

Committee for the Environment

Report on the Committee's Inquiry into Wind Energy Volume 3

Written submissions relating to the report

Ordered by the Committee for the Environment to be printed 29 January 2015

This report is the property of the Committee for the Environment. Neither the report nor its contents should be disclosed to any person unless such disclosure is authorised by the Committee.

**REPORT EMBARGOED UNTIL
COMMENCEMENT OF THE DEBATE IN PLENARY**

Membership and Powers

The Committee for the Environment is a Statutory Departmental Committee established in accordance with paragraphs 8 and 9 of the Belfast Agreement, section 29 of the Northern Ireland Act 1998 and under Standing Order 48.

The Committee has power to:

- Consider and advise on Departmental budgets and annual plans in the context of the overall budget allocation;
- Consider relevant secondary legislation and take the Committee stage of primary legislation;
- Call for persons and papers;
- Initiate inquiries and make reports; and
- Consider and advise on any matters brought to the Committee by the Minister of the Environment

The Committee has 11 members including a Chairperson and Deputy Chairperson and a quorum of 5. The membership of the Committee since 9 May 2011 has been as follows:

Ms Anna Lo MBE (Chairperson)
 Ms Pam Cameron (Deputy Chairperson)¹
 Mr Cathal Boylan
 Mr Colum Eastwood²
 Mrs Sandra Overend^{3, 4}
 Mr Alban Maginness^{5, 6}
 Mr Ian McCrea^{7, 8, 9, 10}
 Mr Barry McElduff^{11, 12}
 Mr Ian Milne^{13, 14}
 Lord Morrow
 Mr Peter Weir

-
- 1 With effect from 10 September 2013 Ms Pam Cameron replaced Mr Simon Hamilton as Deputy Chairperson
 - 2 With effect from 18 June 2012 Mr Colum Eastwood replaced Mr John Dallat
 - 3 With effect from 23 April 2012 Mr Tom Elliott replaced Mr Danny Kinahan
 - 4 With effect from 04 July 2014 Mrs Sandra Overend replaced Mr Tom Elliott
 - 5 With effect from 23 April 2012 Mrs Dolores Kelly replaced Mr Patsy McGlone
 - 6 With effect from 07 October 2013 Mr Alban Maginness replaced Mrs Dolores Kelly
 - 7 With effect from 20 February 2012 Mr Gregory Campbell replaced Ms Paula Bradley
 - 8 With effect from 01 October 2012 Mr Alastair Ross replaced Mr Gregory Campbell
 - 9 With effect from 07 May 2013 Mr Sydney Anderson replaced Mr Alastair Ross
 - 10 With effect from 16 September 2013 Mr Ian McCrea replaced Mr Sydney Anderson
 - 11 With effect from 08 May 2012 Mr Chris Hazzard replaced Mr Willie Clarke
 - 12 With effect from 10 September 2012 Mr Barry McElduff replaced Mr Chris Hazzard
 - 13 With effect from 07 April 2013 Mr Francie Molloy resigned as a Member
 - 14 With effect from 15 April 2013 Mr Ian Milne replaced Mr Francie Molloy
-

Table of Contents

Volume 1

List of abbreviations	iv
-----------------------	----

Report

Executive Summary	1
-------------------	---

Key Conclusions and Recommendations	3
-------------------------------------	---

Introduction	7
--------------	---

Background	7
------------	---

Scope and Terms of Reference	7
------------------------------	---

The Committee's Approach	8
--------------------------	---

Consideration of the Evidence	10
-------------------------------	----

Adequacy of PPS18	10
-------------------	----

Wind Turbine Noise	20
--------------------	----

Setback (Separation) distance	24
-------------------------------	----

Development of other forms of renewable energy	27
--	----

Community Engagement	29
----------------------	----

Community benefits	33
--------------------	----

Appendix 1

Minutes of proceedings	39
------------------------	----

Appendix 2

Minutes of Evidence	71
---------------------	----

Volume 2

Appendix 3

Written submissions	241
---------------------	-----

Volume 3

Appendix 3

Written submissions (<i>continued</i>)	742
--	-----

Volume 4

Appendix 3

Written submissions (<i>continued</i>)	1077
--	------

Volume 5

Appendix 4

Departmental papers 1683

Appendix 5

Papers from other Departments 1699

Appendix 6

Research papers requested by the Committee 1843

Volume 6

Appendix 7

Other papers submitted to the Committee 1911

Volume 7

Appendix 7

Other papers submitted to the Committee (*continued*) 2262

Appendix 8

List of witnesses 2587

List of abbreviations

The Minister	The Minister for the Environment
The Department	Department of the Environment
AM	Amplitude Modulation
AONB	Area of Outstanding Natural Beauty
CIEH	Chartered Institute of Environmental Health
DETI	Department of Enterprise, Trade and Investment
DOE	Department of the Environment
EIA	Environmental Impact Assessment
ETSU	Energy Technology Support Unit
EU	European Union
HSENI	Health and Safety Executive Northern Ireland
MW	Megawatt
NIAPA	Northern Ireland Agricultural Producers Association
NIE	Northern Ireland Electricity
NIRIG	Northern Ireland Renewables Industry Group
NREAP	National Renewable Energy Action Plans
PAD	Pre-application Discussion
PfG	Programme for Government
PHA	Public Health Agency
PPS	Planning Policy Statement
QUB	Queen's University Belfast
RES	Renewable Energy Systems
SPPS	Single Planning Policy Statement
ToR	Terms of Reference
UFU	Ulster Farmer's Union
UU	University of Ulster

List of submissions

1.	Aircore
2.	Andrew White
3.	Anne Flynn
4.	Antrim Borough Council
5.	ABO Wind NI Ltd
6.	Armagh City and District Council
7.	Ballymena Borough Council
8.	Basil and Rodica Conn
9.	Board Gais Energy
10.	Braid Valley Preservation Group
11.	Brendan Maguire
12.	Broughderg Area Development Association
13.	Canavan Associates Ltd
14.	Carrigatuke against Turbines Residents Group
15.	Piers Carty
16.	Castlereagh Borough Council
17.	Causeway Coast Glens Heritage Trust
18.	Chief Environmental Health Officers Group NI
19.	Community Places
20.	Consumer Council
21.	Cookstown District Council
22.	Craigavon Borough Council
23.	D McNeilly
24.	David Boggs
25.	David O'Neill
26.	Deise Against Pylons Ireland
27.	Department of Enterprise Trade and Investment
28.	Drumsum Concerned Community Group
29.	Emma Kiely
30.	Emma McCarthy
31.	Committee for Employment and Learning
32.	ESB Generation and Wholesale Markets
33.	Committee for Enterprise Trade and Investment
34.	Fergal Campbell
35.	Fermanagh District council

36.	Fermanagh Trust
37.	First Flight Wind Ltd
38.	Gaelectric
39.	Geoffrey Simpson
40.	Gerard Flynn
41.	Gianni Alen-Buckley
42.	Harland and Wolff
43.	Heritage Council Kilkenny
44.	Irish Planning Institute
45.	Jason Kerr
46.	Joanne Addie
47.	Dr Jackie Paddison
48.	John Weigel
49.	Juno Planning
50.	Karen Gibson
51.	Kath O'Brien
52.	Ken McLeod
53.	Landscape Institute Northern Ireland
54.	Lisnahaney Residents Group
55.	Midi Walsh
56.	Minister of the Environment
57.	Mountaineering Ireland
58.	Sean and Gemma McGlinchey
59.	National Trust
60.	Nerys Coleman
61.	Newtownabbey Borough Council
62.	Northern Ireland Electricity Ltd
63.	Northern Ireland Electricity Link
64.	ORRA Action Group
65.	Paul Quinn
66.	Patrick Galbraith
67.	Paul Malloy
68.	Paul Webster
69.	Paul Wright
70.	Pauline and Keith Graham
71.	Prof Alun Evans
72.	Committee for Regional Development

74.	RES
75.	Robert Graham
76.	Robert Wallace
77.	RSPB
78.	Rural Community Network
79.	Scottish Power Renewables
80.	Shanti McAllister Landscape Planning and Design
81.	Simple Power
82.	Sinead Galbraith
83.	Southern Group Building Control
84.	SSE Renewables
85.	Strabane District Council
86.	Strategic Planning
87.	TCI Renewables
88.	Teresa Galbraith
89.	The Institute of Public Health Ireland
90.	Thomas John Johnston
91.	Traude Graham
92.	Ulster Farmers Union
93.	Victoria Berryman
94.	Violet Wright
95.	Viridian
96.	West Tyrone Against Wind Turbines
97.	Windwatch NI
98.	Windyfields

Juno Planning

JUNO | PLANNING &
ENVIRONMENTAL
LIMITED

28th February 2014

Environment Committee
Room 373
Parliament Buildings
Ballymiscaw,
Stormont,
Belfast
BT4 3XX

322A Ormeau Road,
Belfast, BT7 2GE

t: +44 (0)28 9064 5222
+44 (0)28 9064 4848
e: info@junoplanning.com
w: junoplanning.com

Dear Chairperson,

Response to Call for Evidence to the Inquiry into Wind Energy

We thank you for the opportunity to provide evidence to the 'Inquiry into Wind Energy.' JUNO Planning & Environmental are an established planning consultancy based in Belfast. Our evidence is based upon the 'Terms of Reference (ToR)' provided by the Environment Committee and is attached as 'Appendix A' to this letter.

We would welcome the opportunity to present this information to you in person, or discuss any areas of interest in more depth if required.

Yours sincerely


Helen Harrison

Helen.Harrison@junoplanning.com

Juno Planning & Environmental Ltd

332A Ormeau Road,

Belfast

BT7 2GE

Appendix A- Response to Call for Evidence for Inquiry into Wind Energy

To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment;

1. We have addressed the issues outlined in this section of the ToR in specific but inter-related subject matters. The subject matters are discussed in paragraphs no.2 to no. 20 below.

Relationship between 'Inquiry into Wind Energy' and preparation of the 'Strategic Planning Policy Statement'

2. We wish to query the relationship that 'Inquiry into Wind Energy' will have with the publication of the 'Strategic Planning Policy Statement (SPPS).' We understand that the SPPS will replace PPS 18 in terms of providing policy guidance for wind energy planning applications. How will the findings from the 'Inquiry into Wind Energy' influence the preparation of the SPPS in final form and ultimately influence local planning policies for the 11 new Council Areas?

3. The SPPS is currently in draft form and a consultation period is underway until the 28th April 2014. Stage 3 will involve the assessment of consultation responses and SPPS revisions, and is due to be concluded in summer 2014. DoE anticipate the SPPS will be published in final form by the end of 2014/ or the beginning of 2015. The findings of the Wind Energy Inquiry will no doubt be of direct relevance to those preparing the final draft of the SPPS.

4. It is notable that the current draft SPPS lacks specific policy guidance on wind energy proposals and this could be perhaps be partially addressed by strategic input from the Environment Committee on their findings/ recommendations from the Inquiry. A failure to provide input to the SPPS process would be a lost opportunity to provide strategic direction and clarity to wind energy planning policy in NI.

Adequacy of PPS 18 and Related Supplementary Guidance

Wind Turbines Farms and Wind Turbines

5. For the purposes of this evidence we wish make a distinction between (i) planning applications for wind farm proposals and (ii) planning applications for single wind turbines. In this context it is important to outline that subject to DoE Planning arrangements planning applications for wind farm proposals are processed by the wind farm team which forms part of the Strategic Project Team at

DoE Planning Headquarters. Planning applications for single turbines are processed by divisional planning offices.

6. Currently there is a clear absence of strategic thinking in terms of the cumulative impact of wind farms and wind turbines compounded by a lack of consistency and communication between those officials determining wind farms and those determining single wind turbines. This absence of strategic thinking and disjointed decision making presents a potential and significant threat to the environment in terms of the huge number of wind turbines now approved and proposed in the NI Landscape.

Planning Applications for Wind farm Proposals

7. PPS 18 is the principal planning policy document for wind farm development. The key policy test within PPS18 for wind energy development is Policy RE1. Policy RE1 states that renewable energy developments will be permitted provided they will not result in an **unacceptable adverse** impact on (i) public safety, human health, residential amenity (ii) visual amenity and landscape character (iii) biodiversity, nature conservation or built heritage interests (iv) local natural resources (v) public access to the countryside. It can be inferred that there is a presumption in favour of granting planning permission renewable energy proposal (including wind farms) provided there will not be unacceptable adverse impact resultant from the proposal. There is a tacit acknowledgment in policy terms that there may be some 'adverse impacts' and the test is whether or not these impacts are such that they are shown to be unacceptable.

8. The key policy test of Policy RE1 is consistent with the approach of PPS1- General Principles which states:

*"The town and country planning system exists to regulate the development and use of land in the public interest. The public interest requires that all development is carried out in a way that would not cause **demonstrable harm** to interests of acknowledged importance."*¹

9. Policy RE1's use of "unacceptable adverse impacts' is consistent with the thrust of PPS1 requirement that development should be carried out in a way that would not cause demonstrable harm. Having cognisance of this fact we consider that Policy RE1 is consistent with the general principles of PPS1 but we query the use of the term 'unacceptable adverse impacts', where the PPS1 refers to 'demonstrable harm'.

10. The specifics of Policy RE1 relating to wind energy development provide a strict set of criteria to be complied with before planning permission can be granted for wind energy development. Policy

¹ Paragraph 3, Planning Policy Statement No.1- General Principles

RE1 also outlines that wider environmental, economic and social benefit of renewable energy projects are material considerations that will be given significant weight in the determination of planning applications, acknowledging the wider positive benefits of renewable energy projects. We consider that Policy RE1 is stringent in terms of the policy requirements for wind farm development if the policy test is applied correctly and consistently to wind farm planning applications.

Wind farm DoE Planning Statistics

11. We note the published DoE Planning statistics² that from the time period of 2002/2003 to 2013 a total number of 171 planning applications for wind farm developments were submitted to DoE Planning. A total of 109 planning applications have been decided by DoE. 96 of the applications were approved representing an approval rate of 88% of decided applications. Statistics were not provided on the number of applications withdrawn from the planning process. The provision of this information within the statistical breakdown of data would offer further insight as withdrawn applications often give an indication of those applications which it is anticipated may be refused. There are currently a total number of 54 wind farm applications awaiting decision in the planning system.

DoE Planning & Determination of Wind farm Applications

12. As noted earlier wind farm applications are currently processed by the wind farm team of the DoE strategic projects team. As noted above there are currently 54 no. wind farm planning applications pending decision. In determining planning application for wind farms it must be fully appreciated that the approved and planned wind farms will become a valuable energy resource supporting NI for at least 25 years and the wind farms and clusters of large turbines are becoming important and visible features within our local landscape. It is therefore of paramount importance that the relevant DoE Planning or local Council team dealing with wind farm applications is adequately resourced with staff experienced in dealing with these often controversial and complex planning applications in a professional and efficient manner.

Planning Applications for Single Wind Turbine Proposals

13. PPS 18 does not provide specific guidance for single wind turbine proposals. Rather PPS18 relies on the policy provision of Policy RE1 for the assessment of wind turbine applications. We are concerned that PPS18 is not proving an effective policy tool in the determination of single turbine proposals and it is apparent that the determination process for single large turbines is often considerably less rigorous than for wind farm applications. Given the vast numbers and large scale of (many of) the single turbines now approved and proposed, this somewhat casual approach to determination must give cause for concern.

² http://www.doeni.gov.uk/index/information/asb/statistics/planning_statistics.htm

14. We are aware of a number of planning applications for single turbines where because the required separation distance to residential units (10 times rotor) diameter is provided applications are being permitted without having to demonstrate compliance with the specified criteria outlined in Policy RE1 (related to wind energy development). Thus applications are being permitted without any landscape or noise assessments and the existence of other approved or proposed single turbines in the vicinity is missed or ignored. The cumulative impact of many large single turbines is therefore never considered or assessed.

15. We consider that PPS18 would be improved if it contained specific planning policy relating to single turbine development. The economic benefits of single turbines whilst still important should clearly be given less weight than those associated with large commercial wind farms. Distinction should also be made between those (private) single turbines which serve nearby operations and those (commercial) single turbines which are purely to connect into to the grid. It is important to recognise that a dispersed network of large single (commercial) turbines can potentially generate commercial returns similar to those of a commercial wind farm but the individual applications are determined with considerably less rigour and cumulative impact is not considered. It is important to note that single large turbines are often located in more populated areas than wind farms which tend to be located in more isolated upland areas.

Consequence of Proliferation of Single Wind Turbine Development

16. We note the published DoE Planning statistics³ that from the time period of 2002/2003 to 2013 a total number of 3,249 planning applications for wind turbines were submitted to DoE Planning. Decisions have been issued on 2,149 planning applications of which 1,891 were planning approvals. This represents an approval rate of 88% of single turbine applications. There are currently 686 wind turbine applications pending in the planning system. Given the past approval rate it is therefore quite possible that we will see in the order of 3000 single turbines appearing across landscape by 2015. There appears to have been no strategic consideration whatsoever to the cumulative impact of 3000 single turbines scattered across the countryside despite the fact that many stand +30m tall and will be a feature in our countryside for 25 years.

17. There are a number of consequences from the proliferation of single turbine development. These include:

- Single turbines are pepper-potted across the NI with limited or no coordination between the siting of the turbines and are undermining the integrity and attractions of the landscape;

³ http://www.doeni.gov.uk/index/information/asb/statistics/planning_statistics.htm

- Single turbines that have not been assessed properly in noise terms and do not have appropriate noise conditions can undermine the development potential of larger scale windfarm developments in the vicinity. Their un-regularised noise output can breach ETSU noise limits at residential properties and thus limit the future operation of other wind energy proposals.

These are key issues that should be considered by the Environment Committee.

Environmental Impact Assessment

18. Environmental Statements are not submitted voluntarily with an application. Wind Energy projects require that the DoE. undertake an Environmental Impact Determination under Schedule 2 (3) (j) of The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 1999 as amended by The Planning (Environmental Impact Assessment) (Amendment) Regulations (Northern Ireland) 2008. Larger windfarm applications require an environmental statement to be submitted with an EIA application and consequently these applications are subject to rigorous assessment compliant with European legislation.

19. Other cases, for example applications for individual turbines, do not require an environmental statement. Where there is no EIA it may be difficult to ensure the same level of rigorous assessment is undertaken on the submitted planning applications resulting in sub-standard applications gaining planning permission.

Further Considerations for the Environment Committee

20. We recommend that the Environment Committee consider the merits of introducing a policy requirement specifically for single turbine planning applications. This planning policy should require applicants to undertake landscape and visual assessment and noise assessments for all single wind turbine applications. The applications should assess the cumulative impact of the proposed turbine with existing and permitted turbines within a 2 k radius.

To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development;

21. Wind turbine noise and separation distances are two separate but inter-related issues in relation to wind energy development. We will address both issues separately.

Wind Turbine Separation Distances

22. In Northern Ireland, there are no statutory separation distances stipulated in legislation. The recommended separation distances are provided through established planning policy guidance in PPS 18. Policy RE1 of PPS 18 states the following in relation to separation distances to wind energy development

“For wind farm development a separation distance of 10 times rotor diameter to occupied property, with a minimum distance not less than 500m, will generally apply.”⁴

23. The focus on separation distances should not be at the expense of a requirement for robust assessment of the potential impact of wind turbines on sensitive receptors in terms of residential amenity. The provision of a minimum separation distance should not negate the requirement for a robust assessment of the impacts upon residential amenity. Planning policy regarding separation distance should be caveated to outline the requirement for robust residential amenity assessments. The provision of a minimum separation distance is a useful tool for wind energy developers in terms of wind farm design and layout however it should never take the place of robust residential amenity assessment.

24. In their analysis of different jurisdictions (separation distance requirements between residential units and turbines) the Environment Committee should have cognisance of the differing social, environmental and geographic context prevailing in the studied country/ jurisdiction.

25. The Environmental Committee should note that the issue of new single dwellings in the countryside is an inter-related topic as the presence and introduction of ever more residential units in the countryside has the potential to undermine the viability of the future wind farm developments due to potential wind farm sites being effectively blighted by multiple single dwellings which all require significant zones of separation from wind farms. This issue cannot be reviewed in isolation but rather should be reviewed in conjunction with PPS21- Sustainable Development in the Countryside as both policy provisions of both documents result in implications for both wind energy development and development of single houses in the countryside. This should also be highlighted in the context of the publication of the SPPS.

Perceived Impact of Wind Turbine Noise

26. Policy RE1 of PPS18 requires that wind energy developments demonstrate:

“that development will not cause significant harm to the safety or amenity of any sensitive receptors (including future occupants of committed

⁴ Pg 9, PPS 18

*developments) arising from **noise**: shadow flicker: ice throw and reflected light.”⁵*

27. PPS18 Best Practice Guidance references ‘ETSU-R-97 Assessment and Rating of Noise from Windfarms’ that provides a framework for the measurement of wind farm noise and gives indicative noise levels calculated to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development.

28. The Institute of Acoustics published “A Good Practise Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise.” This document provides detailed guidance on the methodology for the assessment of the potential impact of wind energy developments. It is our understanding that this document is being used by Council Environmental Health Offices and DoE Planning to assess the noise impact of wind energy developments. The tools are available to decision makers to make informed decisions regarding the **potential real noise impact** of wind energy proposals however it is the responsibility of the Environmental Health Departments and DoE Planning to ensure they apply the best-practice approach in a recognised and consistent manner to assess all wind energy developments.

29. The provision of stringent noise conditions on any planning approval for wind energy development should ensure that operational wind turbines/ wind farms are compliant with ETSU limits and should not impact upon residential amenity. The onus is on the planning authority to ensure there are reasonable and enforceable planning conditions attached to planning approvals that regulate the noise impact of the development when operational. The correct implementation of the existing guidance on noise and wind energy development should protect residential amenity. This is the responsibility of the planning authority and their statutory consultees.

30. The Environment Committee should note that the noise guidance documents discussed above pertain to the ‘potential real impact’ of wind energy proposals rather than the “perceived noise impact” of wind energy proposals. We consider that it would be a difficult and onerous task to address ‘perceptions’ of noise impact and it is extremely unhelpful and arguably misleading to refer to ‘perceived’ noise impact where technology and statutory guidance exists which enables applicants to assess potential real noise impacts using surveyed background noise data and turbine manufacturers operational noise data. It is impossible for applicants to ever be able to effectively overcome ‘perceptions of impact’.

31. Schedule 3 ‘of the Planning (Environmental Impact Assessment) Regulations (NI) 2012 sensibly outline that environmental statements should address the potential significant effects of the development rather than the ‘perceived’ impacts.

⁵ Policy RE1, PPS 18

To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

32. We have addressed the issues outlined in this section of the ToR in specific but inter-related subject matters. The subject matters are discussed in section 3.1 to section 3.3 below.

Existing Engagement/ Consultations Arrangements between Wind Energy Providers and Local Communities

33. There is no existing statutory or formal requirement for pre-planning engagement between wind energy developer and local communities. There is a vacuum in legislative and policy terms. Currently engagement/ consultation arrangements between wind energy developer and local communities are an ad-hoc basis.

Requirements of the Planning Act (Northern Ireland) 2011

34. The Planning Act 2011 contains critical reforms to improve the planning system. It is anticipated the provisions of the Planning Act will be implemented when planning returns as a local government function in 2015. The Planning Act 2011 has specific requirements for (i) pre-application community consultation and (ii) pre-application consultation reports that will form part of the planning application process. Wind Energy developers will be required to carry out a formal consultation process with the local community prior to the submission of any planning application. This clearly represents a significant improvement on the current system where there is no requirement for any consultation. This legislative amendment will not guarantee a cordial relationship between all parties though it will open a channel of communication.

Additional Measures

35. We suggest that the Environment Committee should seriously consider whether there should be tangible benefits for local communities living and working in the areas where wind farms and large single turbines are located through for example: (i) reduced tariffs on energy bills and/or (ii) annual financial contributions from wind energy providers to local community environmental projects. The local communities located closest to wind energy proposals undoubtedly experience the greatest impact and whilst wind energy is recognised as benefiting 'the greater good' in terms of the wider social, environmental and economic impacts, local residents must feel that they experience the brunt of potential impacts but receive no direct benefit. We suggest that a requirement for tangible local

benefits may go some way to mitigating the perceived impact of wind energy proposal on local communities. Local communities could feel the benefit in their immediate area.

Karen Gibson

From: karen gibson [
 Sent: 17 February 2014 19:41
 Subject: Submission for the NI Assembly Wind Energy Inquiry 2014

Wind Energy Inquiry 2014

This is my submission against the Wind Industry here in Northern Ireland and a list of concerns about it that I feel need to be addressed and investigated in a full and unbiased manner.

I believe the Wind Industry DOES NOT work. This has been proven in Denmark, Germany and Spain among other countries to which some have been forced to pull back on the subsidies to this unreliable and intermittent and extremely expensive source of energy. At present in the UK and Ireland heavy subsidies are paid from consumers bills whether they want this or not! This ends up making the economies being uncompetitive. Also the German Industry is moving out to cheaper countries, some giving up on Wind altogether as an energy source and China among others are actually building many more new power-stations to have a reliable source of power.

The UNECE has ruled that the United Kingdom and the Republic of Ireland are in a breach of their obligations under the Aarhus Convention. It is ruled that the EU is also in breach. This convention sets out how the SEA must be carried out and four important concepts are included :

1. Public participation, at a time before the final decision is made.
2. Access to Information. This is transposed in Northern Ireland!
3. Consideration of alternatives. This includes finding an alternative way to achieve the same objective. In this part the actual CO2 saving of the Wind programme must be assessed and clearly stated.
4. Cheap access to the courts to challenge decisions. This is partially transposed. In the Edwards case in England it was decided that costs in environmental cases should be in accordance with the means of the applicant to pay.

All of this has been by-passed and therefore all planning applications will be invalid until it is done!

Rather than writing a full explanation to you I think all these short points should apply and speak for themselves.

- 1 A moratorium on all Wind Projects until wind research is complete by fully independent researchers not suggested, paid for etc by the Wind Industry.
- 2 Alternative energy technologies have not been looked at (hydro, tidal, nuclear etc)
- 3 We need increased set back distances from turbines to residences. At the moment current guidelines are either ignored or not adhered to by the planning office/ applicants/wind industry etc. Eg: It has dropped from 2000m to only 500m and unfortunately many homes affected now or in the future are well **UNDER** recommended safety separation parameters. The impact on residents in close proximity and effects on sleep and health should be vigorously investigated. A set back distance of 10 x base to tip height is required based on conclusions by many experts including Dr Chris

- Hanning, Consultant in Sleep Disorders UK who discusses adverse impacts on sleep at distances of up to 2km and greater.
- 4 Wind energy is not free and is very expensive.
 - 5 Wind may make some contribution as low levels of penetration, but as the penetration increases the contribution of wind drops to zero.
 - 6 Constrained/curtailment fees are paid to companies to turn **OFF** their machines.
 - 7 Wind farms are paid capacity payments when they cannot guarantee supply if called upon to deliver power due to the unreliability of the wind.
 - 8 The PSO levy on bills amounts to only a tiny portion of the real cost.
 - 9 There are **HUGE HIDDEN COSTS** involved in Wind Energy.
 - 10 Wind energy affects property prices for the worse. The affect is particularly significant with 2km.
 - 11 Wind farms/turbines create different types of noise including Low Frequency Noise which has already driven people from their homes eg: Michael and Dorothy Keane, Roscommon. People **DO NOT** abandon family homes they love and invested all their money and time in for absolutely **NO** reason.
 - 12 Over 7 studies have shown wind energy to be very expensive and of little use.
 - 13 Tests should be completed to state the **actual saving from CO2** and fossil fuels from Wind farms. Tests also for noise must involve actual field tests and this would involve observing noise near wind farms/turbines at night for several hours for a long period of time.
 - 14 **Shadow Flicker:** Draft guidelines introduces the concept of Shadow Flicker being an issue with 10 rotor diameters of a dwelling which should be dealt with appropriately "A condition should be attached that there will be **NO shadow flicker at ANY** existing dwelling or other affected property . A further condition should also apply that if Shadow Flicker does occur then necessary measures such as shut down during the time periods will be taken by the wind energy developer or operator to **ELIMINATE** the shadow flicker" The language of these guidelines is too loose and does not put any legal obligation on the developer.. I suggest that **MANDATORY ELIMINATION of shadow flicker is a must!!** Shadow Flicker is affecting many people who suffer with **Epilepsy, Migraine Headaches, Certain types of Autism (with particular light and noise issues on their spectrum)** (among other proven Health issues). This should be taken into account as these can be debilitating disorders and as of yet are NOT taken seriously . A very important Health issue!!

The present government policy for wind energy is based on political and ideological considerations rather than scientific considerations!!

We need our members of the Assembly to start listening to the public who can and will be affected by the Wind Industry and to act in an open and unbiased manner to help the general public and to also investigate the claims the Wind Industry make.

Yours faithfully

Karen Gibson

Kath O'Brien

From: Ka obrien
 Sent: 28 February 2014 16:24
 To: +Comm Environment Public Email
 Subject: Inquiry into Wind Energy

In a nutshell, the government should do nothing in support of extra wind farms that would increase costs for Northern Ireland's energy consumers or for the Northern Ireland's taxpayers. If any capital/money is to be spent, it should be spent for Northern Ireland's citizens benefit like investment in hospitals and schools, not on subsidies for private enterprise for wind farm shareholders where some plan to float on the stock exchange for huge sums and make substantial amounts of money for their private shareholders.

The subsidies by which wind power producers are paid guaranteed, abovemarket prices to put electricity on the grid aren't a cost-effective instrument for climate protection. Nor are they producing a measurable effect on innovation therefore for both these reasons, there is no justification for a continuation of the wind energy subsidies.

Stop the subsidies for the already substantial and mature wind energy industry in Northern Ireland . It is now time to divert subsidies to retrofitting houses and other renewables like biomass, small hydro-electric schemes, biomass plants, consumer education etc.

1. **Anti competitive energy costs** - Wind energy due to the enormous subsidies paid is very expensive energy. If Northern Ireland continues to pursue the overly ambitious renewable target for electricity this will create an **anti competitive** climate for industry in the future and thus lead to future job losses. A competitive supply of electricity, not a soaring and unreliable one, is what actually protects manufacturing and supports jobs. An over reliance on expensive wind energy will become a barrier to inward investment resulting in Northern Ireland failing to attract new jobs in the future. <http://www.iae.ie/news/article/2012/jun/27/publicationnew-energy-policy-advisory/>
2. Jobs - Europe are now realising that we can never be competitive with our high price of electricity which is primarily as a result of the subsidy / rates system and these subsidies only benefit **private wind-farm developers**. There are very little jobs in Wind energy in Northern Ireland as Northern Ireland has no history or prospect of wind turbine manufacture. The potential for jobs in Wind energy in Northern Ireland isn't "huge". Northern Ireland has no background in mechanical engineering and is unlikely to acquire the expertise to built turbines in the near future. In Scotland for the few jobs created in larger than Northern Ireland wind energy sector, it is estimated to **cost £154,000 per job in subsidies** <http://www.telegraph.co.uk/earth/energy/windpower/10122850/Truecost-of-Britains-wind-farm-industry-revealed.html>
3. **Tourist Jobs Loss** - Jobs will be lost in the Tourist industry if the Northern Ireland Government and private wind farm operators get their way and turn the very valuable Northern Ireland landscape into the **Pylon and Turbine Hedgehog** of Europe. Europe and the Northern Ireland Government are effectively destroying its beautiful and priceless nature by providing huge subsidies to **private wind-farm developers**.
4. **Wind is a mature industry** - Why are we subsidizing the wind energy industry which is already a mature industry? Why are we making payments to wind farms to 'switch off' when supply exceeds demand for electricity? How much did Northern Ireland pay to private wind farm developers in curtailment payments?
5. **Unstable Grid** - Why should we allow an unprecedented number of wind farms to join the grid? The number of wind farms envisaged to meet the target for Northern Ireland

will make the Northern Ireland Grid unstable and dangerous, therefore it will lead to more episodes of 'lights out' and therefore a problem for economic recovery.

6. A seriously flawed NREAP that has a very high risk of becoming a huge white elephant and therefore puts Northern Ireland at risk of going into another recession as a result of the wasted billions , resulting in very expensive and anti- competitiveness energy cost . Northern Ireland need to push alternatives - namely retrofitting / insulation which would generate much needed jobs for Northern Ireland's unemployed workforce ,small hydroelectric schemes, biomass plants, consumer education (including schools).
7. **Substantial installed wind capacity already** - Northern Ireland already has substantial installed wind capacity and it is not obvious that there is an economic case for burdening the system with more. There would be little need for continuing grid investment were it not for the expanding wind industry. The full costs of the Grid are not picked up by the wind generator, as they should be, but are spread across all consumers.
8. **More bang for Buck with Retrofitting** - We need to look at ways to help the hard pressed Northern Ireland consumer who is already nearly being taxed out of existence as result of the Northern Ireland banking crisis. If the Northern Ireland government pursues higher renewable target for electricity, then this will mean large increases in electricity bills for the hard pressed consumer. Why not provide subsidies for retrofitting of the housing stock and thus it would give more disposable income by way of cheaper energy bills and thus relief for the hard pressed consumer. Retrofitting will result in more direct jobs and indirect jobs created as a result of more disposable income in the consumer's pocket. It will also lead to substantial reduction in Carbon emissions.
9. **No Cost benefit analysis completed for NREAP** - The Government and its agencies thus far appear not to be able to provide any data to justify NREAP and Grid upgrade.
10. **There appears to be a lack of environmental information, total lack of any cost benefit analysis and/or any other economic analyses and assumptions.** The citizens of Northern Ireland have the right to be properly informed, to participate in the decision making and to have access to justice in relation to projects that have an environmental impact.

Northern Ireland's NREAP must be revised imminently and the revision must be completed in light of changing circumstances in Europe and in light of the cost competitiveness disadvantage due to the U.S. access to substantially cheaper energy. A full and comprehensive cost-benefit analysis on Northern Ireland's NREAP especially concerning wind will demonstrate that Northern Ireland's NREAP is seriously flawed. Subsidies for the mature wind industry must now stop.

-

Best Regards,

K

Ken McLeod

Submission

To the Committee for the Environment, Stormont, Regarding the Full Inquiry into Wind Energy In Northern Ireland.

Introduction.

I am a retired executive engineer who spent thirty years in the power system technical monitoring and analysis business. With ownership of a small farm my wife and I decided in the 1980s to turn it into a woodland nature reserve and in time had it certified by the Ulster Wildlife Trust as a wildlife site. We believed that we would be leaving the place for posterity as an oxygen producer and CO2 absorber as well as a safer haven in our townland of Quilly, Dromore, Co Down for flora and fauna.

In March 2012 a neighbour agreed to lease land to a wind turbine developer and we have been contesting this since. The turbine would be 45m high and 30m across and situated 50 m from our woodland where tens of thousands of birds have been roosting for shelter during cold winter periods.

When the NIEA NH decided that our site had little importance I visited their offices to view the file. I discovered that they had carried out their own, on the ground survey and recommended that the planning application be refused. However their scientific officer over-ruled their surveyors. When three species of bats were found in a professional survey carried out by the developer's experts around and in the precise location specified, NIEA NH considered this insignificant even though bats have full protection in law. Where the planning file is full of holes with missing documents and few notes of telephone conversations with the developer's agent and leaving repeated questions unanswered, the bias in favour of the developer became obvious.

Where both Planning and NIEA claim to fall on the side of caution, it is blatantly obvious that they do not.

When I found the following, which I believe to be an addendum to PPS18, all became clear and of greater concern.

Professional Planning Report for R/2011/0108

Following additional training and guidance from the headquarters in February 2012 staff were advised to adopt a more flexible approach and it was emphasised that as RE1 states; "The wider environmental, economic and social benefits of all proposals for renewable energy projects are material considerations that will be given significant weight in determining whether planning permission should be granted."

The amplification of the Policy also explains even though there may be unacceptable adverse impacts - these can still be outweighed by the local and wider environmental, economic and social benefits of the proposal.

"This includes wider benefits arising from a clean, secure energy supply; reductions in greenhouse gases and other polluting emissions; and contributions towards meeting Northern Ireland's target for use of renewable energy sources."

