraldie**

7 July 2014

Angus Council  
Planning and Transport Division  
County Buildings  
FORFAR  
DD8 3LG

Dear Sir/Madam

**Planning Application – 14/00442/EIAL**

I am writing on behalf of Tealing Community Council and residents of Tealing in response to the amendment to the Planning Application submitted for the installation of 4 Wind Turbines at Nether Finlarg, Kincaldrum, Forfar.

The Tealing area consists of a community of approximately 250 households both on the East and West of the A90 and the location for the proposed Wind Turbines falls within the Tealing Community Council boundary.

Due to the scale of this planning application in addition to other current planning applications at this particular site, a public meeting was called by the Community Council and communicated via email, post and our website and was held on 2 July 2014 to which around 16 residents attended with 10 apologies given due to holidays. In addition a number of comments were passed to the community council from residents unable to attend the meeting. At this meeting the community expressed very strong opinions objecting to this application which we urge the Planning Department to take into account.

The following grounds should be considered as the basis for this objection:

1. This objection is based on the lack of constructive and informative consultation and communication with the local community. The most immediate residents to this proposal have advised at this meeting that there has been no contact made with them directly to discuss the initial planning application and again for this 2<sup>nd</sup> application. We believe if this is the case that this is completely unacceptable to us and I am sure for Angus Council too and, therefore, is there a breach in the planning process by the Developer.
2. In addition, the Community Council has had to request that a representative from Polar Energy attend the public meeting on 2 July 2014 as no previous offer to communicate with the community has been offered by Polar Energy and, therefore, a breach of the planning process.
3. The cumulative impact of this planning application on an already over-saturated location for wind turbines is not acceptable to this community. Tealing is a farming community and approval of a project on this scale in addition to the current

Seagreen/SSE approved application would have catastrophic consequences in this community. In addition, and relevant to this objection is the fact that the Angus area has almost reached capacity with the number of wind turbines already erected across Angus (as outlined in the recent Ironside Farrer Report) but applications continue to be submitted including this further application to erect larger but noted 1 less wind turbine exceeding 80 metres in height.

4. Residents have raised their concerns over the effect on their property prices if the application is approved. There has been little or no research carried out on the effects of such large scale proposals of this nature on house prices and health of livestock and people.
5. The community stated their concerns over the financial gains through subsidies that will be made by the owner.
6. There was also concern raised over the water supply to the local residents which we believe has yet to be articulated and communicated to the most local residents.
7. Noise levels will be more significant from the previous application.
8. The photomontages do not realistically outline the visual impact of this proposal with the wind turbines being visible from all routes into the area.

This letter summaries the comments and representations that have been made to Tealing Community Council on this matter and this should be treated as an objection. It is also noted that whilst this objection is being made, we have received 1 letter of support from the community.

Finally, I would ask you to fully consider the information as part of the planning and decision making process and advise me of any public hearings or planning meetings to discuss this application as both members of the community and the Community Council would like to be present.

Yours faithfully

**Graeme Reoch**  
**Chair**

**ScottJ**

---

**From:** Lennon, Jenny <Jenny.Lennon@rspb.org.uk>  
**Sent:** 15 July 2014 16:01  
**To:** ScottJ  
**Subject:** Finlarg Farm Over Finlarg, Lumleyden. 14/00442/EIAL

FAO Jamie Scott

Thank you for consulting RSPB Scotland on this planning application below.

The survey methodology follows the guidance as set out and advised by SNH, specifically for wintering and migrating geese. We do not feel that significantly negative impacts on birds are likely to occur in this location if the proposal goes ahead.

There are already a large number of operational turbines in this area and within 15-20km of local SPA's, therefore our primary concerns would be the cumulative impact of all of these turbines, something of which there has been little assessment. Post-construction monitoring linked to some form of cumulative impact assessment would assist our understanding of the potential issues connected to an increased number of turbines on birds. This in turn would better inform our responses to such proposals. SNH have produced guidance on assessing the cumulative impact on birds, which can be found at: <http://www.snh.gov.uk/docs/A675503.pdf>.

In summary, RSPB Scotland does not have major concerns with this proposal in isolation, but would encourage the Council to consider the general comments above regarding the assessment of potential cumulative impact of wind turbines.

Regards

**Jenny Lennon**

**Conservation Officer**  
RSPB Scotland

RSPB Scotland is part of the RSPB which speaks out for birds and wildlife, tackling the problems that threaten our environment. Nature is amazing - help us keep it that way.

The Royal Society for the Protection of Birds (RSPB) is a registered charity: England and Wales no. 207076, Scotland no. SC037654.

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## LeslieA

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**From:** DownieKM on behalf of PLANNING  
**Sent:** 01 August 2014 14:05  
**To:** PLNProcessing  
**Subject:** FW: Planning Reference: 14/00442/EIAL -- Frawney Wind Farm, Over Finlarg Farm,Gallowfauld, Forfar, Angus

Mrs Kathleen Downie, Clerical Officer, Angus Council, Communities, Planning & Place, County Buildings, Market Street, Forfar DD8 3LG. Tel: 01307 473376. Email: downiekm@angus.gov.uk

-----Original Message-----

From: Windfarms Team [mailto:windfarms@jrc.co.uk]  
Sent: 31 July 2014 16:28  
To: PLANNING  
Subject: Planning Reference: 14/00442/EIAL -- Frawney Wind Farm, Over Finlarg Farm,Gallowfauld, Forfar, Angus

Dear Sir/Madam,

Planning Reference: 14/00442/EIAL

Site Name/Location : Over Finlarg Farm

Thank you for the opportunity to comment on the proposed development.

JRC analyses proposals for wind turbine sites on behalf of the UK Energy Industry together with the Water Industry in north-west England.

JRC assesses their potential to cause interference to radio systems operated by Energy Industry companies in support of their operational requirements for safety management of critical national infrastructure.

The Energy Industry considers that any wind energy development within 1km of a link operating below 1 GHz or 0.5 km of a link operating above 1 GHz, requires detailed coordination. For turbines with a blade diameter of 32m or less this distance is reduced to 0.5km for links below 1GHz and 0.3km for links above 1GHz.

Unfortunately, part (or all) of the proposed development is located within 1km/0.5km of a protected link site or path managed by JRC.

The affected link(s) is(are):

460MHz~Telemetry and Telecontrol:

(link end points given with grid references deleted plus path length)

N/A

Microwave-Point to Point:

(link end points given with grid references deleted plus path length)

Over Finlarg Farm (Frawney Wind Farm) T1 hub 57m blades 36m  
Grid ref OSGB 341337 742050

Microwave Point to Point:

Link 1 366300 753500 to 337700 740000

Link 2 350800 749700 to 337700 740000

-----

TURBINE:

Over Finlarg Farm (Frawney Wind Farm) T2 hub 57m blades 36m  
Grid ref OSGB 341457 742332

Microwave Point to Point:

Link 1 366300 753500 to 337700 740000

Link 2 350800 749700 to 337700 740000

Link 3 337600 739900 to 375200 771800

Link 4 337600 739900 to 375200 771800

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TURBINE:

Over Finlarg Farm (Frawney Wind Farm) T3 hub 57m blades 36m  
Grid ref OSGB 341790 742444

Microwave Point to Point:

Link 1 366300 753500 to 337700 740000

Link 2 350800 749700 to 337700 740000

-----

TURBINE:

Over Finlarg Farm (Frawney Wind Farm) T4 hub 57m blades 36m  
Grid ref OSGB 341668 742131

Microwave Point to Point:

Link 1 366300 753500 to 337700 740000

Licensed to - Local Electricity Utility

The grid references for this link/these links have been/will be supplied to the developer on request to JRC. However as this document is likely to be in the public domain they have been omitted from this objection.

As a consequence JRC objects to the proposed wind turbine/wind farm on behalf of Local Electricity Utility and itself.

NOTE: The protection criteria determined for Energy Industry radio systems can be found at <<http://www.jrc.co.uk/wind-farms/>>.

Regards

Keith Brogden  
Wind Farm Team

The Joint Radio Company Limited  
Dean Bradley House,  
52 Horseferry Road,  
LONDON SW1P 2AF  
United Kingdom

TEL: +44 20 7706 5197  
SWITCHBOARD: +44 20 7706 5199  
Skype: keithb\_jrc

<[windfarms@jrc.co.uk](mailto:windfarms@jrc.co.uk)>

The information supplied herein is strictly confidential and is intended for the use of the addressee only. It shall not be disclosed to any third party without permission of the JRC.

JRC Ltd. is a Joint Venture between the Energy Networks Association (on behalf of the UK Energy Industries) and National Grid.  
Registered in England & Wales: 2990041  
<<http://www.jrc.co.uk/about>>

**ScottJ**

---

**From:** Windfarms Team <windfarms@jrc.co.uk>  
**Sent:** 29 August 2014 15:58  
**To:** PLANNING  
**Subject:** Planning Ref: 14/00442/EIAL - Frawney Wind Farm, Over Finlarg Farm, Gallowfauld, Forfar, Angus - Objection Withdrawn

Dear Sir/Madam,

Planning Ref: 14/00442/EIAL

Name/Location: Frawney Wind Farm, Over Finlarg Farm

Total 4 turbines at NGR:

T1 341337 742050

T2 341457 742332

T3 341790 742444

T4 341668 742131

Hub Height: 57m Rotor Radius: 36m

(defaults used if not specified on application)

Cleared with respect to radio link infrastructure operated by:-

Local Electricity Utility and Scotia Gas Networks

Please note that, as a result of further analysis, our earlier objection on 31st July 2014 is now withdrawn

JRC analyses proposals for wind farms etc. on behalf of the UK Fuel & Power Industry and the Water Industry in north-west England. This is to assess their potential to interfere with radio systems operated by utility companies in support of their regulatory operational requirements.

In the case of this proposed wind energy development, JRC does not foresee any potential problems based on known interference scenarios and the data you have provided. However, if any details of the wind farm change, particularly the disposition or scale of any turbine(s), it will

be necessary to re-evaluate the proposal.

In making this judgement, JRC has used its best endeavours with the available data, although we recognise that there may be effects which are as yet unknown or inadequately predicted. JRC cannot therefore be held liable if subsequently problems arise that we have not predicted.

It should be noted that this clearance pertains only to the date of its issue. As the use of the spectrum is dynamic, the use of the band is changing on an ongoing basis and consequently, developers are advised to seek re-coordination prior to considering any design changes.

Regards

Keith Brogden

Wind Farm Team

The Joint Radio Company Limited  
Dean Bradley House,  
52 Horseferry Road,  
LONDON SW1P 2AF  
United Kingdom

DDI: +44 20 7706 5197

TEL: +44 20 7706 5199

Skype: keithb\_jrc

<[windfarms@jrc.co.uk](mailto:windfarms@jrc.co.uk)>

**NOTICE:**

This e-mail is strictly confidential and is intended for the use of the addressee only. The contents shall not be disclosed to any third party without permission of the JRC.

JRC Ltd. is a Joint Venture between the Energy Networks Association (on behalf of the UK Energy Industries) and National Grid.

Registered in England & Wales: 2990041

<<http://www.jrc.co.uk/about>>



Iain Mitchell  
Angus Council  
Market Street  
Forfar  
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Wayne Smith  
Asset Protection Assistant  
Business & Operation Support  
Gas Transmission Asset Management  
National Grid  
Warwick  
Direct Tel: 01926 656102  
Email: wayne.smith@nationalgrid.com

**Planning Work?**

**Contact us on 0800 688 588\***

**Mon-Fri 8am-4pm**

(\*Calls may be recorded and monitored)

**E-mail:** [Plantprotection@nationalgrid.com](mailto:Plantprotection@nationalgrid.com)

**Electricity Emergency Number:**

**0800 40 40 90\***

**National Gas Emergency Number:**

**0800 111 999\***

\*Available 24 hours, 7 days/week.