In light of the PPS 18 Training, I think any potential dominant, prominent views of the turbine from the surrounding area could be outweighed by potential benefits of the turbine.

Wind energy is a complex business, without good reason. The majority of citizens and seemingly their representatives do not understand it and this is of no surprise. It is the

deliberate policy of the Wind Industry to muddy the waters as much as possible in order to hide facts while they continue to promote their businesses with half-truths and even lies. They are doing a very good job of it too. Media and many academics either simply play the game or run away from wind issues for selfish reasons such as pension fund investments, payments (bribes) to local people and councils and the generation of funding income for academic institutions. I believe that a clear understanding of the facts should be of great interest and concern to our elected representatives and the wider population, if only they were aware of what is actually occurring.

I make my submission and sincerely hope that it suggests serious questions, which those with authority and politicians acting on behalf of the electorate should be asking of the Wind promotional fraternity.

In the knowledge that others making submissions may be taking a wider approach in their submissions, my submission concentrates on the abstract highlighted in red above. I have listed my suggested questions for the wind industry and its supporters at the end of this document.

'Wider environmental, economic and social benefits, clean and secure.'

There are no benefits of any kind that I was able to find concerning wind turbines in my study. They bring nothing but damage some of which is catastrophic to the environment, the economy, the greater good and our power system.

Wind Turbines are killing machines to most avian species. They are exterminating fully protected species contrary to existing law such as Bats and many birds by the million annually around the world. The cost to agriculture particularly from the reducing numbers of bats for several reasons not least of which is wind turbines is massive, leading to the requirement and cost both to the farming industry and to nature bringing increasing use of pesticides to combat plant and animal disease. Our smallest bats devour around 5,000 midges in one night for example.

NGO's such as the RSPB, The Woodland Trust, The Bumblebee Conservation Trust and many other supposedly environmentally orientated charities receive payment for each of their members who sign up for 'eco' energy from the various suppliers with whom they have made financially beneficial agreements.

The requirement of concrete for the tower plinths, the platforms for the cranes to stand on and the roads between turbines to allow access for very heavy machinery is enormous. Note that one ton of concrete means one ton of CO₂. Large turbines will require around 800 to 1000 tons of concrete for the plinth alone and they are getting larger all the time.

The rare fresh water pearl mussel living in the cleanest rivers we have and a fully protected species, are being exterminated in Ireland by concrete run-off sediment and authorities are quite illegally ignoring this. Much of these watersheds run into lakes and reservoirs, not just rivers to the sea.

The largest wind-farms we have in Ireland and Scotland are built on bog land, which is our CO₂ sink, our rain forest. Peat holds five times more CO₂ than forestry and the bogs are being decimated giving off huge volumes of the gas as they dry out.

Blanket bog slip has already occurred in Ireland and poisoned countless fish and water supplies in Galway. On mountainous blanket bogs roads between turbines cut apart the bogs with the road construction and the lower part may slide down the mountain after a very wet period. We will see more of this.

The power consumption of wind turbines, which is mostly supplied from fossil fuel generation is required to start, stop, brake, turn, de-ice, pump oil and operate control machinery and other equipment is a buried cost probably under the heading of 'Imperfections' in the

cost figures supplied to the regulator by the transmission companies. In our case SONI a subsidiary of Eirgrid, the Irish power transmission company.

Our Electricity Regulator's office is unable to answer my question on this matter of power consumption. It is also probably lost in 'Imperfections.' They therefore do not know nor understand the fine details of what makes up our electricity bills. This surely makes their ability to properly 'regulate' impossible. Please correct me if I am wrong.

When energy from wind is available the transmission system must purchase it. Note that this can be for multiple short periods on any day. Please see Appendix 1. There must be spinning reserve running at some fossil, nuclear or hydro driven power plant which can be quickly made available for the periods when wind is not. Nuclear and coal-fired plants cannot be 'easily cutback and spun-up again.' Nuclear power cannot be cut-back at all. A corresponding amount of their output is dumped when there is abundant wind, at consumer's cost of course. Gas can be 'spun-up' quite quickly but not from a cold start. It is also dumped as necessary. Hydro is the best solution but we don't have very much of that.

If the 30% claimed for Wind contribution in Ireland is true, then for 70% of the time power is flowing to the wind turbines and not from them. For 30% of the time CO2 is being produced and dumped to favour and accommodate wind power on the grid, all at the cost of the consumer including the rich and the impoverished.

For every wind turbine there must be 80% of its capacity running somewhere else, as back up if we are to avoid blackouts. Blackouts are not good for the economy and will kill any chance of encouraging large manufacturing business to Ulster / Ireland and the UK. Large corporations in Germany such as BASF have moved parts of their manufacturing operations to the USA and are threatening to close down in Germany entirely because of electricity costs.

As SONI, our transmission company have shown to me in writing that they and their owner Eirgrid do not make the projections made for wind in Ireland, I think that we can therefore assume that the figures are produced by the wind industry and if not then by persons unknown.

The spinning reserve required to sustain wind power is mostly supplied from fossil fuel power-plants and when their output is cut back to facilitate some available wind power, they run less efficiently and producing more CO2 than they otherwise would if running at their designed correct speed and loading.

Germany is now burning more lignite, the dirtiest coal, to back up wind and solar and producing much more CO2 than they ever have before. The UK is following with coal, more than ever while we simultaneously close down the coal fired plants.

Because the largest wind-farms are remote from centres of demand, Eirgrid / SONI must install hundreds of miles of new overhead transmission lines and sub-stations to carry power from and to the wind-farms. Masses more concrete and steel and huge costs for the public to pick up.

I believe I am right in saying that wind turbines do not reduce CO2 emissions and undoubtedly increase them. I request to be proven wrong in my assumptions. CO2 emissions are increasing all the time as wind energy develops across the world. In fact every country which has taken on Wind energy in a moderate to large scale is now burning more fossil fuel than ever before except for the USA where CO2 emissions have been severely cut due to their developments in shale oil and gas.

Turbine manufacture in a foreign land, their expensive transportation, assembly and maintenance make their claim to be 'clean and sustainable' utterly absurd.

Getting to the true figures concerning wind energy is made extremely difficult for those who try to enquire of government departments and the wind industry. If they do not know

the answer or do not wish to disclose it then the issue becomes a matter of commercial confidentiality or is simply ignored. It is well known that complainants have little choice in what they can possibly do. Our rights to contest such a gigantic scam have been reduced to minimal by Brussels, unless we each have a spare £100K to spend on a judicial review. When the wind blows too hard, then we must pay them to shutdown. They have a no-loose situation.

The UK's National Grid is trying to help get over the problem of the spasmodic supply problem from wind when traditional supply cannot react in good time by filling fields full of dirty diesel generators (mostly imported from South America), which they can wind up quickly. I cannot find if these are also being subsidised. Perhaps the committee can.

Gas generation can be wound up quite quickly and this is why the Wind industry wants lots more gas-fired power stations built all over the UK / Ireland. Without wind we would not need them but gas is preferable to coal producing half the quantity of CO₂.

Through correspondence with the permanent secretary at DETI and then his head of sustainable energy, I found that they were not able to show me where I could find the evidence to prove that wind energy was indeed 'Sustainable.'

Wind turbines are the most expensive form of electricity generation ever devised.

The thousands of jobs talked about by developers and believed by politicians unaware of the true facts, are simply lies. Show me where they have ever achieved the promised jobs in their planning applications? Temporary labouring jobs will be created in the locality and the cheapest supplies of concrete and hard-core will be sourced there, that is all. Travelling teams of skilled technicians carry out maintenance work. Skilled employees of the foreign manufacturers usually manage the installations.

The contract with landowners is normally for 25 years when turbine lifetime is around half of that. One of the many facts missing from wind development proposals is that after around five to seven years their output begins to depreciate and substantially after ten. There is much technical data now available to show a maximum life of 15 to 18 years, with the third part at onethird their claimed maximum output. Please see Appendix 2.

The larger they are the shorter their lifetime will be. Those at sea will hardly exceed 12 years of life according to experts and honest academics such as Professor Gordon Hughes, a former economics advisor to the World Bank. Gearbox and bearing lifetime is around seven years. Which means very expensive maintenance or replacement.

Residents in close proximity to wind turbines are suffering devaluation of their properties and this is accepted now in a growing number of countries with several paying damages to sufferers such as in Denmark and the USA. Developers in North America and Australia are buying the properties when they cannot shut the residents up. An entire village now lie deserted as do dozens of farms in S. Australia. Some British politicians and honest scientists are finally and at last admitting this fact.

Are any of the industrial turbines erected in the UK / Ireland manufactured here? No they are all foreign. So the billions being spent on purchase mostly goes overseas. Who owns the major part of the wind industry? The UK no longer owns one solitary electricity utility from generation through transmission to distribution We sold all the crown jewels years ago. For all that is said, concern for the future is no longer on the government's agenda - if it is beyond the current term of office it seems.

The wind industry may have had a great time taking money for nothing during the 2013 end of year storms (mainly for switching off) but how about last summer when for three months or so we had permanent high pressure and so little or no wind? When we get heavy snow it is most likely that there will be little wind. Put more coal on the fire!

I fully agree that CO2 emissions must be cut back, not because of global warming which remains unproved. However it does look like the seas are suffering from acidity. Ten thousand years ago we, at the spot we are now sitting would have been under a mile thick ice sheet. The earth was at first too hot for life. It has gone through climate change since its creation and will continue to until it is vaporised by the Sun.

Now that we have exported most of our heavy industry to China and India etc. They can produce as much CO2 as they like but we should be paying them compensation for our bad old days with our industrial revolution? Do we really need to commit suicide?

China has become the largest CO2 maker in the world and commissions at least one new coal fired plant every week. India is not far behind. Where has the drive against CO2 gone?

Not many might have noticed how the quality of our electricity supply continues to fall. We can barely make the mains frequency of 50Hz any more. This is due to imbalances on the grid. This too would drive high tech or critical manufacturing away.

Regarding health effects on people and animals. Although proved beyond doubt elsewhere our government denies it with loose statements but refuses to consider scores of credible reports from within and without. It also refuses to carry out studies to prove the point, one way or the other. It seems to be up to the public to prove the problems and not those forcing these things onto innocent people who are it seems, 'calatorial damage.' Honest, in depth studies should shortly occur in the USA and Australia when hopefully the rest of the world and particularly Europe will pay attention to the inevitable result. Over 100 Texas farmers are suing for being mis-sold turbines on their land presently. The noise produced was promised to be minimal and of no concern. Not what the landowners are finding.

In letters I have seen the CEO of the N.I. PHA, quotes as a reference a paper produced by a respected acoustician academic at Salford University, Dr Sabine Von Hunerbein who was commissioned by the Scottish Government to report on the potential negative health aspects of wind turbiness.

Universities are under severe pressure to find funding from external sources these days.

The Scottish Government has a target of 100% of power for Scotland coming from 'renewable' sources. This is technically impossible, but no matter. I wrote to Sabine, quoting the MOD 1 study on the first large wind turbine experiment carried out by NASA and MIT plus many other world class academic institutions, power utilities and their suppliers such as General Electric in 1982. Their paper was written by 'Kelly et al' and is at:

<http://www.windturbinesyndrome.com/wp-content/uploads/2013/07/Kelley-et-al.-Methodology-for-assessment-of-wind-turbine-noise-generation.pdf>

To escape the techy things go straight to the conclusion.

I also asked about her opinion on the Shirley, Wisconsin study carried out by four independent acoustician companies from across the USA in December 2012.

She ignored the Shirley report in her response but commented that in the case of MOD 1, wind turbines have undergone much improvement in the reduction of noise over the years and so those opinions are no longer really valid. I responded pointing out that MOD 1 was built on a lattice tower like a pylon not on a hollow tube and that this to me meant that there was even more danger to health from the resonances produced in such a structure. Anyone who understands wind instruments knows that there is an exciter at the end of a tube be it the player's lips or a reed. It lowest sound will be the fundamental note, which is the resonant frequency of the tube. I added that as the blades of a turbine are slowed as each passes the tower causing a momentary drop in frequency from the generator, this is a credible amount of very low frequency energy going somewhere and possibly the cause of dangerous Infrasound.

She declined to answer. I have written respectful reminders but after many months still no response.

Note that the majority of research into Infrasound has been for weapons research. Infrasound is making people and animals sick across the world at up to 10km from wind farms. The evidence is growing and getting stronger all of the time.

Interesting to note here also that when the Irish Thoroughbred Breeders Association raised concerns about permitting turbines near horse studs in Kildare, within one week an Irish wind industry spokesperson said publicly that none would be built close to stud farms. Are horses valued at a million or more worth more than people and farm animals? Of course.

Considering the Health & Safety at work act it is difficult to see how these machines qualify at all. Recently two technicians were killed in Holland. A spark started a fire in the oil tank and one was burned to death. The other person jumped off the nacelle rather than burn. Didn't make our news services of course and as usual. These things are censored by the BBC, the Murdoch Empire and many others. Do these things have a special exemption from the H&S at work act?

A Scottish wind watch site carries a long list of accidents and fatalities. See; <http://www.caithnesswindfarms.co.uk/accidents.pdf>

When they go on fire it is never possible to put them out, too dangerous for land crews or helicopters. The fire service watches from a safe distance. Disintegrating turbines can throw blades and parts thereof great distances and I believe the world record is more than 1km. They have caused forest and gorse fires in the US. What will they do to peat bogs?

The wind industry calls this 'Component Liberation.' No, I am not joking.

A Scottish school had the bits land in the playground last year, it was a weekend thankfully and nobody was there. Just a matter of time, it seems. I submitted a statement to the Consumer Council regarding the 'greater good' argument and they promised an internal study and a response around end of year (2013). I await their conclusions, now running late.

Statements such as 'this Windfarm will supply 3000 homes' is misleading. The truth is that ten thousand could not supply one home 24/7. And no, the wind is not always blowing somewhere. See Professor Gordon Hughes' study, which looked at this in the UK and Denmark.

Looking again at the lifetime of these things over what the developers claim, we need to be replacing the same amount of wind turbines we have now over the next 12 to 15 years just to keep wind contribution at the same level it is at present.

The morality of this charade is unquestionable and I appeal to those in power to put it right before Europe is bankrupted by the greed of the few, the ignorance of the many and the incompetence reigning in Brussels. We need to reduce CO2 emissions and that is where the money should be spent. For want of better technology such as Geothermal, nuclear is the best we have but that takes too long to put in place and should have been planned years ago. Gas is therefore the fastest short-term solution to CO2 reduction and wind should be at the bottom of the pile next to lignite where it belongs.

Suggested questions for the wind industry, its academic and political supporters.

- 1 What exactly are these environmental benefits claimed?
- 2 When the energy source is unsustainable how can a wind turbine output possibly be?
- 3 Taking all into consideration can the wind industry or government prove beyond reasonable doubt that these machines are reducing CO2 emissions?

- 4 When the wind is too strong they are paid to shut down and when this occurs it can be at any time of high or low demand. Is it intelligent behaviour for any government to pay our money beyond taxes to someone for producing nothing?
- 5 How many full-time employees are there working permanently on each site of each wind-farm in operation in N.Ireland?
- 6 What exactly are the 'social benefits' mentioned?
- 7 What evidence is extant that can prove beyond doubt that this waste of valuable resources on wind energy could possibly be for 'the greater good?'

Ken McLeod

February 27, 2014.

Appendix 1

Eirgrid Whole Ireland Production and Forecast for 10.5 hours. Correct at 3am.

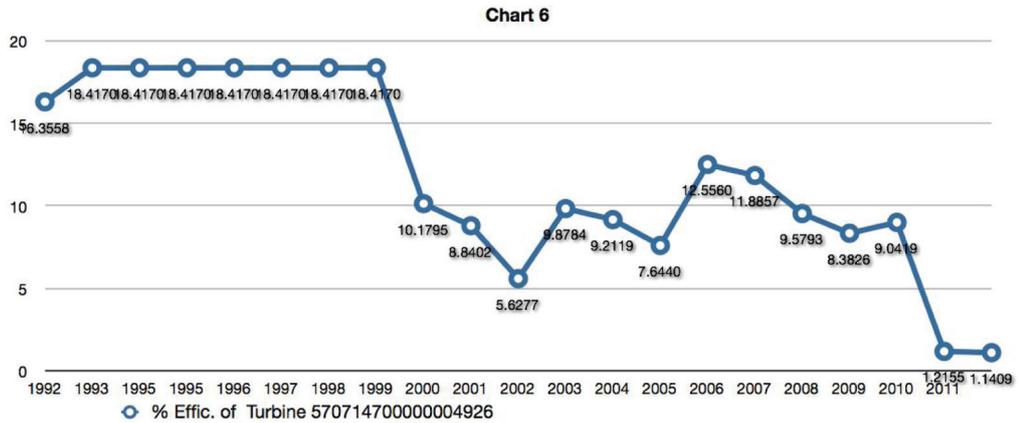
Time	Wind Generation MW	Forecast MW
01/01/2014 00:00	1020	1234.943
01/01/2014 00:15	995	1211.215
01/01/2014 00:30	933	1185.623
01/01/2014 00:45	959	1159.195
01/01/2014 01:00	921	1132.017
01/01/2014 01:15	931	1104.192
01/01/2014 01:30	882	1075.83
01/01/2014 01:45	923	1046.931
01/01/2014 02:00	919	1017.644
01/01/2014 02:15	944	988.014
01/01/2014 02:30	944	958.246
01/01/2014 02:45	947	928.415
01/01/2014 03:00	899	898.346
01/01/2014 03:15	929	906.599
01/01/2014 03:30	895	913.92
01/01/2014 03:45	922	921.118
01/01/2014 04:00	909	927.11
01/01/2014 04:15	894	932.276
01/01/2014 04:30	906	937.062
01/01/2014 04:45	951	941.342
01/01/2014 05:00	953	945.205
01/01/2014 05:15	958	948.609
01/01/2014 05:30	899	951.476
01/01/2014 05:45	885	953.633
01/01/2014 06:00	942	955.217
01/01/2014 06:15	1046	973.384
01/01/2014 06:30	1041	989.15
01/01/2014 06:45	961	1001.833
01/01/2014 07:00	966	1011.228
01/01/2014 07:15	963	1015.967
01/01/2014 07:30	955	1018.59
01/01/2014 07:45	899	1019.743
01/01/2014 08:00	853	1020.01
01/01/2014 08:15	788	1019.419

Time	Wind Generation MW	Forecast MW
01/01/2014 08:30	770	1017.973
01/01/2014 08:45	748	1015.878
01/01/2014 09:00	669	1013.292
01/01/2014 09:15	629	1026.866
01/01/2014 09:30	688	1039.178
01/01/2014 09:45	644	1051.059
01/01/2014 10:00	656	1061.352
01/01/2014 10:15	628	1069.557
01/01/2014 10:30	579	1075.933

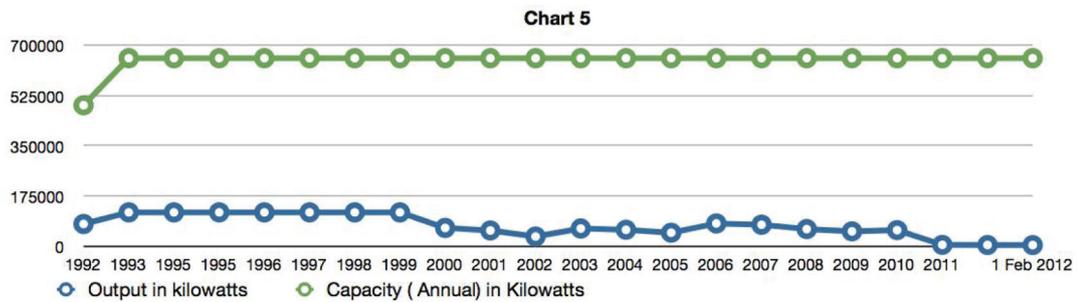
Appendix 2.

Wind Turbine Aging Plots.

Turbine identifier (ID)	Date of original connection to grid	Capacity (kW)	Rotor diameter (m)	Hub height (m)	Manufacturer	Type designation	Local authority no	Local authority	Type of location	Cadastral district	Cadastral no.	X (east) coordinate	Y (north) coordinate
5.707E+17	1 Apr 1993	75	18.8	31			201	Allerød	LAND	Høvelte/van 14a g		709260.15	6193958.3



Turbine identifier (ID)	Date of original connection to grid	Capacity (kW)	Rotor diameter (m)	Hub height (m)	Manufacturer	Type designation	Local authority no	Local authority	Type of location	Cadastral district	Cadastral no.	X (east) coordinate	Y (north) coordinate
5.707E+17	1 Apr 1993	75	18.8	31			201	Allerød	LAND	Høvelte/van 14a g		709260.15	6193958.3



Landscape Institute Northern Ireland

FAO Committee Clerk: Sheila Mawhinney

Committee for the Environment
Committee Chairperson, Anna Lo MLA
Parliament Buildings
Ballymiscaw, Stormont
Belfast, BT4 3XX

Landscape Institute Northern Ireland

25 February 2014

Re: Inquiry into Wind Energy

Dear Ms Mawhinney

The Landscape Institute Northern Ireland (LINI) represents the professional membership of Chartered Landscape Architects, incorporating designers, managers, and scientists. We are a branch of the UK Landscape Institute (LI) which is a registered charity promoting the highest standards in landscape planning, design, management and research through its 6000 members. The LI represents professionals in private practice, at all levels of government and government agencies, in academic institutions and in commercial organisations.

LINI welcome this 'Inquiry into Wind Energy' and feel our extensive professional experience in this sector would be of great value and interest to the Committee – with discussions surrounding the adequacy of PPS18 and its Supplementary Guidance of particular interest.

As an organisation the Landscape Institute and the professionals it represents are the recognised experts on Landscape and Visual Assessment (LVIA). Indeed the Landscape Institute, along with the Institute of Environmental Management and Assessment, has recently published the 3rd edition of 'Guidelines for Landscape and Visual Assessment'. Our members throughout the UK, lead the preparation of Environmental Impact Assessments (EIA) Landscape Characterisations, Landscape and Visual Impact Assessments and Regional Guidance on Landscape Wind Farm Capacity. Many of our members are internationally respected experts in this field.

As a key stakeholder, the Landscape Institute Northern Ireland would be delighted to have the opportunity to present evidence directly to the Committee on matters raised, inviting experts in this field from our membership to contribute directly to your important inquiry.

I trust the Committee will consider this offer and look forward to hearing from you in due course.

Yours Sincerely



Pete Mullin CMLI

Northern Ireland Policy Consultant
Contact No. 07775752010

Landscape Institute Northern Ireland

c/o PLACE Built Environment Centre, 11 Rosemary Street, Belfast BT1 1QF
mail.northernireland@landscapeinstitute.org www.landscapeinstitute.org/northernireland/
petem@landscapeinsitutute.org Registered Charity No.: 1073396

Lisnahaney Residents Group

LISNAHARNEY AREA RESIDENTS GROUP

SUBMISSION TO NI ASSEMBLY ENVIRONMENT COMMITTEE
ON THE INQUIRY INTO THE WIND INDUSTRY



Contents

	Page No
Executive Summary	
1.0 Introduction.....	5
2.0 Over Reliance on Wind Industry to Reach Energy Targets.....	6
3.0 Opening of AONBs to Achieve Renewable Energy Targets.....	7
4.0 Outdated Noise Regulations.....	8
5.0 Consultation with Local Communities.....	10
6.0 Community Benefits.....	11
7.0 Overstating socio economic benefits.....	12
8.0 Breaching Advertising Standards.....	13
9.0 Impact on Tourism.....	14
10.0 Impact on Residential Property.....	16
Appendices.....	17

Executive Summary

- The Lisnaharney Resident group (LARG) have produced this paper in response to the Environment Committee invitation to hear from groups to assist with their inquiry into the wind industry. LARG's submission outlines concerns in relation to approaches taken to achieve renewable energy targets and the over reliance on the wind industry, the opening of AONBs, set back distances, noise regulations, wind developer engagement with the local community, the projected socio economic benefits and the impacts on host rural communities.
- Northern Ireland has already met the UK obligation and targets for renewable energy. However NI has committed to become a renewable energy exporter setting a higher target of 40% for renewables. This has created a rush of applications resulting in a wind industry that is growing exponentially. This unfortunately has meant that the legislation, guidelines and standards that enable good industry governance have been left behind and not updated. Some would argue that they are not fit for purpose for today's modern wind turbines. Until proper governance structures are put in place, then renewable energy targets are being achieved at the expense of our landscape, AONBs and residents who live in the rural communities who pay host to these wind farms.
- The continual opening of AONBs for wind farm development must be reviewed and seriously considered if it is longer necessary. With the contributions from other less intrusive renewable energy projects such as hydro power, biomass and solar power, Northern Ireland's renewable energy target should be capable of being met without an over reliance on wind. We can now afford to be more particular about the number and location of wind farms.
- Within Northern Ireland no independent research has ever been carried out to consider the impact of wind turbines on tourism. Perhaps this is now necessary especially with the growing number of turbines on our landscape and with the high concentration of turbines that are located and planned for within Areas of Outstanding Natural Beauty.
- In relation to noise assessment, planning relies on a 16 year old noise methodology known as ETSU-R-97 (ETSU). Since ETSU was written in 1997, wind turbines have become much larger. In 2012 the Institute of Acoustics (IoA) was commissioned to review how ETSU was being applied and it produced a Good Practice Guide (GPG). A final Good Practice Guidance was issued in May 2013, and is now being adopted by NI Government. The GPG only provided guidance on the continued use of ETSU and have failed to take into account wind shear, which creates the occurrence of amplitude modulation (AM) ie the loud beating, slapping or banging noise from wind turbines. It also failed to take into account low frequency noise (LFN) which is inaudible or barely audible but which can be found measured inside homes near turbines. Australian and Canadian authorities are now conducting assessments of AM and LFN due to the concerns raised by residents who live near turbines.

- The way in which the wind developer- REI have used community funding to influence local opinion and sway a planning decision has been disgraceful. In our view, liaison with community groups about funding local projects should only be carried out once planning approval has been granted. Up until that point the only community liaison that should be carried out is working with local residents to mitigate any adverse impacts of the proposed wind farm in their area

In the case of the proposed Lisnahaney Wind farm, the developer appointed a community liaison officer, who has been engaging with groups promoting community benefit funds prior to planning approval. This has caused conflict and discontent locally especially with those who live on the Lisnahaney Road. Instead of the developer's community liaison officer engaging with those living closest to the wind farm to allay resident's fears and concerns, community benefits are being used as a lever whereby those who live in the wider community-furthest away from the wind farm and who will suffer no real adverse effects are incentivised by the community benefit to pressurise those who live closest to the wind farm and whose amenity and health will suffer from the development.

- REI issued an information leaflet during its Public Engagement evenings (**See Appendix 1-pages 18-19**). The information contained in this leaflet was misleading with a number of deceptive and poorly constructed conclusions. LARG felt so strongly in regard to these claims that they lodged an official complaint to the Advertising Standards Authority (Ref: A13-226365/CS) who have upheld the complaint. The full report from the ASA can be viewed in **Appendix 2-pages 20-25**. Alarming, some of the misleading information provided by REI formed part of their planning application which included an Economic Impact Study. The Economic Impact study provided indicative electricity output and wind farm capacity figures as well as job creation and benefits to the local economy.
- LARG conducted its own community public consultation exercise and discovered that an overwhelming percentage of local residents were in opposition to the wind farm development. (**see map in appendix –page 26**) This is in total contrast to the picture painted by REI in their Community Engagement report where they stated that their planning application is largely accepted by local residents. Even more disturbing was that this alleged positivity from the local community was being told to our local elected representatives on Omagh District Council and other bodies that REI were consulting with during their planning application preparations.
- The socio economic benefits often claimed by wind industry developers are now being challenged and are not seen as advantageous and beneficial as they first appeared. In a study by Verso Economics produced in March 2011 entitled "**The Economic Impact of Renewable Energy Policy in Scotland and the UK**" the key findings reported that for every job created in the UK in renewable energy, 3.7 jobs were lost elsewhere. In this report, it is stated that employment figures provided by those promoting renewable energy are often greatly exaggerated, exceeding official employment figures covering the whole of the energy sector.

In Spain renewable energy policies had destroyed jobs elsewhere in the economy. These losses implied that more than two jobs were lost across the Spanish economy for every green job created. In addition there will be other costs to the local economy that are harder

to quantify in financial terms such as the impact on the environment, visual amenity, human health and negative effects on residential property prices.

In Holland, a recent report by Buck Consultants International stated that €100m a year in tourist spending is at risk because of wind farm plans and that 3000 tourist jobs would be lost.

- Recent independent studies on the impact of wind turbines on property values, confirm that the on the ground experience of property auctioneers and valuers that wind turbines adversely impact property values. Residential property values can be protected by reviewing the current guidelines regarding the setback distance of turbines from housing. Set back distances are outdated and require a reassessment as turbines have got bigger and wind farms more common features on landscapes since the set back distance was first introduced. When considering the set back distance in PPS 18, there was a failure to consider or assess the relationship between proximity to wind energy developments and diminution of residential amenity and property values.

1.0 Introduction

The Lisnaharney Area Residents Group (LARG) is a community group based near to the Gortin Glens, Omagh in Co Tyrone that covers the neighbouring town lands west of the Gortin Glens namely Cullion, Dunmullan, Reaghan, Tirmurity, Lislap, Eskeradooey, Castleroddy, Dunbreen, Ballynatubbrit, Legnabraid, and Ballykeel.

We are a registered community group and our aim is to promote and advertise our area, which is an Area of Outstanding Natural Beauty and its scenic quality is valued highly by the residents who live in the area and the many visitors who come all year round to enjoy the vistas and outdoor recreation events held there. We have our own active face book page and website www.lisnaharney.co.uk.

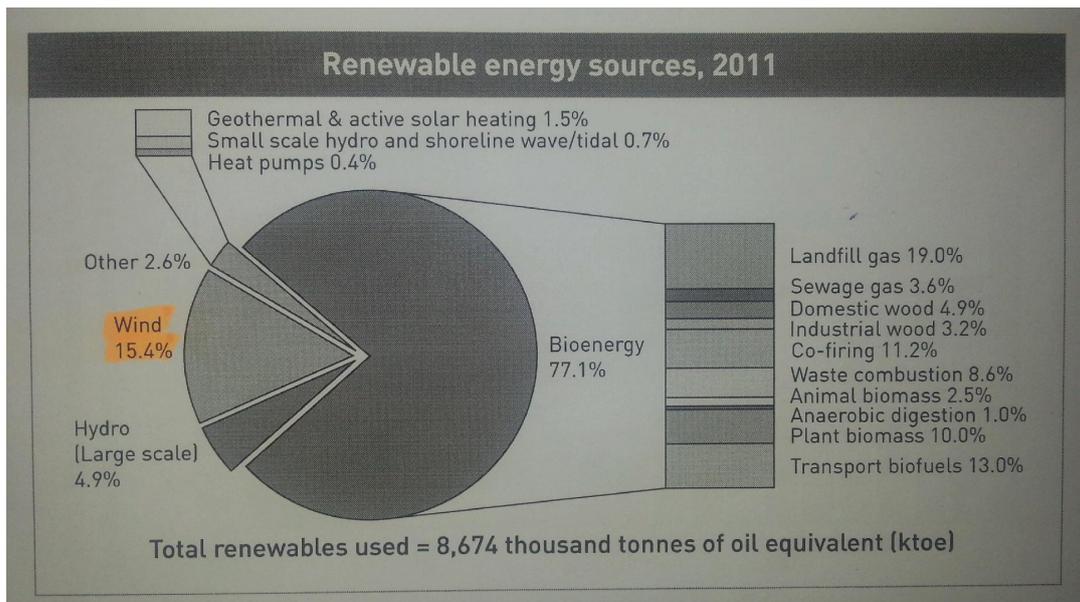
Presently there is a planning application for a wind farm comprising 14 turbines, 125m in height in the lands to the north of the Lisnaharney Road and south of Liscabble Road near Gortin Co Tyrone Ref No K/2013/0181/F. The developer is Renewable Energy International (REI) now known as Windyfields; although the application has been made on behalf of All Renewable Consulting Ltd (ARC NI), these appear to be one and the same company, or operate very closely with many of the same people. As does ARC NI1, ARC NI2, ARC NI3, RBF Wind Energy Ltd and Windyfields Holdings. On several of these company websites the proposed Lisnaharney Windfarm is presented as “for sale”

LARG welcomes the Environment Committee ‘s review into the wind industry. This paper will attempt to describe our concerns and experiences over the past 12 months. We are by no way experts but we have had to educate and inform ourselves about the wind industry at a very fast pace to be able to engage with the relevant bodies /personnel. LARG on behalf of concerned local residents have consulted with local politicians, planners, Omagh District Council and The Minister for the Environment to express their reasons for objecting to the wind farm proposal in our area.

This paper was produced in response to the Environment Committee invitation to hear from groups to assist with their inquiry into the wind industry. LARG’s submission outlines concerns about: approaches taken to achieve renewable energy targets and the over reliance on the wind industry, the opening of AONBs, noise regulations, engagement with the local communities, the projected socio economic benefits and the impacts on host rural communities.

2.0 Over reliance on the Wind Industry to Achieve Renewable Energy Targets

2.1 Northern Ireland has already met the UK obligation and targets for renewable energy. However NI has committed to become a renewable energy exporter setting a higher target of 40% for renewables.



Pie chart- from the Dept of Energy and Climate Change- 2011-2012

With the contributions from other less intrusive renewable energy projects such as hydro power, biomass and solar power Northern Ireland's renewable energy target should be capable of being met.

2.2 In England and Wales the rejection of wind farm applications is around 50%. In Northern Ireland it is in the region of 5%. This sends a message to speculative developers that NI is open for wind farm development. This has created a rush of applications resulting in an industry that is growing exponentially. This unfortunately has meant that the legislation, guidelines and standards that enable good industry governance have been left behind and not updated. Some would argue that they are not fit for purpose for today's modern turbines.

Although renewable energy targets are being met, until proper governance structures are put in place, then these targets are being achieved at the expense of our landscape, AONBs and residents who live in the rural communities who pay host to these wind farms.

3.0 Opening Up of AONB To Achieve Renewable Energy Targets

3.1 Currently 49% of all NI industrial turbines are located in West Tyrone. This has now reached saturation point. **(see appendix 4-page 27)**

The continual opening of AONBs for wind farm development must be reviewed and seriously considered if it is longer necessary. As renewable energy targets can now be met without an over reliance on wind, we can afford now to be more particular about the number and location of wind farms.

3.2 Unfortunately PPS 18 “ removed the exclusion of wind farm development from AONB’s opening up the landscape for developers. Perhaps it is now time to reverse this trend and protect our AONBs by amending PPS18.

The site proposed for the Lisnaharney wind farm development falls within the Landscape Character Area (LCA) No 26 Bessy Bell and Gortin. In accordance with the Supplementary Planning Guidelines this LCA’s overall sensitivity to wind farm development was rated as “**High**”. It is described as follows:

***“The majority of this landscape is highly sensitive to wind energy development, notwithstanding the presence of existing and consented wind farms. This is an iconic and widely visible Sperrin landscape, whose summits and steep upper slopes are particularly sensitive to the introduction of any new structures. Sensitivity is further increased by the LCA’s popularity for outdoor recreation...
Overall Sensitivity – High”***

4.0 Outdated Noise Regulations

- 4.1 When granting planning permission for a wind farm, Planning relies on a 16 year old noise assessment methodology known as ETSU-R-97 (ETSU). Since ETSU was written in 1997, wind turbines have become much larger. Any neutral observer would have expected a substantial revision of these guidelines especially when there has been a greater understanding of the science that underpins noise assessments and the widespread complaints from residents living close to wind farms but this has not happened.

When a wind farm planning application is considered by the planners there are many issues to be assessed. Most of these, such as possible harm to landscape, heritage assets and ecology are subjective value judgements. So a planning decision maker can justify a decision either way. The ETSU noise assessment is the only part of the process that involves a clear pass or fail. LARG are not aware of planning ever turning down a wind farm application based solely on its potential to cause noise nuisance. So how can it be that a growing proportion of wind farms are giving rise to noise complaints?

It appears that ETSU has worked out pretty well for the wind industry. Some leading experts on acoustics have concluded that the entire ETSU methodology is based on pseudoscience that is being used to serve a business and political agenda and should be replaced with a more reliable and robust assessment.

- 4.2 In 2012 the Institute of Acoustics (IoA) was commissioned to review how ETSU was being applied and it produced a Good Practice Guide (GPG). However the terms of reference for this review excluded consideration of noise limits, excluded a rewrite of ETSU, and excluded a consideration of health effects of turbine noise. It also excluded the most troublesome aspect of turbine noise – Amplitude Modulation (AM). The reason given for this was that the wind industry through its trade association, RenewableUK was conducting its own study into the phenomenon.

A final Good Practice Guidance was issued in May 2013, and is now being adopted by NI Government. The GPG only provided guidance on the continued use of ETSU and as a result the new guidance has permitted even higher noise levels to be inflicted on local residents and by default shorter separation distances for developers to exploit.

- 4.3 The principle behind ETSU is that noise from a wind turbine can be masked by existing background noise so it calls for a comparison of the predicted turbine noise with the background noise at each property assumed to be at risk. In 2013, a report entitled "***The Bad Science behind Wind turbine Noise Guidelines***" by Cox and Unwin (see appendix 5 -pages 28-65) detailed numerous scientific concerns and in particular its failure to allow for wind shear. Wind shear is the effect where wind speed at turbine height is greater than at ground level where people live. Wind shear is at its highest at night. High wind shear results in greater turbine noise and the occurrence of amplitude modulation (AM), ie the loud beating, slapping or banging noise from wind turbines. AM is the most intrusive noise characteristic of wind turbines and its exclusion from assessment guidelines is a major concern.

- 4.4 In addition there is mounting evidence of significant levels of low frequency noise (LFN) being measured inside homes located near turbines. LFN directly affects the health of residents even where the turbine noise is either inaudible or barely audible at all. The wind power industry and government have consistently denied the presence of LFN. However due to concerns regarding wind turbine LFN elsewhere the South Australian Environment Protection Authority has said it will conduct full spectrum monitoring inside and outside of homes. Similar action is also being taken by the Government of Ontario, Canada. Wind farm LFN has all the makings of a future health scandal in UK and ROI.

Already litigation proceedings have commenced in ROI where a residents group have brought a legal challenge aimed at overturning Bord Pleanála's grant of planning permission for a wind farm development near their homes in Co Cork. The residents claim that a proper assessment of the noise impact from the turbines on their homes was not carried out. This case will come before the Courts in March 2014 (**see appendix 6-page 66**). Also in Banteer Co Cork the Shiveen family and others are suing a wind farm developer for adverse impacts on their health due to a turbines being in close proximity to their homes.

A recent article published in the **British Medical Journal dated 10/03/2012 by Dr C.D. Hanning and Prof. Evans** states the impact on public health must be considered when assessing wind farm developments. This same report also recommends a separation distance for turbines from houses on health grounds of a distance of at least 1.5km.

Several houses in the Lisnahrney Area are 900m away from the proposed turbines.

5.0 REI Consultation with the Local Community:

- 5.1 REI in their planning application described extensive resident consultation that was largely positive. LARG also consulted with residents along the roads listed in REI Community Engagement submission. The majority of residents have told us that they had no recollection of ever been visited or had any information left with them in regard to this proposal. Other residents told us when they had tried to contact REI with concerns and meetings were promised but REI cancelled and they were not rearranged. Despite this in their Community Engagement Report, REI stated they visited all roads on three separate dates. It was also discovered that the house numbers listed on REI's Community Engagement report- some of which are actually non-existent or are derelict buildings.
- 5.2 LARG has discovered that on some roads ie Lisnaharney Rd, an overwhelming percentage (almost 100%) of residents whom were not benefiting directly from REI, were in opposition to the development. **(see map in appendix 3- page 26)**
This is in total contrast to the picture painted by REI in their Community Engagement report where they propose that local residents largely accept this application. Even more disturbing was that this alleged positivity from the local community was being told to our local elected representatives on Omagh District Council and other bodies that REI were consulting with during their planning application preparations.
- 5.3 We were also disappointed to learn that the Strabane Ramblers whom were identified on the Community Engagement report as a local group who had declined to meet them in regard to the application, had no recollection of ever being approached in regard to the same- again discrediting the integrity of the Community Engagement Report presented by REI as part of this planning application.
- 5.4 How public information evenings were organised by REI was disappointing. Posters and photographs were displayed and REI staff where there to answer questions. It was organised on a drop in basis for individuals. This was off putting for local residents who did not understand the information presented and did not know what questions they could or should be asking. Information evenings would have been more beneficial if a general presentation providing an overview of the planning application, followed by a Q&A to eliminate residents concerns. People would have been encouraged and felt more confident to engage in a group basis rather than a one to one.

LARG was also disappointed regarding how the information evenings were advertised and promoted, these were promoted over a bank holiday period and the second week's advertisement actually only appeared on the last day of the actual event- this gave the appearance that REI wished to ensure that these events happened without much local notice.

6.0 Community Benefits

6.1 The allocation and distribution of community benefits in our view have been a controversial and a divisive aspect to the planning process. In an attempt to win over planning concerns and objections from local communities, developers rather than trying to engage with local communities on their planning concerns are trying to win over communities by persuading them to accept wind industry funding for community projects.

6.2 Currently in accordance with draft guidelines being developed by Strabane and Omagh District councils, it is communities living within an eight-mile radius from a wind farm that are eligible for community funding. Seventy percent of this funding is to be allocated to those living within 5 miles. Where it is not possible to allocate 70% of the funding within the 5-mile boundary, then any allocated funding would be distributed within the wider threshold of 8 miles.

In relation to the Lisnaharney wind farm, it is the residents who live within 2 miles of the wind farm who are the main hosts to the developer and the wind farm and it is this group of people who have the greatest concerns and who have objected strongly in opposition to the siting of the wind farm in their area. See map in **appendix 3-page 26** illustrating community objections.

6.3 REI has appointed a community liaison officer, who has been engaging with groups in the outer limits, promoting community benefit funds. This has caused conflict and discontent locally especially with those who live on the Lisnaharney Road. Instead of the developer's community liaison officer engaging with those living closest to the wind farm to allay resident's fears and concerns, community benefits are being used as a lever whereby those who live in the wider community-furthest away from the wind farm and who will suffer no real adverse effects are incentivised by the community benefit to pressurise those who live closest to the wind farm and whose amenity and health will suffer from the development.

In fact in one known case, a community group has been asked by the Developer to withdraw its objection from the planning portal before they could benefit from community funding.

6.4 The way in which community funding has been used to influence local opinion and sway a planning decision has been disgraceful. In our view liaison with community groups about funding local projects should only be carried out once planning approval has been granted. Up until that point the only community liaison that should be carried out is working with local residents to mitigate any adverse impacts of the proposed wind farm in their area.

7.0 Overstating of Socio Economic Benefits

7.1 In a study by Verso Economics produced in March 2011 entitled ***“The Economic Impact of Renewable Energy Policy in Scotland and the UK”*** the key findings reported that for every job created in the UK in renewable energy, 3.7 jobs were lost. REI in its Lisnaharney application have made a number of claims about job creation and benefits to the local construction sector as part of their planning submission. These claims and claims similar to them made by several wind farm developers are now being challenged. In the report cited above, it is stated that employment figures provided by those promoting renewable energy are often greatly exaggerated, exceeding official employment figures covering the whole of the energy sector. It calls for more accurate figures on behalf of the industry to engender a more rational debate on the subject.

7.2 A high profile study published by King Juan Carlos University (Alvarez et al March 2009) investigated the effects of public sector support to renewable energy in Spain. The study concluded that despite aggressive green jobs policies, Spain created a low number of jobs in the sector. Most jobs created in construction phase were short term. Only a small number of jobs were created on a longer-term basis in the maintenance and operation.

There were further claims that Spanish renewable energy policies had destroyed jobs elsewhere in the economy. These losses implied that more than two jobs were lost across the Spanish economy for every green job created. In addition there will be other costs to the local economy that are harder to quantify in financial terms such as the impact on the environment, visual amenity, human health and negative effects on residential property prices.

8.0 Breaching Advertising Standards Authority Standards

- 8.1 REI issued an information leaflet during its Public Engagement evenings (**See Appendix 1- pages 18-19**). The information contained in this leaflet was misleading with a number of deceptive and poorly constructed conclusions. LARG felt so strongly in regard to these claims that they lodged an official complaint to the Advertising Standards Authority (Ref: A13-226365/CS) who have upheld the complaint. The full report from the ASA can be viewed in **Appendix 2- pages 20-25**.

Some of the misleading information provided by REI that formed part of their planning application included an Economic Impact Study carried out by a third party on their behalf. The indicative electricity output claim in this had been based on a capacity factor which had been reached using DUKES wind data calculations (Not site specific). Also REI provided data in relation to wind speeds on the Lisnahuney Site based on NOABL (more site specific) data, raising concerns as they had not actually provided information as to how these wind speeds would translate into a round figure 30% capacity factor (quoted) on this site, not taking into account site specific factors which will affect the capacity factor.

REI installed an anemometer mast after these figures were produced raising a number of questions in regard to their calculations regarding the outputs and potential of this site. It is our understanding that an anemometer must be in place gathering data for a set period before assessing its potential as a wind farm site. Therefore any indicative electricity output figures quoted on REI's documents and application material is misleading until they can produce a site-specific report of the same.

- 8.2 The Claim in the Economic Impact Study in regard to job years, wages and gross value added during construction was not presented in such a way as to show how they calculated them, not providing adequate substantiation to support the same and therefore LARG can only see this as misleading information.

9.0 Negative Impact on Tourism and Recreational Use

9.1 Policy T0U2 of PSRNI recognises that many areas are important assets to the tourist industry because of their exceptional landscape quality including AONBs. This proposed wind farm at Lisnaharney is an AONB. The proximity of the Gortin Glen Forest Park, History Park, Sperrin Caravan park, the Gortin Lakes, The Ulster American Folk Park, The Robbers Table Walk, Gortin Loop, Ulster Way Walks, National Cycle Routes, The North West Trail, The Melon Fun Farm and Marshalls Country Trail make this an area which is greatly used for outdoor recreation.

9.2 REI in their economic Impact study suggested that wind farms would have a negligible adverse effect on tourism. However a comprehensive study carried out by The Tourism Company entitled: "The Impact of Wind Turbines on Tourism" prepared for the Isle of Anglesey County Council (February 2012.) reviewed 4 major studies on this subject carried out in Scotland, Wales and Ireland where tourists and tourist providers were surveyed about their opinions on the subject. This study made the following points:

- The existence of attractive landscapes and natural beauty to tourists was important.
- In general tourists prefer to see wind turbines at a distance. In Visit Wales study 2003, the majority wanted them to be "as far away as possible" and significant negative reaction to images was partly related to proximity.
- In the Visit Scotland 2008 study, negative views were expressed towards wind turbines amongst those tourist operators who provided nature or activity based holidays. A study carried out by Wild Scotland, the association of wildlife tour operators showed that 61% of operators in Scotland felt the impact of wind farms would be negative. Also a survey by Activity Scotland, the association of activity holiday operators, revealed 88% of operators believed the likely impact to be negative.

9.3 REI also stated in their economic impact study, that wind farms could become tourist attractions in their own right. Some studies do report a positive interest by tourist visiting wind farms. However most studies have anticipated that this may be driven by a novelty factor that is likely to wear off as turbines become more commonplace.

Failte Ireland's position is that care must be taken to ensure that insensitively sited wind energy developments do not impact negatively on tourism potential. It is opposed to wind energy development in National Parks and areas of scenic importance.

- 9.4 The NI Tourist Board in the past have tended to reference a 2011 NITB/Mintel research paper in regard to Wind Turbine Placement and the impact of the same. However:-
- This paper is dated 2011 when some of the important source information is older than that, this is misleading. Also if the source info is this old there is quite a difference in the saturation of Wind Farms since then and no doubt opinions will have changed?
 - The map they use on this paper is very out of date and missing quite a number of newer wind farms and planning applications.
 - A very high proportion of the Source Information is from the wind industry, we as a group believe that this should be from independent bodies as to accept the advice from the companies likely to benefit from the placement of the same is potentially biased.

- 9.5 Since this research paper, NITB in their consultation to PPS18 have stated:

“The board has concerns regarding the development of wind farms, relating primarily to their visual impact and noise generation and in turn the potential impact on tourism, particularly in scenic area”

Also in relation to the planning application for 21 turbines at Binevenagh, NITB have stated in their consultee response to the planning process:

“ A development of this scale and in such a close proximity to these features may have an impact on the visitor experience in the area.”

- 9.6 Within Northern Ireland no independent research has ever been carried out to consider the impact of wind turbines on tourism. Perhaps this is now necessary especially with the growing number of turbines on our landscape and with the high concentration of turbines that are located and planned for within in the Sperrin’s Area of Outstanding Natural Beauty.

10.0 Set Back Distance and Impact on Residential Property Prices

- 10.1 The construction of the proposed wind farm will have a permanent adverse effect on the market value of property in the immediate area. Residents of rural housing in the immediate vicinity of wind farm sites enjoy a wide range of amenities that contribute to residential property values such as high natural and scenic value. There is increasing recognition of the negative impacts of wind farms on near by houses. In particular, Lincolnshire Valuation Tribunal (2525475645/032C and 2525475652/032C) upheld an appeal to downgrade a dwelling to a lower council tax band due to the proximity of a wind farm which was 930m from the house in question. The findings of the case explicitly state

“Case law and experience elsewhere had shown that dwellings which were located in close proximity to wind farms had seen their property prices drop by 20%”

Reference: Council Tax Appeal Farmhouse Greys Farm North Drove Bank Spalding Lincs PE11 3JX reassessment of Council Tax band due to proximity to Wind Turbines.

Despite this evidence, the wind industry deny that wind farms will have any detrimental impact on house prices even though recent independent studies on the impact of wind turbines on property values, confirm that the on the ground experience of property auctioneers and valuers that wind turbines adversely impact property values.

(see appendix 7- page 27)

- 10.2 Residential property values can be protected by reviewing the current guidelines regarding the setback distance of turbines from housing. Set back distances are outdated and require a reassessment as turbines have got bigger and wind farms more common features on landscapes since the set back distance was first introduced. When considering the set back distance in PPS 18, there was a failure to consider or assess the relationship between proximity to wind energy developments and diminution of residential amenity and property values.

LISNAHARNEY AREA RESIDENTS GROUP

SUBMISSION TO NI ASSEMBLY ENVIRONMENT COMMITTEE
ON THE INQUIRY INTO THE WIND INDUSTRY

APPENDICES

Appendix 1.

RENEWABLE ENERGY INTERNATIONAL
 Proposed Lisnaharney Wind Farm, Gortin, County Tyrone
 March 2013

Renewable Energy International (REI) is proposing to develop a wind farm of up to 14 turbines in the Lisnaharney area approximately two and a half miles south west of Gortin, County Tyrone.

Who are REI?

Renewable Energy International (REI) was established in 2009 to focus on developing onshore wind power opportunities. Based in Belfast and London with operations throughout Northern Ireland and Europe, REI has extensive experience and a proven track record in the development of wind farms.

Why Wind Energy?

In Northern Ireland we make around 88% of electricity from coal, oil and gas - 100% of which is imported. Rising international fuel wholesale prices are the main contributor to rising electricity bills for the consumer.

Around 12% of the electricity we consume is already from renewable sources, mainly from wind farms. The NI Assembly's Strategic Energy Framework (2010) includes a target of making 40% of electricity consumed from renewable energy sources by 2020 with the bulk of the new generation coming from wind farms. Wind energy is well suited to the Northern Ireland climate, technically proven and produces competitively priced electricity.

Research has shown that as the market share of wind generation grows, displacing oil, gas and coal (thermal) generation, the average generation cost falls.¹

Thermal generation will continue to set the wholesale electricity price through to 2020 though as we see more wind generation going onto the grid at times of high wind output and relatively low demand, wind could supply all electricity demand and there will be increasing periods where wholesale prices fall to zero.¹

Summary of the Proposed Project

- 14 x 3MW wind turbines with the possibility of extension;
- Turbine tip height c. 125m subject to turbine selection process;
- Requires a substation and access tracks;
- Total capacity of 42MW;
- Indicative electricity output 110,376 MW hrs, comparable to the demand of 23,773 UK homes;²
- Saving 55,371 tonnes of Carbon dioxide each year, just over 1% of the total UK annual reduction target and 12.6% of Northern Ireland's target.²

Lisnaharney was initially identified as a suitable wind farm development in 2009. While it is located within the Sperrins Area of Outstanding Natural Beauty, high wind speeds and a lack of significant environmental impacts contributed to site selection confirmed by subsequent environmental and technical studies.

Following constraint studies and consultation with local residents, community associations and elected representatives, the site design was reduced from 16 to 14 turbines. It is anticipated that following this series of information days, and after making any design changes based on your feedback, the planning application will be submitted in Q2 2013.

Environment Impact Assessment

A comprehensive Environmental Impact Assessment is being carried out in order to ensure the site is suitable for wind farm development and to inform the layout and design. A full Environmental Statement outlining the findings will be submitted with the planning application, covering: landscape and visual amenity, noise, amenity impacts, ecology, archaeology, geology, hydrology, roads, air and climate, health and safety and communications as well as the significant socio-economic benefits expected.

¹ Source: IWEA Report The impact of wind on pricing within the Single Electricity Market, v2.0 2011
² Source: Oxford Economics, Lisnaharney wind farm, Economic Impact Study 2012

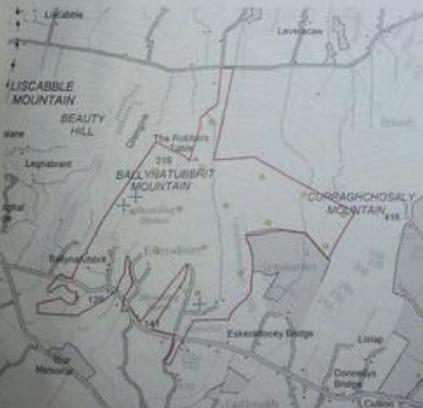


Local Benefits

Developing the wind energy industry locally will retain jobs and earnings. REI is committed to spending as much locally and in NI as possible and anticipates spending £20.5 million on civil works, site investigations and environmental monitoring with a total project value of £54.5 million.

- £500,000 has been invested in development costs to date;
- 540 direct, indirect and induced job years will be created during the 18 month construction period, producing wages of £10m and gross value added of £18.1m;
- Post-construction spend in local economy estimated at £900,000 per annum for 25 years covering rents, local land and property rates £100,000 a year rising to £450,000 a year when rates policy changes implemented) and a community fund (estimated £80,000 annual fund);
- Further £1m annual spend on-site maintenance.

The recession has brought a legacy of unemployment and a lack of investment. Looking at the bigger picture in Northern Ireland as a whole there is a need for investment and job creation.



Map showing proposed layout of wind farm at Usnahanrey and application site area.

Reproduced with the permission of Land and Property Services under delegated authority from the Controller of HMSO. © Crown Copyright License 2684



Any project such as the proposed Lisnahanrey wind farm, should be assessed on its merits and the potential economic and other benefits that would be brought to the local area. These include:

- Major investment in the local economy;
- Local employment opportunities;
- Support for beleaguered construction sector and local businesses;
- Diversification of local income;
- Significant rate repayments to Omagh District Council;
- Clean energy, increasing fuel security and lower energy costs for Northern Ireland;
- Major contribution to NI Energy policy targets and Carbon Dioxide reduction targets;
- Provision of skilled jobs in a new and growing industry sector;
- New source of community funds for local community projects.

Contact Details



Kathryn Tims
 Renewable Energy Int. Ltd
 Unit 3 Ormeau Business Park
 8 Cromac Avenue
 Belfast BT7 2JA
 Phone +44 (0)7803 624 919

Appendix 2.

ASA Adjudication on Windyfields Ltd

Windyfields Ltd t/a ARC NI 3 Ltd

Unit 3 Ormeau Business Park
8 Cromac Avenue
Belfast
Northern Ireland
BT7 2JA

Date:

28 August 2013

Complaint Ref:

A13-226365

Background

Summary of Council decision: Four issues were investigated, of which three were Upheld and one was Not upheld.

Ad

A leaflet for a wind farm development company, distributed at an information evening, described a proposed wind farm project, its expected efficiency and the benefits it would bring to the local area. Introductory text stated "Renewable Energy International (REI) is proposing to develop a wind farm of up to 14 turbines in the Lisnaharney area approximately two and a half miles south west of Gortin, County Tyrone".

Under the heading "Summary of the Proposed Project", bullet points stated "- 14 x 3MW wind turbines with the possibility of extension; ... - Indicative electricity output 110,376 MW hrs, comparable to the demand of 23,773 UK homes; - Saving 55,371 tonnes of carbon dioxide each year, just over 1% of the total UK annual reduction target and 12.6% of Northern Ireland's [sic] target". Further text stated "Following constraint studies and consultation with local residents, community associations and elected representatives, the site design was reduced from 16 to 14 turbines".

Under the heading "Local Benefits", text stated "Developing the wind energy industry locally will retain jobs and earnings", followed by bullet points including "- 540 direct, indirect and induced job years will be created during the 18 month construction period, producing wages of £10m and gross value added of £18.1m; - Post-construction spend in local economy estimated at £900,000 per annum for 25 years covering rents, local land and property rates ...".

A map, labelled "Map showing proposed layout of wind farm at Lisnaharney and application site area" had 16 turbines marked on it.

Issue

The complainant challenged whether:

1. the claims "REI is proposing to develop a wind farm of up to 14 turbines", "14 x 3MW wind turbines with the possibility of extension", "Following constraint studies and consultation ... the site design was reduced from 16 to 14 turbines" and the map showing 16 turbines were contradictory and therefore misleading;
2. the claims "up to 14 turbines" and "the site design was reduced from 16 to 14 turbines" were misleading, because they understood that REI was already in negotiation with landowners to expand the project;
3. the claims relating to the indicative electricity output and carbon dioxide savings were misleading and could be substantiated; and
4. the claims relating to local benefits were misleading and could be substantiated.

CAP Code (Edition 12)**11.13.13.113.73.9****Response**

1. Windyfields Ltd, trading as ARC NI 3 Ltd, which formerly traded as Renewable Energy International (REI), provided a copy of their Planning Application, which showed they had applied for permission to install fourteen 3-MW turbines on the site. They said the map showing 16 turbines was the result of a clerical error and, after realising the mistake on their first information evening, they had withdrawn the leaflet and replaced it with a correct version on which the map showed only the 14 turbines for which they had sought planning permission. They provided a copy of the amended version of the leaflet.

2. REI said they had no land control at the location other than that relating to the land covered by the Planning Application, so they were unable to apply for an extension to the number of turbines for which they had applied for planning permission. They said if they were to secure further land rights following their testing phase, they would have to submit a further planning application and engage with the local community, and the site would not form part of the currently proposed wind farm. They provided a copy of the location plan submitted with the Planning Application, which showed the boundaries of the proposed wind farm and a wider boundary around that, which showed the overall area over which they held options with landowners of land on which the wind farm was to be located. They said they had no plans for any extension within that area at that time and had no other land interests within 6 km of that area. REI considered the whole premise of the complaint was hypothetical and the claims were not misleading.

3. REI provided a copy of an Economic Impact Study, prepared by an independent company, details of some of the calculations made by the independent company in support of information in the Economic Impact Study, and details of their own calculations on which the claims were based.

REI said the indicative electricity output figure of 110,376 MW per year was calculated through a formula which used the total installed capacity of a wind farm and the expected percentage of

time during which it would work at the installed capacity (the 'capacity factor' or 'load factor'). REI said the total installed capacity for the Lisnaharney wind farm would be 42 MW, and the capacity factor would be 30%. The capacity factor was based on figures published by the Department of Energy and Climate Change (DECC) in the Digest of UK Energy Statistics (DUKES), in July 2012, which showed that the average capacity factor for on-shore wind farms in the UK between 2007 and 2011 was 26.2%, although that included the very calm year of 2010; without 2010 data the average capacity factor was 27.3%. They said that Northern Ireland demonstrated a greater wind resource than the UK average and therefore a capacity factor of 30% was considered an appropriate rate for output projections for the Lisnaharney site. They also referred to wind speed data from a resource based on NOABL wind speed data, which showed wind speeds of 8 to 10 m/s at 75 m above ground level at the site. They provided examples of data from three turbine sites in other countries where wind speeds of 6 to 7 m/s resulted in capacity factors of between 29.1% and 31.3%. They therefore considered that data demonstrated the capacity factor for the Lisnaharney site should be at least 30%. They said they had just installed a wind measurement mast so they would have an accurate measurement of wind speeds at the site in the next three to six months.

REI said the claim that the indicative electricity output was comparable to the demand of 23,733 UK homes was based on an average UK household annual electricity consumption of 4,643 kWh. They said that figure was used by renewableUK, the wind energy industry trade body.

With regard to the claims in relation to carbon dioxide emissions savings, REI calculated the figure through a formula which used the total installed capacity, the capacity factor, and the 'emissions factor' (the number of grams of carbon dioxide saved per kWh through the use of wind energy). REI said they had used an emissions factor of 430 g, which they had taken from DECC and Scottish Natural Heritage figures.

In relation to the claims that the carbon dioxide savings would be equal to "just over 1% of the total UK annual reduction target and 12.6% of Northern Ireland's [sic] target", REI referred to the Economic Impact Study, which stated that "The development could also reduce CO₂ emissions by 55,371 tonnes each year, equating to just over 1% of total UK annual reductions and approximately 12.6% of total NI annual reductions". The independent company which produced the report said that sentence in the report should have included some qualifications, and provided details of their calculations in support of the more qualified claim.

4. REI said the Economic Impact Study stated that the construction phase spend of £20.5 million was expected to generate a total of 540 job years, £10 million in wages and £18.1 million gross value added. The total included job years, wages and gross value added for direct jobs, indirect jobs and induced jobs.

REI provided their own calculations in relation to the annual post-construction local spend, but said these calculations were not formally recorded. They said there were three local revenue streams: the amount paid to landowners in site rent (the details of which were confidential); the community fund which would provide £2,000 per installed MW per annum; and business tax rates on capital assets. They said the total yearly revenue stream calculated on that basis would

be £860,797, and as a result they considered their claim of £900,000 revenue per annum was not misleading.

Assessment

1. Upheld

The ASA noted that the map which showed 16 turbines was an error and we acknowledged that REI had already amended it to show only 14 turbines, as reflected in their Planning Application. However, we were concerned that even with that amendment to the map, the various statements in the ad which referred to the number of turbines proposed for the site were contradictory and therefore misleading. We concluded the ad breached the Code in that regard.

On this point, the ad breached CAP Code (Edition 12) rules 3.1 (Misleading advertising) and 3.9 (Qualification).

2. Not upheld

We noted the wider boundary of the site as marked on the Planning Application map largely corresponded with the boundaries shown on the map in the ad (in areas where the maps did not correspond, the map in the ad showed a slightly larger area than the Planning Application map), and that the Planning Application was for 14 turbines only. We also understood that REI would be required to go through a further Planning Application process should they wish to extend the site in future. We therefore concluded that references in the ad to the site consisting of 14 turbines were not misleading.

On this point, we investigated the ad under CAP Code (Edition 12) rules 3.1 (Misleading advertising), 3.7 (Substantiation) and 3.9 (Qualification), but did not find it in breach.

3. Upheld

We noted the indicative electricity output claim in the ad had been based on a capacity factor which had been reached using DUKES wind data calculations. When considering advertising claims about the regional or national use of wind energy, the ASA had previously accepted a capacity factor based on DUKES data providing that claims were also heavily qualified. However, we noted that the claim in the ad was specific to the Lisnahaney site and considered DUKES data alone was not adequate to support site-specific claims. We noted the data REI had provided in relation to wind speeds at the site was based on NOABL data, which was more site-specific, but we were concerned they had not provided detailed information as to how those wind speeds would translate into a capacity factor of 30%, taking into account other site-specific factors which would have an effect on the capacity factor. We welcomed their move to install a wind measurement device to provide accurate site-specific data in future. However, we considered that we had not seen adequate substantiation to support a capacity factor of 30% for the Lisnahaney wind farm, and therefore concluded that the indicative electricity output figure stated in the ad was misleading. Furthermore, we considered that, even if the capacity factor had been

adequately substantiated, the claim should have been phrased conditionally to make clear that the calculation on which it was based was an estimate.

With regard to the claim that the wind farm's output would be comparable to the demand of 23,733 UK homes, we noted that figure was based on an average UK household annual consumption figure of 4,643 kWh. We understood that renewableUK recommended using the figure used by the DECC, which was slightly lower, but noted that because that figure was lower, the claim in the ad was more conservative than if the DECC's figure had been used. As such we considered it was acceptable to use a figure of 4,643 kWh in the calculation. However, because the claim was based on a calculation which used the 30% capacity factor, we concluded the claim was misleading. Furthermore, we considered that in order to avoid misleading consumers, the ad should have made clear the basis of the calculation.

With regard to the claim that the wind farm would save 55,371 tonnes of carbon dioxide from being produced each year, we considered REI's use of the DECC figure for the emissions factor was robust and relevant. However, because the 30% capacity factor had been used in the calculation on which the claim was based, we concluded the claim was misleading. We were also concerned that, even if the capacity factor figure had been adequately substantiated, the calculation was not accurate and the final figure should have been 7,909 tonnes lower. Furthermore, because we understood that the precise amount of CO₂ displaced varied from wind farm to wind farm, we considered the claim should have been phrased conditionally to avoid implying that wind energy was guaranteed to displace exactly 55,371 tonnes of CO₂ per year.

In relation to the claims that the carbon dioxide savings would amount to "just over 1% of the total UK annual reduction target and 12.6% of Northern Ireland's [sic] target", we noted the statement in the Economic Impact Study, on which that claim was based, did not refer to annual reduction "targets", but to current levels of carbon dioxide reductions. We considered the claim in the ad was therefore misleading in that regard. Notwithstanding that, we were concerned that the way in which the current annual reduction in carbon emissions in Northern Ireland had been calculated was not robust enough to support advertising claims, not least because it relied on applying a 30% capacity factor to all currently operating wind farms in Northern Ireland. We also understood they had calculated that the contribution the Lisnahaney wind farm was expected to make to carbon dioxide emission reductions in Northern Ireland was actually 0.6% rather than "just over 1%". Furthermore, because the reductions claims were based on the Lisnahaney wind farm saving 55,371 tonnes of carbon dioxide each year, for which we had not seen adequate substantiation, we considered the claim was also misleading in that regard.

On this point, the ad breached CAP Code (Edition 12) rules 3.1 (Misleading advertising), 3.7 (Substantiation), 3.9 (Qualification), 3.11 (Exaggeration) and 11.1 (Environmental claims).

4. Upheld

We noted the claim with regard to job years, wages and gross value added during the construction period was based on statements in the Economic Impact Study. However, it was not clear from the report how those figures had been calculated. In the absence of that information,

we considered we had not seen adequate substantiation to support the claims and concluded those claims were misleading.

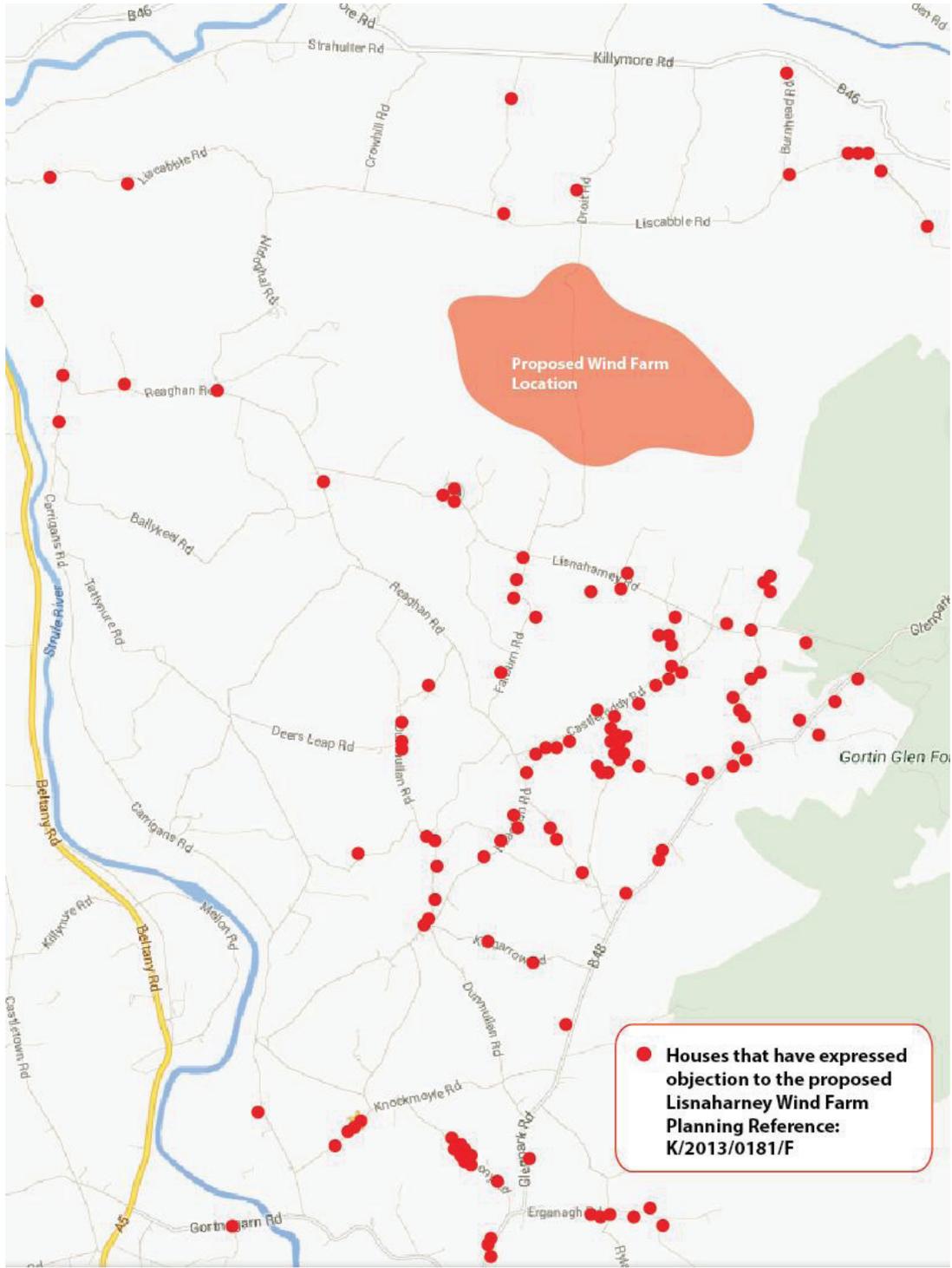
With regard to the claims in relation to post-construction local revenue, we noted the claim referred to revenue from "rent, local land and property rates" but not to the revenue from the community fund, which formed part of the £869,797 total. We were also concerned that the estimated revenue from business tax rates on capital assets was made on the basis that an ongoing consultation in relation to the revaluation of business assets in Northern Ireland (the results of which were due in 2015), would revalue wind farms at £18,000 per MW of installed capacity from their current value of £4,000. We acknowledged REI had received advice which supported the likelihood of an £18,000 figure, but we considered that, without qualifications in the ad to make that clear, the £869,797 figure was misleading.

On this point, the ad breached CAP Code (Edition 12) rules 3.1 (Misleading advertising), 3.7 (Substantiation), 3.9 (Qualification) and 3.11 (Exaggeration).