Calls may be recorded and monitored.

[www.nationalgrid.com](http://www.nationalgrid.com)

Date 15<sup>th</sup> August 2014  
Our Reference: XX\_TS\_Z2\_3NWP\_002173  
Your Reference: 14/00442/EIAL

Dear Mr Mitchell,

**Ref: Erection of 4 Wind Turbines of 57 Metres to Hub Height DD4 0QE, Part 1, Frawney Wind Farm Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden**

National Grid has No Objection to the above proposal which is in close proximity to a High-Pressure Gas Pipeline – Feeder 12 Kirriemuir to Rhynd.

I have enclosed a location map to show the location of National Grid high-pressure gas pipeline(s) within the vicinity of your proposal and associated information below.

Yours sincerely  
Wayne Smith

Asset Protection Assistant

**EAGLES (Electricity And Gas Location Enquiry System)**

Is now available to use simply click on the link to register [www.beforevoudig.nationalgrid.com](http://www.beforevoudig.nationalgrid.com), submit details of your proposed works and receive instant guidance and if appropriate maps showing the location of National Grid gas and electric apparatus.

## **PLEASE READ CAREFULLY**

- No buildings should encroach within the Easement strip of the pipeline indicated above
- No demolition shall be allowed within 150 metres of a pipeline without an assessment of the vibration levels at the pipeline. Expert advice may need to be sought which can be arranged through National Grid.
- National Grid has a Deed of Easement for each pipeline which prevents change to existing ground levels, storage of materials. It also prevents the erection of permanent / temporary buildings, or structures. If necessary National grid will take action to legally enforce the terms of the easement.
- We would draw your attention to the Planning (Hazardous Substances) Regulations 1992, the Land Use Planning rules and PADHI (Planning Advise for Developments near Hazardous Installations) guidance published by the HSE, which may affect this development.
- To view the PADHI Document, please use the link below: <http://www.hse.gov.uk/landuseplanning/padhi.pdf>
- You should be aware of the Health and Safety Executives guidance document HS(G) 47 "Avoiding Danger from Underground Services", and National Grid's specification for Safe Working in the Vicinity of National Grid High Pressure gas pipelines and associated installations - requirements for third parties T/SP/SSW22. You should already have received a link to download a copy of T/SP/SSW/22, from our Plant protection Team, which is also available to download from our website.
- To view the SSW22 Document, please use the link below:  
<http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=33968>
- A National Grid representative will be monitoring the works to comply with SSW22.
- To download a copy of the HSE Guidance HS(G)47, please use the following link:  
<http://www.hse.gov.uk/pubns/books/hsg47.htm>
- National Grid will also need to ensure that our pipelines access is maintained during and after construction.
- Our pipelines are normally buried to a depth cover of 1.1 metres however; actual depth and position must be confirmed on site by trial hole investigation under the supervision of a National Grid representative. Ground cover above our pipelines should not be reduced or increased.
- If any excavations are planned within 3 metres of National Grid High Pressure Pipeline or, within 10 metres of an AGI (Above Ground Installation), or if any embankment or dredging works are proposed then the actual position and depth of the pipeline must be established on site in the presence of a National Grid representative. A safe working method must be agreed prior to any work taking place in order to minimise the risk of damage and ensure the final depth of cover does not affect the integrity of the pipeline.
- Excavation works may take place unsupervised no closer than 3 metres from the pipeline once the actual depth and position has been confirmed on site under the supervision of a National Grid representative. Similarly, excavation with hand held power tools is not permitted within 1.5 metres from our apparatus and the work is undertaken with NG supervision and guidance.

### **Pipeline Crossings**

- Where existing roads cannot be used, construction traffic should ONLY cross the pipeline at locations agreed with a National Grid engineer.
- All crossing points will be fenced on both sides with a post and wire fence and with the fence returned along the easement for a distance of 6 metres.



- The pipeline shall be protected, at the crossing points, by temporary rafts constructed at ground level. No protective measures including the installation of concrete slab protection shall be installed over or near to the National Grid pipeline without the prior permission of National Grid. National Grid will need to agree the material, the dimensions and method of installation of the proposed protective measure. The method of installation shall be confirmed through the submission of a formal written method statement from the contractor to National Grid.
- Please be aware that written permission from National Grid is required before any works commence within the National Grid easement strip.
- A National Grid representative shall monitor any works within close proximity to the pipeline to comply with National Grid specification T/SP/SSW22.
- A Deed of Indemnity is required for any crossing of the easement including cables

## **Cables Crossing**

- Cables may cross the pipeline at perpendicular angle to the pipeline i.e. 90 degrees.
- A National Grid representative shall supervise any cable crossing of a pipeline.
- An impact protection slab should be laid between the cable and pipeline if the cable crossing is above the pipeline.
- Where a new service is to cross over the pipeline a clearance distance of 0.6 metres between the crown of the pipeline and underside of the service should be maintained. If this cannot be achieved the service must cross below the pipeline with a clearance distance of 0.6 metres.

## **All work should be carried out in accordance with British Standards policy**

- BS EN 13509:2003 - Cathodic protection measurement techniques
- BS EN 12954:2001 - Cathodic protection of buried or immersed metallic structures – General principles and application for pipelines
- BS 7361 Part 1 - Cathodic Protection Code of Practice for land and marine applications
- National Grid Management Procedures



11 September 2014

**14/00442/EIAL Frawney, Over Finlarg, Lumley Den  
Comments of Countryside Officer in Relation to Landscape & Visual Impacts**

**Landscape Effects**

The proposed wind farm would be located within Sidlaw Hills (TAY8 Igneous Hills LCT). The Sidlaws are steep open hills and enclosed valley farmland. The hills provide a northern backdrop to Dundee and define the southern edge of Strathmore to the north. The landscape scale is typically medium and there exists capacity for turbines of up to 80m in height

The turbine number and size comparison of the withdrawn 2012 application; the 2013 application approved at appeal and the current 2014 application are listed below:

- 12/00577/EIAL 4 No. turbines, 100m (blade tip); 60m (hub height); 40m (rotor radius)
- 13/00532/EIAL 5 No. turbines, 80m (blade tip); 56m (hub height); 24m (rotor radius)
- 14/00442/EIAL 4 No. turbines, 92.5m (blade tip); 57m (hub height); 35.5m (rotor radius)

The turbines in the current application compared with those approved are 1m taller to hub height, but the rotor radius has increased by 11.5m (23m diameter). The number of turbines has been reduced from 5 to 4. The towers, hubs and blades would be noticeably more substantial than those approved. The turbines in the current application are more similar in size and robustness to the 2012 application than the 2013 application approved at appeal.

Section 6.5 of the ES assesses landscape effects. It is a weakness that the assessment does not consider the proposed turbines in relation to landscape scale. SNH guidance in relation to landscape scale is contained within paragraphs 3.31 to 3.33 of "Siting and Designing Windfarms in the Landscape (version 2, May 2014)". In particular, paragraph 3.33 lists three tests to find an "appropriate scale". These are as follows:

- *Of minor vertical scale in relation to the key features of the landscape (typically less than one third);*
- *Of minor horizontal scale in relation to the key features of the landscape Where the windfarm surrounded by a much larger proportion of open space than occupied by the development);*
- *Of minor size compared to other key features and foci within the landscape; or separated from these by a sufficiently large area of open space (either horizontally or vertically) so that direct scale comparison does not occur.*

Unfortunately the visualizations demonstrate that the proposed turbines at 92.5m to blade tip fail the first and third tests in particular. Examples are listed below:

- VP3: The turbines would appear larger than the hills in the background and out of scale with the small and medium scale houses, farms, trees and field patterns.
- VP9: The turbines would appear larger than the hills and again out of scale with small and medium scale houses, farms, trees and field patterns. This VP is from Carrot Hill, a popular recreational destination and also likely to be representative of views from higher ground to the east of the site.

Scale issues would increase as a result of the increase in turbine size.

## Visual Effects

The proposed development would be located on lower ground within the Sidlaw Hills. (They would be below the 260m contour with the hills to the immediate west being circa 330m). (This is very slightly higher ground than the 2012 application and similar to the 2013 application). This has substantially contributed towards the visual impact within the wider landscape being more contained than would be the case with a hilltop location. For example:

- VP14: From Kirriemuir Hill only some blade tips protrude above the ridgeline of the Sidlaw Hills. They would however be obvious from Balmashanner Hill (VP11) and along the A90(T) corridor as far north as Forfar.
- The ZTV (Figure 6-4) demonstrates that from the south views of the development would be restricted to higher ground and longer distance views.

However VP10 & 13, demonstrate that the turbines would be larger than preferred to comfortably be contained within the visual pocket which they would occupy. This would be more apparent with the proposed increase in turbine height.

For turbines of this size, their location between hills has meant that they would be significantly less widely visible in the landscape than would be otherwise the case. This is however partially reduced by the greatest effects predicted to be experienced along a major transport corridor (A90(T)).

The most significant visual effects would be in relation to the views with 5km to the east and north; and within 1km to the south and west, where the turbines would often dominate views locally. The most significant effects would in relation to nearby houses. The layout in comparison to the 2013 approved layout is almost the same, but with turbine 5 (the most easterly) removed.

I previously considered that the sensitivity of receptors had in some cases been under-assessed in the previous applications. Whilst the assessment of some has been slightly increased in the current application, there continues to be a slight under-assessment of receptor sensitivity.

Views from receptors near the site are likely to experience a slight rise (relative to the approved application) in impacts due to the increased height and rotor diameter. However, for some receptors, this increase in magnitude may be partially countered by the omission of turbine 5. For example, from receptors to the east, where turbine 5 was closest, the overall magnitude would be slightly less than the approved scheme. To north or south receptors sometimes would experience a reduced arc of view containing turbines relative to the approved scheme.

The application site is within a bowl between hills which has the capacity to restrict views of development within it particularly from the most directions except the north-east. The increase in turbine height from 80m to 92.5m would slightly increase visibility of the development in views by further extending above the visually contained pocket. (see VP 10, 13).

## Cumulative Landscape Effects

Whilst slight changes to turbine visibility may be likely due to the increased turbine size, there would be likely to be to the impact upon wind turbine typology from that approved.

## Cumulative Visual Effects

Cumulative visual effects are contained within 6.6.3 of the ES. Cumulative impacts are described, but there are only cumulative wirelines from four viewpoints and there the assessment of impacts is relative to the approved 2013 development.

Govalls.12/00570/EIAL approved at appeal consists of 6 turbines 87m (tip height); 60m (hub) and 27m (rotor radius). The ES argues that increasing the turbine height more closely matches those approved at Govals. As indicated above, the increase in turbine height from 80m to 92.5m would slightly increase visibility of the development in views. This would slightly increase the occurrences whereby the proposed development would be seen in a cumulative relationship with Govals and Arc Hill in particular.

The rotor radius of Govals more closely matches the approved 2013 development. Similarly, the turbine proportions of the Govals and approved 2013 application are most similar (rotor radius is slightly less than half the tower height). On that basis I fundamentally disagree with that assertion. This difference in proportion would be readily apparent from Carrot Hill (VP9), Balmashanner Hill (VP11) and would be particularly acute from the A90(T) (VP 10 figure 4.34b).

I do however agree that the proposed layout is simpler (than that approved) and that aspect relates better to Govals (particularly when viewed from Carrot Hill). However, contrasting turbine proportions (relative to Govals), together with an increase in turbine size would, in my opinion, lead to an overall increase in cumulative visual effects.

## **Conclusion**

The proposed increase in turbine height would typically lead to significant landscape scale issues.