Action

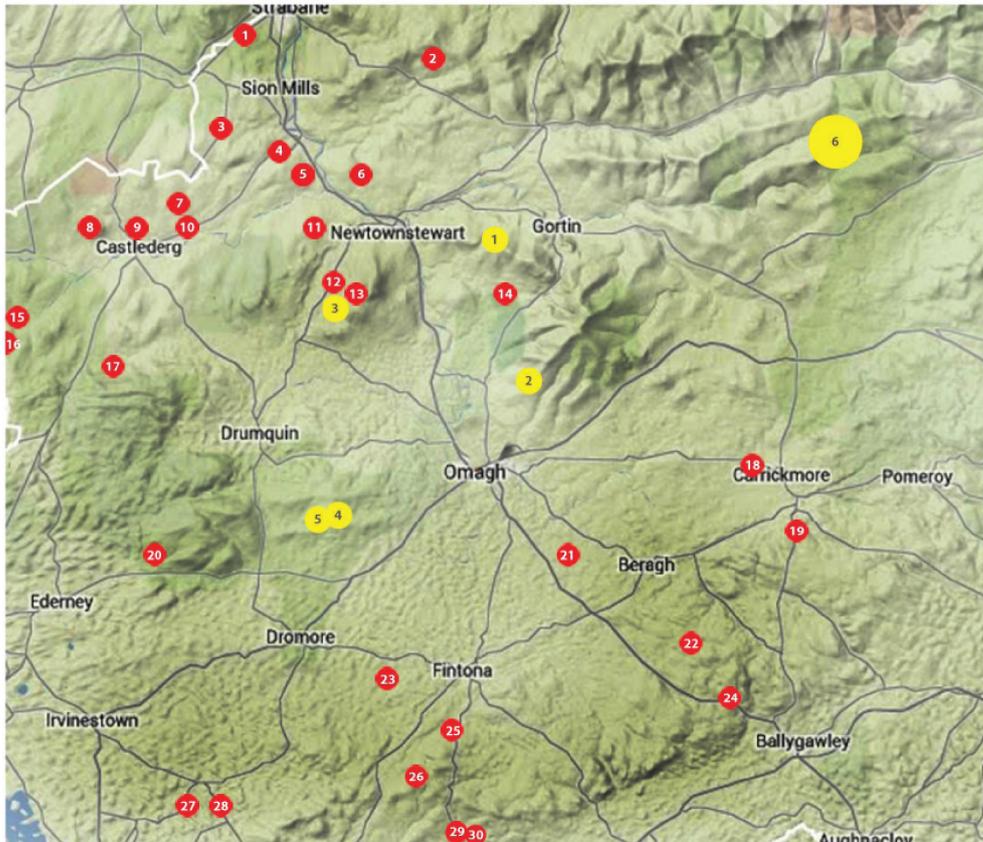
The ad must not appear again in its current form. We told REI not to make claims for which they did not hold adequate substantiation.

Appendix 3.



Map illustrating the opposition household's local to the Planning application.

Appendix 4.



TURBINE /COMPANY NAME	NUMBER OF TURBINES	TURBINES FARMS IN PLANNING- YELLOW	
1 YAAK	-	1 LISNAHARNEY	14
2 OWENREAGH WINDFARMS -A.C	6	2 SLIEVEARD	7
2b OWENREAGH WIND FARM	10	3 BESSY BELL REPLACEMENT	10
3 MOUNTAIN LANE 1	-	4 PIGEONTOP	9
4 CLADY HALIDAY WIND	-	5 POLLENAGHT	-
5 LOUGHILL WIND FARM A	6	6 DORRAVIL	60
6 LISNATUNNEY	-		
7 HILLSIDE COMBINED RENEWABLES LTD	-		
8 MUCKLEHILL WIND FARM	-		
9 CRIGSHANE ENERGY LIMITED	14		
10 OAKDEANE RENEWABLES	-		
11 MOORE BROS- DIAMOND FIELD	-		
12 BESSYBELL WINDFARM	10		
13 BESSYBELL WINDFARM (NI) LTD	10		
14 DUNBREEN TURBINE	1		
15 BBGNI	-		
16 CHURCH HILL ENERGY LTD	8		
17 BIN MOUNTAIN WIND FARM (NI) LTD	6		
18 BALLINTRAIN	-		
19 CROCKAGARRAN WIND FARM	-		
20 TAPPAGHAN WINDFARM LTD	13		
21 TIVOCKMOY FARM	-		
22 SLIEVE DIVENA WINDFARM	12		
23 NIGEL JORDAN	-		
24 BALLYMAC	-		
25 SCREGGAGH WINDFARM	-		
26 HUNTERS HILL WIND FARM	8		
27 ALAN CAMPBELL	-		
28 DERRALLEN	-		
29 LENDRUMS BRIDGE -ECO UNIT	1		
30 LENDRUMS BRIDGE EXTENSION SITE	11		

Appendix 5.

'Bad science' behind the wind turbine noise guidelines

Author: Cox, Richard; and Unwin, David

With contributions by Doug Bingham and Rod Greenough. Prepared for possible presentation to DECC, March 2013.

The term 'Bad Science' is borrowed from the title of the book by Ben Goldacre (ISBN 9780007284870). Although his book relates to medicine and the pharmaceutical industry, the lessons regarding bad science are equally applicable to the wind power industry.

This presentation identifies the 'Bad Science' that is being used throughout the noise assessment process. Since the 1990s 'Bad Science' has been incrementally applied to the wind turbine noise assessment guidance such that it is now firmly enshrined in what is promoted by the wind industry as 'industry best practice'.

The end result is that it has allowed wind turbines to be built too close to residential areas resulting in an increasing amount of noise nuisance and the probability of increasing numbers of noise related complaints.

This presentation and supporting material looks at the science behind the noise assessment process. We demonstrate that the key principles supporting the current ETSU guidance are unreliable and the levels of uncertainty are sufficiently large that an ETSU based noise assessment provides no assurance that noise will not become a problem for people living close to wind turbines.

We believe that only by enforcing a minimum separation distance, (typically in the order of 2km for the current generation of industrial wind turbines) can a reasonable degree of protection be provided against noise nuisance.

Only a limited selection of the 'key issues' topics can be presented during this presentation, but we have assembled and made available via 'Dropbox' links a considerable amount of support materials.

[Of note, see 'Neglect of Wind Shear in Assessing Long Range Propagation of Wind Turbine Noise' by Mike Toft]

We are a loosely connected group of mostly retired scientists and engineers spawned from wind farm opposition groups across the country. Characteristics common to all include:

- Concern at the 'Bad Science' being employed in wind turbine noise assessments.
- A wish to see noise assessment guidelines based on solid scientific and engineering principles.

We are aiming this presentation material at the DECC Chief Scientific Officer, David Mackay, since we note from the DECC web site that his first listed responsibility is: “Making sure key policy and planning decisions in DECC are evidence-based”.

We identify the main areas where the evidence shows that ‘Bad Science’ is being routinely employed in the noise assessment process and that in turn this is having an adverse effect on the planning process for wind energy developments.

We refer here to the Institute of Acoustics (IoA) Noise Working Group (NWG) and the wind turbine noise assessment guidelines currently being prepared by this group for the Department of Energy and Climate Change (DECC).

A cynic might well believe that ETSU R97 was produced to permit the introduction of wind farms into inappropriate low background noise locations where they and other comparable industrial installations could not meet planning conditions derived from the long established BS 4142.

We will argue that noise assessments based on the long-standing BS 4142 Standard provide a more robust methodology than ETSU.

The *Acoustics Bulletin* method, now incorporated into the IoA NWG draft guidance, provides a new methodology for correcting for wind shear. It will be shown later that this new methodology is unsafe and when compared with the original intentions in ETSU allows even higher noise levels and reduced separation distances.

This presentation builds on the content from a document two of us were involved with that has been widely circulated: ‘Where ETSU Is Silent’ (WEIS).

The IoA-led consultation launched during July 2012 is an attempt to update the guidance based on ETSU R97 [ref 13]. A major concern with the IoA NWG consultation process is the lack of transparency and potential conflict of interest with the NWG dominated by the wind industry supply chain. See WEIS [ref 3] page 11 and Appendix D.

Several consultation responses (that we are now aware of) have not been published and those that are published are done so anonymously [ref 17 & 18]. The Ref 17 and 18 documents are the published consultation responses and were obtained from the IoA web site.

Also see:

- Analysis of onshore wind turbine planning appeal decisions by Cox, Sherman and Unwin, Feb 2012 [ref 4]: *No wind turbine planning appeals were identified as having been refused on noise.*
- ‘Wisconsin’ report, Dec 2012 [ref 7]: *Confirms LFN & Infrasound are a serious issue for wind power.*

It took 5 months for DECC to provide a response ref 9 to a letter from Chris Heaton-Harris MP (Con., Daventry) regarding the report ‘Where ETSU Is Silent’ [ref 3] by Cox, Unwin and Sherman.

Although WEIS identified numerous areas where ETSU fails to provide adequate guidance (is silent), Ed Davey (DECC) only commented on wind induced noise. We will discuss wind induced noise later and show that the report referred to by Ed Davey, 'ETSU W/13/003861REP', has been quoted totally out of context, demonstrating 'Bad Science' at its worst.

Other issues, including wind shear, background noise data analysis, turbine noise prediction, amplitude modulation and assessment uncertainties, were glossed over as being addressed by the new IoA 'good practice guide'.

This is the basic 5-step ETSU noise assessment process:

1. Identification of potentially affected properties.
2. A measurement survey consisting of simultaneous measurement of background noise levels at representative properties with wind speed and direction at the proposed turbine site.
3. Analysis of the data to remove rain-affected and atypical data, and derivation of the noise limits for the scheme.
4. Prediction of the turbine noise levels at the nearest receptors.
5. Demonstration of compliance with the noise limits.

The ETSU assessment process revolves around these core principles:

- Measurements use the A weighting since noise nuisance is believed to relate to the noise we hear.
- Background noise is able to mask turbine noise.
- Background noise increases (is positively correlated) with wind speed.
- To avoid noise nuisance, limits are applied to restrict turbine noise to not more than 5dBA above background with minimum levels applied where background noise is considered low.

However, when we examine the science behind the noise assessment process we demonstrate that each of these core principles is shown to be unreliable such that the guidance fails to provide adequate protection for receptors against wind turbine noise.

When looking at the ETSU process we should also look at BS 4142 from which ETSU evolved.

BS 4142 is titled, 'Rating industrial noise affecting mixed residential and industrial areas'. Without getting into detail, *the critical advantage in using BS 4142 is that it enables local authorities to exercise duty of care responsibilities.*

Regarding BS 4142 [ref 2] we should also add:

- First published in 1967, amended 1975, 1980, 1982, and revised 1990, 1997
- Concise 19 page document easily understood and applied by local authorities and developers
- Applicable for a range of wind speeds up to 5m/s

- Applicable when rating levels are above about 35dB
- Background surveys not required if rating level is below 35dB

Overall, BS 4142 provides enforceable, robust noise assessment guidance.

ETSU R97 is titled, 'The assessment and rating of noise from wind turbines'.

The critical factor is that ETSU prevents local authorities from exercising duty of care responsibilities.

We should also add:

- ETSU was commissioned by developers and then the DTI (now DECC) with vested interests. See WEIS [ref 3] page 11.
- Published 1997 and no revisions to take account of increases in size and characteristic noise change due to wind shear.
- Government refuses to sanction an impartial review
- Is not consistent with customary noise limits and defined parameters applicable to all other forms of UK power generation and industrial applications in general
- Incorrectly refers to recording of unattended background and specific noise as 'Survey results'. Surveys require a surveyor and physical attendance.

The failings of ETSU are currently requiring the production of a new Good Practice Guide produced by the IoA NWG whose composition includes several representatives of acoustics consultants companies that regularly represent wind farm developers at public inquiries and in no sense can be regarded as truly disinterested.

Under the heading of 'merits' one could argue that ETSU has considerable merit over BS 4142 for wind farm developers.

We will now review the main areas of ETSU and the IoA draft guidelines, designated as planks A, B and C.

Plank A: Estimation of existing background noise levels at nearest receptors, for all generating conditions at the proposed turbines, leading to appropriate noise limits at receptors.

Plank B: Prediction of turbine noise propagation to nearest receptors, for all generating conditions at the turbines, leading to determination of compliance with limits.

Plank C: Comparisons of measured and predicted to produce an overall noise assessment.

Planks A and B directly relating to the assessment process are fraught with difficulty and Plank C issues highlight fundamental overall faults and uncertainties.

As a result we believe that the current draft guidelines from the NWG reveal a fundamentally flawed, unsound scientific approach in all areas.

The draft guidelines do not, therefore, in our view form a suitable starting point for wider consultation.

Planks A–C Summaries

Plank A: Background Noise Measurement

Measurement Location

Free field or facade? Common sense says ‘facade’ as this is where residents will experience the noise but the guidelines say ‘free field’. What’s the difference? Background can be around 3dB lower at the facade due to screening and turbine noise can be 3dB higher due to reflection. *This yields up to a 6dB difference within the assessment.*

Why measure background noise at 1.2 to 1.5m height and not at ground level where we could minimise wind induced noise as is the case for measuring turbine noise? Where is the science to justify this measuring height?

Microphone Wind-Induced Noise

- There is data contamination at wind speeds above around 5m/s
- No commercially available wind screens currently being used are suitable for measuring in windy conditions.
- Magnitude of the data contamination is unknown.
- ETSU report W/13/00386/REP has been used and quoted out of context. The letter from Ed Davey MP is totally wrong on this.

Directional Screening

The guidance fails to recognise the importance for this or to provide for a robust directional screening process. It is particularly important for sites near motorways and major roads.

Poor Statistical Science

We see widespread misuse of statistical regression analysis and a failure by decision makers to question or even understand the analysis. This allows a misuse of science providing developers the opportunity to steal 2 or 3dB extra to noise limits. This is ‘Bad Science’ being employed to confuse decision makers.

Plank B: Turbine Noise

Wind Shear Correction

The wind shear correction methodology being proposed by the IoA NWG is another case of ‘Bad Science’. It is too complex and will be incomprehensible to planning decision makers. In fact we are finding that this methodology is proving to be extremely difficult to understand

for anyone who has not themselves analysed wind shear using raw mast wind speed data. In fact we doubt that all the members of the IoA NWG themselves actually understand it!

What on first impression looks like an elegant solution to wind shear correction turns out in practice to fail to provide receptors the protection required and is overly complex. There is no doubt it offers a clean solution for developers by reducing operational risk from noise complaints.

- The main problem with this methodology is the difficulty in producing a background noise curve at the appropriate level that will provide adequate shear correction for the typical 10% of the time when the highest levels of wind shear occur.
- Additionally, there is a high risk of unrepresentative sampling unless background noise surveys are extended from typically 2 to 3 weeks to periods of many months.
- If noise limits are imposed based on this methodology being proposed by the NWG it is believed it would be virtually impossible for a local authority or third party to demonstrate a breach of the noise planning condition.

Noise Prediction

Wind shear also plays an major role in the propagation and intensity of outdoor noise through its effect via refraction. The science behind this has been well know since the 19th century but is not considered by the current guidance or by developers when wind turbine noise is predicted. It is therefore not surprising that turbine noise is being under predicted resulting in an increase in noise complaints.

Wind turbine noise prediction is normally carried out using the standard ISO 9613-2. However, this standard was designed for low height, non-wind-dependent stationary noise sources where wind shear and wake effects are never a significant factor. This standard has never been validated for use with modern tall wind turbines in high wind shear conditions.

The three studies referenced in the IoA NWG document fail to consider wind shear or wake effects. All three studies appear scientifically unsound and none of them have been published in a peer-reviewed journal. None of them appear appropriate as fundamental references for DECC and IoA endorsed guidelines. Another case of 'Bad Science'. We understand that Dr Mike Tolft will be making a separate representation where he will discuss this particular issue. However, his IoA consultation response [ref 17 starting at page 127] provides further detail on this topic.

Amplitude Modulation

AM is the most important noise characteristic of wind turbines so excluding it from the IoA NWG review of the guidelines must be of concern to anyone of a scientific mind. We find it difficult to understand why AM is apparently such a mystery to the wind power industry.

Almost certainly turbine manufacturers will understand the problem in some detail since it is virtually identical to helicopter blade vortex interaction (BVI) or 'blade slap'. However, no turbine manufacturer would dare to admit openly to excess AM so the phenomenon stays

hidden and the wind industry pretends it is not an issue. However what causes helicopter BVI, and how to minimise it has been well understood for decades.

Additionally, the standard planning condition based on dB LA90 is ineffective at controlling excess AM. The Den Brook AM planning condition based on $dB_{LA_{EQ} 125ms}$ will detect excess AM. However, the wind industry is desperate to have the Den Brook condition removed from general use and more 'Bad Science' is being deployed to discredit this condition. Not so much a case of 'bad science' as one of 'no science'.

Plank C: Overall Assessment Process

Noise Limits

Noise limits and the ill health effects of turbine noise are excluded from the IoA terms of reference provided by DECC and WHO noise limits are also being ignored – *Why?*

There is no evidence of medical or audiology experts having been consulted to ensure that the limits we do have are scientifically derived.

How can robust guidance based on scientific principals be produced if noise limits and health effects are excluded?

Low-Frequency Noise (LFN)

The existence of significant levels of LFN has been consistently denied by the wind power industry and Government. However recent evidence [ref 7] has shown significant levels of LFN being measured inside homes located near turbines and that LFN is directly affecting the health of residents. In many case residents have had to abandon their homes.

These adverse effects are related to the extremely low frequency pulsations at the blade passing frequency. The rotational speeds of modern turbines having 80m and 90m diameter rotors are occurring at the known peak frequency for causing these effects known as *nauseogenicity*.

A most significant finding is that residents are being affected where the turbine noise is either not audible or barely audible at all. This has highlighted the need for new definition for a 'threshold of perception' and dispels the ETSU core principles that noise nuisance is related to the noise we hear and that background noise can mask the effects of turbine noise.

LFN is 'the elephant in the room' for the wind power industry and demands urgent Government action. During Feb 2013 it was announced that the South Australian Environment Protection Authority has said it will conduct full spectrum monitoring, inside and outside homes, due to concerns regarding LFN. Similar action is also being taken by the Government of Ontario, Canada.

Assessment Uncertainties

Neither ETSU nor the NWG draft guidance recognise uncertainties, also referred to as tolerances. This must make wind turbine noise assessment the only exact science, other than hindsight.

Each step of the assessment process is subject to uncertainties, some adding and some subtracting and varying according to different operational conditions. However, if we combine these in a conservative yet scientific manner we easily can expect noise levels that are either twice or half as loud as predicted. Given that wind farms are being designed up to the noise limits with headroom usually less than 3dB and frequently less than 1dB, it is easy to see how limits can be exceeded and why there is a high chance of noise complaints with such levels of uncertainty. This is another case on 'Bad Science'.

Planks A–C Key Issues

Plank A: Background Noise Measurement

Considering plank A and plank B it is generally safe to say that:

It is in the interests of developers for:

- The measured background noise and from it the derived limits to be as high as possible
- The predicted turbine noise to be as low as possible

Higher noise limits allow reduced separation distances and reduced generation constraints for developers

Most assessments we have seen claim ETSU compliance by the smallest of margins (typically less than 3dB and sometimes less than 1dB) as wind farms are being designed and consented (usually at appeal) right up to the noise limits.

Measurement Location

BS 4142 page 2 sect 5.3 states:

“Choose measurement positions that are outside buildings and that will give results that are representative of the specific noise level and background noise level at the buildings where people are likely to be affected.”

BS 4142 page 2 sect 5.3 note 2 states:

“Where it is necessary to make measurements above ground floor level, chose a position which is 1m from the facade on the relevant floor of the building.”

This requirement would typically apply to noise levels affecting a first floor bedroom.

ETSU requires measurements 10m from the facade – *Why so far away?*

NWG draft suggests 3.5m to 10m – *Why so far away?*

Why Location Is Important

Turbine noise is from a specific point source whereas background noise is coming from all directions, including vertically.

Measurement location should be selected to represent as close as possible the noise environment experienced by the residents.

The differences between free field and facade may be up to 6dB.

A free-field measurement is clearly to the advantage of the wind farm developer as it allows a higher background noise to be measured and so a higher noise limit to be established.

Measurement Height

Measurement height was questioned during the IoA consultation workshop and no one present could provide a proper answer as to why 1.2–1.5m height was used, other than it was copied over from BS 4142. A case of “We always do it this way”.

It should be noted that BS 4142 does not intend measurements to be taken in wind speeds above 5m/s so a microphone height of 1.2 to 1.5m should not in these situations cause problems with wind induced noise.

Measuring background noise with the microphone at ground level as employed for measuring turbine noise would eliminate wind-induced noise at the microphone. Page 11 section 5 of IEC 61400 states, “Measurements are taken with a microphone positioned on a board placed on the ground to reduce the wind noise generated at the microphone and to minimise the influence of different ground types.” Note that when using a ground board as per IEC 61400 (sect 8.3) then it is necessary to subtract 6dB from the measured value to account for the reflective effect of the ground board.

IEC 61400 [ref 19] is a highly detailed standard designed to ensure clarity between turbine developer and manufacturer whereas the ETSU guidance for background noise measurement is unscientific and vague.

Microphone Wind-Induced Noise

Microphone wind-induced noise has the effect of increasing the measured noise. ETSU-R-97 warns of the problem, but subsequently ignores it. BS 4142-1997 [ref 3] warns of the problem and advises:

- “For the purposes of this standard, windshields are generally effective up to wind speeds of 5m/s.”
- “Measured levels shall be considered valid only if they exceed readings on the measuring instrument owing to the above influences by at least 10 dB.”

BS 4142 page 2 sect 5.4 refers where it also states: “Use an effective windshield to minimise turbulence at the microphone.”

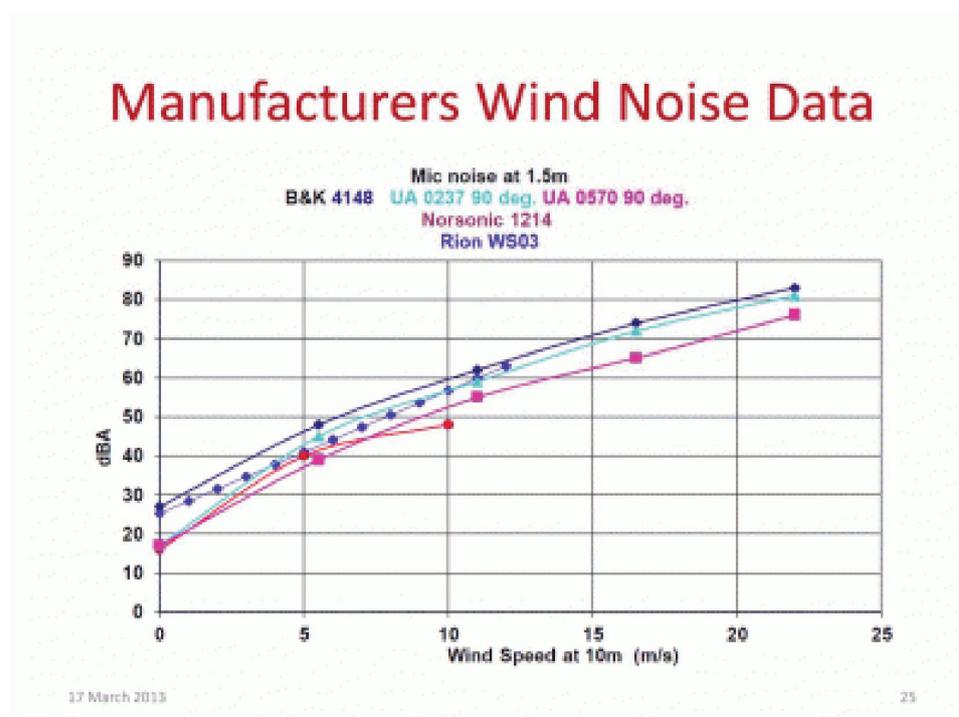
Detailed comments to the ETSU report W/13/00386/REP are provided in the response to the IoA consultation [ref 14] by R Cox.

The original report as presented was a reasonable attempt better to understand the problems of wind induced noise but basically it was inconclusive and recommended further research. It does not provide a specification for a proven wind screen design. However, the report has since been quoted completely out of context in ETSU R 97 and elsewhere. Until last year the report was generally unavailable so as a result until quite recently no one has questioned it.

The statement by Ed Davey MP in his letter to Chris Heaton Harris MP (Con. Daventry) dated 16 Dec 2012 [ref 9] is therefore completely wrong where he states: “which includes a design for suitable double layer wind shields”. It does not.

The Rion WS 03 is one of the most widely used windscreens for wind farm background noise measurement and has a similar performance to the Rion WS 15. These are probably the best commercially available wind screens. Even so they have severe limitations to their use in wind speeds above 5m/sec.

This analysis was conducted by Dr Greenough:



Wind speeds shown in the slide at ten metres height have been adjusted to compensate for the lower wind speeds at 1.5m above ground level where the microphone would be located. This

graph shows that the performance of wind screens available from several manufacturers are quite similar and all produce similar levels of wind-induced noise.

The best wind screens currently being used suffer around 40dB(A) wind induced noise at 5m/s. This adds a degree of uncertainty to the assessment process that even recent comparison studies have failed to quantify.

In fact, the only studies conducted recently have been comparisons. *None have been able to quantify the actual level of data contamination.*

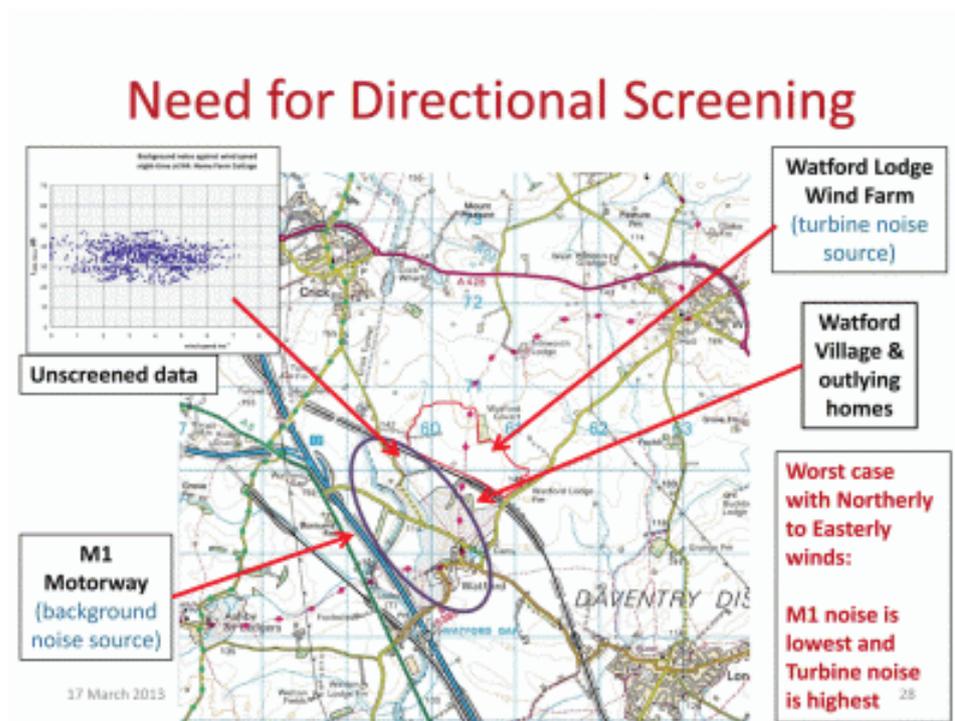
Directional Screening

This is becoming more of an issue for wind farms as they are often located near motorways and trunk roads for ease of access for the heavy loads. Road traffic leads to highly variable levels of background noise depending upon traffic flows and wind direction.

The range of data points typically seen of >20dB was also observed by Bass, Bullmore and Sloth [ref 12] during their 1996 to 1998 study where they state at page 8, para 3.1:

“an unexpected feature of the background noise data at all sites was the large variation of the results between monitoring locations. A spread of almost 20dB(A) was apparent between the mean levels at each of the monitoring locations on each site over the wind speed range from 5m/s to 8m/s. This was even the case for the flat topography site where all monitoring locations were exposed to what should have been identical conditions. This finding has implications with regard to background noise measurements undertaken to assess the acceptable levels of specific noise radiation from wind farms. Users of any technique that sets wind farm noise levels relative to measured background noise levels should be aware of the differences between measurements. Further work is suggested to establish whether the large measured differences are real changes in background noise level or whether they are due to the differing susceptibility of individual items of measuring equipment to wind induced noise.”

This slide shows a typical case where motorway noise has a major effect on background noise (as any local resident knows) depending upon wind direction and traffic flow:



Without directional screening the derived background noise level will be much too high for the worst case situation of northerly to easterly winds.

For obvious reasons, wind farm developers have generally resisted directional screening of background noise data whereas the evidence shows wind direction is a very important factor in background noise levels and subsequent noise nuisance.

A robust directional screening would result in two or more sets of background noise data and noise limits that would be dependant upon wind direction.

The new draft guidance is unclear regarding the requirement and lacks a process to ensure robust screening for directional effects.

How ETSU recommends that the data should be used in the assessment

ETSU-R-97 compares the measured 'background' noise with that predicted for the turbines over a range of wind speeds.

There are scientific problems in how the background data are processed to arrive at summary measures that can be compared with the turbine noise prediction.

There are also problems in how the background data are processed to arrive at summary measures that can be compared with the turbine noise prediction.

This is all that ETSU-R-97 (page 101) says about how the combination of the data is to be achieved:

“For each sub-set, a ‘best fit’ curve should be fitted to the data using a least squares approach usually a polynomial model (of no more than 4th order) ... These two curves, referred to as the ‘day-time curve’ and the ‘night-time curve’, provide a characterisation of the prevailing background noise level for day-and-night respectively, as function of wind speed from zero to 12m/s at 10m height. Note that whatever model is used to describe the measured data, this should not be extrapolated outside the range of the measured wind speed data.”

ETSU suggests that the best way to summarise the background is to plot the measured value of noise against wind speed (10m AGL) and then draw a ‘best fit’ curve through these data.

No physical reasoning is put forward to guide the choice of curve to be fitted but the examples given are all polynomials of order up to order 4 (quartic).

Three features need to be noted.

Issue 1: Implicit assumptions

- The main control on the background noise is wind speed: given the role of wind shear in sound propagation, it is not clear to us why such an assumption is made.
- Although mentioned, in practice other controls such as time of day and wind direction, are ignored: we have seen that at many sites these are major features of the noise climate.

ETSU’s approach prioritises the impact of wind speed on the noise climate.

Issue 2: Problems with the data

In practice cubic or quartic polynomials are usually used. The objective seems to be to get a ‘good fit’ to the data, using the coefficient of determination, R^2 , as the sole criterion of fit, *but*

- n , the ‘sample’ size can be as high or as low as you like,
- Both X and Y are temporally autocorrelated, and most importantly ...
- There seems to be no physical science to guide the choice
- of function that should be fitted.

This curve-fitting procedure, using classical regression, that has been known and used since the mid-nineteenth century, assumes that the data are an independent random sample from a defined population of possible values.

The method evolved when, rather than being a very large data file downloaded from an automatic recording device, each and every data point was likely to be hard won by careful hand measurement.

Autocorrelation can be understood by a simple thought experiment. Suppose that at some time the anemometer records a $V \square \square$ wind speed of 10m/s, what is the value likely to be in ten minutes time? Given that meteorological elements show persistence in time it is highly unlikely to be either 0m/s or, say, 25m/s? Chances are that it will be fairly close to 10 m/s. In

other words successive data are correlated with themselves. Yet statistical inference assumes that each case is independent or uncorrelated with the others.

The effect on the result is to bias the standard error because the standard goodness of fit measures are ‘tricked’ into believing that there is a larger sample than actually exists. Larger samples give smaller standard errors and better statistical significance and thus an illusion of accuracy that isn’t actually present.

Issue 3: Any function will do?

In practice the noise assessment reports we have seen fit quadratic, cubic or quartic functions in the hope of getting some ‘best fit’ as measured by the coefficient of determination given in an ordinary least squares fit.

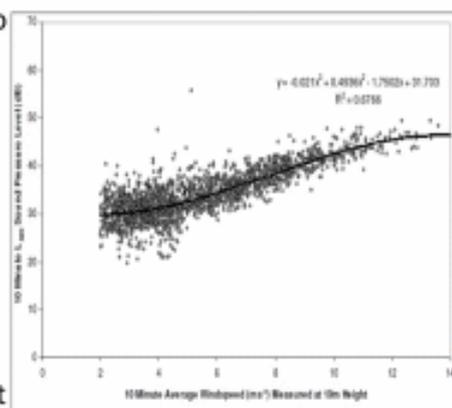
Any of these curves could have been used in a noise assessment and all fit the data reasonably well. Since there is no science to guide our choice any one of them will do the intended job BUT, quite critically, the result is a range of possible ‘summary’ values at each whole number wind speed.

A typical example

- A cubic polynomial fitted to the data, $R^2=0.68$
- Data blanked out below 2m/s wind

NOTE

- Improbably high value at Y axis of 31.7dB
- Negative gradient at low wind speed <2m/s
- At any one wind speed there is a range of measured background of at least 10dB



17 March 2013

37

These are real data accepted and used to set noise conditions at a recent wind farm inquiry. They are typical and the summary they suggest was used in the assessment process by the planning inspectorate, an action justified by the notion that the analysis was conducted properly since it followed the ETSU guidance.

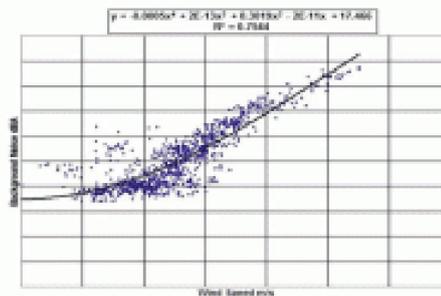
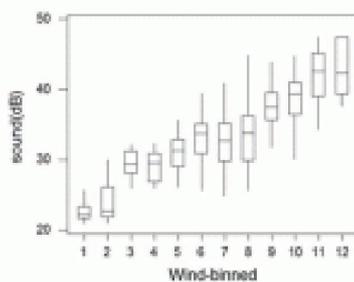
Does It Matter?

- Result is that we have a range of background values of around 1.4-2.0dBA
- Has very little to do with nature and everything to do with the choice of model fitted to the data
- Introduces yet another source of unrecognised uncertainty into the ETSU process
- Although modest it could well be important in any decision made with receptor sites that are marginal in the ETSU-R-97 guidance

We are seeing consents given with ‘headroom’ <0.5dB!, in effect treating the entire ETSU process as totally deterministic and subject to no error or uncertainty, which is scientifically crazy.

There are alternatives of which we have investigated two in detail:

Two alternatives?



17 March 2013

39

On the left we have simply binned the data (these are simulated data: most of the real data available are not in the public domain) at each whole number wind speed and for each drawn a ‘boxplot’ to show the median, interquartile range and total range at that wind speed $\pm 0.5\text{m/s}$. ETSU actually suggests that this approach might be used but for some reason the industry of acoustics consultants who appear for developers seem to have quietly ignored this recommendation. It has two advantages. First, no curve is fitted – we rely solely on a summary of the measured data (plus a bit on the bins chosen). Second, it makes explicit the fact that at each wind speed we have a range of background that might, or might not, mask any turbine generated noise.

The curve on the right hand side has been fitted to the same data but with a constraint that as it intersects the Y axis it has zero gradient – this is a simple logical constraint that must be true. In a real example where we have done this we find that the fit is only marginally

reduced and the predictions of the noise climate are more consistent at all the receptors than you get from the standard unconstrained approach.

See ref 11, for more detail. This paper has been submitted to the Institute of Acoustics and will be published in the *Acoustics Bulletin* May 2013 edition. Its findings were made available to the IoA NWG consultation but almost certainly will be ignored.

Plank B: Turbine Noise

We have thus far assumed that the predicted turbine noise levels at each and every receptor is reasonable. The next series of slides show that this is simply not the case. There are three critical issues:

- Wind Shear Correction
- Noise Prediction
- Amplitude Modulation

Handling Wind Shear

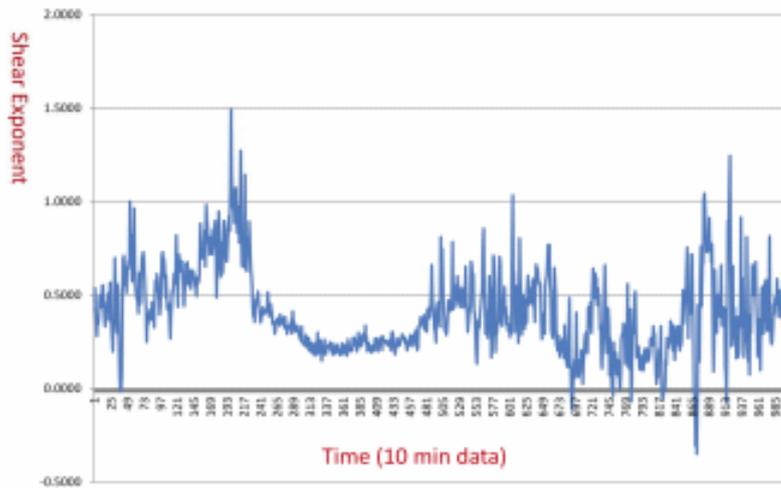
ETSU makes only minimal reference to wind shear. The IoA Bulletin, March 2009 [ref 5] was an attempt to clarify the treatment of wind shear, which we believe:

- Was untested and not independently peer reviewed
- Is overly complicated
- Usually reduces noise protection and allows reduced separation distances
- Makes noise nuisance enforcement more difficult than it need be

The IoA NWG draft document [ref 13] attempts to formalise the IoA Bulletin Method into the new guidance.

This slide taken from WEIS [ref 3] shows a plot of wind shear for the Winwick site in Northamptonshire over a typical 7-day period showing how highly variable wind shear can be in the short term:

Typical Wind Shear - 7 Day Period



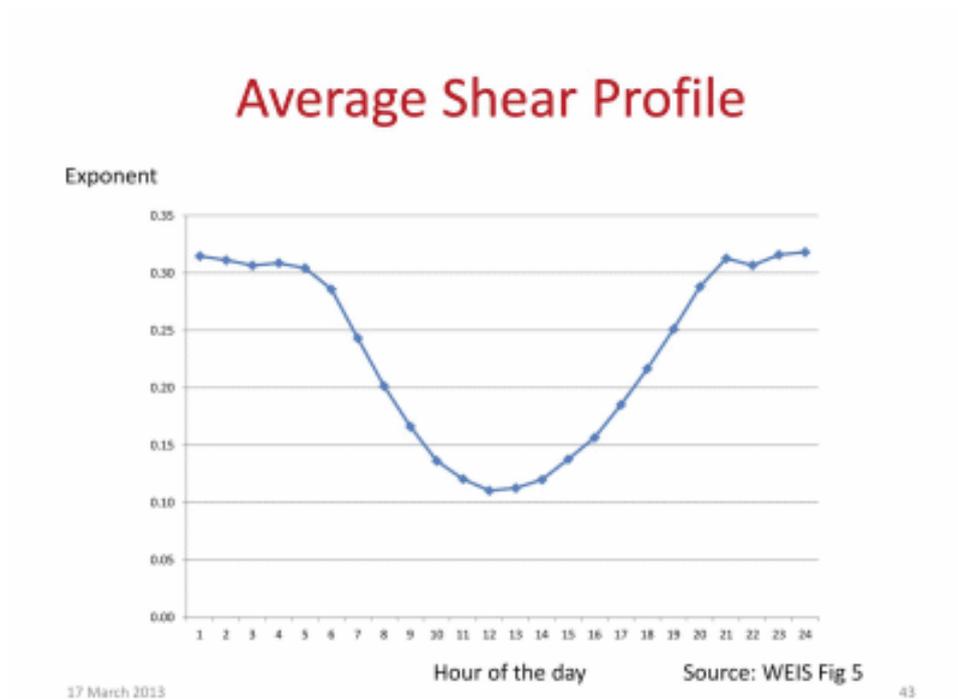
17 March 2013

Source: WEIS Figure 4

42

The horizontal axis is time based, the numbers relate to the 10min data sets over the 7-day period. The vertical axis is the shear exponent. The shear exponent is a simple plot of $\log(\text{ten minute mean wind speed})$ vs. $\log(\text{height AGL})$. In effect the magnitude of the exponent provides an index of how rapidly wind speed changes with height AGL, which is the major part of the wind shear (it neglects directional change) that more properly should be included). Note that shear goes negative on occasions, indicating a reduction in wind speed as one ascends. This is found to occur at very low wind speeds in stable atmospheres and may well indicate the presence of low level jet flow.

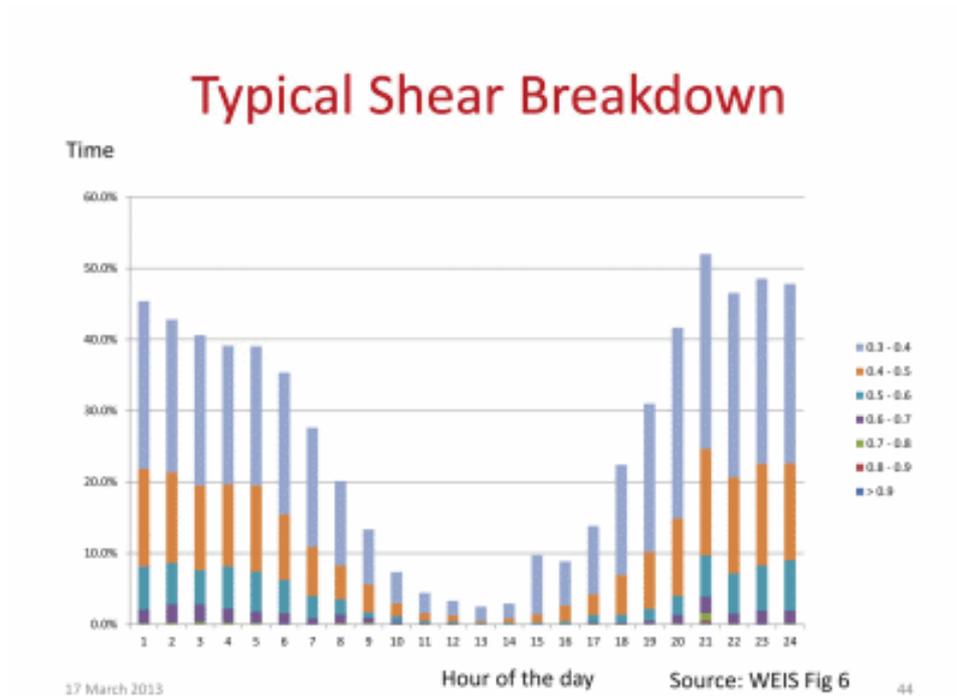
Despite this apparent random behaviour, over the long term the shear profile is regarded as being very reliable and predictable year after year. This is why wind farm developers record wind data for at least a year in order to determine the wind resource for the site.



The average wind shear throughout the 12 month period for this site (Winwick) calculated from 51,943 valid 10 minute data sets was found to be 0.2548. However, plotting the average hourly wind shear (for the 12 month period) shows typical diurnal variation, with a minimum value of 0.11 occurring around midday and a maximum value of 0.32 occurring around midnight. There is thus a very large daily variation by a factor of around 3.

For reference in the literature, shear exponents above 0.5 are generally regarded to indicate 'excessive' levels and are known to be associated with excess amplitude modulation (see later).

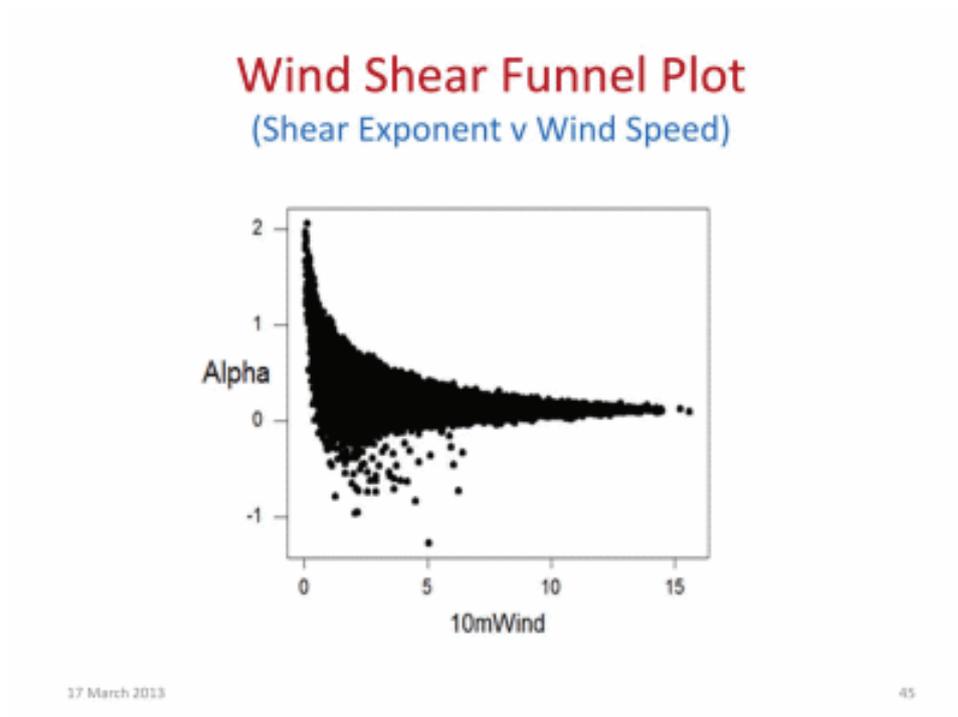
If you refer to Figure 6 at WEIS reproduced here you will see a breakdown of hourly shear into (vertical) bands based on percentage of time. Note this relates to 12 months worth of data for the Winwick wind farm site:



Also in the analysis of Winwick, the data sets with V80 wind speeds below 4m/s (when the turbine would not be generating) were removed to prevent the extreme but nonrelevant shear values from corrupting the analysis. It should be clear from this slide that correcting for ‘average’ shear will undercorrect for the significant percent of the time when shear is very high and when noise complaints are most likely to occur. Analysis of the data for this site to determine the durations for shear levels during each hourly period shows:

- *A shear exponent of greater than 0.4 occurs for more than 19% of the time from 8pm through to 5am. The total time above 0.4 is 167.9 minutes.*
- *A shear exponent of greater than 0.5 occurs for more than 7% of the time from 8pm through to 5am. The total time above 0.5 is 60.9 minutes with 54.3 minutes of this during the quiet daytime and night time periods.*

To see the effect of wind speed, on wind shear (WEIS fig B4 at page 73) produced by Prof D Unwin shows a funnel plot of shear v wind speed. High shear only occurs at the lower to mid-range wind speeds and this is where noise nuisance is most likely to occur. On the plot ‘alpha’ is the shear exponent, established by over 50,000 regression analyses of the 10 minute wind averages at the same site.



Some features of the plot should be pointed out:

- For any given wind speed, there is a range of possible shear exponents.
- For any given wind speed, and with the exception of a few outliers, both the lower and upper limits of these ranges are well defined.
- As wind speeds increase so this range decreases and the actual values of the wind shear become less.
- Although the majority of the shear values are positive, indicating an increase in wind speed with height, incidents when the reverse is the case and we have a negative shear exponent are not unknown.

Where does High Wind Shear Occur?

Percentage of time for shear exponent in each band

Shear Exponent	Den Brook	Shipdham	Harrington	Kelmarsh	Winwick
< 0.16	16	18	33	24	34
0.16 to 0.3	31	40	35	34	34
0.3 to 0.5	32	28	25	31	23
> 0.5	21	14	7	11	9

17 March 2013

46

We show on this slide some other sites where data has been analysed by the authors and others. Some sites show even higher levels of wind shear than is shown for Winwick.

Although the years for which there is available data vary, these wind shear calculations are based on a consistent regression-based methodology applied to long term mast data. They show the percentages of time during the day when shear is within the bands shown. Note that 0.16 is the 'standard' level of shear exponent. What these numbers do not show (but the slide 2 previous does) is that the higher levels of shear occur mostly during the evening and night time hours so contribute to noise nuisance during these hours.

Harrington, Kelmarsh and Winwick are located in Northamptonshire, Den Brook in Devon and Shipdham in Lincolnshire. We can conclude from this data that high levels of shear where the exponent exceeds 0.5 occur for probably more than 10% of the time at most wind farm sites. The view put forward by the industry that high shear is confined to low lying flat land is simply incorrect.

Note: Data for Den Brook and Shipdham provided by REF.

Wind Shear Correction

Main concerns with the wind shear correction methodologies:

1. Where shear correction is applied – To the background noise or turbine noise?
2. How much shear correction is applied – Average shear or based on the higher levels that occur for significant periods of time?
3. Can enforceable limits be applied?

These concerns relate to both the NWG draft document [ref 13] and the *IoA Bulletin* article [ref 5] dated 2009 from which it was developed.

Unfortunately, the NWG proposed shear methodology is quite complex making it extremely difficult to understand. It is doubtful if all members of the IoA NWG fully understand it and our experience to date is that only those who have conducted detailed analysis of raw mast data are able to appreciate fully the true implications of this methodology. It will most likely be incomprehensible to planning decision makers.

In theory, correcting for wind shear either by adjusting the measured background noise or the predicted turbine noise should produce the same assessment result. The IoA document at Annex E Para 7.5 confirms that either of these two methods will work. However, it is how the shear correction is implemented that generates problems, with the devil being very much in the detail. In fact we believe that only one method of adjusting the turbine noise level for wind shear can be made to work as ETSU originally intended.

The 1st bullet point at annex E para 7.5 [ref 13] provides the cleanest and most ‘transparent’ method of shear correction, i.e. correcting the predicted noise curve for shear. This is also the most logical method from the point of view of a person on the ground since wind shear affects the turbine noise not the background noise. This method is sometimes referred to as the ‘ETSU method’. The noise limits produced by this method are based on the actual background noise levels at a particular receptor (residence) location with the actual wind speed at 10m AGL at the wind farm site as the reference point. The actual 10m wind speed at the receptor is likely to be more closely correlated with the site 10m height wind speed than to hub height wind speed. If the limits are subsequently breached it is most likely because wind shear has caused the turbine noise to be louder than was predicted.

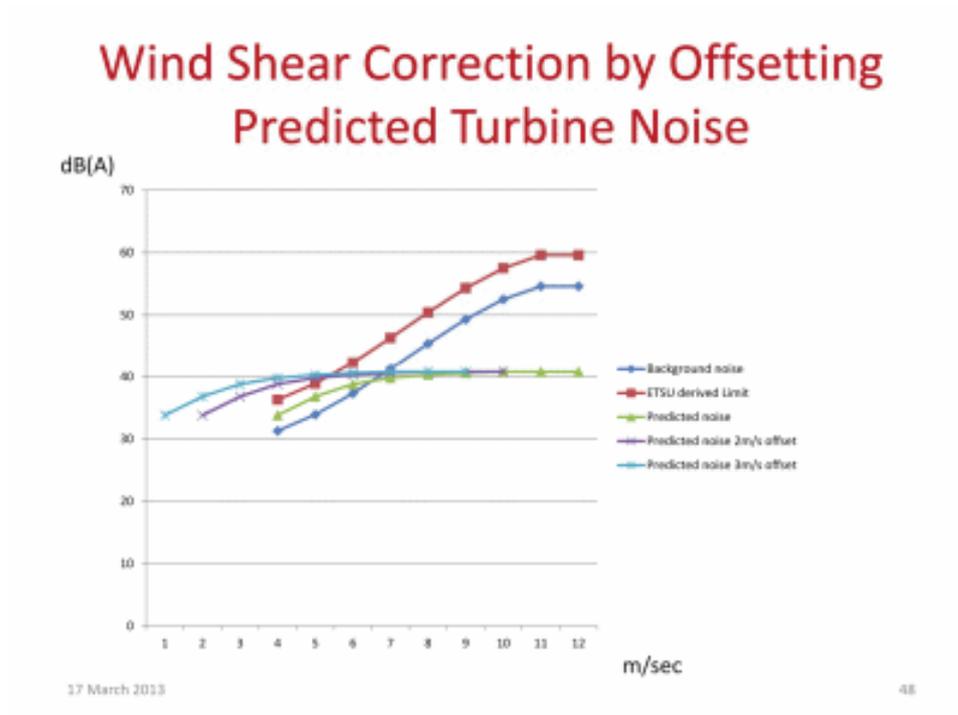
This is the method described in WEIS and is demonstrated at the next slide. So as regards to the effectiveness of this method we are in agreement with the IoA NWG, but note that the NWG (para 2.4.5) are only intending that it be used with small (<500kW) turbines.

The second method was previously referred to as the ‘Bulletin method’. In this case the noise limits are based on using hub height wind speed as the reference level. Background noise levels at the receptor location are corrected for instantaneous shear during the background noise survey period and recorded against standardised 10m AGL wind speed, calculated from hub height wind speed using the ‘standard’ 0.16 shear exponent. An average line is then taken through these data points to determine the reference background noise.

As we have seen wind shear is highly variable in the short term (days and weeks) but over a longer period such as a year the overall shear profile is considered to be highly consistent and repeatable year after year. It is for this reason that developers measure a site’s wind resource over typically a 12-month period. Establishing the shear profile is a fundamental part of the developer’s wind resource calculations.

If we base the noise limits on the short term shear measurements obtained during a (typically 2- or 3-week) background noise survey then there will be a high risk of sampling error. Additionally, the noise limits will not relate to the actual site 10m AGL wind speeds. At the planning stage it therefore becomes very difficult to assess whether a noise breach is likely to

occur. In the event of any later noise complaints, it will be very difficult to determine whether a breach of the limits has occurred and will require close cooperation by the turbine operator since hub height wind speed data are required to determine if a breach has occurred.



This slide shows what we believe to be the preferable wind shear correction methodology, known as the ‘ETSU method’ but only providing the appropriate amount of shear correction is applied. The correction is applied by offsetting the predicted turbine noise curve to the left for shear in excess of the standard (0.16 exponent). This is described in WEIS.

This method can provide a limit based on the high level of wind shear that may occur at a particular site for what is considered a significant percentage of the time. To achieve this it is likely that an offset of greater than 3m/s would be required for most wind farm sites.

Unfortunately the NWG have steered their methodology to the alternate method in virtually all cases (except turbines of <500kW) by applying the correction to the background noise data. The problems associated with this NWG methodology have been demonstrated by Moroney [ref 6].

Wind Shear Offset Calculator

1	2	3	4	5	6	7	8	9	10
Reference Wind Speed	Calculated from V_{10} using $\alpha = 0.16$	Calculated from V_{10} , ref using $\alpha = 0.3$	Shift from reference required for $\alpha = 0.3$	Calculated from V_{10} , ref using $\alpha = 0.4$	Shift from reference required for $\alpha = 0.4$	Calculated from V_{10} , ref using $\alpha = 0.5$	Shift from reference required for $\alpha = 0.5$	Calculated from V_{10} , ref using $\alpha = 0.6$	Shift from reference required for $\alpha = 0.6$
V_{10}	V_{10}	V_{30}	V offset	V_{10}	V offset	V_{10}	V offset	V_{10}	V offset
	$\alpha = 0.16$	$\alpha = 0.3$	Ref - $\alpha = 0.3$	$\alpha = 0.4$	Ref - $\alpha = 0.4$	$\alpha = 0.5$	Ref - $\alpha = 0.5$	$\alpha = 0.6$	Ref - $\alpha = 0.6$
3.0	4.18	2.24	0.76	1.82	1.18	1.48	1.52	1.20	1.80
4.0	5.58	2.99	1.01	2.43	1.57	1.97	2.03	1.30	2.70
5.0	6.97	3.74	1.26	3.04	1.96	2.47	2.53	2.00	3.00
6.0	8.37	4.48	1.52	3.64	2.36	2.96	3.04	2.40	3.60
7.0	9.76	5.23	1.77	4.25	2.75	3.45	3.55	2.80	4.20
8.0	11.16	5.98	2.02	4.86	3.14	3.94	4.06	3.20	4.80
9.0	12.55	6.73	2.27	5.46	3.54	4.44	4.56	3.60	5.40
10.0	13.95	7.47	2.53	6.07	3.93	4.93	5.07	4.01	5.99
11.0	15.34	8.22	2.78	6.68	4.32	5.42	5.58	4.41	6.59
12.0	16.74	8.97	3.03	7.29	4.71	5.92	6.08	4.81	7.19

17 March 2013

49

This slide taken from WEIS Table 2 shows the levels of shear offset that are required for a range of wind speeds and shear exponents. The offset required is the difference between the standardised 10m wind speed (column 1) and the actual 10m wind speed at the required shear exponent (columns 3, 5, 7 & 9). The offsets are given at columns 4, 6, 8 & 10.

For example, at a 10m wind speed of 6m/s and a shear exponent of 0.5, the actual 10m wind speed would be 2.96m/s requiring an offset of 3.04m/s.

The next few slides demonstrate the problems associated with the second method being proposed by the IoA NWG. REF (Moroney) [ref 6] demonstrates the effect of this second (Bulletin) method on the background noise data plots and it is a simplified version that is shown here.

Wind Shear Correction

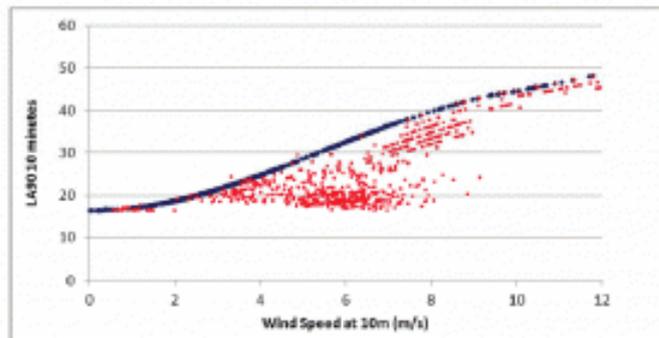


Figure 2: The blue points above show two weeks of an ETSU-R-97-type plot of average noise vs 10 metre wind speed. The red points are the same average noise data points vs the Bulletin method's transformed 10 metre wind speed (the so-called 'standardised' wind speed). The horizontal axis indicates the 10 metre wind speed for the blue points and a 'standardised' 10 metre wind speed for the red points.

Source: REF

17 March 2013

50

The slide shows a starting point with a cleaned up background noise curve (dB(A) against measured 10m AGL wind speed. The blue line is a typical curve for averaged background noise as measured at rural sites obtained during a 2 to 3 week survey period and for clarity the blue data points have all been removed. No shear correction has been applied to this line.

In applying the IoA NWG methodology we derive from the anemometry data the 'standardised' 10m AGL. We find this method introduces a high degree of scatter reducing the accuracy on the derived noise limit. The red dots are the same background noise data points but now plotted against the IoA NWG method's 'standardised' wind speed. The substantial increase in scatter is a direct result of this methodology as each is corrected for instantaneous wind shear.

What is immediately obvious is that the IoA NWG method's transformation moves most of the background noise points under the original blue line; (this is expected if actual shear is greater than the standard 0.16), and that the degree to which the points drop depends on the value of wind shear being applied. The data points are effectively offset to the right. These data cover a two week period that includes some periods of relatively high wind shear, so there are many points significantly lower than the simple ETSU line of background noise versus actual 10-metre wind speed. It may be noted that at higher wind speeds the shift of the red points from the blue points is much smaller; this is because wind shear tends to decrease at higher wind speeds.

The next step in deriving a background noise condition according to the IoA NWG methodology requires fitting a smooth polynomial to the transformed data, effectively averaging out the data. However, what is also clear from this slide is that the IoA NWG's method's transformation results in an asymmetrical distribution of red points which a

polynomial is unlikely to fit well. The critical wind speed range (where noise nuisance is most likely to occur) of 5–8m/s is particularly poorly represented by the polynomial with a third of the background noise data points being 4dB or more beneath the line.

Wind Shear Correction

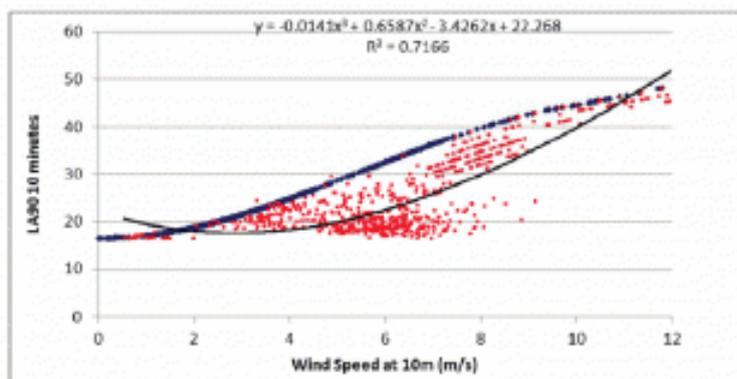


Figure 3: The data in Figure 2 with a best-fit third order polynomial (black line) fitted to the red Bulletin-methodology data.

Source: REF

17 March 2015

51

Furthermore, at the lowest and highest wind speeds, the polynomial fits the data particularly poorly. This demonstrates that shear was very high for a significant percentage of the time and higher than apparent due to the averaging effect of the polynomial curve. These results show that the transformation proposed by the IoA NWG's authors to account for wind shear results in a poorer fit with more scatter.

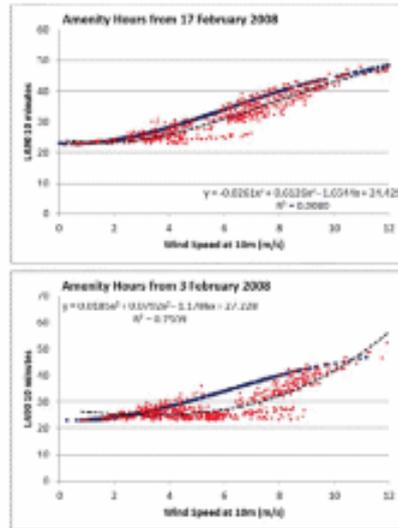
The figures show what is intuitively understandable, namely that background noise at a neighbouring dwelling is not closely related to, or dependent on, hub height wind speeds – particularly in the wind speed range of 0–8m/s. Crucially, it follows that any noise condition based on this fit will be less reliable than one based on the original ETSU method. *In order to protect against the highest levels of wind shear it could be argued that the line should have less than 10% of the red dots below it. To achieve this it would need to run almost horizontal from zero wind speed to around 7m/s where it would then curve upwards.*

Another major problem with using the IoA NWG's methodology is that the resulting noise condition limits vary significantly depending on the particular wind shear that occurred during the background noise baseline survey, leading to a high risk of sampling error.

This is demonstrated in these two diagrams which show that if monitoring was carried out over two different fortnights two weeks apart in 2008, the IoA NWG's method's transformation shifts the average background noise data in a significantly different manner:

Wind Shear Correction

Figure 4: Two plots showing how the *Bulletin* method's transformation produces different results for the same input background noise data depending on the dates of the wind speed measurements.



Low shear during this survey period

Higher shear during this survey period

Source: REF

17 March 2013

52

However, once the limits are set they would apply under all conditions.

To summarise wind shear correction:

The key problem with the NWG methodology is that the averaged (derived) background noise curve from the corrected data points will be too high. A secondary problem is that short survey durations will result in a high risk of collecting unrepresentative data with regard to the long term shear profile.

The real issues here is not whether correction should be to the background or turbine noise data, or whether wind speeds are referenced to 10m height or hub height, what needs to be considered is how to provide reasonable noise protection for receptors in a transparent way such that planning decision makers can easily understand it and to give noise limits that in practice can be enforced by Environmental Health Officers acting for the local planning authority.

A reasonable level of protection will not be achieved using *any* average shear correction or even based on ± 1 standard deviation of the distribution of corrections.

We conclude that the methodology being promoted by the IoA NWG fails to provide the promised levels of protection, opening the way to a prospect of enormously complex future legal difficulties.

A detailed description of the effects of wind shear on noise propagation and ISO9613-2 is provided by Dr Mike Tolft in his IoA consultation response [ref 17 starting page 127]. The next two slides provide a summary of his argument.

Wind shear is the condition where wind speed varies with height above ground level. The normal atmospheric condition is one of positive wind shear, where wind speed increases with height. Discussion of wind shear is usually confined to the problem of causing differences between wind speed at different heights and the implications for sound power generated at the turbine and background noise generated at ground level.

A completely different and if not more important aspect of wind shear is its role in determining, via refraction, the propagation path and intensity of outdoor noise. The role of wind shear in outdoor sound propagation has been well understood since the founding work of Stokes, Reynolds and Rayleigh in the 19th century, and yet *full discussion of the effect of wind shear appears to be totally neglected in wind farm noise assessments.*

Wind shear shapes the propagation paths of outdoor noise in all directions, strongly affecting the intensity of sound at receiving locations. Wind shear is a principal cause of noise levels being often unexpectedly enhanced at locations a long way downwind of a noise source. Whilst ISO 9613-2 implicitly takes some account of this effect of wind shear on propagation from low height, non-wind-dependent stationary sources, by means of ground attenuation (A_{gr} , empirically determined) under downwind conditions, the degree of wind shear accounted for is not made clear within the standard.

Motorway noise provides a useful everyday example of noise propagation. If you stand immediately next to a motorway when the wind is blowing across it, it doesn't matter which side you stand on, upwind or downwind, the noise levels will be essentially the same.

If you walk away from the motorway on the upwind side, i.e. walking into the wind, the noise levels will drop off quite rapidly. This is not true of walking away on the downwind side, noise will persist at significant levels for many hundreds of meters.

It's as if the wind blows the sound along – but this is in fact not the case at all, this is the crucial point.

Were there to be a 25 mph gale blowing across the motorway, with the same wind speed at all heights above the ground, the motorway would be equally noisy at long distances upwind as downwind; this is an unexpected conclusion and not our normal experience at all. However it would occur in such a situation of zero wind shear.

It would happen because the speed of sound in air is around 768mph, so movement of *all* the air at 25mph one way or the other will have very little effect.

In practice the wind is generally stronger at greater heights, which progressively changes the speed of sound with height; this in turn changes the curvature of the wave fronts and hence the direction of their propagation.

Sound waves consequently bend back down to earth on the downwind side at longer distances from the source; the opposite happens on the upwind side.

This gives us our everyday experience of motorway noise being enhanced at long distances downwind.

Further to these observations, were there to exist a condition of negative wind shear, such as might pertain above a low-level atmospheric jet, then sound propagation would actually be enhanced in the up-wind, rather than the down-wind direction, which is entirely counter-intuitive, emphasising that sound is not 'blown along by the wind'.

Wind shear thus plays a major role in determining noise impact at longer range from turbines, but this is not given explicit consideration by wind farm developers, and robust worst-case wind shear situations are not established specific to local site conditions.

ISO 9613-2 indicates a ± 3 dB level of prediction uncertainty for the conditions it was validated for. *It was not validated for use with high-level noise sources under high wind shear, turbulence and high wind speeds as apply for wind turbines. In these cases the degree of under-prediction is likely to be significantly greater than ± 3 dB.*

The current guidance, ETSU and the NWG draft guidelines are totally deficient from a scientific perspective with respect to noise prediction.

Amplitude Modulation

- Wind turbine excess amplitude modulation (AM or EAM) is generally recognised as when turbine blade 'swish' changes to thumping or banging
- EAM is highly intrusive even at >1.5km separation
- AM effectively excluded from the IoA NWG draft guidelines on the pretext that it will be covered later by the RenewableUK report on the subject
- An independent AM study is urgently required

Amplitude modulation is the most important noise characteristic of wind turbines so excluding it from the IoA review of the guidelines must be of concern.

Additionally, no credibility can be given to any future report on this subject commissioned by the industry trade association RenewableUK. This will have the same credibility as studies into health effect of smoking conducted by the tobacco industry.

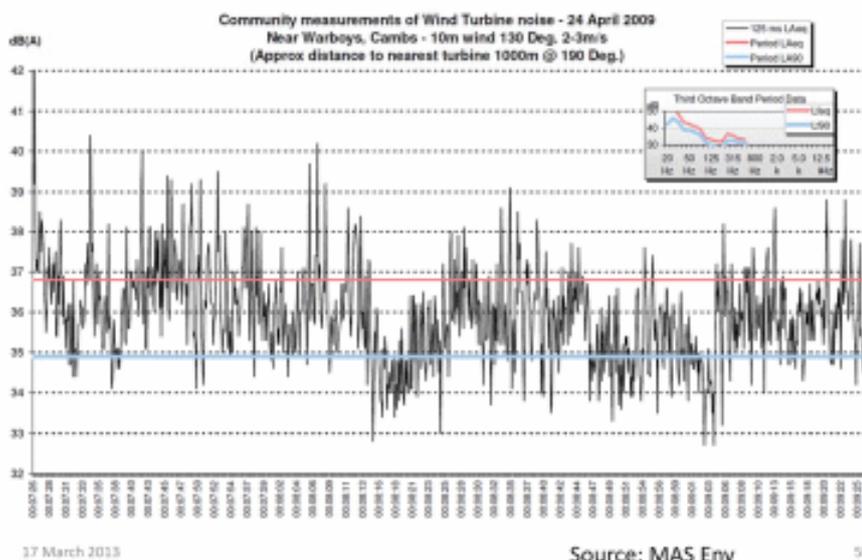
This summarises AM as detailed in WEIS:

- EAM is similar to helicopter blade slap, itself the result of blade vortex interaction (BVI) [ref 3].
- Helicopter BVI has been well understood for decades.
- Why is wind turbine EAM such an apparent technical mystery to the wind power industry?

Turbine manufacturers will understand the problem very well but are not going to share such information.

This diagram is taken from page 39 of the MAS Environmental report ref 10 dated 4 Jan 2010 that analysed the noise assessment for the New Albion wind farm. This shows the short-term variability of turbine noise at Warboys when the dB LAeq is measured at 125ms intervals.

Variable Nature of Turbine Noise



In this case short term background noise must be at least 3dB lower than the lowest LAeq readings that are inclusive of background noise at a level of around 33dB. As a result we have turbine noise peaks of up to 10dB above an actual background level of 30 dB and 5.5dB above the inclusive (10 minute) period LA90 level of 35dB.

Applying either BS 4142:1990 or :1997 assessment procedures, with a +5dB addition for noise character described as “regular variation and thumps”, a rating level of +12 dB above background results. This is 7 dB above the “marginal significance” upper limit and 2 dB into the “complaints likely” condition.

It must be emphasized that in this case with a 10 metre height wind speed of less than 5m/s all the conditions are satisfied for application of BS 4142 when assessing an industrial noise source in a residential area.

Conversely the (10 minute) period LA90 would be lower than the ETSU \square 97 night time limit by 8dB, which ignores both period and short term LAeq levels and adjustment for character. Quoting from the MAS report at para A1.39: “Graph AM Warboys – AM at 1000m from the nearest turbine at Warboys. It was substantially below the ETSU \square R \square 97 limit of 43dB LA90 at night but was the dominant noise and intrusive due to the regular variation and thumps. This was not the worst case as it was not directly downwind but at 60 degrees angle to the nearest turbine. The modulation was of 3–5dB. It was clear and audible both outside and inside my car. There were only rarely any other sounds within the noise environment.”

In conclusion we see that the public have very little statutory protection from any harmful effects of EAM. We recognised that the existence or otherwise of health effects attributable to it is controversial.

- The standard planning condition based on dB L_{A90 10min} is ineffective at detecting EAM.
- Statutory nuisance is also ineffective at protecting against EAM.
- *The Den Brook / Marston planning condition based on dB L_{AEQ,125ms} will detect and control EAM and should be routinely used.*

Plank C: Overall Assessment Process

Noise Limits

- Noise limits are required to protect the amenity of wind farm neighbours (receptors) and to prevent ill health effects from turbine noise.
- Determining noise limits w.r.t. health effects is outside of the IoA NWG acousticians areas of expertise.
- *There is no evidence of suitable qualified medical or audiology experts being consulted to ensure noise limits are scientifically derived.*

The IoA NWG does not have the inputs to enable health impacts to be determined, yet their conclusion have implications for such possible effects.

- Noise limits and the ill health effects of turbine noise are excluded from the terms of reference agreed between DECC and the IoA – *Why?*
- WHO noise limits are also being ignored – *Why?*
- *How can robust guidance based on solid scientific principles be written if noise limits and health effects are excluded from consideration during this consultation?*

We should add here that BS 4142 on page 6 sect 8.1 states:

“Certain acoustic features can increase the likelihood of complaint over that expected from a simple comparison between the specific noise level and the background noise level. Where present at the assessment location, such features are taken into account by adding 5dB to the specific noise level to obtain the rating level.”