The visibility of the proposed turbines would increase slightly as a result of the increase in size. Locally, some receptors would experience a reduction in horizontal extent by the removal of the fifth turbine, but all would experience a slight increase in effects due to the increase in height and rotor diameter. From east, local receptors would benefit from the closest turbine being removed, but again the increase in the height of the remaining turbines would increase their impacts.

I would not predict significant cumulative landscape effects as a result of the change in turbine size.

The turbines in the approved scheme are of a similar proportion to those approved at Govals. The removal of the fifth turbine creates a layout more similar to Govals when viewed from the east. However, the obvious difference in turbine proportion between the two schemes would be a significant adverse cumulative visual effect which would, in my opinion, substantially outweigh the layout improvements.



Seventeen Acres  
Balnuith By Tealing  
Dundee, DD4 0RE

23<sup>rd</sup> June 2014

Angus Council  
Planning and Transport Division  
County Buildings  
FORFAR  
DD8 3LG

For the attention of Jamie Scott, Case Officer.

Dear Sirs,

**Planning Application – Frawney Wind Farm, Finlarg (14/00442/EIAL)**

With reference to the above, we write to formally object to the Planning Application submitted by Atmos Consulting Ltd on behalf of Polar Energy (Finlarg) Ltd. for the erection of a Wind Farm north of Over Finlarg Farm, Tealing, Angus.

Our grounds of objection are as follows:

1. A massive wind turbine has already been erected within close proximity at Tealing. Permission has been granted by Angus Council for erection of yet another turbine in Tealing. Outline permission has been granted to Seagreen for extension and significant enlargement of the SSE substation at Tealing, with a further application by Greencat renewables for the installation of a 130 acre Solar Park. This is surely all in excess of Angus Council's policy. If this application is approved there will be a number of wind turbines within very close proximity. Cumulatively, this amounts to approval being given for conversion of most of the Tealing area into a wind farm!
2. The Turbine Assessment Report does not realistically outline the visual impact of this proposal to surrounding properties. It does not appropriately account for existing and ongoing development, including the above turbines and other electrical installations on an industrial scale. Indeed, the current application seeks to significantly increase both the height and diameter of the turbines which is understood to be beyond Scottish Government guidelines.
3. The turbine will be visible from all routes into Tealing effecting a negative impact on the visual amenity and presentation of the village and surrounding area. The Turbines will be particularly prominent and visible to those using the Dundee / Aberdeen "ambassador route" of the A90.

4. This erection would be in very close proximity with historical monuments and several listed buildings in Tealing. The cumulative impact of the number of wind turbines being erected locally in Angus adversely affects the setting of these protected features of the village.
5. The noise that will be generated from the wind turbines individually and cumulatively will result in significantly increased noise pollution in a quiet country area.
6. The proposed site and effectively the view of the entire area would no longer be aesthetically pleasing.
7. Whilst we appreciate that there are some people in favour of wind turbines there is limited information on the long term effects of wind turbines. The Angus area is already saturated with the current numbers and local people should not be subjected to any more. We also appreciate that the Government is pro sustainable energy but there are alternative solutions and other more appropriate measures that could be put in place rather than erecting these structures which blight the landscape and adversely effect property values and thus the local economy.

Please consider the reasons above as formal objections to this application and we would ask that we are contacted to be advised of any public meetings to discuss this matter.

Yours faithfully

**Gary and Pauline McIlravey**  
**Tealing Residents**



8 Plans of Thornton

Galmis

Forfar

DD8 1UA

**Objection to application 14/00442/EIAL – four wind turbines to 92.5m blade tip, north of Over Finlarg Farm.**

Sir –

I object to the above application and trust its merits will be judged on planning grounds and not on an outrageous attempt to improve the profitability of a previously consented application.

This application is contrary to the Local Development Plan. It is in for turbines 12.5m higher than the previously consented application (on appeal to Scottish Government) which Angus planning officers had stated would have an unacceptable significant adverse on the landscape. The visual impact on residents was also stated to be unacceptable and there were huge concerns over the cumulative effect of other approved wind farm schemes. This new application would clearly have a more detrimental effect than previous applications.

The applicants of this scheme (this is application number three for the site) have previously indicated that pounds, shillings and pence are more important than the landscape or residential amenity. And just because they obviously got their sums wrong on how much profit would be made on erecting 80m turbines this is no reason for approval of a revised scheme with bigger turbines.

To attempt to justify the application by comparing it with the adjacent Govals windfarm scheme defies belief. Two wrongs don't make a right. The Development Standards Committee and council officers both agreed the Govals scheme was also contrary to the Local Development Plan.

I draw to your attention to the fact that since the 80m application was determined the independent Ironside Farrar landscape capacity study for

winfarms in Angus has been published (backed by SNH). This report was published too late to be considered by the Scottish Government Reporter when considering the earlier proposal.

It clearly states that large turbines (above 80m) "would be too tall for this scale of landform" at Over Finlurg. It also suggests that approval should not be given to both the Frawney and Govals schemes.

As stated at the beginning of my objection this application it should be refused on planning grounds and scant regard should be taken of the continuing weasel words put forward by the applicants of meeting national targets and providing local employment etc.

I suggest this application should be dealt with and rejected speedily under delegated powers. There is no point in having a Local Development Plan if it is disregarded to meet to financial aspirations of a developer.

Yours faithfully,

**RAY GIBSON**

RECEIVED

7 - JUL 2014  
LKW

Mrs V Mitchell  
Mr A Mitchell  
1 Nether Finlarg Farm Cottages  
Forfar  
Angus  
DD8 1XQ

2<sup>nd</sup> July 2014

**Re: Objection to application 14/00442/EIAL four wind turbines to 92.5m blade tip, north of Over Finlarg Farm.**

Dear Sir/Madam

As owner, occupiers of 1 Nether Finlarg Farm Cottages, we are one of the key properties which will be significantly affected by the proposed amendments to the application for Frawney Wind Farm.

We would like to highlight that once again we were not consulted in this application and were not included in the neighbour notifications regarding the proposed changes. We are submitting this objection as a result of the first and only consultation during a Tealing Community Council meeting held on the 2<sup>nd</sup> July 2014 at which Mr Garvie presented the amended proposal.

The applicant states that the proposed changes of an increase in turbine height and removal of one wind turbine will be of benefit to residents. With the original proposed height, we stressed the considerable impact on residential amenity and concerns regarding noise levels. We acknowledge that the applicant has removed the 5<sup>th</sup> nearest proposed turbine to the property. However, this does improve a bad situation. The proposed height increase of the remaining 4 wind turbines which are only 250m further away from the 5th will not improve the impact on residential amenity but will worsen the situation.

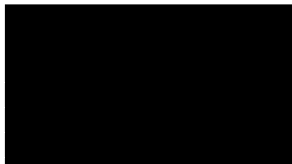
The photo montages do not provide an accurate representation of the visual impact that all 4 turbines with the increased height will have from our property and do not take into consideration the impact from our main ground and first floor rooms.

Once again we would like to stress the close proximity of the proposed turbines to our private water supply and risk of disruption and contamination of the water remain a concern. As in our prior objections, we do not feel that the implications of disruption and contamination of the private water supply have been taken seriously.

We would like to reinforce that the proposed changes will have a significant and unacceptable impact on residential amenity and strongly urge that this proposal is rejected.

Yours Faithfully

Mrs Veronica Mitchell  
Mr Anthony Mitchell





**Broadlands, Loanhead, By FORFAR, Angus, DD8 1XF**

**Planning & Transport,  
County Buildings,  
Market Street,  
FORFAR,  
DD8 3LG**

**3<sup>rd</sup> July 2014**

**Dear Sirs,**

**Application No: 14/00442/EIAL Four Wind Turbines 92.5m to Tip at  
Over Finlarg, Lumley Den, Angus.**

**While I applaud the suggestion of the applicants to reduce the number of already consented wind turbines at this location from five to four I would ask you to kindly note my very strong objection to this new application**

**To imply that four even larger turbines would be beneficial to those living very close to the five already consented is nothing short of a cynical ploy that appears to be a means of almost achieving their original goal of constructing 100m high turbines on Finlarg Hill.**

**The statement, " it is estimated that the wind farm will, over its 25 years life, directly support approximately 1.6FTE jobs in Scotland, of which 1.1 could be based in Angus", is an assertion that must be open to question. I also note with some scepticism the word "could" rather than the positive "would" in this application. In plain English, this wind farm might, just possibly, create one very part-time job during its entire lifetime!**

**The only reason these developers are requesting permission for four turbines is for the increased subsidies which would accrue should permission be granted for this application. As they state, "the amended scheme seeks to maximise the benefits arising from the scheme . . ." In other words – it is just about profits and has nothing to do with amenity for locals or suitability in the Angus landscape.**

RECEIVED

7 - JUL 2014

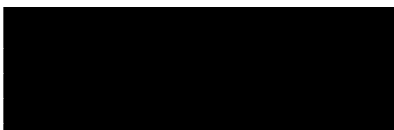
1C/KW

**Those turbines already consented would have been capable, from time to time, of producing up to 4MW and would thus be paid a Feed In Tariff. These far larger but just one fewer in number turbines would, *theoretically*, be capable of producing 9.2MW and would therefore qualify for the significantly more generous Renewable Obligation Certificates, potentially earning considerably more customer-funded subsidies.**

**At 92.5m to tip – more than 303 feet tall – these machines would be the largest in Angus to date – greatly in excess of the proposed 80m maximum as outlined in the recent Landscape Capacity Assessment for Wind Energy in Angus. Turbines in such a highly prominent position, and being situated adjacent to the six over-large turbines already consented at Govals Farm would be intolerable for local inhabitants who already have to face the stress of the prospect of having two wind farms constructed so close together within sight and sound of their homes and would be totally out scale with the landscape, dwarfing everything else in sight.**

**In view of the fact that such an increase in turbine height is completely contrary to all previous expert guidance I would ask you to reject this application which blatantly does not comply with the Angus Development Plan.**

**Yours faithfully,**

A solid black rectangular box used to redact the signature of P. M. Powell.

**P. M. Powell (Mrs)**

## Comments for Planning Application 14/00442/EIAL

### Application Summary

Application Number: 14/00442/EIAL

Address: Frawney Wind Farm Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden

Proposal: Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development

Case Officer: Jamie Scott

### Customer Details

Name: Mr Ray Strachan

Address: May Cottage Forfar

### Comment Details

Commenter Type: Member of Public

Stance: Customer objects to the Planning Application

Comment Reasons:

Comment: Another application, But higher, this cannot be right or just. I live in very close proximity to these proposed turbines and I cannot believe that Angus Council will approve these blights on the beautiful Angus skyline. However, I suspect this case will go to appeal and the Reporter will allow these. Is this democracy?

I strongly object to these turbines being erected.





Broadlands,  
Loanhead,  
Forfar,  
Angus,  
DD8 1XF

13/07/2014

Head of Planning & Transport,  
County Buildings,  
Market Street,  
Forfar,  
DD8 3LG

RECEIVED  
21 JUL 2014  
JLKW

Ref: Application **14/00442/EIAL – Over Finlarg Wind Farm**

Dear Sir,

I must ask you to record my strong objection to the latest application by Atmos Consulting on behalf of Polar Energy Ltd. for a wind farm consisting of four turbines 92.5 metres in height.

The granting of permission by the Government Reporter for six 87m turbines at Govals Farm was appalling enough, but for that to be followed by yet another disastrous decision allowing five 80m turbines at Finlarg should have been the end of the madness.

But no, dissatisfied by the grant of bigger turbines to Govals and hit by the 20% reduction in Feed-In Tariffs in April which would have undermined the profitability of their consented application, they have come back for more, with a potential income (at 25% load capacity) 150% greater than before.

Justification for this increased size of turbine is very thin, consisting mainly, on the one hand, of the argument that Govals has 87m consented, and we only want a little more, and on the other hand unsubstantiated claims of helping reduce climate change and reduction in CO2 emissions.