Sect 8.2 goes on to qualify this including: “the noise contains distinct impulses”. This certainly describes wind turbine noise even without what is described as excess amplitude modulation.

ETSU does not provide for including this tonal penalty for normal blade swish as would BS 4142.

- ETSU recommends a higher minimum night time limit of 43dB(A) than during the daytime. The justification being that residents will be inside asleep and the attenuation through an open window is assumed to be 10dB.
- *Where is the technical justification for this high level of window opening attenuation?*
- To the casual observer the attenuation is much less and will vary depending upon the house construction, layout and window details. *Research is needed to quantify the effect.*

- *ETSU allows night time turbine noise levels >20dB above actual background noise in many quiet rural locations.*

Only ETSU allows higher noise levels at night than during the day.

With turbine noise levels just below the 43 dB LA90 limit, complaints would be virtually guaranteed in quiet rural locations.

We need these limits to be based on scientific and medical fact, not guesswork.

Low-Frequency Noise

- The ill health effects of low-frequency noise (LFN) from wind turbines has been the subject of numerous reports over recent years with the term ‘wind turbine syndrome’ often used [ref 3].
- *A 2km separation distance has frequently been recommended [ref 3].*
- The existence of significant LFN or ill health effects has been consistently denied by the wind power industry and Government [ref 3] who have recommended no further investigations are required.

There is evidence from studies elsewhere in the world that LFN is a problem. For the first time we have agreement by consultants acting for both sides in this dispute that:

- Significant levels of LFN is being measured inside homes near wind turbines
- That LFN is a serious issue affecting the health and amenity of residents near turbines

Report published in *Noise & Health* [ref 9] Oct 2012 provides clear evidence of sleep disturbance and mental health effects on residents living within 1.4km of turbines.

Report published Dec 2012 (Wisconsin report) [ref 7] jointly by four consultants acting on behalf of both the developer and local residents confirmed: *“LFN and infrasound as a serious issue, possibly affecting the future of the industry. It should be addressed beyond the present practice of showing that wind turbine levels are magnitudes below the threshold of hearing at low frequencies.”*

Wisconsin report [ref 7] findings included:

- LFN is correlated with the turbine blade passing frequency (B Walker)
- The long-term response by the residents was ‘severely adverse’ although the noise was barely audible. *“What apparently is needed is a new Threshold of Perception”* (Hessler Associates).

The highly significant fact here is that the noise while either not audible or barely audible is causing adverse health effects.

Note that Hessler Associates are well known for representing US wind farm developers.

Measuring equipment suitable for detecting LFN was used during this survey revealing high levels of LFN inside the homes.

Rand Acoustics [ref 7] reported:

- “Neighbors do not always hear the turbines. The neighbors indicated there is no real difference in wind compass direction on the negative health effects.”
- “Neighbors reported being highly annoyed by the interior sound. Elevated acoustic energy was observed inside all three homes in the range of 10 to 40Hz.”
- “Neighbors reported that [only] at a distance of 3-1/2 miles, they could find relief when turbines were operating.”

Rand Acoustics [ref 7] concluded:

- *“Nauseogenicity is a factor at Shirley. Acceleration of the inner ear is suggested due to extremely low-frequency pulsations at the rotation and blade pass rates that occur in or near the frequencies of highest potential for nouseogenicity and are coupled strongly into the homes now abandoned.”*
- *“Medical research and measurement is urgently needed to be field coordinated along with infrasonic acoustic and vibration testing. The correlations to nouseogenicity at the 2.5MW power rating and size suggest worsening effects as larger, slower-rotating wind turbines are sited near people.”*

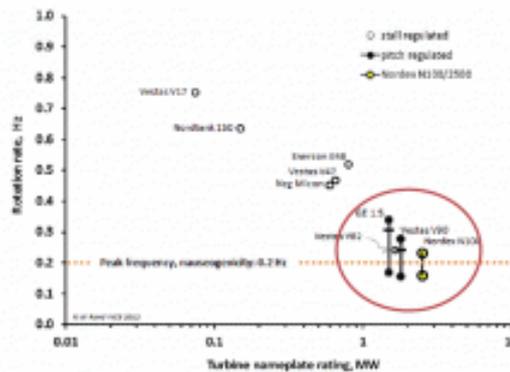
Yet again more research is needed. Sweeping possible issues under the carpet in order to allow the onshore wind industry access to virtually every site it wants will not help.

The turbines used most frequently at UK wind farms now have rotor diameters of 80 or 90m so will operate at close to the critical blade passing frequency as shown here:

Chart of wind turbine rotation rates (Hz) for various wind turbine models,

Note: nauseogenicity range is 0.1 to 1 Hz with peak potential noted at 0.2 Hz.

80metre+ rotor diameter wind turbines operate in the critical speed zone



17 March 2013

70

Schomer & Associates [ref 7] reported:

- “Currently the wind turbine industry presents only A-weighted octave band data down to 31 Hz. They have stated that the wind turbines do not produce low-frequency sound energies.”
- “Measurements at Shirley have clearly shown that low-frequency infrasound is clearly present and relevant.”
- “A-weighting is totally inadequate and inappropriate for description of this infrasound.”

The octave band data we have seen presented by developers, obtained by turbine manufacturers only goes down to 63Hz whereas the Wisconsin report is discussing frequencies down to 10Hz.

This is the first time we have clear evidence of high levels of LFN and that *A weighting measurement is inappropriate.*

We should also add here that IEC 61400 [ref 19] at sections A2 and A3 recognises the potential for infrasound (below 20Hz) and LFN (between 20 Hz and 100Hz) causing annoyance even though barely audible and that noise may be underestimated if assessed using only an L_{Aeq} value.

Noise nuisance and ill health effects are occurring due to turbine LFN even when the noise is inaudible or barely audible.

This dispels the ETSU core principles that:

- Background noise is able to mask turbine noise. *This is now proven to be incorrect.*
- Noise nuisance is related to the noise we hear so measurements use the A weighting. *This is now proven to be incorrect.*
- Limits are applied to restrict turbine noise to not more than 5dBA above background with minimum levels applied where background noise is considered low. ETSU does not allow for tonal correction for normal amplitude modulation whereas BS 4142 does. *These limits have been found to be insufficient for protecting wind farm neighbours.*

Summarising the Assessment Uncertainties

We have seen that ETSU R-97 compares the measured 'background' noise with that predicted for the turbines over a range of wind speeds.

We have also seen that turbine noise prediction is not an exact science and that there are problems in the sampling and measurement of the background. This introduces considerable uncertainty into the predictions, almost certainly more than the simple 'model error' usually quoted.

There are also uncertainties in how the background data are processed to arrive at summary measures that can be compared with the turbine noise prediction. How do these all combine to affect the security of the overall noise assessment?

Once again, we note that the acoustic science used in ETSU R-97 must be the only example of an exact science other than hindsight known to mankind. The responsible scientist should recognise these uncertainties, and draw attention of any planning decision makes to them. The implications for wind farm evaluation and the planning system are not of direct scientific concern and anyhow will vary from site to site.

Uncertainty: Sources and Estimates

Plank A: Background noise:

1. Measurement tolerances of sound level meters used
2. Effect of inadequate wind shielding
3. Microphone siting and height
4. Data contamination (rain, transients)
5. Spatial and temporal sampling

It is hard to give precise estimates here but fairly conservative ones are: sources 1–4, say ± 5 dB; source 5, say ± 2 dB. Assuming independence, these combine to give an uncertainty in Plank A of ± 5.38 dB.

Plank B: Turbine noise:

1. Different turbines and different method of manufacturer rating
2. Engineering variations between turbines nominally the same

3. Variations due to ageing and non-ideal conditions
4. ISO 9613 propagation model and wind shear

Even the ISO 9613 method suggests a model error of around ± 3 dB. We believe that this is extremely optimistic, given the application of a model in situations that are way outside the parameter space in which it was originally validated, so even ± 8 dB is a real possibility.

These may well be conservative estimates. Assuming these are independent we have a pooled uncertainty of $\text{SQRT}(5^2 + 8^2) = \pm 9.43$ dB.

This represents a halving or doubling of loudness and should be considered against the claimed headroom for the selected receptors. In many cases this is less than 3dB, sometimes even less than 1.0dB.

It is virtually certain that a proportion of wind farms consented under ETSU will generate justified noise complaints. ETSU does not afford the protection to citizens that its originators thought it would.

Recommendations

ETSU is clearly unfit for purpose and should be replaced with new science-based guidelines.

- The current guidance (either ETSU or the NWG draft guidance) are shown to be unreliable and fail to protect against noise nuisance or noise-induced ill health effects.
- Until proper scientifically based guidance can be put in place, a minimum separation distance should be applied.
- For turbines, typically of 120m height and 80m diameter, a 2km separation distance is required.

Greater transparency is required:

- Simultaneous publication of the final IoA Guidelines together with a Technical Annex discussing those consultation points not adopted in the Guidelines, and the NWG's detailed scientific justification for this.
- The IoA consultation exercise and the resulting Guidelines should clearly reflect the fact that a 'grown-up conversation' has taken place with the wider scientific community and that the outcome is demonstrably based on sound science.

Other recommendations:

- *The draft guidelines should be withdrawn and substantially revised, prior to a further consultation.*
- Stop commissioning studies from the Wind Industry supply chain on 'best value' principles alone and consider independent academic options instead.

- Commission an urgent review of the health effects of wind turbine noise involving the British Academy of Audiology, (www.thebsa.org.uk) or the British Academy of Audiology (www.baaudiology.org).

These recommendations are based on our lack of confidence in the Institute of Acoustics Noise Working Group.

It is proposed that most of the existing IoA NWG members be replaced to ensure independence (perceived and real) and the group strengthened with the required mix of specialist scientific and medical skills.

References

1. ETSU-R-97
2. BS 4142: 1997 Rating industrial noise affecting mixed residential and industrial areas
3. Where ETSU is Silent by Cox, Unwin and Sherman July 2012 (including 41 ref docs) [\[link\]](#)
4. Analysis of Onshore wind turbine planning appeal decisions by Cox, Sherman and Unwin Feb 2012
5. Acoustics Bulletin March 2009
6. REF Info note 120403 IoA Shear Methodology
7. A Cooperative Measurement Survey and Analysis of Low Frequency and Infrasound at the Shirley Wind Farm in Brown County, Wisconsin (Wisconsin report), Dec 2012 [\[link\]](#)
8. Effects of industrial wind turbine noise on sleep and health, Nissenbaum, Aramini, Hanning, Oct 2012 [\[link\]](#)
9. DECC Ed Davey MP letter to C Heaton Harris MP, Dec 2012
10. Analysis of Assessment of Environmental Noise in the ES New Albion Wind Farm, MAS Environmental January 2010, Mike Stigwood
11. A neglected source of uncertainty in potential wind farm noise assessment using the ETSU_R-97 process, Greenough, Unwin 2013
12. Development of a wind farm noise propagation prediction model, Bass, Bullmore, Sloth Jan 1996 to May 1998
13. IoA discussion document, July 2012
14. IoA consultation response by R Cox, Sept 2012
15. IoA consultation response by D Unwin, Sept 2012
16. IoA consultation response by D Bingham, Sept 2012
17. IoA published consultation responses part 1
18. IoA published consultation responses part 2
19. IEC 61400-11 Wind turbine generator systems – Acoustic noise measurement techniques

David Unwin is a retired academic geographer and environmental scientist. Richard Cox spent over eight years in the Royal Navy as an electrical artificer working on naval aircraft; as an electrical engineer in the power generation industry he was involved in the construction, commissioning, maintenance and life extension of nuclear and fossil fired power stations for over 30 years in both technical and commercial roles. Dr Rod D

Greenough is Emeritus Reader in Physics in the University of Hull; he is co-director of an SME specialising in the application of audible sound for non-destructive condition monitoring and the application of technologies to cancel audio noise. **Doug Bingham** is a retired acoustic consultant formerly employed by A V Technology Ltd of Cheadle Heath; prior to that he was an engineering manager for Hawker Siddeley Power Engineering responsible for the core projects mechanical engineering department, which included noise and vibration disciplines, and a director of Pax Acoustic Engineering Ltd, an AVT subsidiary noise control hardware company.

Appendix 6.

Residents challenge approval for wind turbines

By Ann O'Loughlin

Tuesday, January 14, 2014

A residents' group has brought a legal challenge aimed at overturning Bord Pleanála's grant of planning permission for a development of several wind turbines near their homes in Co Cork.

The High Court case arises from a decision to permit construction of six electricity-generating wind turbines and ancillary building and associated road works at the townlands of Derragh, Rathgaskig and Lack Beg in Ballingearry, Co Cork. The turbines may be a maximum height of 100m with rotor diameter of 100m and a total tip height of 150m.

The residents claim the board's decision is flawed, unreasonable and irrational, and that it failed to properly assess the impact on their homes of noise generated from the turbines. The 12 residents and their families live and work between 500m and 2km from the proposed development.

The action is against An Bord Pleanála and Cork County Council, and the wind farm developer, Framore Ltd, are notice parties. Framore intends to connect the turbines to the national power grid, the court heard.

After Cork County Council granted permission for the development last June, the residents appealed to Bord Pleanála. In November, the board rejected the appeal and granted Framore Ltd permission for the development, subject to conditions.

Yesterday, Eamon Galligan, counsel for the residents, said their challenge was being brought on grounds, including that the board failed to meet its obligation to assess the noise impact of the turbines as part of an Environmental Impact Assessment. That failure amounted to a breach of fair procedures, he said.

The board also failed to have regard to provisions of the Wind Energy Development Guidelines 2006 relating to impact of noise levels at sensitive locations, including dwelling houses, he said. No reasons were given by the board for departing from those guidelines, he added.

Should the court decide to remit the matter to Bord Pleanála, the residents wanted an order requiring the matter to be assessed by a different planning inspector and different members of the board, counsel said.

Mr Justice Michael Peart granted the residents application, made on an ex parte basis (one side only represented) to bring the judicial review proceedings. The case will come before the court again in March.

This story appeared in the printed version of the Irish Examiner Tuesday, January 14, 2014

Appendix 7.

Gone with the wind: valuing the local impacts of wind turbines through house prices

This paper provides quantitative evidence on the local benefits and costs of wind farm developments. In the tradition of studies in environmental, public and urban economics, housing costs are used to reveal local preferences for wind farm development in England and Wales. This is feasible in England and Wales because wind farms are increasingly encroaching on rural, semi-rural and even urban residential areas in terms of their proximity and visibility, so the context provides a large sample of housing sales that potentially affected (at the time of writing, around 2.5% of residential postcodes are within 4 km of operational or proposed wind farm developments). ...

All these comparisons suggest that operational wind farm developments reduce prices in locations where the turbines are visible, and that the effects are causal. This price reduction is around 5-6% for housing with a visible wind farm of average size (11 turbines) within 2km, falling to 3% within 4km, and to 1% or less by 14km which is at the limit of likely visibility. ...

Wind farms with 20 or more turbines reduce prices by 3% at distances between 8-14km, and by up to 12% within 2km. ...

Results based on comparison of operational sites and those refused planning permission suggest that these full impacts could be much bigger – the upper-bound estimate is about 15% within 2km of the average wind farm.

Stephen Gibbons

London School of Economics and Spatial Economics Research Centre, London, United Kingdom
November 2013

[Full report available online](#)

Medi Walsh

From: Midi walsh
Sent: 28 February 2014 12:37
To: +Comm Environment Public Email
Subject: Inquiry into wind energy

To Whom It May Concern on the Panel of the Inquiry into Wind Energy in Northern Ireland

Energy costs

- Wind energy due to the enormous subsidies paid is very expensive energy and not sustainable. The EU have already stated that subsidies to the mature energy industry must cease. If Northern Ireland continues to pursue the overly ambitious renewable target for electricity this will create a non-competitive climate for industry in the future and thus lead to future job losses as is now happening in Germany. A competitive and unreliable supply of electricity, is what actually protects manufacturing and supports jobs. An over reliance on expensive wind energy will become a barrier to inward investment resulting in Northern Ireland failing to attract new jobs in the future.

Jobs

- Europe is now realising that we can never be competitive with our high price of electricity which is primarily as a result of the subsidy / rates system and these subsidies only benefit private wind-farm developers. There are very little jobs in Wind energy in Northern Ireland as Northern Ireland has no history or prospect of wind turbine manufacture. The potential for jobs in Wind energy in Northern Ireland isn't "huge". Northern Ireland has no background in mechanical engineering and is unlikely to acquire the expertise to build turbines in the near future. In Scotland for the few jobs created in larger than Northern Ireland wind energy sector, it is estimated to **cost £154,000 per job in subsidies**

Tourist Jobs Loss

- Jobs will be lost in the Tourist industry if the Northern Ireland Government and private wind farm operators get their way and turn the very valuable Northern Ireland landscape into an industrial landscape. Europe and the Northern Ireland Government are effectively destroying its beautiful and priceless nature by providing huge subsidies to private wind-farm developers and promised large guaranteed returns to the investors.

Unstable Grid

- The number of wind farms envisaged to meet the target for Northern Ireland will make the Northern Ireland Grid unstable and dangerous, therefore it will lead to more episodes of 'lights out' and therefore a problem for economic recovery.

No Cost benefit analysis completed for NREAP

- The Government and its agencies thus far appear unable to provide any data to justify NREAP and Grid upgrade. A seriously flawed NREAP that has a very high risk of becoming a huge white elephant and therefore puts Northern Ireland at risk of going into another recession as a result of the wasted billions, resulting in very expensive and non-competitive energy cost. Northern Ireland needs to push alternatives - such as retrofitting insulation which would generate much needed jobs for Northern Ireland's unemployed workforce. Marie van der Hoeven of the International Energy Agency has said, 'Energy efficiency is our first fuel'.

Substantial installed wind capacity already

- Northern Ireland already has substantial installed wind capacity the technical and financial limit of wind in the energy mix is a maximum of 20%. There would be little need

for continuing grid investment except for the expanding wind industry which threatens to destabilise the grid. The full costs of the Grid are spread across all consumers, rather than being charged to the wind farm developers. If the Northern Ireland government pursues higher renewable target for electricity, then this will mean large increases in electricity bills for the hard pressed consumer. Why not provide subsidies for retrofitting of the housing stock and thus it would give more disposable income by way of cheaper energy bills and thus relief for the hard pressed consumer. Retrofitting will result in more direct jobs and indirect jobs created as a result of more disposable income in the consumer's pocket. It will also lead to substantial reduction in CO2 emissions.

There appears to be a lack of environmental information, total lack of any cost benefit analysis and/or any other economic analyses and assumptions.

- The citizens of Northern Ireland have the right to be properly informed, to participate in the decision making and to have access to justice in relation to projects that have an environmental impact. (UN Aarhus Convention)

Please take our submission very seriously, we need to leave a planet and an economy in good repair for our children and or children's children. We need to look beyond the financial gain of a few to the good of the majority.

Yours,

Midi Walsh,

Deise Against Pylons,

Memo from the Committee for Enterprise Trade and Investment re Inquiry into Wind Energy

Northern Ireland Assembly

Committee for Enterprise, Trade and Investment
Committee for the Environment
Room 375

Parliament Buildings
Tel: +44 (0)28 9052 1614

To: Sheila Mawhinney
Clerk to the Committee for the Environment

From: Jim McManus
Clerk to the Committee for Enterprise, Trade and Investment

Date: 20 January 2014

Subject: Inquiry into Wind Energy

At its meeting on 16 January 2014, the Committee for Enterprise, Trade and Investment considered your memo dated 18 December 2013 asking for comments on the Inquiry into Wind Energy.

Members agreed to inform the Committee for the Environment that the current Committee Review into Electricity Pricing will consider the impact of wind energy incentives on pricing.

Members also suggested that you contact the Fermanagh Trust for information and comments regarding community benefits from wind energy developments.

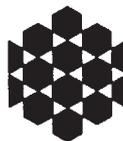
I hope this information is of assistance to the Committee.

Jim McManus

Clerk

Minister of the Environment

**From the office of the
Minister of the Environment**



Department of the
Environment

www.doeni.gov.uk

Anna Lo MBE
Chairperson
Committee for the Environment
Room 247
Parliament Buildings
Ballymiscaw
Belfast
BT4 3XX

DoE Private Office
8th Floor
Goodwood House
44 - 58 May Street
Town Parks
BELFAST
BT1 4NN

Telephone: 028 902 56019

Email: private.office@doeni.gov.uk

Your reference:

Our reference: COR/1236/2013

7 February 2014

Dear Ms Lo

Thank you for your letter of 18 December inviting me to submit a written response to the Committee for the Environments Inquiry into Wind Energy.

I welcome the opportunity to contribute to the Committee's enquiry and have pleasure in enclosing my Department's comments to the Committee in the attached paper.

Yours sincerely

MARK H DURKAN MLA
Minister of the Environment

ANNEX A

Written Response to Inquiry into Wind Energy
Minister of the Environment

February 2014

Introduction

1. This paper is the written response by the Minister of the Environment to the Committee of the Environment's inquiry into onshore wind energy development.

Context to renewable Energy Development

2. The issue of onshore renewable energy should be considered in the context of the wider European and national commitments to increase the proportion of energy from renewable sources; and for reduction of Greenhouse Gas emissions.
3. The Program for Government 2011 – 15 contains commitments to encourage achievement of 20% of electricity consumption from renewable sources by 2014/15 as well as a commitment to continue to work towards a reduction in greenhouse gas emissions by at least 35% on 1990 levels by 2015.
4. In addition, the Department of Enterprise Trade and Investment's (DETI) Strategic Energy Framework (SEF) seeks to achieve the target of 40% energy consumption from renewable sources by 2020. The expectation is that this target should be delivered through a mix of renewable energy technologies.
5. These commitments are driven by EU directives, including Directive 2009/28/EC on the promotion of the use of energy from renewable sources

(the Renewables Directive), which requires the EU as a whole to obtain at least 20% of total energy consumption from renewables by 2020 (the national target for the UK share being set at 15%).

6. To date there is approximately 531MW of installed wind capacity. DETI estimate that the target of 40% electricity consumption from renewable sources will require a total of 1400-1800MW of renewable generation installed capacity, depending on the technology mix.

Planning Policy Statement (PPS) 18 'Renewable Energy'

7. In this context, PPS18 'Renewable Energy' aims to facilitate the siting of renewable energy generating facilities in appropriate locations within the built and natural environment in order to achieve Northern Ireland's renewable energy targets; and also to realise the benefits of renewable energy.
8. The objectives of the policy also include: ensuring that the environmental, landscape, visual and amenity impacts associated with or arising from renewable energy development are adequately addressed; and that the Region's built and natural, and cultural heritage features are adequately protected.
9. Policy RE1 therefore sets out a range of criteria which development that generates energy from renewable resources (including wind energy) must meet in order to be considered acceptable.
10. In summary these include requirement(s) that development will not result in an unacceptable adverse impact on public safety, human health, or residential

amenity; visual amenity and landscape character; biodiversity, nature conservation or built heritage interests; local natural resources, such as air quality or water quality; and public access to the countryside.

11. The wider environmental, economic and social benefits of all proposals for renewable energy projects are material considerations that will be given significant weight in determining whether planning permission should be granted.

Wind Energy Development

12. Specifically in relation to wind energy development applications will also be required to demonstrate that the development:

- will not have an unacceptable impact on visual amenity or landscape character through: the number, scale, size and siting of turbines;

has taken into consideration the cumulative impact of existing wind turbines, those which have permissions and those that are currently the subject of valid but undetermined applications.

- will not create a significant risk of landslide or bog burst;
- will not give rise to unacceptable electromagnetic interference to communications installations; radar or air traffic control systems; emergency services communications; or other telecommunication systems;

- will not have an unacceptable impact on roads, rail or aviation safety;
 - will not cause significant harm to the safety or amenity of any sensitive receptors¹ (including future occupants of committed developments) arising from noise; shadow flicker; ice throw; and reflected light; and
 - that above-ground redundant plant (including turbines), buildings and associated infrastructure shall be removed and the site restored to an agreed standard appropriate to its location.
13. For wind farm development the policy identifies that a separation distance of 10 times rotor diameter to occupied property, with a minimum distance not less than 500m, will generally apply.

Supplementary Planning Guidance:

14. PPS18 is accompanied by a Best Practice Guidance (BPG) document which sets out background information on the various renewable energy technologies (including onshore wind energy) and is designed to contribute to the development management process.
15. The BPG is further supplemented by guidance contained in '*Wind Energy Development in Northern Ireland's Landscapes*' which must be taken into account when determining planning applications for wind energy

development. This document provides broad, strategic guidance in relation to the visual and landscape impacts of wind energy development.

16. The guidance is based on the sensitivity of Northern Ireland's landscapes to turbine development and contains an assessment of 130 individual Landscape Character Areas (LCAs) by referencing the characteristics and values associated with each. It sets out principles and guidance relating to site selection, siting, layout and design and the assessment of landscape, visual and cumulative impacts.

Planning Issues

17. As Minister of the Environment a number of issues have been raised with me concerning planning for wind energy development. These issues and the Department's position on them will be of interest to the Environment Committee's Inquiry and are as follows:

Cumulative landscape impact

18. The cumulative impact of wind energy development in the landscape is an issue that has been raised through the development management process; and directly to me by concerned individuals and groups.
19. As set out above planning policy already requires developers to demonstrate that the development has taken account of the cumulative impacts of existing turbines; those that have been approved; and those that are the subject of valid but undetermined applications.

20. The supplementary planning guidance 'Wind Energy Development in Northern Ireland's Landscapes' (SPG) specifically PPS18 highlights cumulative impact as a key issue that will need to be considered going forward and provides advice and guidance to assist officials in assessing potential cumulative impacts upon landscape.
21. In addition to preparing a quarterly statistics bulletin on wind energy approvalsthe Department also produces maps of all approved wind turbines/wind farms(See Annex 1). It is important to note this does not represent the total number of turbines/wind farms built. This information is monitored by the Department on an ongoing basis and is used to assist with the assessment of cumulative impact.
22. Therefore, in assessing wind energy applications, the Department already gives consideration to whether the proposal would individually or cumulatively have an unacceptable impact on visual amenity and landscape character ; amenities that ought, in the public interest, to be protected.
23. The view has been and continues to be expressed to the Department by concerned individuals and groups that certain areas are close to reaching their capacity to accommodate further turbine development without detriment to landscape character, and visual amenity.

Residential amenity (including assessment of noise impacts)

24. Concerns have been expressed through the development management process that wind farm and wind turbine developments impact adversely on

residential amenity of nearby residents and that the current policy does not adequately deal with this issue.

25. PPS18 already requires that wind energy developments will not have an unacceptable impact on visual amenity or cause significant harm to the amenity of sensitive receptors (including future occupants of committed developments) arising from noise; shadow flicker; ice throw; and reflected light.
26. To help preserve general amenity of windfarm neighbours the policy identifies a separation distance of 10 times rotor diameter to occupied property, with a minimum distance not less than 500m, will generally apply.
27. Specifically in relation to the assessment of noise impacts, PPS18 (in common with other UK administrations) identifies the use of the ETSU-R-97 methodology for assessing and rating of noise from wind turbines. This standard is calculated to give a reasonable degree of protection to wind farm neighbours without placing unreasonable restrictions on wind farm developments that contribute to meeting the renewable energy targets set out above.
28. At the direction of the Department of Energy and Climate Change (DECC) in England the ETSU-R-97 standard was the subject of a review by the Institute of Acoustics (IoA). Following on from this, in May 2013, the IoA published a Good Practice Guide aimed at ensuring the consistent application of the

methodology. On this basis the Minister has endorsed the use of the guidance in Northern Ireland.

29. Noise impact from wind energy development is an important consideration and where it is demonstrated that a development would result in an unacceptable adverse impact on the amenity of a sensitive receptor as a result of noise impacts then planning permission will be refused.

Health and Safety Impacts

30. Concerns regarding possible adverse health and safety impacts on people living close to wind turbines have also been raised with the Department.
31. PPS18 requires that no renewable energy development should give rise to an unacceptable adverse impact on public safety or human health. The alleged public health impacts are said to arise from the effects of turbine noise, infrasound, and shadow flicker or a combination of these and are said to include symptoms such as sleep deprivation; hypertension; headaches; cardiovascular complaints; palpitations and mood disturbances.
32. The Department consults on a case-by-case basis with the Environment Health Department (EHD) of the relevant council and with the Public Health Agency and relies on this expert advice in identifying the nature and extent of any potential impact that may arise.
33. The advice of the PHA is that, provided established guidance and best practice in relation to placement of wind turbines and mitigation measures is

undertaken, there is minimal to no risk to the health of the population associated with such facilities.

34. Comments have been received to the Department in relation to the safety of wind turbines and the potential for accidents as a result of the mechanical failure of the turbine or turbine blade.
35. The BPG to PPS18 advises that the only source of possible danger to human life from a wind turbine would be the loss of a piece of the blade or, in the most exceptional of circumstances, the whole of the blade. Many blades are composite structures with no bolts or other separate components. Blade failure is therefore generally considered to be most unlikely. The separation distances set out in the policy are therefore considered adequate to meet health and safety requirements.
36. For smaller individual wind turbines, for example on a farm enterprise, a distance of fall-over distance (i.e. the height of the turbine to the tip of the blade) plus 10% is recommended as an appropriate separation distance for safeguarding safety.
37. Advice previously received from the Health and Safety Executive NI (HSENI) is that in the period from 2006 –2013 a total of 7 incidents on wind farms were reported to HSENI. The HSENI advise that these incidents included 6 reportable injuries to employees and 1 equipment failure. There were no fatalities recorded in this period.

38. The Department is satisfied that the current policy provisions adequately address concerns regarding potential health and safety impacts of wind energy development.

Separation Distance

39. Some concerns have been expressed on the specific issue of separation distance set out in the policy and that it is inadequate and has been insufficient to protect safety and/or residential amenity.
40. The separation distance between wind farm development and occupied property which is identified in PPS18 is applied for reasons of general amenity. It is not intended to prevent noise nuisance as this is subject to separate development management considerations, including ETSU-R-97. It is also not imposed for health and safety reasons, although as set out above it can assist in this objective.
41. In the Republic of Ireland Wind Energy planning guidelines prepared by the Department of Environment, Community and Local Government recommend a 500 metre separation distance as appropriate to help address noise and shadow flicker impacts.
42. In the Republic of Ireland revised wind energy guidelines in respect of noise and shadow flicker are currently out to public consultation with a closing date of 21 February 2013. They propose for the first time a mandatory setback, for amenity reasons, of 500 metres between a wind turbine and the nearest dwelling.

43. In England Government planning policy for renewable energy is contained in the National Planning Policy Framework. The document 'Planning practice guidance for renewable and low carbon energy' (July 2013) provides supplementary planning guidance on this matter and advises that planning authorities should not rule out otherwise acceptable renewable energy developments through inflexible rules on buffer zones or separation distances.
44. In Scotland the draft Scottish Planning Policy (SPP) document proposes a separation distance of up to 2.5 km between wind farms and cities, towns and villages identified in the local development plan. This is to reduce visual impact but decisions on individual developments should take into account specific local circumstances and geography.
45. The existing SPP proposes a separation distance of 2km. It is important to note that this is not a minimum separation distance between dwellings and turbines but is intended to assist with identifying 'areas of search' for wind farm development within development plans.
46. Welsh Planning Policy on separation distance is set out in Technical Advice Notice (TAN) 8: Planning for Renewable Energy. This states that 500m is currently considered a typical separation distance between a wind turbine and residential property to avoid unacceptable noise impacts. TAN 8 however advises that when applied in a rigid manner it can lead to conservative results and so some flexibility is advised.

47. No UK or Irish jurisdiction propose to establish, or have established, a minimum mandatory separation distance between a dwelling house and wind turbine of greater than 500 metres.

Impact on property values

48. The policy consideration in Northern Ireland is set out in Planning Policy Statement (PPS)1 'General Principles' Paragraph 52 of PPS1 states that "the planning system does not exist to protect the private interests of one person against the activities of another, although private interests may coincide with the public interest in some cases".
49. PPS 1 further advises that the basic question is not whether owners and occupiers of neighbouring properties would experience financial or other loss from a particular development, but whether the proposal would unacceptably affect amenities and the existing use of land and buildings that ought to be protected in the public interest.

Environmental Impact Assessment (EIA)

50. The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012 (the EIA Regulations) set out the descriptions of development and applicable thresholds and criteria for the purposes of classifying development as Schedule 2 development.

-
51. For the purposes of these Regulations, wind farms, being installations for the harnessing of wind power for energy production, have applicable thresholds and criteria defined as:
- (i) the development involves the installation of more than 2 turbines; or
 - (ii) the hub height of any turbine or height of any other structure exceeds 15 metres.
52. In most instances, wind farm applicants submit voluntary Environmental Statements. Where they do not, the Department will carry out a determination under the EIA Regulations and where appropriate this is also the case for planning applications for single turbines. The essential determining factor will be the extent to which a particular Schedule 2 development is likely to have significant effects on the environment.

Community benefit

53. Community benefit typically refers to a voluntary contribution by a developer to a nearby community affected by a large scale renewable energy development, typically a wind farm.
54. The offer of community benefits is made outside the planning system and is not a material planning consideration. Decisions about planning proposals should be based on planning considerations only and should not be linked to the offer of unrelated benefits which are not necessary to making the development acceptable in planning terms. This principle is clearly set out in paragraph 64 of PPS 1 'General Principles' which states:

“The Department will seek planning agreements only where the benefit sought is related to the development and necessary to the grant of permission. Unacceptable development will not be permitted because of unrelated benefits offered by the applicant nor will acceptable development be refused permission simply because the applicant is unable or unwilling to offer such unrelated benefits”.

55. Notwithstanding this, the Department has been working with the Departments of Enterprise, Trade and Investment and the Department of Agriculture and Rural Development to explore how communities can better engage with developers proposing renewable energy developments in their areas.
56. As a result of this work, consultants were commissioned to undertake a study to consider the relationship between communities and renewable energy; and how communities can engage with developers and participate in, or benefit from, renewable energy developments. The Communities and Renewable Energy report was published by DETI in October 2013.
57. One of the recommendations in the report relates to the preparation of guidance in relation to engagement/community benefit and renewable energy development. The report states that DOE is the Department responsible for planning issues in relation to community engagement in renewable energy projects but acknowledges that the provision of community benefits lies outside the planning system.

58. The three Departments did not accept the recommendations of the report at that time, and instead proposed to await the outcome of the Department of Energy and Climate Change (DECC) consultation on Community Energy. The outcome of the consultation was the DECC Community Energy Strategy, published on 27 January 2014. Department officials will consider the contents of the strategy and propose to meet shortly with their counterparts in DETI and DARD in order to formulate a joint action plan to implement the consultant's recommendations.
59. It is important to note that any guidance issued by the Department on the practice of securing 'Community Benefits' from large scale renewable energy development must be focused on supporting and encouraging communities in securing such benefits. Planning policy cannot require developers to provide such unrelated benefits as a precondition of securing planning permission.

Strategic Planning Policy Statement (SPPS)

60. The Department has published a draft single Strategic Planning Policy Statement to consolidate and, where necessary, update the provisions of the existing suite of planning policy statements (PPSs) including PPS 18 'Renewable Energy'.
61. The statement is a simpler, more strategic, and more concise statement of planning policy. The Department published the draft SPPS on 4 February for

a 12 week period of public consultation and will have the document finalised in time for the transfer of the majority of planning functions to the new councils in 2015.

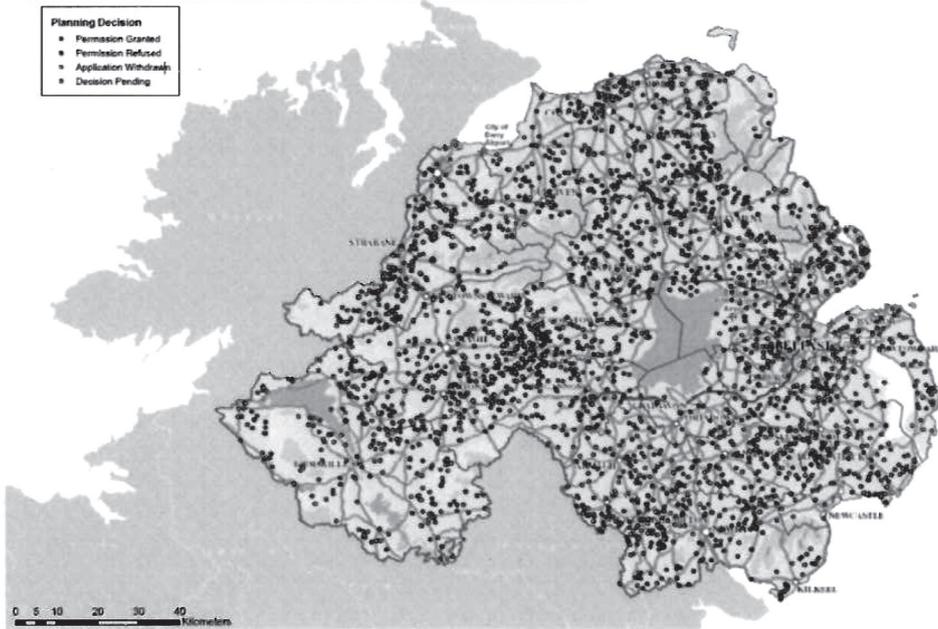
Conclusion

62. The Department considers that PPS18 adequately addresses the issues identified, however it intends to use the opportunity of the consultation on the SPPS to listen to the views of the public on planning policy for renewable energy development and, where appropriate, reflected these in the final SPPS.

ANNEX 1

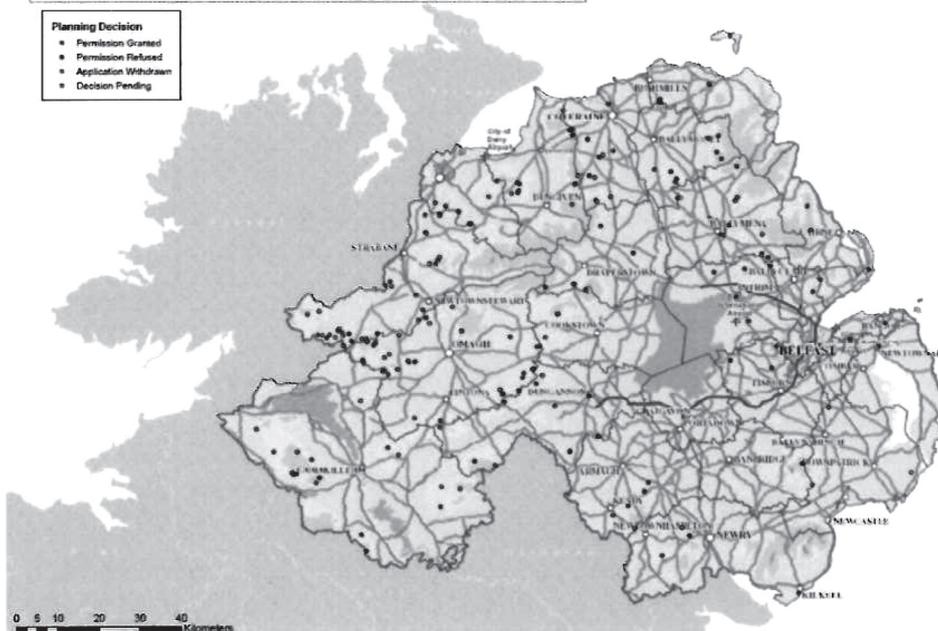
**Planning Applications for Single Wind Turbines
April 2002 - November 2013**

- Planning Decision**
- Permission Granted
 - Permission Refused
 - Application Withdrawn
 - Decision Pending



**Planning Applications for Wind Farms
April 2002 - November 2013**

- Planning Decision**
- Permission Granted
 - Permission Refused
 - Application Withdrawn
 - Decision Pending



Mountaineering Ireland



Irish Sport HQ
National Sports Campus
Blanchardstown
Dublin 15

Committee for the Environment
Room 247
Parliament Buildings
Ballymiscaw
Belfast BT4 3XX
Northern Ireland

14 March 2014

Re: Inquiry into Wind Energy

Dear Sir / Madam,

Mountaineering Ireland is the representative body for walkers and climbers on the island of Ireland, and is recognised as the governing body for all aspects of mountaineering by Sport Northern Ireland and the Irish Sports Council. Mountaineering Ireland's mission is to represent and support the walkers and climbers of Ireland and to be a voice for the sustainable use of Ireland's mountains and hills and all the places (coastline, crags, forests) we use.

Renewable energy developments can have a significant impact on the landscape and detract from the experience of recreational users in upland areas; consequently we welcome the opportunity to respond to the terms of reference for the Inquiry into Wind Energy. In this brief submission we have outlined some overarching comments and provided evidence in response to the terms of reference:

1. Overarching comments

Mountaineering Ireland submits these comments from the context of supporting the principle of sustainable, renewable energy developments within Northern Ireland. While admittedly starting from a low base, renewable energy generating capacity increased ten-fold in Northern Ireland between 2003 and 2011 (Cowell et al, 2013). In 2011 92% of electricity generated from renewable energy in Northern Ireland came from onshore wind and this proportion has continued to increase since, exacerbating an over-reliance on onshore wind energy (NI RIG, 2012, p18). Mountaineering Ireland believes that a policy of energy conservation, coupled with a diversity of renewable sources, particularly offshore and supported, community scale schemes that deliver power directly, provide a more appropriate approach to meeting future energy needs.

Northern Ireland has a very limited stock of relatively wild and undeveloped natural landscape; mountains, moorlands and heaths cover about 12% of Northern Ireland's land surface, compared with the UK average of 18% (UK NEA, 2011, p106). The character of much of this 12% has already been altered by development; we are using up this vital resource at an unsustainable rate. Wind energy developments can have a severe impact, imposing a large-scale industrial use onto semi-natural landscapes. Power lines and roads to service the site add to the visual intrusion. The construction, operation and decommissioning of

Directors: P. Barron, D. Batt, F. Bradley, N. Hore, U. MacPherson,
M. McKeever, R. Millar, I. Sorohan, U. Vejsbjerg, S. Walsh
Mountaineering Ireland is a company limited by guarantee. Registered in Dublin, number 199053.
Registered Office: Irish Sport HQ, National Sports Campus, Blanchardstown, Dublin 15, Ireland

windfarms causes disturbance to the local community, recreational users, wildlife, hydrology and an irreversible change to the physical landscape. Wind turbines also bring large scale mechanised movement to a naturally still environment.

Mountaineering Ireland challenges the apparent presumption towards siting wind farms in upland areas. While the preferred location for wind turbines was traditionally in locations on higher ground, advances in turbine technology (especially scale and blade design) now allow efficient wind turbines to be located in lower-lying areas (Heritage Council, 2013). Wind turbines sited on cut-away bogs would have less prominence within the landscape than turbines in uplands areas. Wind turbines located within large industrial sites (active or disused) would also appear less incongruous, and their proximity to the grid would result in greater efficiency and reduced cost.

The total installed windfarm capacity in Northern Ireland in December 2013 was over 531MW, which equates to 345,410 homes being powered (NI RIG, 2014). This in turn is very close to half of all the households in Northern Ireland, as identified in the 2011 Census. With such a significant amount of wind generation already online, and more that has been approved, but is not yet visible on the landscape, it is appropriate, and we would argue necessary, to review Northern Ireland's renewable energy policy. The Inquiry into Wind Energy is therefore timely.

2. The adequacy of PPS18 and related guidance

While PPS18, and its supporting guidance, include many positive and reassuring statements, the policy is underpinned by a presumption in favour of development, evidenced in the extract below:

'The wider environmental, economic and social benefits of all proposals for renewable energy projects are material considerations that will be given significant weight in determining whether planning permission should be granted' (Policy RE1: Renewable Energy Development)

Planning consent rates for renewable energy development in Northern Ireland (at almost 90%) are significantly higher than other UK jurisdictions. Recent research by Cardiff University attributed this high rate of planning consent largely to PPS18 taking a more liberal criteria-based approach than what is used elsewhere in the UK, and went on to describe the Northern Ireland approach to planning as 'far more relaxed compared to other parts of the UK'.

A further weakness in PPS18 is that it does not preclude renewable energy developments within Northern Ireland's eight Areas of Outstanding Natural Beauty (AONBs), the Giant's Causeway World Heritage Site and the Marble Arch Caves Global Geopark. This weakness has been highlighted through the recent approval of two substantial windfarms with Binevenagh AONB (Dunmore and Dunbeg). The evidence from the Sperrins AONB is even more stark; 49% of Northern Ireland's industrial wind turbines are in west Tyrone, a number of these within the AONB and the others in its hinterland. Further developments are currently proposed for the area, including a 14-turbine windfarm at Lisnaharney near Omagh which affects two public rights of way and would ruin the character of the popular Robbers Table walk. There is no evidence in this area of either 'the consideration of cumulative impact' advocated in PPS18 (RE1), or the 'cautious approach' in relation to designated landscapes recommended in the Best Practice Guidance (1.3.23).

Given that Northern Ireland does not have National Parks we need to ensure stronger protection for our AONBs and other scenic landscapes. Due to the prominence of wind turbines within the landscape this should include a buffer zone around AONBs and other important landscapes.

With a new planning regime imminent, it is essential that a strong Northern Ireland-wide policy is in place to protect undeveloped and semi-natural landscapes. While these landscapes deserve to be protected for their own value, it is notable that Northern Ireland's landscape is a key attraction for visitors, and therefore is integral to our tourism industry. The quality of our landscape also plays a role in the health and well-being of Northern Ireland's citizens. It is Mountaineering Ireland's view that a renewal of Northern Ireland's Landscape Character Assessment is required, as well as the development of a Landscape Strategy for Northern Ireland. These would provide clear parameters for the preparation of development plans and council decision-making on planning applications for renewable energy developments.

3. Separation distances

Mountaineering Ireland is opposed to any increase in the set-back distances currently included in PPS18. With Northern Ireland's dispersed population, increasing the separation distance between turbines and occupied property would intensify the pressure for development in our limited remaining areas of undeveloped and semi-natural land. As stated in Section 1, Mountaineering Ireland believes that wind turbines are more appropriate within large industrial sites, than in natural landscapes. In addition to the existence of large structures, noise, shadow etc. are inherent to the industrial environment.

4. Community engagement

As the representative body for the largest recreation user group in Northern Ireland's upland areas, Mountaineering Ireland represents a strong community of interest in these areas. Community engagement is typically taken to refer to the local geographic community; we would assert that significant communities of interest should also be consulted.

The Wind Inquiry should give serious consideration to how transparency can be ensured in the relationship between developers and community groups. A public register of community benefits would be helpful. Mechanisms to facilitate community ownership of renewable energy developments should also be explored.

In the current economic situation, there is a tendency in Northern Ireland to accept development in the hope of providing employment, particularly in rural areas. Renewable energy developments, particularly windfarms, generate very little employment, and where there is employment, it may not be for local people. A recent study from Scotland concluded that for every job created in the UK in renewable energy, 3.7 jobs are lost (Marsh and Miers, 2011). While this may be just one report, it shows that the economics of the renewable energy industry are questionable, and that significant public investment is being made in private industry. This is beyond the scope of Mountaineering Ireland's interest, however we urge the Inquiry to examine the economics of the wind energy industry.

5. Closing remarks

Mountaineering Ireland welcomes the Inquiry into Wind Energy; sadly we have reached a point in Northern Ireland where it is now clearly evident that there is need for greater protection for our undeveloped and semi-natural landscapes, particularly in upland and coastal areas.

The small area of undeveloped upland landscape or wild land which remains in Northern Ireland is a priceless natural asset, the enjoyment of which for recreation and other sustainable uses, is vital to the physical, mental, recreational, emotional and spiritual well-being of our people as a whole. This natural capital should not be squandered by the imposition of windfarms (which could be sited elsewhere in more appropriate and less damaging locations) in those vulnerable and precious places. Strong policy is required quickly to achieve better balance between the business goals of a small number of private developers and the long-term public interest. Within this policy Mountaineering Ireland would like to see a greater focus on energy conservation, off-shore and other renewable technologies such as tidal, wave and solar.

Mountaineering Ireland only became aware of this consultation recently. We wish to register our interest in: renewable energy development in natural environments; outdoor recreation and the protection of Northern Ireland's natural and semi-natural landscapes. We ask to be included in any future consultations that may be relevant.

Yours sincerely,



Karl Boyle

Chief Executive Officer

References:

Cowell, R. et al (2013) Promoting Renewable Energy in the UK - What Difference has Devolution Made?, published by Cardiff University, see: <http://cplan.subsite.cf.ac.uk/cplan/sites/default/files/DREUD-FullReport.pdf>.

Heritage Council (2013), The Onshore Windfarm Sector in Ireland – Planning in Harmony With Heritage, published by the Heritage Council, Kilkenny, see: http://www.heritagecouncil.ie/fileadmin/user_upload/Planning/2013/Recommendations.pdf

Marsh, R. & Miers, T. (2011) Worth The Candle? The Economic Impact of Renewable Energy Policy in Scotland and the UK, published by Verso Economics, Kirkcaldy, Scotland, see: <http://www.acci.asn.au/Files/Worth-The-Candle--The-Economic-Impact-Of-Renewabl>

NI RIG (2012) The economic effects of increasing wind deployment in Northern Ireland, published by Northern Ireland Renewables Industry Group, see: http://www.ni-rig.org/wp-content/uploads/2012/07/Redpoint_NIRIG-NI-wind-report_final_20120329-2.pdf

NI RIG (2014) NI Wind Energy Sector Announces Record-breaking Year, published by Northern Ireland Renewables Industry Group, see: <http://www.ni-rig.org/wp-content/uploads/2012/08/Press-release-NIRIG-14-conference-FINAL-2.pdf>.

UK NEA (2011) The UK National Ecosystem Assessment: Chapter 5 – Mountains, Moorlands and Heaths, published by UNEP-WCMC, Cambridge, see: <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>

Sean and Gemma McGlinchey

Sean & Gemma McGlinchey

13th February 2014

To whom it may concern,

We wish that the Environment Committee acknowledge our views when taking submissions for their enquiry into wind energy planning policy in Northern Ireland.

We are writing this submission on behalf of ourselves and other victims resident in our area (Killeter/Aghayarn /Termonamongan ,Castlederg) in County Tyrone. Currently, there are 6 windfarms either operational or consented to within our area- consisting of a total of 55 Turbines, and a further 8 windfarms within planning stages consisting of a total of 59 Turbines. A further 4 turbines are within the planning process which are proposed extensions to either operational or consented windfarms. This is a total of 118 turbines within an approximate 4 to 5 mile radius.

We believe that Strategic planning in Belfast are blatantly riding rough shod over people and communities with no regard for the people who live there – the above statistics surely prove this to be the case.

We have been enormously let down by Strategic Planning in our area and believe that major changes to policy will have to take place urgently in order to properly address the blatant disregard for the protection of amenity and health of rural dwellers. In addition we believe we are victim to major planning failures in the decisions being made in our area which do not comply with the current planning legislation as it stands.

With reference to a number of windfarms in this area, we have commissioned an independent noise report which was carried out by world renowned acoustician Mr Dick Bowdler -who is an advisor to the UK government on wind farm noise and whose credentials cannot be questioned. Mr Bowdler's conclusions clearly stated Tievenameenta windfarm J/2011/0335/F which is situated just 390 metres from one residents home, could in no way stay within ETSU-R-97 limits operating on its own, never mind when considered cumulatively with the already operational windfarms in the area. He also stated that noise conditions being placed on some of the windfarms were in no way enforceable and therefore in no way protected anyone living in the area. Mr Bowdler stated in the summary of his report that "Residents appear therefore to be afforded no protection of their amenity from noise from these wind farms." His report also proved that the application in relation to noise did not comply with the May 2013 best practice guideline on noise.

This report was sent to Strategic Planning who sent it to our local Environmental Health Officer for consultation. Our Local Environmental Health Officer sought additional information from SSE - the developer. SSE declined to give our EHO the information. Our EHO then sent their views back to Strategic Planning asking that they formally request this information from the developer. Strategic Planning failed to do this and instead sent the application to our local council for approval. Strabane District council voted unanimously to refuse this application and publicly stated their disdain for the manner in which Strategic Planning showed such contempt for the people of their constituencies. It was made clear by Strategic Planning at this meeting that the responsibility for policing noise levels from the windfarms lay with the developers themselves, and again the council, like us, questioned the impartiality of these measures.

After an internal, and therefore we believe biased, 'management board review' Strategic Planning, rather than dealing with this most serious matter in a proper and professional manner by formally requesting the information from the developer , chose to ignore Council and Environmental Health and granted approval on 30/10/13.

From the outset we had serious problems with this application. As this was an amended application to an already questionably approved windfarm- which very few residents had been made aware of, reports which were put forward by the developer which were to be read in conjunction with the original Environmental Statement from 2004. The original ES was not available to view on the public portal. We therefore had to travel to Belfast to Strategic Planning HQ to view the original file. On two occasions we visited Strategic Planning to view the file the original ES was not included. The ES forms the main body of any windfarm application and therefore should have been within this file. Also on the two occasions we visited Strategic Planning we had to make appointments and our viewing time was restricted. We believe this is in contradiction to our entitlements to unimpeded access to information relating to the environment under the Aarhus Convention and EIA Directive 2003/35/EC. If the amended application was to be read in conjunction with the original application then the original ES should have formed part of the amended application.

We met with Environment Minister Mr Mark H Durkan in relation to the above matter and during the minuted meeting he stated that if best practice guidelines were available then they should certainly be adhered to.

We also ask you to address the issue of Planning application (J/2013/0112/F) for Crighshane windfarm – currently operational. This windfarm has been the subject of major noise disturbance to our community and although this matter has been with environmental health and the developer, no resolution has been forthcoming. Last spring/summer the above application was submitted under the guise of ‘planning regularisation’ – although upon reading the entirety of the application it is clear that this is essentially an application for retrospective planning .We question the entitlement of the planning service to now retrospectively grant retention permission for a development which was subject to an EIS and required appropriate assessment under the EIA directive 85/337 EEC as amended, and which has the potential to impact on an SAC, namely the River Derg. The decision of the European Court of Justice in the case against Ireland 50/09 also has a bearing on this entitlement to grant permission retrospectively for a development subject to the EIA directive. Coincidentally this was the windfarm visited by NIRIG and councillors last year.

In conclusion we remind the committee that the above are only some of the serious irregularities we, along with the specialists we have employed at huge costs to ourselves, have uncovered. It is in our opinion, as a result of disregard and negligence by the planning service and their partnering bodies, that so many people are being victimised in their own homes. We ask that the committee assist us in our plight and in our right to protection.

Should you require further information please contact us at the above address.

Yours Sincerely

Sean and Gemma McGlinchey

And on behalf of local residents.

National Trust



**National
Trust**

Committee for the Environment Inquiry into Wind Energy

Response from the National Trust

February 2014

1. Introduction

The National Trust welcomes the opportunity to contribute to the Committee for the Environment's inquiry into Wind Energy. We commend the Committee for this initiative.

As Northern Ireland's largest conservation charity, the National Trust works to look after and protect our precious heritage of buildings and landscapes for everyone's benefit. In doing so, we help care for and provide access to many of the places local people and international visitors value most, e.g. Northern Ireland's only World Heritage Site at the Giant's Causeway, our highest mountain Slieve Donard, the internationally important and ecologically rich Strangford Lough, and mansions and gardens including Mount Stewart, Castle Ward and Castle Coole.

We have responsibilities spread across landscape protection, nature conservation, providing access to the countryside and caring for our built heritage and historic environment. We also play key roles in sustainable tourism, providing local employment and supporting economic opportunity.

The National Trust also has a long term focus – a modern interpretation of our founding principles is to *'look after special places for ever for everyone'*. Therefore we are very conscious of the impact decisions made today will have on future generations.

Thus we have a keen interest in the wide range of issues which relate to energy consumption and provision now and in the future, not only wind energy. Our response to the current inquiry is offered in this broader context.

2. Summary of key points

- While we warmly welcome this inquiry, it has a narrow and specific focus on onshore wind energy and the adequacy of current planning guidance.
- The specific issues relating to onshore wind generation must be understood and planned for in the much broader context of how strategic decisions are made in Northern Ireland about how our finite (and limited) resource of land is used to meet the full range of society's needs.
- We believe Northern Ireland needs an over-arching land strategy, and we would urge the Committee to address this much broader issue through a future inquiry or study. The Committee's leadership in this area would be helpful to promote a wide public debate on the importance of land and landscape in Northern Ireland.
- There are many additional policy contexts which must be taken into consideration as part of the Committee's current inquiry. These include:
 - the current consultation on the Strategic Planning Policy Statement;
 - Local Government Reform and the devolution of a range of responsibilities (particularly planning) to new local authorities;
 - the draft Northern Ireland Landscape Charter currently out for consultation by Northern Ireland Environment Agency;
 - the review of Landscape Character Assessments;

- particular attention must be given to the issue of windfarm applications in designated landscapes including Areas of Outstanding Natural Beauty.

3. Detailed comments

Bearing in mind our view that the issue of onshore wind energy generation needs to be considered in a wider context, the National Trust offers the following comments:

Given our responsibility for looking after beautiful places, we believe any wind energy proposals should be located, designed and on a scale that avoids compromising our landscapes. We believe that there is a place for wind in a mix of renewable technologies which society must pursue to help us meet low carbon energy needs and thereby tackle climate change. However, there will always be a need for rigorous debate about the right locations and scale for any energy infrastructure. Overall, the National Trust's energy policy is to advocate a much greater emphasis on reducing overall energy demand, a significant increase in renewable energy generation for heat and power appropriate to the site.

It is essential that Northern Ireland has an appropriate policy and regulatory framework to support a broad range of renewable energy technologies.

3.1 Referring to the Inquiry's specific Terms of Reference:

To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis with due regard for emerging technologies and independent environmental impact assessment.

The planning system has an important role to play in ensuring that Northern Ireland has the infrastructure to meet its energy needs in the future, while at the same time protecting our landscapes and habitats from undue harm.

While it is important to review the adequacy of PPS 18, it will be even more important to ensure that sufficient and appropriate coverage of energy generation issues is provided in the Strategic Planning Policy Statement currently out for consultation. We would urge the Committee to ensure that its conclusions to this Inquiry are taken into consideration during scrutiny of the draft SPPS, so that future planning policy is clear, and can be applied consistently across Northern Ireland.

We believe that the current PPS18 is particularly permissive in its approach – perhaps an understandable approach when it was produced in 2009. The policy is open to a wide range of interpretation, given that it both has a presumption in favour of development provided there is not an unacceptable adverse impact on amenity, biodiversity, landscape character etc, and then goes on to outline how proposed projects 'likely to result in unavoidable damage' should be dealt with. The policy does not make it clear that where the impact cannot be adequately mitigated, it should be refused.

This has resulted in applications for wind farm developments – both large scale and single turbines – being submitted and frequently approved in some of Northern Ireland's most sensitive landscapes.

It is a particular concern that recently planning permission has been granted for wind farm developments in Binevenagh AONB. We urge the Committee to make clear that this should not set a precedent that would result in further planning permissions being granted in AONBs. We believe the principle which applies in other parts of the UK that there is a presumption against wind farm developments in AONBs should apply in Northern Ireland.

PPS18 states in Policy RE1 that applications for wind energy development must demonstrate that the cumulative impact of existing wind turbines, those which have permission, and those applied for are taken into consideration. However, evidence on the ground suggests that either this policy is not being adhered to, or there is no adequate mechanism with DoE Planning to monitor and assess the cumulative impact of wind energy developments, whether

large scale or individual. Issues of cumulative impact are especially relevant in coastal areas such as Strangford Lough and the North Coast where consideration of both landscapes and seascapes come into play.

A more strategic approach – directly linked to an overall strategy for land in Northern Ireland – should be adopted. This is essential to provide clarity for applicants, affected communities and decision makers.

With the devolution of planning to new local authorities in 2015, the need for a mechanism to ensure the cumulative impacts are adequately addressed will become even greater. Cross-departmental co-operation (DoE, NIEA, DETI, DRD) and engagement of local councils and local communities will be essential, operating within a clear framework beyond that which PPS18 can provide.

The rate of change of renewable technology has the potential to present significant economic opportunities for Northern Ireland, and these should be encouraged. At the same time, planning policies (whether PPS 18 or SPPS) need to be reviewed on a regular basis, to ensure that guidance is appropriate to the technology under consideration.

The Environmental Impact Assessment (EIA) requirements must be met and assessed to a rigorously high standard. Each EIA should also include the impact of wind generation on the need for expansion of the distribution network to ensure there is sufficient capacity in the grid.

Landscape and Visual Impact Assessment (LVIA) should form a key part of any EIA, and we would urge that a detailed LVIA should be required for schemes which do not automatically trigger an EIA.

We recommend that guidance should be provided to promote a standardised approach to the production and assessment of LVIA's. The best practice guidelines published in Scotland in 2012, could be considered as an approach. Photomontages alone should not be used to assess visual impact.

3.2 *To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development.*

In our view, the separation distance recommended in PPS18 of 500 metres from occupied property, should continue to apply to wind turbine developments. It is recognised that maintaining this distance, given the dispersed settlement patterns in Northern Ireland, means a relatively limited resource of land available for future wind energy development. Consequently, the Committee should take the opportunity to encourage innovative approaches to exploring and developing other approaches to **low carbon and renewable** energy sources.

3.3 *To review the extent of engagement by wind energy providers with local communities and ascertain how this engagement may best be promoted.*

We welcome the Committee's focus on engagement between energy providers and local communities as this is an area of increasing concern and is not addressed in PPS 18. Such engagement must be open, transparent and genuine, and where appropriate communities should receive support to fully engage with potential developers. The Committee may wish to consider models such as a community benefits register, introduced in Scotland in 2012, as well as a list of potential community benefits which would be appropriate or available, to increase consistency and transparency of approach.

4. **Conclusion**

Meeting Northern Ireland's energy needs now and in the future, and responding to targets to reduce our dependence on fossil fuels, presents a significant challenge for government and society. We welcome the Committee's initiative to review wind energy, and we urge that this is followed by a broader, strategic consideration of all our land uses in Northern Ireland.

We would welcome the opportunity to discuss our response in further detail with the Committee.

For further information, please contact:
Diane Ruddock, External Affairs Manager
The National Trust, Northern Ireland
Tel: 028 9751 2301
e-mail: diane.ruddock@nationaltrust.org.uk

28 February 2014

Nerys Coleman

From: Nerys Coleman
Sent: 28 February 2014 16:06
To: +Comm Environment Public Email
Subject: Environment Committee's Wind Energy Call for Evidence

Committee for the Environment
Parliament Buildings
Stormont
Belfast BT4 3XX

28 February 2014

By email to: committee.environment@niassembly.gov.uk

Dear Anna Lo,

I welcome the opportunity to respond to the Environment Committee's Wind Energy Call for Evidence. I believe that it is imperative that we support the development of Northern Ireland's renewable energy resources. There are many benefits of doing so. These include lower carbon emissions, a more diverse energy supply, stabilising the volatile fossil fuel prices upon which so much of Northern Ireland relies and demonstrating our genuine commitment to addressing climate change.

A range of policies are already in place to mitigate any of the potential impacts of wind energy development. For example, PPS18, which sets out the planning framework for renewables, is an appropriate policy for the assessment of wind farm developments in Northern Ireland. The ETSU-R-97 limits are considered to be acceptable in assessing noise levels and these are the limits proposed across the UK by experts in their field.

Separation distances between wind farm developments and houses are not required by statute anywhere in the UK or Ireland and I do not believe that Northern Ireland should impose such limits. However, 500m is a common set-back distance and added to this is the ability of planners to set noise level limits at the houses likely to be significantly affected, and require these to be met by planning conditions.

I would also like to highlight that I support renewable energy and believe that Northern Ireland has among the best wind energy resources in the world. I think that it is important to support the development of these resources in a responsible manner. Policy-making in the complex arena of energy requires strong and robust evidence and a clear, ambitious vision for a low-carbon future.

Yours sincerely,

Nerys Coleman

Newtownabbey Borough Council

From: Sandra Graham [mailto:sgraham@newtownabbey.gov.uk]
Sent: 30 January 2014 15:45
To: +Comm Environment Public Email
Subject: Inquiry Into Wind Energy

Good afternoon Sheila

Please find below Newtownabbey Borough Council's response to the Inquiry Into Wind Energy which was reported to the Consultation Sub Committee on 27 January 2014.

2 OA/CN/191 Northern Ireland Assembly Inquiry into Wind Energy

Members were reminded that correspondence had been received from the Northern Ireland Assembly, Committee for the Environment, advising of its intention to carry out an inquiry into Wind Energy.

The matter was considered at the Planning and Consultation Committee on 13 January 2014 and referred to the Consultation Sub Committee to formulate the Council's response.

Following discussion it was agreed that **the following comments be submitted as the Council's response:**

- (a) the Council welcomed an inquiry into wind energy and clarification as to the sustainability of this type of electricity production**
- (b) the Council expressed concern at the lack of consultation with local communities, particularly in relation to the smaller schemes, unlike large wind energy schemes which generally involved wider consultation as part of the planning process**
- (c) the Council recognised the continuing improvement to the technology of wind turbines and supported any employment opportunities this would create for local businesses.**

Regards.

Sandra Graham

Administrative Assistant
Council Business Services
Newtownabbey Borough Council.

Northern Ireland Electricity

Northern Ireland Electricity Limited

Response to DOE Inquiry into Wind Energy

7 March 2014

1. Introduction

1.1 This note comprises the response of Northern Ireland Electricity Limited (NIE) to the DOE inquiry into wind energy. The terms of reference (ToR) for this inquiry are as follows:

- 1. To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment;**
- 2. To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development; and**
- 3. To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.**

2. NIE'S Response to TOR Point 1

2.1 It is NIE's role to develop an electrical network that will meet all future requirements, both load and generation related, subject to certain criteria around efficient investment being met.

2.2 NIE has a pivotal role in the delivery of the electricity infrastructure to enable the connection of renewable sources of electricity generation required to meet energy policy objectives. In developing its plans for new infrastructure, NIE has obligations to bring forward proposals that provide an effective overall balance between measures of technical performance, environmental compatibility, and economic cost.

2.3 The effective demonstration of this balance is a significant feature within the planning approval process for infrastructure development, but is an area very frequently exposed to legal challenge by those parties opposed to new infrastructure developments.

2.4 Uncertainties and delays arising from these challenges will continue to be a significant and increasing source of obstruction against the delivery of energy policy objectives, and NIE believes that there is now an increasingly urgent need for closer co-ordination of energy policy and planning policy objectives such that critical infrastructure (and particularly significant linear developments including overhead lines) can be developed and delivered in a practical, timely and cost effective manner.

2.5 In NIE's view it is vital that the Utility Regulator, Industry Stakeholders, NIE and departments including DETI, DOE and DARD work in an organised way together if the 2020 targets are to be met.

2.6 Regarding the key driver that is renewable generation, the type of generation technology deployed and the geographical location of that generation is a matter for developers and the planning process alongside the incentives implemented by the government.

2.7 For both regulators and licensees this means a level of uncertainty in planning, delivering and funding network development.

-
- 2.8 The government target of 40% of consumption from renewable sources by 2020 means that approximately some 1600MW of renewable generation must be connected to the grid at that time, however the actual quantum will be dependent on the mix of renewable technologies used and their respective load factors. There is currently around 600MW connected aligning to around 15% (vs the 40% target).
- 2.9 Recent cost estimates suggest that c£60m must be spent to enable 27% (vs the 40% target) to be achieved (expected in 2016/17) with a further £420m of transmission investment required to achieve the 40% level.
- 2.10 NIE's expectation is that the greater proportion of 2020 targets will be met from Large Scale Generation connections i.e. Wind Farms which connect to the transmission network. The transmission network requires reinforcement to enable the targets to be met and the Medium Term Plan and further work under the joint NIE/EirGrid Renewable Integration Development Project (RIDP) are being considered with specific investments being progressed and approved on a case by case basis with the Utility Regulator.
- 2.11 Whilst this investment approval process is underway it must accelerate if 2020 targets are to be met. The approval processes include environmental and planning approvals for the wind farms / turbines along with environmental, planning and also regulatory approvals for the grid connections. The combination of these requirements leads to a very lengthy time line to connection.
- 2.12 Faced with these high levels of uncertainty, NIE recognises the need to plan and develop its electricity network in a balanced fashion that recognises the need to support the widest practical range of new renewable generation developments, whilst also limiting the possibility of building excessive infrastructure that would be under-utilised in the future.
- 2.13 This is not an easy balance to strike, given the levels of uncertainty noted above and the fact that major transmission infrastructure can take many years to deliver. However, it is fundamentally apparent that infrastructure development is required. There is no "do nothing" option.

3. NIE'S Response to TOR Point 2

- 3.1 Guidelines already in place in relation to clearances to 'live NIE equipment'. For specific information please refer to:

<http://www.nie.co.uk/Connections/Generation-connections/useful-information/Safety-clearances>

4. NIE'S Response to TOR Point 3

- 4.1 NIE has no comment on this point.

Northern Ireland Environment Link

Environment Committee Wind Energy Inquiry

Comments by
Northern Ireland Environment Link

28th February 2014

Northern Ireland Environment Link (NIEL) is the networking and forum body for non-statutory organisations concerned with the environment of Northern Ireland. Its 65 Full Members represent over 90,000 individuals, 262 subsidiary groups, have an annual turnover of £70 million and manage over 314,000 acres of land. Members are involved in environmental issues of all types and at all levels from the local community to the global environment. NIEL brings together a wide range of knowledge, experience and expertise which can be used to help develop policy, practice and implementation across a wide range of environmental fields.

These comments are made on behalf of Members, but some members may be providing independent comments as well. If you would like to discuss these comments further we would be delighted to do so.

Dr Jonathan Bell
Northern Ireland Environment Link
89 Loopland Drive
Belfast, BT6 9DW
P: 028 9045 5770
E: stephen@nienvironmentlink.org
W: www.nienvironmentlink.org

Northern Ireland Environment Link is a Company limited by guarantee No N1034988 and a Charity registered with Inland Revenue No XR19598

Northern Ireland Environment Link (NIEL) welcomes the opportunity to submit comments to this inquiry / the Environment Committee. NIEL is aware that this inquiry is taking place at the same time as the DoE is consulting on the Draft Single Planning Policy Statement for Northern Ireland (SPPS). Therefore, we would encourage the findings of this inquiry to inform the necessary redrafting of appropriate sections of the SPPS.

Assessing the adequacy of PPS18 and the need for strategic guidance

NIEL endorses a policy and regulatory framework which supports the appropriate development of renewable energy infrastructure. Wind energy forms an important component of the mix of technologies required to boost our renewable energy capacity to fulfil the requirements of the Renewable Energy Directive and the targets included in the NI Strategic Energy Framework (SEF). The planning system plays a crucial role in facilitating and regulating the provision of renewable energy infrastructure. In the context of this inquiry there are important policy issues that need to be considered in order to create a more robust and strategic approach to wind energy provisioning in Northern Ireland.

Land is a finite resource that is under increasing strain from a myriad of competing uses and other pressures. For example, land as a source of energy production (the topic of this inquiry) co-exists amongst a plethora of other competing land uses, including agricultural production, recreational activity, conservation, employment, housing and carbon sequestration. Since the beginning of this century there has been rapid growth in the use of land in Northern Ireland for renewable energy generation. Between 2003 and 2011 planning consent rates

for renewable energy in Northern Ireland (90%) were higher than any other UK jurisdiction¹. Approximately 15% of Northern Ireland's annual electricity is now supplied from indigenous renewable sources which represents significant progress, in terms of contributing to renewable energy targets². The dramatic expansion of renewable energy capacity in Northern Ireland has resulted primarily, but not exclusively, from onshore wind developments. While the highly permissive PPS18 has been complicit in the growth of wind energy generating capacity in Northern Ireland, it has not necessarily had a 'strategic eye' in encouraging appropriate patterns of development or given enough consideration to the associated impacts.