The fact that Govals was consented was inexplicable and the subsequent consent for 'Frawney' even more so. To allow yet bigger turbines would be unforgiveable. Three wrongs do not make a right!

In Para 2 of the Planning Statement, headed "The Need for the Development", claims are made regarding the 'measures being taken to combat climate change' and that the

*'proposed development will, therefore, make a material contribution to reducing Scotland's CO2 emissions and contribute directly to efforts to reduce the extent and rate of global climate change (to a greater extent than the approved scheme).'*

These claims are made with several references to DECC and the Government Reporter responsible for consenting the earlier application.

However, in a Freedom of Information response to Dr. John Etherington, inquiring about reductions in CO2 emissions resulting from wind power, DECC admitted that no such analysis had been carried out by DECC.

Therefore, claims for reductions in CO2 emissions to the extent quoted in Table 1 as part of the 'need for the development' cannot be justified or proven. If these claims cannot be justified or proven, they cannot be accepted as justification for the scheme.

There are other discrepancies and omissions in the Planning Statement which must be considered.

In Para 4.2, referring to SPP6, there is the vague statement that

*'in determining proposals for energy development, consideration should be given to the effect on off-site properties, ...'*

No mention of the fact that SPP6 also states that

*'...should ensure that proposals are not permitted if they would have a significant and long term detrimental impact on the amenity of people living nearby'.*

PAN 45 confirms that development up to 2 km is likely to be a prominent feature in an open landscape and at 93.5m in height these would be very intrusive

*'This amended proposal will of course bring forward significantly greater benefits than the approved scheme as outlined in the ES, without causing any significantly greater harm.' !*

It is clear that this development would have a significant detrimental impact on local homes, particularly at Nether Finlarg where four non-financially involved houses are within 1050m of the nearest turbine. A noticeable absence from the Planning Statement photo-montages is the simulated view from Nether Finlarg cottages, especially since the application refers to the reduction in the threat to residential amenity by the removal of one turbine, the closest to the community. Since this simulated view was shown in the earlier application it is surprising that the claimed improvement in amenity

*'four turbine layout presents a tighter cluster of turbines with a reduced visual spread and increases the separation distance from key sensitive receptors to the benefit of amenity.'*

is not used as supporting evidence.

In Para 5.3 referring to 'climate change benefits'

*'climate change benefits of renewable energy development are important material considerations in the determination of renewable energy planning applications.'*

There is absolutely no proof for this claim, and government targets are not part of planning policy.

Para 5.4 Economic Benefits

*The developers are proposing a community benefit package of £46,000 per annum (£5,000 per MW) over the 25 year life of the project.*

It has been stated very clearly, on many occasions, that so-called 'community benefits' are not part of the planning process. This is clearly an attempt to influence community opinion – to the detriment of other members of the community.

Finally, Fig 6-9a, (Photomontages\_1\_16) shows the expected view from Gallowfauld, yet the viewpoint indicator, marked very clearly on the map is some 750m closer to the turbines, to the west of North Tarbrax farm.

I would respectfully request that this application be refused,

Yours sincerely,

A large black rectangular redaction box covering the signature area.

D.R.Powell



## Comments for Planning Application 14/00442/EIAL

### Application Summary

Application Number: 14/00442/EIAL

Address: Frawney Wind Farm Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden

Proposal: Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development

Case Officer: Jamie Scott

### Customer Details

Name: mr Andrew Vivers

Address: arniefoul glamis forfar

### Comment Details

Commenter Type: Member of Public

Stance: Customer objects to the Planning Application

Comment Reasons:

Comment:

Ark Hill wind turbines (8 x 80m Enercon E48 turbines) - One Year On

5 Mar 2013 4 April 2014

I live at Arniefoul which is 5km East of the Ark Hill wind turbines and 1.6km West of the proposed Govals wind turbines (6 x 87m turbines). The prevailing wind is from the West.

Ark Hill was commissioned on 5 March 2013 and at that time I started to have continuous headaches with some light-headedness and tinnitus. Further to this, I also started to suffer frequent sleep disturbance. When I awoke I could often hear the whooshing of the turbine blades. Assuming it was the audible sound that was disturbing me, I moved my bed further away from the window and slept with the window closed. This made no difference to my sleep deprivation usually being woken at around 3am until 5am. With the window closed I rarely hear the turbine noise, but I can sometimes feel their rhythm and therefore deduce that it is an inaudible noise (Low Frequency Noise and Infrasound) that is causing the lack of sleep.

In June 2013 I had two dizzy spells when out walking on the hills surrounding Arniefoul. It was at this time I noticed a correlation between the turbines, the wind direction and the above symptoms. My tinnitus became constant and on some nights extremely loud.

My symptoms appear to be worse when there is a Southerly wind. The Ark Hill turbines rotate clockwise and therefore it is probably an emission during the down stroke that creates the harmful effects. This suggests it may have little to do with the supporting structure and therefore an

upwind or downwind design of turbine will make little difference.

Surprisingly, the prevailing Westerly wind seems to cause slightly less symptoms than a Southerly wind. Turbine noise, however, is most audible when there is little prevailing wind at ground level and at treetop level, but sufficient wind at turbine blade area to turn the blades at a critical speed. In similar conditions to these, when there is an Easterly wind we can easily hear traffic on the A90, 5km to our East, even though there is the huge bund of the Sidlaw Hills between us.

A North or East wind causes slightly less symptoms again, although should the Govals wind turbines be erected, I expect to suffer greatly from those turbines during these wind directions.

January and February 2014 were particularly bad months with predominately Southerly and Westerly winds causing much sleep deprivation, loud tinnitus, lack of concentration and irritability.

On 9 February 2014, I started recording my blood pressure morning and evening. It fluctuates considerably with a recorded high of 185/105. On 28 March for instance, after several days of Easterly wind, it was at a more acceptable 140/83. There appear to be correlations between wind, atmospheric and weather conditions.

Whilst my body may be building some form of resistance to the turbine noises (audible and inaudible) I also believe it is getting more sensitive in certain ways. I sometimes get my turbine headache out to at least 10km from the turbines. Also, I have recently noticed I need to clear my ears more frequently, similar to going up in an airplane or scuba diving.

From 6 - 12 March we stayed near Tarfside, Glen Esk (currently no turbines near there). All my symptoms reduced noticeably, with my blood pressure reaching a low of 136/81.

An obvious option is to sell my property and move (where to?). My work is in the local area and therefore this is not really a business option. Nor is it an emotional option since my family has enjoyed being at Arniefoul for nearly a century.

I have heard of landowners with turbines who now regret having turbines on their land, yet are unable to speak out due to non disclosure clauses in their contracts with developers. Also, I suspect that there are many people living near wind turbines who suffer similar conditions to mine but who remain silent for fear of property devaluation, tenancy or employment concerns, and the like.

I am sure that should the Govals and Frawney (5 x 80m, same make as Ark Hill and West Knock Farm, Buchan) wind turbines be erected, with Forfar and Letham being on the down-wind side, there will be people with similar sensitivity as myself who will suffer. Children are thought to be more sensitive to turbine noises than adults.

People sometimes say that I look well considering the symptoms I describe. I am reluctant to take drugs/medication, with their own potential side effects, when I do not believe they are treating the root cause. I have always made considerable efforts to maintain a high level of fitness.

I understand that:

Low frequency noise and Infrasound (such as emitted by wind turbines) are sound waves that are felt by the body rather than heard, probably by the utricle. Depending upon the amplitude or intensity, it produces feelings of extreme discomfort, a feeling that the body is vibrating. Depending upon the frequency and intensity, infrasound can keep you awake, or induce sleep. Therefore, it can cause sleep deprivation.

Infrasound induces stress and causes the body to secrete the hormone Cortisol. This effect is a medically recognized danger of long-term infrasound exposure.

Cortisol, plays a vital role in preparing our body for stressful fight or flight episodes. It increases blood pressure and blood sugar levels, and has an immunosuppressive action that provides needed alertness and energy during stressful experiences. However, during long term stress, or if Cortisol production is prolonged, its effects on the human body can become severe. A weakened or suppressed immune system will allow existing health problems to accelerate, and make it easier for new ones to be created.

Exposure to infrasound during early sleep hours can be particularly harmful. This is when the body normally produces the lowest levels of Cortisol. This might explain my 3am awakening and subsequent wakefulness. Artificially stimulating Cortisol production during sleep means that the Cortisol is not used and remains in the body, potentially damaging essential body functions.

A sound wave in air is a sequence of pressure changes. A sound wave in a liquid or solid is more like a vibration. This helps explain how Low Frequency Noise and Infrasound travel great distances and easily pass through solid walls, and can set up vibrations or resonances in rooms and body cavities.

There is well-documented and peer-reviewed evidence of the detrimental health effects that turbine emissions have on humans. It is unethical to expose people to something already suspected of being harmful.

Where is the Duty of Care?

Andrew Vivers

Arniefoul, Glamis, DD8 1UD

4 April 2014

ADDENDUM 14/4/14

Since distributing the above "Ark Hill - One Year On" leaflet, an acoustics engineer has come to stay for two nights. I hope to be able to raise the funds for a longer term study.

I understand that:

There appears to be a correlation between my being woken and subsequent wakefulness, and peaks in low infrasound frequencies up to 3Hz. &#8232;

The peak frequencies emitted by turbines are typically less than 5Hz. Our UK legislation on this matter, ETSU-R-97, is totally inadequate since it is only concerned with 'audible' noise, ie. above 20Hz (few people can hear sounds below 20Hz).

The fact that we can not hear a sound does not make it any less harmful.

Audible sound attenuates (decreases in energy/volume) at a rate of minus 6 decibels (dB) per doubling of distance from the source. Infrasound attenuates at minus 3dB per doubling of distance, out to about 50km (which is probably why our Ministry of Defense has opposed wind turbine applications within 50 km of the Eskdalemuir Seismic Array). Also, infrasound tends to have more of a ground hugging nature and does not readily dissipate into the high atmosphere. This helps explain why the effects of infrasound are noticed at much greater distances than audible sound.

For humans, the annoyance threshold for audible sound is around 2dB. Interestingly, the annoyance factor does not then increase with increasing volume/energy.

Turbines can emit infrasound even if the blade is not turning. A gently breeze can cause the tower and/or blades to resonate and emit infrasound.

Depending on various factors, a single turbine can emit as much infrasound as a large wind factory. Ark Hill (8 turbines) for instance, was at times comparable to a 100+ turbine wind factory.

The fact that industrial sized turbines emit Infrasound/Low Frequency Noise (ILFN) can not be disputed.

The fact that ILFN is harmful to humans can not be disputed.

There is ample peer-reviewed evidence from around the world that "proves beyond reasonable doubt" that wind turbine neighbours experience detrimental health effects.

The logical conclusion is that the ILFN emissions from turbines are causing the ill health, however, even if it is not, turbines should be dismantled until the cause is found and rectified. The wind industry make claims similar to: 'Turbines are not known to cause harm to humans'. The above information must cast considerable doubt on their claims. Also, their statements are certainly not the same as saying "Turbines are known not to cause harm to humans"

It is unethical to expose people to something already suspected of being harmful. I ask again, "Where is the 'Duty of Care'"?



EMAIL FROM A GLAMIS COMMUNITY COUNCILLOR RECEIVED 5 April 2014

Dear Andrew

I am very surprised you suffer thus from the wind farm as we live closer and never notice such symptoms. Perhaps your tinnitus is from your army career, as my tinnitus is from my many youthful days loading on the grouse moor. If I was that ill i would not publicise the fact - what do you hope to achieve by such a leaflet?

I am delighted Juliet is not mentioned in your catalogue of ailments, but you should have included a mention of your deteriorating mental state.

I suggest you should simply sell up and move, as the Govals wind farm will surely be much closer to you than Arkhill wind farm

Kind regards John

(note: John is a renewables energy consultant, ex director of Ark Hill Wind Farm, ex factor of Strathmore Estates [25% ownership of Ark Hill], and a Glamis Community Councillor)

Infrasound Bullet Points 16 May 2014

People with a blocked or anatomically small helicotrema (a narrow pathway in the cochlea of the ear) have an increased sensitivity to Infrasound and Low Frequency Noise (ILFN).

The main resonant frequencies of a persons internal organs are below 5 Hz. The peak frequencies emitted by turbines are below 5 Hz. Earths resonance frequency is 7.83 hertz.

Some people are sensitive to ILFN out to 30km from a turbine(s).

ILFN frequencies between 3 and 12 Hz cause Rapid Eye Movement (REM) sleep disruption and general sleep deprivation. This in turn can: increase mood swings (happy/violent); inhibit or modify dreams; make people depressed and/or apathetic. The detrimental health effects of sleep deprivation are well documented.

ILFN exposure can cause the body to secrete cortisol which increases blood pressure and blood sugar levels, and has an immunosuppressive action. A suppressed immune system will allow existing health problems to accelerate and make it easier for new ones to be created. The effects are worse if exposed to ILFN during sleep hours.

Our bodies try to protect vital organs from ILFN bombardment by laying down extra collagen, causing a thickening of the pericardium and blood vessel walls for instance, which will also increase the likelihood life threatening health problems.

The wavelength of ILFN at 1Hz is 340mtrs. 5Hz is therefore 68mtrs. The basic calculation for room wall dimension resonance is half the wavelength, but remember: an attic could extend the

whole length of a house, thus if a house is 14 mtrs long, wall resonance could be caused by ILFN at around 12Hz; internal walls can be very thin and not form part of the house foundations; diagonal room measurement is also important. All this may help explain why infrasound is often more noticeable in the smallest room usually the cludgie (loo; often has an outside wall).

Temperature inversion (temperature rising with height before cooling usually around dawn and dusk) can cause sound which would normally dissipate into higher atmosphere to be refracted down. The curve of this sound usually comes back to ground level at about 5km distance from the turbine. If ILFN follows this pattern, it will join the other ground hugging infrasound, increasing the potential danger. ILFN does similarly bounce off cloud base etc.

Audible sound is emitted from turbines in a butterfly wing shape, with minimal noise directly downwind, upwind, right or left. Larger forewings are downwind. Infrasound may do the same. Turbines can emit ILFN even when the blades are not turning. A gentle breeze can cause the tower and/or blades to resonate.

Many people who believe they are suffering adverse health effects from wind turbines are hesitant to report their symptoms due to the manner in which their claims have often been discounted or ignored by the wind industry and government officials (Hansard, 2009, pp.G-516, G-547). Experts contend that the quantity, consistency, and ubiquity of the complaints constitute epidemiological evidence of a strong link between turbine noise, ill health, and disruption of sleep (BMJ2012; 344:e1527).

Individuals should not have to prove the effect, only perceive it. Self reporting is an important tool in the process.

The World Health Organisation (WHO) considers a sleep journal as a valid tool for documenting sleep disturbance.

On 21 Jan 2013, the State of Wisconsin (USA) imposed a moratorium on industrial turbines until further health research is conducted.

On 7 Nov 2013, a Falmouth judge (USA) ordered local turbines to cease operating between 7pm and 7am and all day Sunday in order to avoid irreparable physical and psychological harm to local residents.

Arniefoul, Glamis, Angus, DD8 1UD andrewvivers@hotmail.com

27 April 2014

North East Scotland (Liberal Democrat)

Ellon Business Centre

Broomiesburn Road

Ellon AB41 9RD

&#8232;Ref: Your letter of 14 April 2014

Dear Mrs McInnes

&#8232;WIND TURBINE SYNDROME

&#8232;Thank you for taking the time to follow up on my letter of 4 April.

&#8232;Health concerns in Scotland are ignored because of a sentence, a mere aside in a

bracket.

We are told by Angus Council that current Scottish Government guidance states there is NO EVIDENCE of turbine health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested. ([http:// www.scotland.gov.uk/Resource/0044/00440315.pdf](http://www.scotland.gov.uk/Resource/0044/00440315.pdf)). The quote is from a bracketed sentence in that link which gives no direct reference to the actual Hayes Mackenzie 2006 report from which it took the information; a report that is EIGHT years old and during which time turbines in Scotland have grown considerably in number, height and capacity. Reports of ill-health associated with turbines are now prolific around the world.

Hayes Mackenzie 2006 powerpoint presentation Low Frequency and Infrasound Noise Immission (sic) from Wind Farms and the potential for Vibro-Acoustic disease <http://www.hayesmckenzie.co.uk/downloads/LF%20and%20Infrasound%20Noise%20Immission%20from%20Wind%20Farms%20and%20the%20Potential%20for%20Vibro%20Acoustic%20Disease%20-%20Malcolm%20D%20Hayes.pdf>) shows that Infrasound and Low Frequency Noise (ILFN) are emitted by turbines; it states that ILFN can be harmful to humans (known as Vibroacoustic Disease or VAD) and gives a time/symptom chart; it then concludes that it is UNLIKELY that symptoms will result through induced internal body vibration from incident wind farm noise.

This is definitely not the same as the Scottish Government quote above. UNLIKELY is not NO EVIDENCE.

I ask : are measurements independently and continuously taken of ILFN emissions by turbines in Scotland. Are they correlated with reported health effects?

Are we to understand that turbines in Scotland do not affect the local population, yet they do elsewhere in the world?

This report also states: Dr Mariana Alves-Pereira, in discussion with Dr Amanda Harry in the UK and Dr Nina Pierpont in the US, is now looking into the low- frequency noise and infrasound produced by industrial wind turbines to determine whether they too can cause VAD. Dr Alves-Pereira's initial assessment, based on noise measurements taken inside and outside the homes of wind turbine neighbours, is that turbines are indeed a likely cause of VAD. Dr Pierpont named the effect as Wind Turbine Syndrome (WTS).

With regard to the VAD chart, the report makes a comparison between aircraft technicians, who may experience high levels of ILFN for short periods during their working day, and wind turbine neighbours who experience constant or intermittent and variable ILFN (the tower and/or blades can resonate and emit ILFN even when the blades are not turning). Added to this must be the additional factor for those who live and try to sleep near wind turbines, is that ILFN exposure, which disrupts sleep via repetitive physiological stress and wakening, will do damage to health via sleep deprivation and chronic stress (both of which are well-established in clinical medicine and in the research literature, as harmful).

The report did not produce a WTS chart which would have shown a reduced time of symptom appearance for turbine neighbours. See note 1.

WTS and peer-reviewed reports of the detrimental health effects of turbines have been ignored for

up to 20 years, based on an inaccurate quote and an old document that was not directly considering industrial wind turbines.

&#8232;In another 2006 report by Hayes Mackenzie for the DTI, titled Measurement of Low Frequency Noise at Three UK Wind Farms (<http://www.hayesmckenzie.co.uk/downloads/Measurement%20of%20Low%20Frequency%20Noise%20at%20Three%20UK%20Wind%20Farms.pdf>) from which the powerpoint presentation is taken, the only conclusions it makes (pages 2, 46 & 66), are based on one sentence from the World Health Organisation (WHO) document Community Noise (para 7.1.4 page 64) dated 1995, which itself is not directly concerning wind turbines. That WHO report is nearly TWENTY years old!!

The recommendations (page 68) do not appear to have been acted upon. Also see note 2.

I urge you to read this very informative article <http://blogs.telegraph.co.uk/news/jamesdelingpole/100248760/wind-farm-noise-a-government-cover-up/>.

As I mentioned in my 4 April letter, ILFN causes the body to secrete cortisol which has an immunosuppressive action. A suppressed immune system will allow existing health problems to accelerate and make it easier for new ones to be created.!

I also understand that our bodies try to protect vital organs from ILFN bombardment by laying down extra collagen, causing a thickening of the pericardium and blood vessel walls for instance, which will also increase the likelihood life threatening effects.

ILFN should be added to the list of Silent Killers. Not everyone gets cancer - that doesnt make it any less real.

Scotlands wind energy policy is a slower, but no less effective version of the Highland Clearances of 1746 onwards. Properties are sterilised (Angus Council words) or banned from occupancy (Ark Hill); people are forced to relocate or possibly succumb to WTS and probable early death; and our turbine covered hills and glens are becoming desolate places where few people wish to visit or live.

May I refer you to the Kelley research from the 1980's which proved that wind turbine generated impulsive infrasound and low frequency noise from a single down bladed wind turbine directly caused annoyance symptoms at levels of sound energy which could not be heard. Also, Professor Salt's research shows some of the neuropsychological pathways involved.

<http://waubrafoundation.org.au/2013/explicit-warning-notice/> and <http://www.windturbinesyndrome.com/2014/medical-school-research-team-confirms-wind-turbine-infrasound-can-produce-wind-turbine-syndrome-usa/?var=cna>

[www.windturbinesyndrome.com/2014/medical-school-research-team-confirms-wind-turbine-infrasound-can-produce-wind-turbine-syndrome-usa/?var=cna](http://www.windturbinesyndrome.com/2014/medical-school-research-team-confirms-wind-turbine-infrasound-can-produce-wind-turbine-syndrome-usa/?var=cna)

Thank you for your continued interest and action. It is greatly appreciated by many thousands of people in Scotland and around the world, who for various reasons are unable to sell their property or relocate and are therefore forced to succumb to the detrimental health effects of WTS as a result of our futile energy policies, inaccurate quotations and outdated documentation.

Could you call for an urgent moratorium on all industrial turbine developments in Scotland until an independent review of ILFN emissions and their health effects on humans is conducted.

&#8232;Yours sincerely,

Andrew Vivers

Note 1. As a rough calculation (without considering sleep deprivation), the time of symptom

appearance for WTS should be the VAD time reduced by a factor of around 4.2 (turbine neighbours who live and work near turbines, 24hrs x 7days x 48working weeks = 8064 hrs exposure per yr, assuming 4 weeks holiday away from turbines; technicians, 8hrs x 5days x 48weeks = 1920 hrs exposure per yr. 8064 divided by 1920 = 4.2). Thus a 4yr VAD symptom exposure would manifest in 1yr for a WTS exposure, and a 10 year VAD symptom in 2.5yrs for WTS, which indeed appears to be the case!

Note 2. Similarly, one wonders why ETSU-R-97 (The Assessment and Rating of Noise from Wind Farms) uses 35dBA L90 for all turbine locations when it is commonly accepted that typical daytime background noise levels are around 18 to 20dBA L90 in remote rural areas, 30 to 40dBA L90 in typical or quite suburban areas, and 50 to 60dBA L90 for busy urban areas. Night time levels would be much lower.

Dear MrsMcInnes, 8July2014

Thank you for your letter of 29 May and for sight of Derek Mackay's letter. He makes the assumption that a moratorium would lead to a resumption of this policy without any changes. I argue that the moratorium could lead to a cessation of this policy, or at least to a resumption with much tighter conditions and health protection which would include Infrasound (ILFN) monitoring.

Whilst the Scottish Government may chose to be unaware of "a peer reviewed, proven, widely experienced dose-response link between wind turbine operation and health impacts", may I refer him to: <http://waubrafoundation.org.au/resources/wind-turbine-noise-adverse-health-effects-june-2014/>!

He makes reference to my "particular situation". I can assure him that there are many people around Scotland and the world who are suffering similar symptoms as myself but he may not have heard of them because:

they are too ill or already dead

they have not been give access to all relevant information, or have not yet made the connection between their deteriorating health and turbine emissions

if they have made the connection, they are unwilling to make a complaint due to employment, tenancy, property devaluation or other concerns, and indeed maybe their fear of being ridiculed if they have made the connection and voiced concerns and complaints, they have given up due to the manner in which their claims have often been discounted or ignored by the wind industry and government officials (Hansard, 2009, pp.G-516, G-547). Experts contend that the quantity, consistency, and ubiquity of the complaints constitute epidemiological evidence of a strong link between turbine noise, ill health, and disruption of sleep (BMJ2012; 344:e 1527)

As I have mentioned before, I am not complaining about the audible noise from the Ark Hill turbines.

I am seriously complaining about the effects of the infrasound (ILFN) emissions from these turbines - which is not audible. These effects are cumulative, and therefore any visiting officer is unlikely to notice any effects.

The only way for any type of assessment of ILFN is to use good quality ILFN measuring

equipment. As you will read in the addendum to my 'Ark Hill - One Year On' (attached), an acoustics expert came here in early April with suitable monitoring equipment and showed a direct time correlation with my being woken and subsequent wakefulness, and infrasound peaks at 3 Hz. A second monitoring box was placed much closer to the turbines and I am confident that the infrasound came from the turbines and not from some other anomaly that has only occurred since the turbines were erected. Please also see my 'Bullet Points' (attached).

The facts are clear:

Wind turbines emit ILFN, and can do so even when the blades are not turning.

ILFN is harmful to humans and other life forms, and can kill.

In the interests of Public Health, the Scottish Government and local Councils should impose a condition on turbine applications that ILFN is measured before and after turbine erection (for a period of a few weeks/months).

ILFN measurement should be a mandatory tool that is used to assess any reported health effects from turbines. This could show a direct time correlation between symptom and ILFN peaks.

I hope this is of interest and that the correct action will be taken to protect public health.

Andrew Vivers&#8232;Arniefoul, Glamis, Angus, DD81UD

Email sent 12 Sept 2014

The link between Vibro Acoustic Disease (VAD) and Wind Turbine Syndrome (WTS)

VAD is an acknowledged medical disease caused primarily by the frequencies of Infrasound (0 - 20Hz) and Low Frequency Noise (20 - 500Hz).

These frequencies are commonly grouped together as ILFN (0 - 500Hz). [1]

Respiratory pathology induced by ILFN is not a novel subject given that in the 1960's, within the context of U.S. and U.S.S.R. Space Programs, its existence was being reported. [2]

Central nervous system disorders in workers exposed to ILFN were first observed 25 years ago among aircraft technicians. Concurrently, respiratory pathology was identified in these workers, and later reproduced in ILFN-exposed animal models. [3]

In 1987, the first autopsy of a deceased VAD patient was performed. The extent of ILFN induced damage was overwhelming, and the information obtained is, guiding many of the associated and ongoing research projects. [4]

In both human and animal models, ILFN exposure causes thickening of cardiovascular structures.

Pericardial thickening with no inflammatory process, and in the absence of diastolic dysfunction, is the hallmark of VAD.

Depressions, increased irritability and aggressiveness, a tendency for isolation, and decreased cognitive skills are all part of the clinical picture of VAD.

In VAD, the end-product of collagen and elastin growth is reinforcement of structural integrity. This is seen in blood vessels, cardiac structures, trachea, lung, and kidney of both VAD patients and ILFN-exposed animals. This means that blood vessels can become thicker, thus impeding the normal blood flow. Within the cardiac structures, the parietal pericardium and the mitral and aortic valves also become thickened

When echocardiography, brain MRI or histological studies are performed, structural changes can be identified, all consistently show significant changes in VAD patients and ILFN-exposed animals.

Wind Turbines are known to emit a broad spectrum of ILFN frequencies, with peak frequencies at below 5Hz.

In Portugal ILFN has been extensively researched, and occupational VAD symptoms have been grouped according to length of exposure during work hours.

Those living and working near wind turbines are obviously exposed to Infrasound 24/7. Exposure at night can often result in considerably sleep deprivation.

The detrimental health effects of sleep deprivation are well recognised medically.

The Hayes Mackenzie 2006 report which is often quoted by Government and Council officials gives a time to symptom chart for VAD. [5] The chart is shown below, and is based on occupational exposure to noise (ILFN).

## VAD SYMPTOMS

Stage 1 (Mild) 1-4 yrs: Slight mood swings; Indigestion; Heart burn; Mouth/throat infections; Bronchitis.

Stage 2 (Moderate) 4-10 yrs: Chest pain; Definite mood swings; Back pain; Fatigue; Fungal, viral & parasitic infections; Inflammation of stomach lining; Pain and blood in urine; Conjunctivitis; Allergies.

Stage 3 Severe (10 + yrs): Psychiatric disturbances; Haemorrhages of nasal, digestive & conjunctive mucosa; Varicose veins & haemorrhoids (piles); Duodenal ulcers; spastic colitis; Decrease in visual acuity; Headaches; Severe joint pain; Intense muscular pain; Neurological disturbances.

Among the most serious consequences of untreated VAD are rage-reactions, epilepsy, and suicide.

As a rough calculation, without considering sleep deprivation, the time of symptom appearance for ILFN induced WTS should be the VAD time, reduced by a factor of around 4.2 (turbine neighbours who live and work near turbines, 24hrs x 7days x 48working weeks = 8064 hrs exposure per yr, assuming 4 weeks holiday away from turbines; occupational exposure, 8hrs x 5days x 48weeks = 1920 hrs exposure per yr. 8064 divided by 1920 = 4.2).

Thus a 4yr VAD symptom exposure would manifest in 1yr for a WTS exposure, and a 10 year VAD symptom in 2.5yrs for WTS, which indeed appears to be the case.

## IFLN INDUCED WIND TURBINE SYMPTOMS

Less than 1 yr: Headaches; Dizziness; Sleep deprivation; Haemorrhoids; Umbilical hernia; High blood pressure; Fatigue; Tinnitus; Vertigo; Poor concentration & memory; Slight mood swings.

1-4 yrs: Nausea/seasickness; Panic attacks; Annoyance, anger & aggression; Increased agitation of those with Autistic Spectrum Disorder and ADD/ADHD; Increased blood sugar levels.

4-10 yrs: Thickening of pericardium and blood vessel walls plus other soft tissue damage.

Many other chronic health problems are thought to be created or accelerated, probably by infrasound-induced increased levels of cortisol (which lowers our immune system).

On 5 Sept 2014, the Waubra Foundation wrote to NSW Planning Assessment Commission regarding the Gullen Range Wind Development [6]. This letter contains much important information regarding ILFN.

The facts are clear:

1. Wind turbines emit ILFN, and can do so even when the blades are not turning.
2. ILFN is harmful to humans and other life forms, and can kill.
3. In the interests of Public Health, the Scottish Government and local Councils should immediately impose a condition on turbine applications that ILFN is measured before and after turbine erection.
4. ILFN monitoring should be a mandatory tool that is used to assess any reported health effects from turbines.

Andrew Vivers

Arniefoul, Glamis, Angus, DD8 1UD

## References

1. <http://www.ncbi.nlm.nih.gov/pubmed/17014895>
2. <http://www.ncbi.nlm.nih.gov/pubmed/17315094>
3. <http://www.ncbi.nlm.nih.gov/pubmed/16969569>



4. <http://www.ncbi.nlm.nih.gov/pubmed/15273020>
5. <http://www.hayesmckenzie.co.uk/downloads/LF%20and%20Infrasound%20Noise%20Immission%20from%20Wind%20Farms%20and%20the%20Potential%20for%20Vibro%20Acoustic%20Disease%20-%20Malcolm%20D%20Hayes.pdf>
6. [http://waubrafoundation.org.au/wp-content/uploads/2014/09/GRWF\\_WF\\_Submission\\_to\\_PAC\\_Final\\_Sept\\_2014.pdf](http://waubrafoundation.org.au/wp-content/uploads/2014/09/GRWF_WF_Submission_to_PAC_Final_Sept_2014.pdf)



## Comments for Planning Application 14/00442/EIAL

### Application Summary

Application Number: 14/00442/EIAL

Address: Frawney Wind Farm Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden

Proposal: Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development

Case Officer: Jamie Scott

### Customer Details

Name: mrs christina walker

Address: home farm balgavies forfar

### Comment Details

Commenter Type: Miscellaneous

Stance: Customer made comments in support of the Planning Application

Comment Reasons:

Comment: Dear Mr Scott

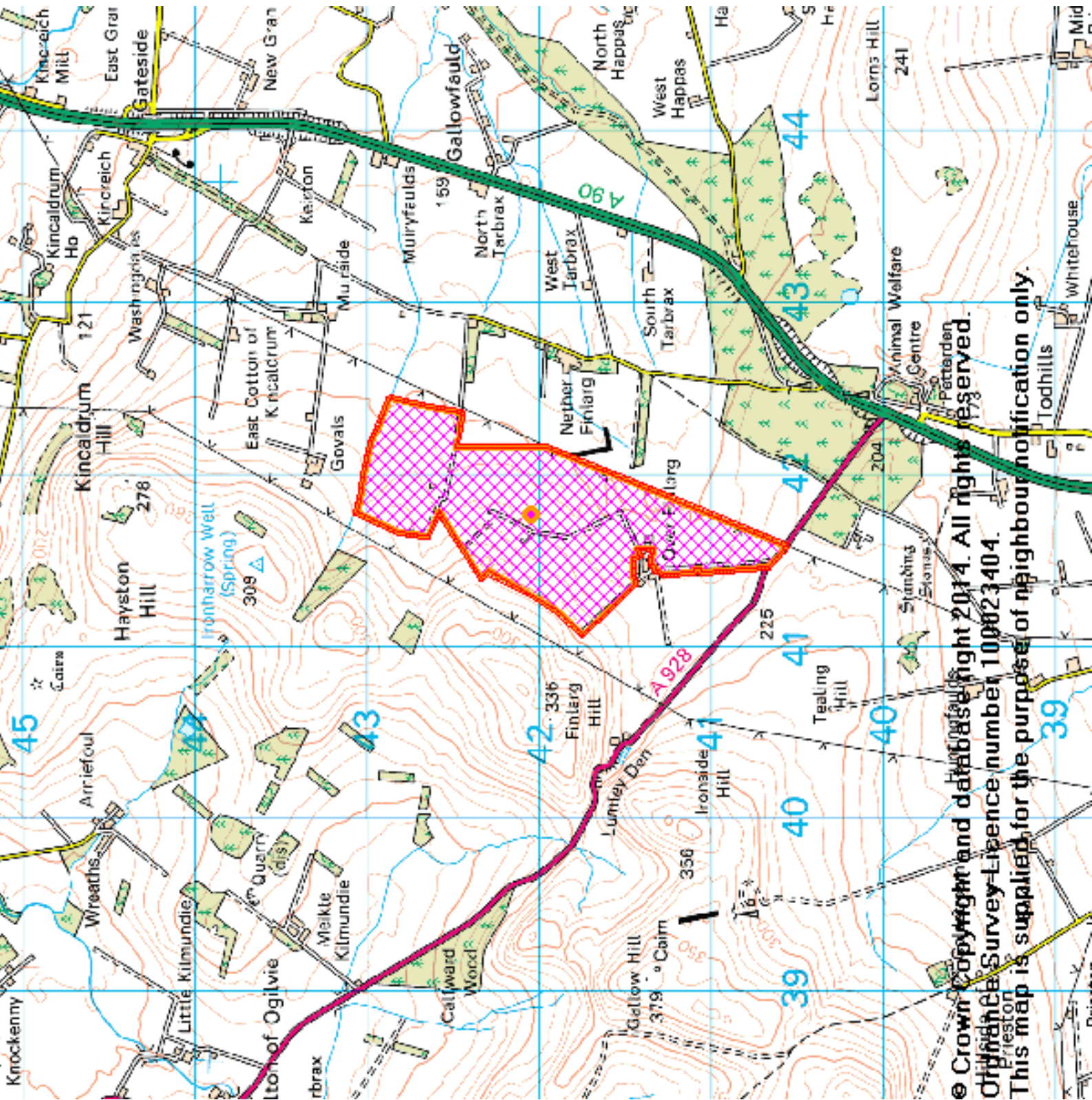
The countryside officers comments on this application clearly show that any additional impact from the turbines' being taller is balanced by the reduction in their number and the reduced residential impact. The judgement is finely balanced in terms of landscape and visual impact. But the vast increase in power must also be considered. To put this in to perspective, an additional 5.2 megawatt of capacity is proposed: the equivalent of an additional 11 turbines at 80m height would need to be consented elsewhere, whether in Angus or not, to produce the same output as the turbines proposed. And by constructing one less than there is already consent for. All this for practically no increase in landscape or visual impacts.

The site can have 5 turbines constructed whatever. Surely it's better to maximise the benefit of this by avoiding the construction of an extra 11 turbines elsewhere to gain an extra 5.2mw of renewable power and having one less turbine than the original consent into the bargain?

Yours sincerely,

CGW





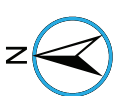
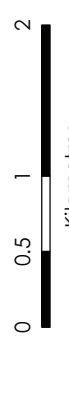
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This map is supplied for the purpose of neighbour notification only.



# Frawney Wind Farm Polar Energy (Finlarg) Ltd

Figure 1-1  
Site Location

Key  Site boundary



Scale @ A3:  
1:50,000

AC31



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05/06/2013 Drawn by: SL Checked by: TH Approved by: FS  
4603/LP/055b

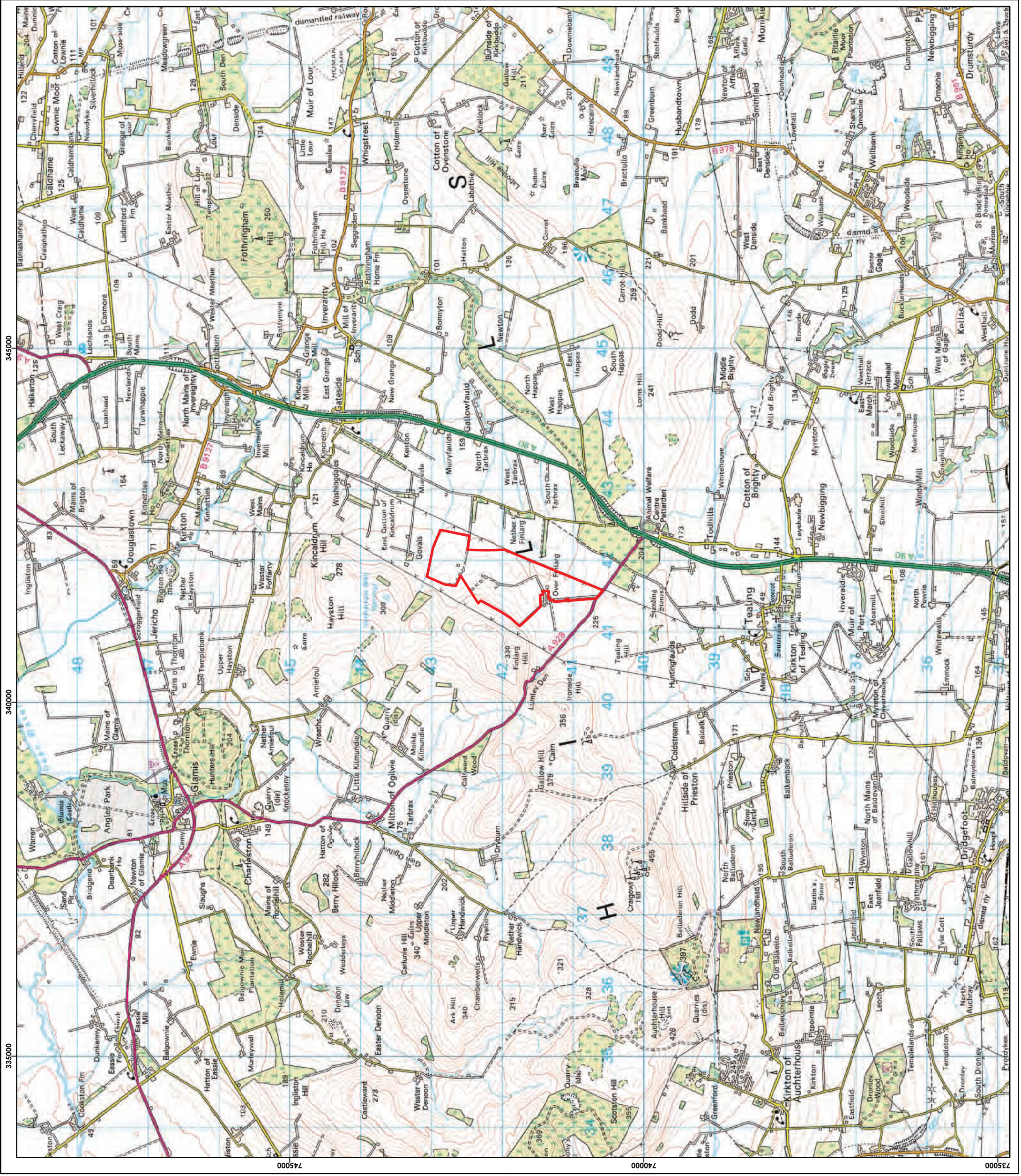


Figure 3-2  
Site Layout

**Key**

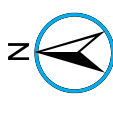
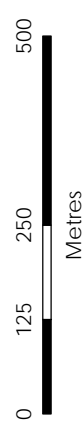
Site boundary

Turbine locations:

- 1 - 341337, 742050
- 2 - 341457, 742332
- 3 - 341790, 742444
- 4 - 341668, 742131

Site infrastructure

- Turbine foundation
- Temporary construction compound
- Control building and substation
- Crane hardstanding
- New access track
- Upgraded access track
- Permanent met mast

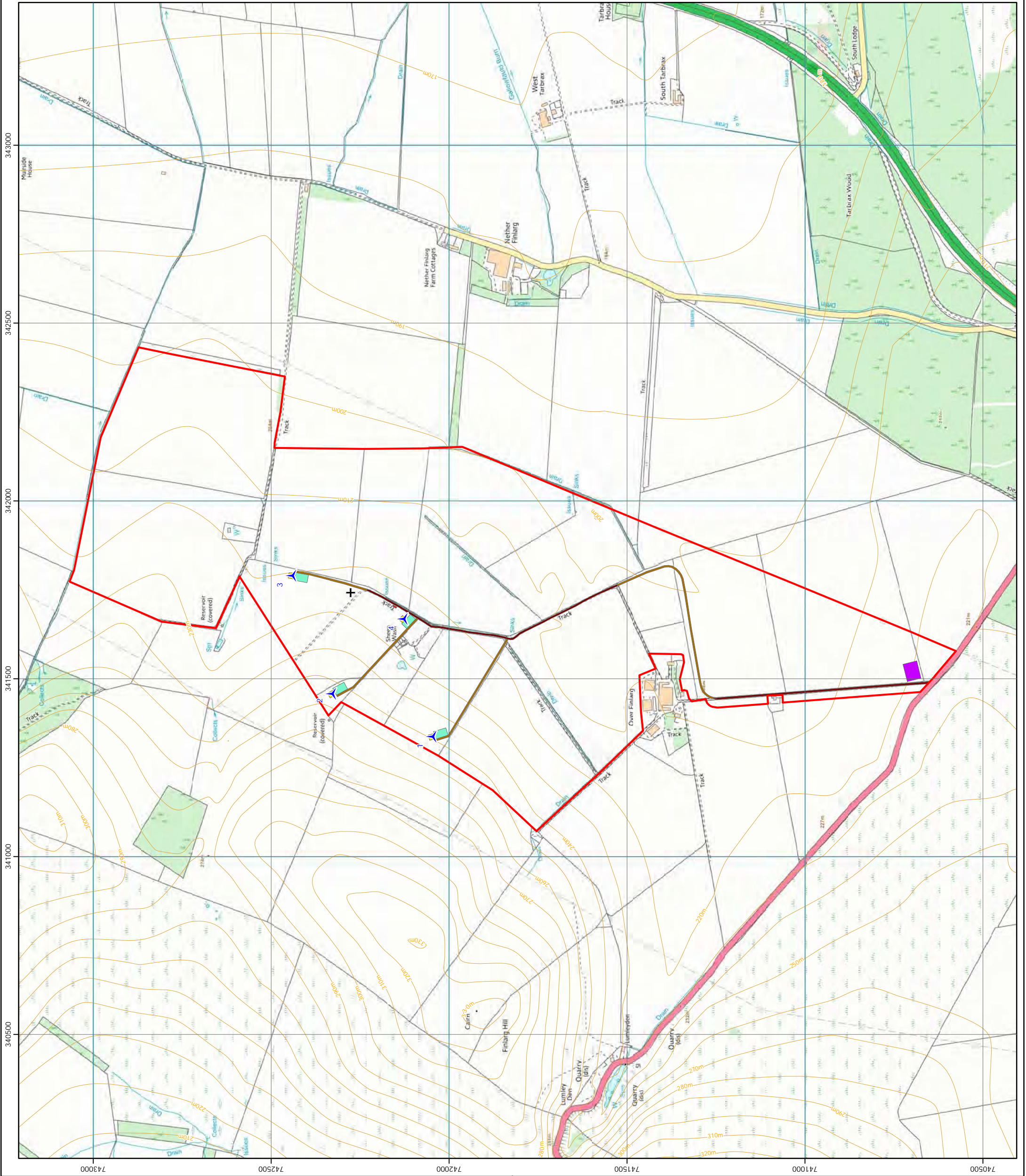


Scale @ A3:  
1:10,000

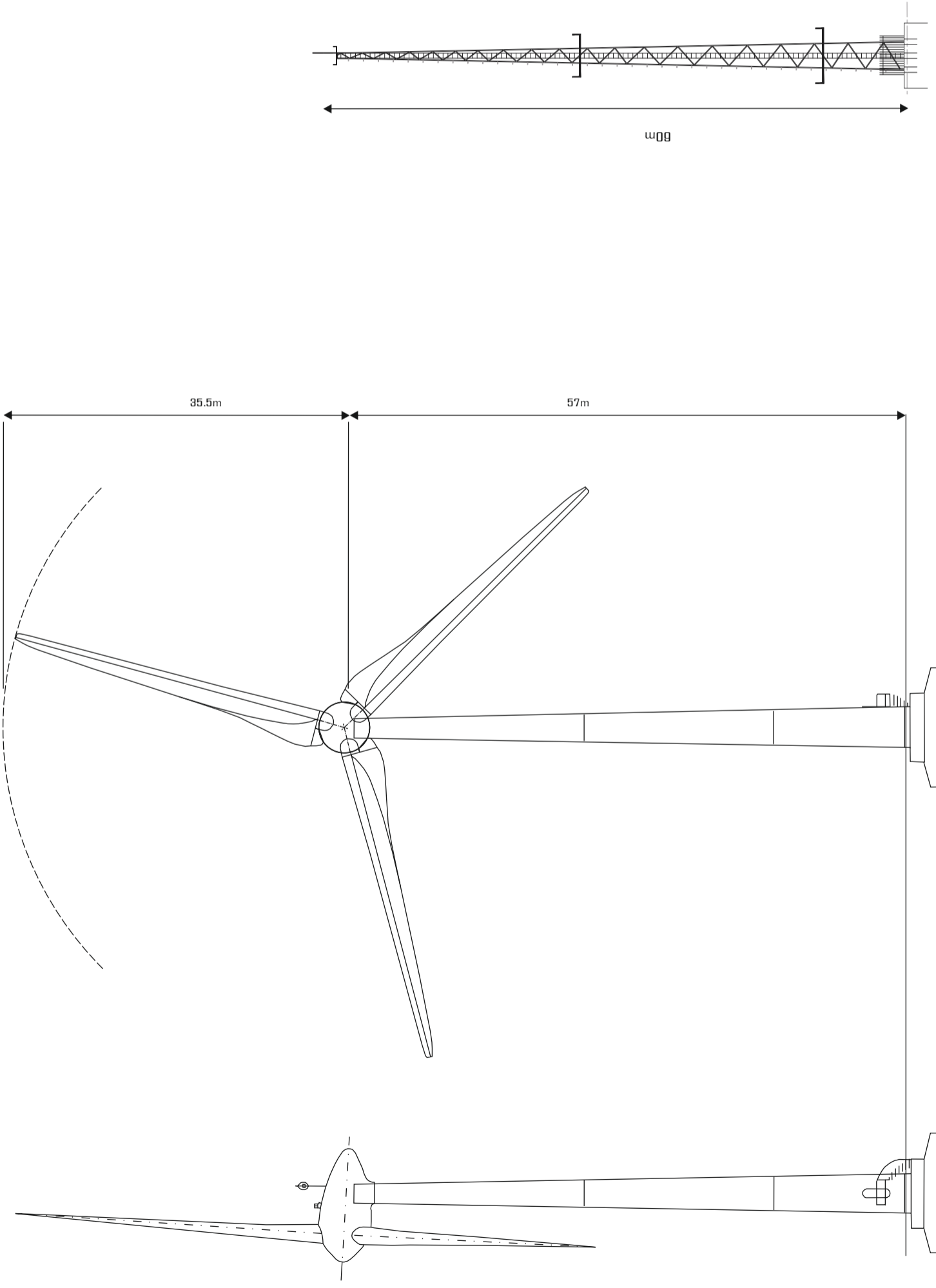
**AC31**



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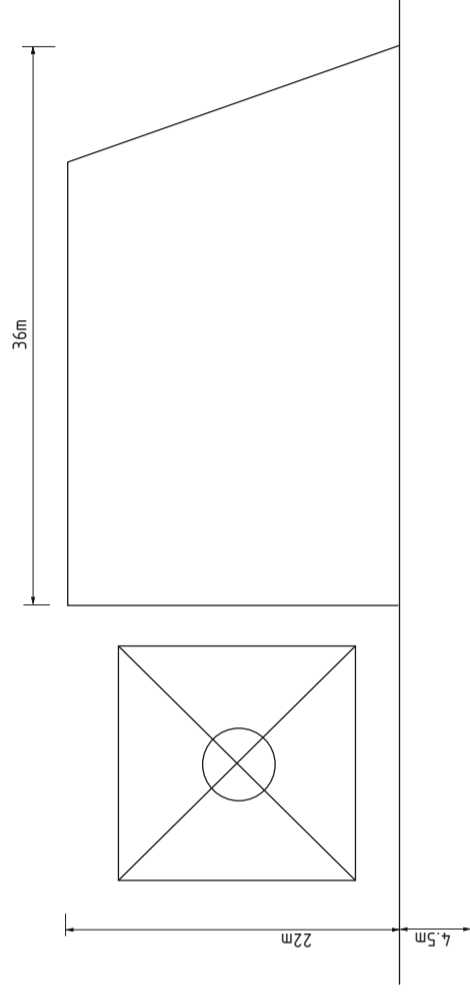




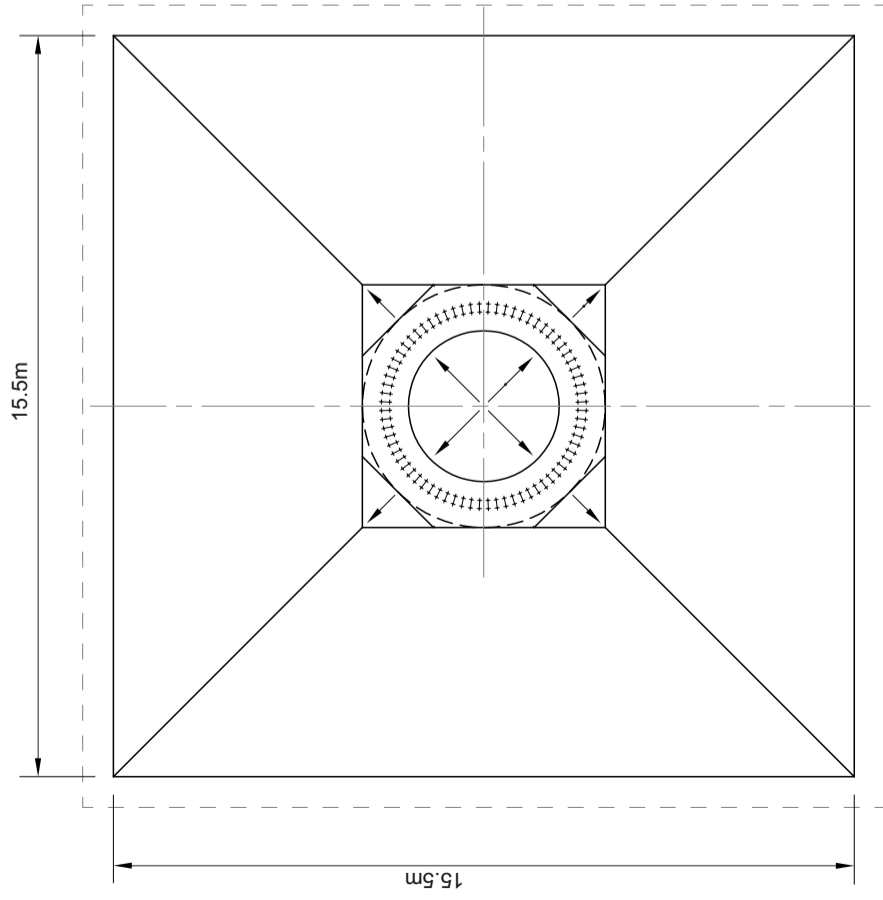


Typical Meteorological Mast  
Approximate Scale - 1:500

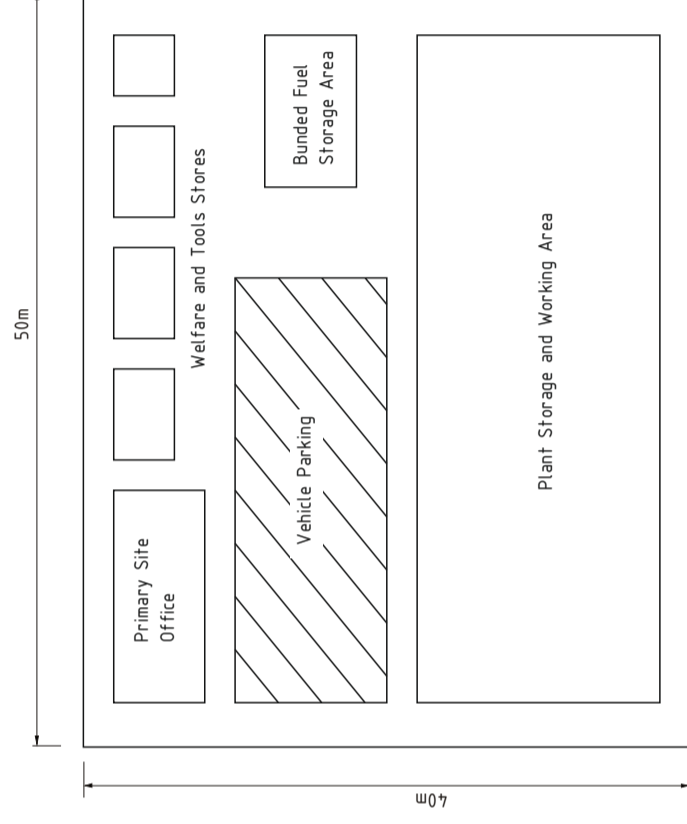
Typical Wind Turbine  
Approximate Scale - 1:500



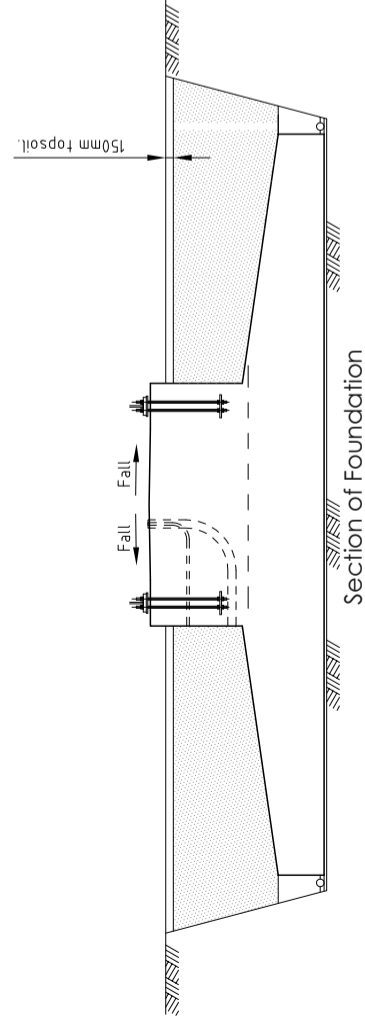
Typical Installation Area  
Approximate Scale - 1:500



Plan of Foundation



Typical Construction Compound Area  
Approximate Scale - 1:500



Typical Gravity Base Turbine Foundation  
Approximate Scale - 1:160

Section of Foundation

ANGUS COUNCIL



TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997  
(AS AMENDED)  
TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE)  
(SCOTLAND)  
REGULATIONS 2013

PLANNING PERMISSION REFUSAL  
REFERENCE 14/00442/EIAL

To **Polar Energy (Finlarg) Ltd**  
c/o Atmos Consulting Limited  
FAO Tom Parkyn  
Rosebery House  
9 Haymarket Terrace  
Edinburgh  
EH12 5EZ

With reference to your application dated 4 June 2014 for planning permission under the above mentioned Acts and Regulations for the following development, viz.:-

**Erection of 4 Wind Turbines of 57 Metres to Hub Height and 92.5 Metres to Blade Tip and Ancillary Development at Frawney Wind Farm Field 1020M North Of Over Finlarg Farm Over Finlarg Lumleyden for Polar Energy (Finlarg) Ltd**

The Angus Council in exercise of their powers under the above mentioned Acts and Regulations hereby **Refuse Planning Permission (Delegated Decision)** for the said development in accordance with the particulars given in the application and plans docketed as relative hereto in paper or identified as refused on the Public Access portal.

**The reasons for the Council's decision are:-**

- 1 That by virtue of the height of the proposed wind turbines, the development is contrary to Policy 6 of TAYplan and Policies S3, ER5 criteria (a) and (c) and ER34 criterion (b) of the Angus Local Plan Review as it would result in unacceptable adverse landscape impacts having regard to landscape character and setting.
- 2 That by virtue of the height and proportions of the proposed turbines, the development is contrary to Policy 6 of TAYplan and Policies S1 (b), S6 (b), ER34 (a) and (b) and ER35 (f) of the Angus Local Plan review as, cumulatively with other operational and/or approved turbines, the proposal would have an unacceptable impact on the visual resource of the area and the visual amenity of receptors.

The application has not been subject of variation.

Dated this **2 October 2014**

Iain Mitchell - Service Manager  
Angus Council  
Communities  
Planning  
County Buildings  
Market Street  
FORFAR  
DD8 3LG