Figure 1 (see below) highlights the scattering of planning permissions for single turbines across Northern Ireland. Two substantial wind farms have recently received approval at Dunmore and Dunbeg within Binevenagh AONB. These decisions should not be allowed to set a new precedent for wind energy development; as in other parts of the UK there should be a presumption against major wind energy developments and medium or large sized single turbines within AONBs. This recent breaching of AONBs combined with the dispersed nature of single turbine developments across Northern Ireland demonstrates the need for urgent action. The following extract from PPS18 illustrates its highly permissive nature:

'The wider environmental, economic and social benefits of all proposals for renewable energy projects are material considerations that will be given significant weight in determining whether planning permission should be granted'

Essentially, a wider environmental benefit of wind energy could be to contribute to mitigating against climate change or an economic benefit could be the creation of jobs. For such broad criteria to carry significant weight potentially gives the green light to almost any wind turbine proposal. The policy should give greater weight to other considerations, such as the negative visual, landscape, amenity, ecological and community impacts. Furthermore, this current presumption in favour of development is inappropriate given the lack of strategic spatial guidance around wind energy development.

Wind turbines can be visually intrusive and can impact significantly on landscape character. In contrast to the current dispersed pattern of single turbines, clustering of turbines can help minimise the level of visual intrusion per MW of electricity generated. Supplementary guidance should include advice on turbine cluster size and height and thresholds above which development may become unacceptable in landscape terms. Up-to-date guidance on the existing scale and importance of cumulative landscape and visual impacts is required within the supplementary guidance.

Robust and independent environmental impact assessments must accompany applications for wind turbines and regulatory bodies must possess the necessary expertise to understand and apply the appropriate environmental safeguards. Indeed, the urgency to achieve renewable energy targets should not compromise the pursuit of biodiversity targets. It is therefore essential that wind farms are sited, designed and managed in a way that minimises the adverse impact on important bird populations and other habitats and species (see BirdLife International Report³). This may involve the implementation of innovative and cost effective technologies to mitigate the risk to wildlife. The siting of wind turbines in relation to peatland is another important consideration, especially given the extensive tracts of blanket bog in County Tyrone for example, where considerable wind developments are proposed. Construction of wind turbines can result in the loss of large amounts of carbon (in the form of CO₂), through the removal or drainage of peat around foundations. According to recent

1 Delivering Renewable Energy Under Devolution (2013): <http://www.cardiff.ac.uk/cplan/research/delivering-renewable-energy>

2 Northern Ireland Environment Link (2013) Assessment of Progress on Targets <http://www.nienvironmentlink.org/cmsfiles/files/Vision-2020-Assessment-of-Progress.pdf>

3 Meeting Europe's Renewable Energy Targets in Harmony with Nature: http://www.rspb.org.uk/Images/Renewable_energy_report_tcm9-297887.pdf

research⁴, development on areas of undegraded peatland should be avoided or strictly managed to maximise carbon retention and ensure that significant net carbon savings are realised.

The identification of Strategic Search Areas (as adopted in Wales⁵) should be explored as an option for addressing the highly dispersed pattern of wind turbine developments in Northern Ireland. An updated Landscape Character Assessment combined with landscape capacity and environmental sensitivity studies would enable the identification of spatial zones which encompass land suitable for major wind power developments. In the context of local government reform and the imminent return of planning powers to local Councils there is an urgent need to develop strategic spatial guidance to provide increased clarity for decision makers and certainty over the provision of supporting infrastructure (such as grid connections). It would also help reduce contestation and inform more consistent and strategic planning decisions across new local Council areas. One option may be to consider the use of publicly owned land as strategic sites for wind farm developments, where the provision of associated infrastructure could be concentrated. Focussing wind energy in a number of well-equipped strategic locations would have the added advantage of providing greater certainty for the renewables industry.

Separation Distances

The specification of minimum set-back or separation distances is the most common tool used to mitigate the impacts of wind turbines on individual properties. A 500m separation distance (as is currently recommended in Northern Ireland) should be upheld and enforced to ensure that communities and individual householders are protected from the potential adverse effects of wind turbines. It is acknowledged that even with a 500m set back distance, if factors such as site and wind resource availability, the provision of buffers for AONB's, protected sites and other areas of high landscape quality are taken into account, the amount of land suitable for wind development is greatly reduced. Given the added complexity around the appropriate siting of wind turbines in Northern Ireland (due to the limited land mass and highly dispersed rural settlement pattern), it is questionable whether future growth of onshore wind energy can be sustained. In the short-term, onshore wind energy should still be developed on a strategic basis, however it is imperative that alternative forms of renewable energy are explored and mobilised in order to sustain growth of the renewable energy sector in the medium to long-term. Indeed, the appropriateness of further growth in onshore wind in Northern Ireland needs to be assessed as part of a wider evaluation of the potential of alternative forms of renewable technology.

Community Engagement

Onshore wind energy is often a highly contested form of development that can generate significant local opposition. Openness and transparency around wind energy developments, genuine community benefit and engagement from an early stage in the planning process is fundamental to garnering acceptance and building community trust. A community benefits section is absent from PPS18, but a section has been included in the SPPS. While understanding the reluctance to include community benefit as a material consideration, a stronger requirement should be placed on developers to improve community benefit packages. The use of publicly owned land, for example, as sites for wind energy development could be an effective mechanism for channelling greater community benefit. It would allow government to place the onus on developers to offer community benefit as part of a tendering process. Mechanisms also need to be developed to enhance the capacity of communities to derive benefits from wind energy developments. A community benefits register, as introduced in Scotland (2012) and soon to be introduced in England (spring

4 Smith, J., Nayak, D.R., Smith, P (2013) Wind energy on undegraded peatlands are unlikely to reduce future carbon emissions. *Energy Policy*, 66 (2014) p585-591

5 Welsh Assembly Government Technical Advice Note 8 - Planning for Renewable Energy <http://wales.gov.uk/docs/desh/publications/050701technical-advice-note-8-en.pdf>

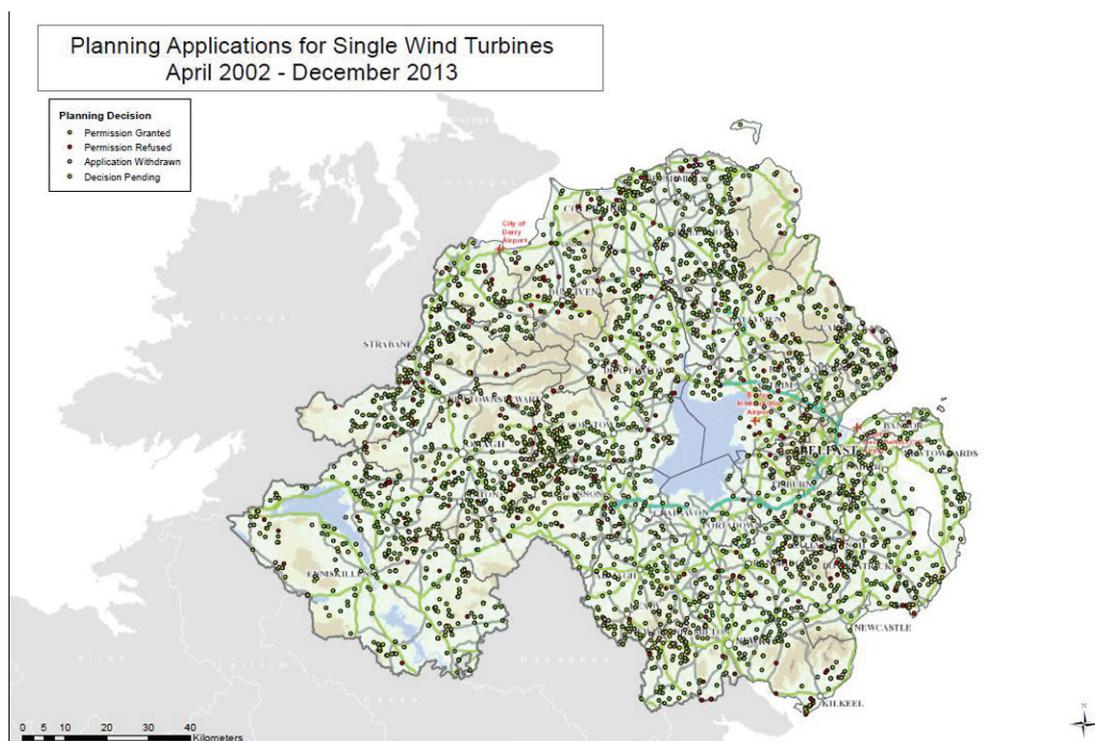
2014), combined with a menu of community benefits would increase transparency and raise awareness amongst communities of the types of benefits they should be receiving, while the use of intermediaries would ensure fairness in the negotiating process. Community ownership of renewable schemes has been linked to greater acceptance of developments. Compared to other jurisdictions community ownership in Northern Ireland is low. In Denmark for example, new legislation requires that communities are offered 20% ownership of new wind energy developments. Case studies of community ownership schemes from across Europe would be a useful starting point for developing a robust community ownership model for Northern Ireland.

Final Comments

A significant challenge lies ahead to maximise renewable energy capacity in Northern Ireland in a way that minimises the intrusiveness of renewable energy infrastructure, while ensuring that communities are not disadvantaged. While the dispersed pattern of wind turbines across Northern Ireland needs to be halted, it also exemplifies the lack of strategic guidance underpinning land use in Northern Ireland. It supports NIEL's call for cross-Departmental buy-in to an overarching land strategy. Such a strategy is required to optimise the use of land in Northern Ireland and facilitate a more joined-up approach to how our precious land resource functions, appears and is used.

Figures

Figure 1 Planning Applications for Single Turbines between 2002 and 2013



Source: DoE Planning NI Statistics

ORRA Action Group

From: B LAVERTY
Sent: 24 February 2014 15:14
To: Mawhinney, Sheila
Subject: Fw: Wind Energy Inquiry Nr Ireland Assembly

F.A.O. Sheila Mawhinney

Further to our conversation of to-day please find attached my response for submission to your inquiry: Deadline 28 February 2014

Regards
Barbara Laverty

Northern Ireland Assembly
Environment Committee
Review into Wind Energy

This is in reply to your request for information on our experience with living with Wind Farms and have tried to answer under the Terms of Reference for the Assembly Committee for the Environment to debate.

Preamble

We formed The ORRA Action Group as concerned residents who live in Loughguile, Co Antrim to raise awareness and voice our concerns about the prospect of yet another Wind Farm Altaveedan (Planning ref: D/2010/0356/F) of 9 turbines of 102mts high and 800mts from our homes, the adverse issues that it would cause to this neighbourhood. We have campaigned for the past three years, but despite having over 148 individual letters of objection, a petition of 227 signatures against this proposal but only 4 letters in favour, it was passed by the planners for approval on 28th October 2013. We have now three wind farms, a total of 31 turbines within 5km and the ever increasing single ones owned by individual farmers/businesses. The pictures attached are of the Slievenahanaghan (the first wind turbines ever in Northern Ireland) which has stood broken and idle for the past seven years and this is the legacy we have been left with which the planners seem unable to decommission.

Adequacy of PPS18

PPS18 and related supplementary guidance are to provide a consistent and strategic basis on which to assess and protect unacceptable impact by way of a ES (Environmental Impact Assessment) Regulations (Nr Ireland) 1999 as amended 2008 on:-

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

The mechanism whereby the requirement of an ES (Environmental Statement) gave us more cause for concern which was provided by the developers and is required by law to be impartial, with its objective "being to inform the decision-maker rather than to promote the project". Yet the ES for this project was found to be far from impartial and on some crucially important yet basic points, such as the distances between this proposed development and other wind farms, the ES was factually incorrect, a point which we raise in our 59 page report submitted to the planning department and a point that had to be

acknowledged by the developer some months later. The planning service are not identifying these shortcomings or any of the others that were highlighted. The presence of Curlew was initially dismissed as "Not having any significant adverse effects on birds", but after making further consultation with RSPB and the NIEA the developer had to produce FEI (Further Environmental Information) to accommodate the displaced curlew. There seems to be a certain arrogance associated with the development process that amplifies our concern that the voice of the local residents who live in the area and know what goes on are not considered relevant. I rang the Head of Planning in Millennium House about my concerns that gravel pits were being dug, trees were being cut down and heavy plant was trundling all over the mountain during the Bird Breeding Season, to be told "A man can do what he likes on his own land" when I reminded him and asked the DARD re Single Farm Payments and requirements this was then retracted and the practise was stopped.

We believe that the ES submitted which is to provide lay people with information on such a complex development that the lack of impartiality shown was totally unacceptable. Any ES should not wilfully and knowingly suppress contra-indicative data and should not claim data to be authentic and rigorous when, in reality it is cherry picked from partisan environmental material. We highlighted cases where planning authorities and by High Court on landscape impacts on Hemsby, near Gt Yarmouth England and Fife in Scotland, yet RES the developer referred to Scottish Regulations. It seems that Scottish Planning Authorities are minded to take into account the very concerns that we had raised in relation to residential amenity and effect on landscape. This ES should never have been accepted at face value and it should not have been up to the local community to investigate and highlight to the Consultants the errors and bias contained within it.

Failure to provide alternative sites is a mandatory requirement - see ES 1.2 of our report - why this site should be chosen in a highly populated area of over 100 individual properties when mandatory regulations state that the developer must assess different landscapes with different potential capacities to absorb impacts. This flies in the face of the Companion Guide to PPS22 and SPG (Supplementary Planning Guidance) state the key principle of Good Siting, Layout and Design, should "Identify and avoid impacts on area which feature vulnerable bird habitats or contains known archaeological features. We believe that this ES fell short of this requirement in various areas.

There is no third part appeal process within PPS18 which allows the community to appeal. The planning process is weighted unfavourably against making any sort of representation to the Planning Department or Local Councils. We have had to fight to have our concerns heard when the developer was asked to make a presentation to local council chambers and we were asked as an after thought when they were reminded that we the residents had the opposite side of the argument. Once passed the only option is a Judicial Review and taken within three months of the application being approved. Our own ES would have to be done and together with employing Planning Consultants, you then have to find a firm of solicitors and a Barrister with non conflicting issues which has to be done in three months. We pursued this line but having got to the Barrister stage the costs of £35-40K were prohibitive - so it is unlikely that cases are ever being challenged.

Perceived impact of Wind Turbine Noise & Separation Distances

Noise - I have attached our report that was forwarded to the planners and under section 1.1.12 our consultant has gone in to great detail on the serious concerns we have with the way Noise has been treated and the impartiality of the ES. The equipment used to monitor the background

noise, the adequacy of ETSU in assessing as it has been 16 years since the preliminary guidelines were prepared and with little operating experience of larger wind turbines. It is widely believed that a minimum distance of 2KM should be recommended and with the developer paying residents within 2.7km a clear indication that they too believe that residents living within this boundary will have substantial negative impact on their properties by the presence of this wind farm.

Land character/sensitivity - The NIEA, Landscape Architects Branch have concerns regarding the impact this proposal will have on the wider landscape and visual impact, including cumulative impact, but the planners decided that "the wider environmental, social and economic benefits over ride" NIEA concerns or ours. The fact that this wind farm will dominate the views from the main route into the AONB and the views from the Moyle way will either be looking over or through is of no consequence.

Valuation of property within distance of wind Farms - Governments should as part of the planning process guarantee blight free values for all the properties that are blighted. Reduce their rates by 20% which would reflect the devaluation of property. This has been recently set as a precedent in Barnstable Devon where the Valuation Office Agency had to re-band and lower the council tax categories, confirming homeowners suspicions of the impact wind farms have on house prices and a newspaper article as recent as 26th January 2014 Mail on Sunday says that the London School of Economics (LES) have proof that wind Farms take thousands off your home and will publish its findings this month.

We already have "The Planning Blight (Compensation) (Northern Ireland) Order 1981" and the "The Planning Act (Northern Ireland) 2011" where major projects undertaken for the national benefit should not impose losses on individuals reducing the value of their property. The blighting of property values in the locality as a consequence of wind Farms should be compensated in the same way as road, rail or any other government led projects.

Property here close to the entrance to this newly passed development and surrounding roads will have to put up with 4 years of construction traffic, noise and health & safety issues on narrow roads not suitable for such heavy industrial traffic during winter months and one way traffic management plans that will put an extra 3 mile on every journey from our property and a busy school bus route. What if the need for an ambulance or a fire engine. There is a serious Health & Safety concern? Do we have a case under law of nuisance?

Engagement of Wind Energy Providers with Local Communities

LEDS (Local Electricity Discount Scheme) were launched here in 30th May 2013 where the developer plied the local community with the promise of £200 yearly for 25 years or the operational life time of the wind farm in an effort to influence the application. This was endorsed by the then Environment Minister Mr Attwood outside Stormont although the planners say that LEDS form **NO** part of planning. This was led by the Local Community Centre manager who was already in receipt of part of a £36,000 payment from the same developer and would gain further in financial payments. This offer should not have been introduced prior to any decision being made by the planning department and only led to more questions being asked about such payments which we sent to Mr Attwood and to date we have never had a reply to any of the questions. So much for community engagement. At the final hearing at Local Council, a letter was read out from our local MLA Ian Paisley Jnr. stating that "he wished no further delay on this proposal". It would appear that financial and political persuasion have more to do with this than the planning.

So to conclude we the Community feel that PPS18 has failed in it's requirement to protect us from unacceptable impact on issues (a) to (e) listed or engagement with us in addressing our concerns but blatantly dismissing or ignoring them and this must be addressed.

Barbara Lavery
ORRA Action Group

Enc/attachments:-

Photos of Damaged Wind Turbine
Submission of 59 page report
Letter to Mt Attwood re LEDS





Orra Action Group,
Crockan Cottage,
49 Shelton Road,
Armoy,
Co. Antrim,
BT53 8YH

The Planning Service,
Millennium House,
17-25 Gt. Victoria St.,
Belfast,
BT2 7BN

Date: 19th August 2012

FAO: MS Jane Curley

Subject: Proposed Altaveedan Wind Farm, Your Ref: D/2010/0356/F

Dear Ms Curley,

As you will be aware, we have previously written to your department asking for an extension of time to enable us to fully prepare our response to the Environmental Statement submitted by RES. We do not believe we were given sufficient time, but in the limited time available to us, we have consulted and prepared a response as attached.

In the following pages we identify errors and shortfalls in the Environmental Statement prepared by RES in relation to the above development. We believe that some, if not the majority, of these should have been identified by the planning service in their initial review. We do not feel it should be the sole responsibility of local residents to ensure that an ES on such a project is impartial and/or accurate. Also, we think it grossly unfair that members of the local community have to endure the stress and expense of preparing these documents, when the planning policy should be designed such that the ES presents a level playing field from the outset.

Previous letters from Orra Action Group and other local residents have gone unanswered, the points made being ignored. We believe there are serious questions to be answered in relation to this planning application, and do not expect that the points raised in the following pages can be so easily dismissed. For example, given that the cumulative effect of wind farms in a given area is of utmost importance in the assessment of suitability of a Site (according to guidelines issued by the Planning Service) it is quite staggering that RES have underestimated the distance between the proposed wind farm and their other proposed wind farm (Corkey Extension) by almost 50%. Even the distance to the Corkey Wind Farm is understated by 20%. We would like to understand what checks have been carried out by the planning service on other data submitted by RES in their ES; In addition we

would expect you to ask RES for an explanation of how such a fundamentally important data point can be so inaccurate.

We also believe the lack of impartiality shown in the ES is totally unacceptable. We in the Orra Action Group fully appreciate that the development of wind energy is a complex and involved subject, and that different viewpoints exist. However, it is a requirement of the ES that it be impartial, so that those seeking to be informed by it can come to the right conclusions. The ES should not willfully and knowingly suppress contra-indicative data and should not claim data to be authentic and rigorous when, in reality, it is cherry picked from partisan environmentalist material. In the following pages you will see that there exist some vastly opposing viewpoints, and these are not held by cranks or anarchists but by experts in their field, with many years of experience in the relevant industry (for example, see the views of experts from E.on and Scottish Power in 1.1.15.2).

While we are deeply disappointed that the subject application has managed to get even to this stage of the planning process, we are encouraged by decisions being made in recent months throughout the UK, sometimes by planning authorities and sometimes by the High Court. For example, the proposed Newburgh Wind Farm in Fife, Scotland, where the ES submitted to the Planning Service was similar to the ES submitted by RES for Altaveedan, claiming the landscape impacts would be of low to moderate significance and again as in the case of the RES ES for Altaveedan, using the wider study area to minimise the landscape impact. Fife Council did not agree, and commented in their judgement as follows (bold highlight by us):

***“2.3.15 The low-medium rating conclusion given by the ES to the landscape sensitivity and magnitude of effect is considered to undervalue the nature of this landscape and its value to a significant number of receptors in Newburgh and those passing through the local landscape on the public roads, by train and on foot. It is not accepted that the submitted conclusion is reasonable in terms of the assessment that the character of the landscape itself would have the capacity to absorb the proposed development without significant long term adverse effects on the existing, intrinsic landscape character, composition and quality of the area.*”**

***2.3.16 With regards to the assessment of significance of views, it is considered that some of the impacts may be greater than the ES has presented. The sensitivity of the visual impact from local viewpoints, routes and for a considerable number of local residents would be high, falling to medium for more distant viewpoints, and low in more distant general views where topography and vegetation would limit the impact. The visual impact of the proposal is of significant local concern even although it is not considered significant in a regional or national context.*”**

***2.3.17 With regards to landscape and visual impacts, whilst the proposal would be wholly and partially screened on an intermittent basis by topographical features, vegetation and built forms, both in a local context as well as from more distant locations, the proposal would also be highly visible on a frequent intermittent basis when viewed from the immediate vicinity as well as from unobstructed/unscreened locations in the surrounding area. The proposal, in terms of its location, size, scale, number of turbines and its elevated upland position would significantly adversely affect the locally sensitive landscape, AGLV/SLA and the visual amenity of the area, would result in them being visually prominent from the surrounding area, would create an overbearing effect on the*”**

virtually undeveloped surrounding rural landscape, and would detrimentally affect the visual amenity of the occupiers of properties within the immediate locality

2.3.18 Further to the above, the proposal would also be visually conspicuous on, and visible above the skyline and adjacent woodland areas, and would have moving parts, which would intensify its influence. Overall, the proposal would not protect or enhance nor be sympathetic to the landscape quality of the area as is required by the policies and guidance outlined above and is therefore not considered acceptable for the above reasons."

We reprint the above text because the concerns raised in that particular case by Fife council are precisely the concerns we have raised with respect to the proposed Altaveedan project. The Fife project also highlights a serious concern that developers are not only misleading communities, but also local authority planners by submitting inaccurate ES or EIAs. Perhaps they know that if they submitted an honest and impartial review of the impacts it would affect the chances of gaining planning consent.

The above example is by no means unique and there are a growing number of wind farm applications being refused for similar reasons. e.g. Spittal Wind Farm near Greenock: (again bold highlights by us)

"Scottish Ministers have considered the residential receptor assessment, included in the application, which identified 89 existing or nearly completed properties within 2 kilometres of the nearest turbine, 16 of these within 1 kilometre and the remaining 72 properties lie between 1 and 2 kilometres. The Reporter examines these effects in paragraphs 9.58 to 9.68 of the report and found that overall at least 5 non-stakeholder properties would become unpleasant places to live in and that a number of others would suffer from adverse visual impacts. This view is also reflected in the public response to this application where there were 5 representations objecting to the development for the particular reason that it would devalue their property and only 3 who supported the application in that it would not devalue their property.

Scottish Ministers recognise that residential amenity is a material consideration in determining large scale wind farm applications and agree with the Reporter's finding that there would likely be an adverse impact on a number of properties within close proximity of the site

The effects of the proposal on the local landscape was also assessed by SNH and examined by the Reporter during the Inquiry who shared the concerns expressed by SNH concluding that the proposed turbines would be a dominant feature in relation to the surrounding land resulting from the height, number and positioning of turbines which would give a congested appearance by itself and would also relate unfavourably to existing wind farms"

It's ironic that the ES submitted by RES makes so many references to Scottish Regulations. It seems that Scottish Planning Authorities are minded to take into account the very concerns that we have been raising in relation to residential amenity and effect on landscape.

A recent High Court judgement has also highlighted the need for a balance to be struck. In rejecting an appeal by developers against refusal of Hemsby Wind Farm planning approval, Mrs. Justice Lang

ruled out plans to build 105m (344ft) turbines at Hemsby, near Great Yarmouth, finding that government renewable energy targets do not outweigh the value of the beauty of the countryside. The proposal from SLP had already been rejected by the local planning authority and at appeal when a planning inspector found that, *'The development would result in material harm to the character and appearance of the area because of its scale and location and the cumulative impacts of other similar developments.'*

In what is being seen as a landmark ruling, the judge agreed with the findings of the Inspector, saying that lower carbon emissions did not have 'primacy.'

We have pointed out in the following pages (see Section 1.2 below) that in the Environmental Statement, RES have tried to use Government Energy targets not only to try to justify their proposal but even to assert that there is no need for any alternative sites to be studied. We believe this is completely unacceptable and is a breach of planning policy relating to wind farm development.

We hope that the proposal to develop a Wind Farm at Altaveedan does not have to progress to the High Court to be ultimately decided. We honestly believe that the development at this site is not justified, that the ES submitted by the developer is one-sided and inaccurate, and we hope that the Planning Service will review our findings and protect our landscape character and our cherished way of life, as other planning departments and courts have done in recent months in relation to other developments. RES are wrong to try to develop a wind farm in such a location and in such close proximity to housing, and should not have used an inadequate and misleading ES in their attempts to get the project approved.

Sincerely,

Barbara Laverty

On behalf of Orra Action Group

Altaveedan Wind Farm

Response of Orra Action Group to Environmental Statement Consultation

August 19th 2012

1.0 Observations in relation to the Environmental Statement:

In relation to the planning application that has been made to the Northern Ireland Department of the Environment (DOE) Planning Service for permission to construct, operate and decommission a wind farm known as Altaveedan Wind Farm, we, Orra Action Group, take issue with the following sections of the Environmental Statement (ES):

Section 1.4.2 of the ES states that: "The scale of the Altaveedan development means that there is the potential for significant environmental effects to arise. Consequently it was deemed appropriate to undertake an EIA". Section 1.4.3 goes on to say that the EIA should include the following characteristics

- *it is impartial, its objective being to inform the decision-maker rather than to promote the project;*
 - *it is consultative, with provision being made for obtaining information and feedback from statutory agencies and key stakeholders; and*
 - *it is interactive, allowing opportunities for environmental concerns to be addressed during the planning and design of a project.*
- We do not believe the ES is impartial, and believe the ES has been used to promote the project. Concerns related to this impartiality are listed in 1.1 below.
 - We do not believe the ES is complete, in that some elements of the ES do not meet the mandatory requirements. Concerns related to these shortfalls are listed in 1.2 below.
 - We do not believe the ES has had provision for obtaining feedback from 'key stakeholders'. Concerns related to this lack of provision are listed in 1.3 below.
 - We do not believe adequate opportunities were provided for environmental concerns to be addressed during the planning and design of the project. Concerns related to this lack of opportunity to address environmental concern are listed in 1.4 below,

1.1 Lack of Impartiality:

- 1.1.1 **We believe that Section 4.4 of the ES exaggerates the 'need' for development of the proposed Wind Farm and does not provide an impartial assessment.** The section refers to government targets for renewable energy, and implies that specific developments such as the proposed Altaveedan Wind Farm are required in order to meet these targets; however, it does not mention the following observations from the EirGrid / SONI All-Island Generation Capacity Statement 2012-2021:

Page: 10:

"A number of renewable generation projects are assumed to be commissioned by 2021 giving a total renewable generation capacity of 1482 MW in Northern Ireland. This includes onshore wind (1042 MW), offshore wind (300 MW), tidal (50 MW) and large scale biomass (90 MW).

Assumptions of total renewable generation capacity to be commissioned by 2021 in Northern Ireland can be derived by referencing the Strategic Environmental Assessment (SEA) and the Strategic Energy Framework (SEF) produced by the Department of Enterprise, Trade and Investment (DETI). These DETI publications indicate that even higher amounts of renewable generation may connect over the next few years.

Also, information provided for onshore wind farm connections by Northern Ireland Electricity (NIE), the Northern Ireland Planning Service indicate that there will be much more onshore wind connected by 2021.

Page 29:

"The DETI publications, NIE information and Planning Service information indicate that even higher amounts of renewable generation will connect over the next number of years which would result in exceeding the 40% target in 2020" (EirGrid / SONI All-Island Generation Capacity Statement 2012-2021).

Therefore there is every reason to believe that the government targets for renewable energy could (in theory at least) easily be met, even without the supposedly 'material' contribution of the Proposed Wind Farm. We believe it is essential that this point is taken into consideration, and do not believe the ES was impartial in this regard. The implication from the ES is that developments such as Altaveedan have to take place in order to meet government targets on renewable energy, and that is patently not the case. If there is a surplus of renewable energy applications then other sites which are less sensitive to the local landscape and ecology should be selected for wind farm developments. See other related concerns below such as RES failure to review alternative sites (1.2.1), which is a mandatory requirement of the EIA programme.

- 1.1.2 **We have particular concern about the lack of impartiality in the process of selecting viewpoints for the LVIA.** Section 6.2.28 of the ES states: *"Viewpoints are chosen to provide a representative sample of viewers (receptors) and types of views of the proposed wind farm across the study area and to demonstrate potential views of the wind farm rather than to show the screening effect of landscape features"*. It is very evident that this approach has not been applied consistently, and by way of example refer to Viewpoint 6. Section 6.3.39 of the ES refers to visual impact of the wind farm from the location of Lissanoure Castle, and states: *"Viewpoint 6 has been selected to illustrate the nature of views from the landscape surrounding the castle estate that may be experienced by people travelling to it."*

In fact, the photograph taken from viewpoint 6 does not in any way represent the *"nature of views from the landscape surrounding the castle estate that may be experienced by people travelling to it"*. The wind farm would be in full view from:

- At least a 2 mile section of the Ballyveeley Road, starting only a few hundred metres to the South of Viewpoint 6.
- A section of the Ballyveeley Road on the northern side of the junction with the Lough Road, again less than 500m from Viewpoint 6

- The Pharis Road, coming up the junction of the Pharis and Ballyveely Roads.
- Sections of Coolkeeran Road, after the junction with Glenbush Road.
- Corkey Road, coming towards Louhgiel
- Shelton Road and Altnahinch Roads.

In fact, the wind farm would be in view from every approach road to Lissanoure Castle, whether the visitors were coming from Ballycastle, Cloughmills / Ballymena, Ballymoney or the Glens. Little wonder that the current owners of the castle have written to the planning HQ as referenced below in 1.1.6, describing the project as *“particularly insensitive and unsightly”*, and stating that: *“The turbines would have a substantial negative impact on tourism in the area as the surrounding countryside is still relatively unspoilt. This will not only have a negative impact on our wedding business at Lissanoure Castle, which draws people from all over the world, it will also have a hugely negative impact on the local bed and breakfast businesses. The windfarm will dominate the landscape over the village of Loughguile detracting from its charm and reducing the footfall through local businesses.”*

In summary, we are extremely concerned at the lack of impartiality presented in relation to this viewpoint and believe this to be symptomatic of many of the viewpoints ‘selected’ by RES. We have not had the time or resources to check each of the views submitted in the ES but believe that this one example on its casts doubt on all the viewpoints meeting the requirements of a) impartiality in selection and assessment and b) providing a representative sample of viewers (receptors) and types of views of the proposed wind farm across the study area and to demonstrate potential views of the wind farm rather than to show the screening effect of landscape features.

We request the planners to give this point serious consideration as one example of the concerns we have had throughout this process.

- 1.1.3 **Impartiality in relation to description of wind farm:** We refer to section 5.1.1, which lists seven main site specific factors determining the viability of a wind farm. In the second bullet, ‘Planning’ one of these factors is stated as “in particular...maintenance of appropriate distances from dwellings to avoid affecting local amenity”. We do not believe that the use of the word ‘appropriate’ (taken in the context of RES’ conclusion that Altaveedan is a suitable site for development) is impartial. In fact, the ES goes on in other sections to clarify that the turbines will be located at the absolute minimum distance from dwellings allowed by law. It is a subjective matter as to whether such a setback distance is ‘appropriate’ but the 270 plus local residents have made it clear that they think much greater distances from dwellings would be appropriate, as have many international experts and bodies:

- The Welsh Affairs Select Committee, after an investigation of the effect of wind farms on local residents, said: *“It would be prudent that no wind turbines should be sited closer than 1 mile away from the nearest dwellings. This is the distance the Academy of Medicine in Paris is recommending, certainly for the larger turbines and until further studies are carried out”*.
- The Noise Association recommends a minimum distance of 1 mile from property.
- The paper by Barbara J. Frey BA, MA and Peter J. Haddon, BSc, FRICS on the Effects of Wind Turbines on Health recommends a buffer zone of 2 km between turbines of up

to 2 MW and homes.

- 'Wind Turbine Syndrome: A Report on a Natural Experiment' which is a peer-reviewed report by a Nina Pierpont, a Johns Hopkins University School of Medicine-trained M.D. and Princeton (Population Biology) Ph.D. This book has received great acclaim, including the following:
"Impressive. Interesting. And important" ROBERT M. MAY, PhD, Professor Lord May of Oxford OM AC Kt FRS. President of the Royal Society (2000–05), Chief Scientific Advisor to the UK government (1995–2000).
"Dr. Pierpont has clinically defined a new group of human subjects who respond to low frequency, relatively high amplitude forces acting upon the sensory and other body systems. Her rigorous clinical observations are consistent with reports of the deleterious effects of infrasound on humans". F. OWEN BLACK, MD, FACS, Senior Scientist and Director of Neuro-Otology Research, Legacy Health System, Portland, Oregon. Dr. Black is widely considered to be one of the foremost balance, spatial orientation, and equilibrium clinical researchers in America.
"This is an extraordinary book. It is personal and passionate, which makes it compelling reading. But it is much more—authoritative, meticulous, and scholarly. . . . It clearly takes its place as the leading work on the topic. . . . A must-read for all health care professionals". ROBERT Y. McMURTRY, MD, FRCS (C), FACS. Former Dean of Medicine and Dentistry at the Schulich School of Medicine & Dentistry, University of Western Ontario. Founding Assistant Deputy Minister of the Population and Public Health Branch of Health Canada, and currently a member of the Health Council of Canada
- Many US states now insist on a buffer zone equivalent to a 2km setback distance.
- The Scottish Planning Policy SPP6 (Renewable Energy) also indicates that a 2 km buffer zone is sensible "PAN 45 confirms that development up to 2 km is likely to be a prominent feature in an open landscape".
- German manufacturer Retexo-RISP some years ago suggested on their web site that "buildings, particularly housing, should not be nearer than 2 km to the windfarm". This was written when turbines were half the size of today's models.
- In continental Europe, current best practice is a 2km setback, and legislation has been put before the House of Lords for a compulsory, 2 km setback from turbines in Britain

We note that other sections of the ES refer to the PPS 18 'Best Practice' minimum separation distance of 10 times rotor diameter (and not less than 500m minimum). We do not accept this as 'best practice' in terms of the wind energy industry, either in Northern Ireland or on a global basis, and refer to the references above and many other similar conclusions arising out of various studies. In a letter to Stop Highland Windfarms Campaign (SHWC) resulting from an enquiry to Jim Mather, Minister for Enterprise, Energy and Tourism, the Directorate for the Built Environment has now clarified the proximity issue and reaffirmed the terms of SPP6 in respect of residential amenity. The relevant paragraph says this: *"The 2km separation distance is intended to recognise that, in relation to local communities, visual impacts are likely to be a prominent feature and this should be taken into account when identifying the most suitable search areas. However, impacts will clearly*

vary considerably depending on the scale of projects and the proposed location. That is why SPP6 confirms that, in all instances, proposals should not be permitted if they would have a significant long term detrimental impact on the amenity of people living nearby. This principle applies to houses within and outwith 2km of the proposed development and regardless of whether they are single dwellings or part of a settlement."

In summary, we do not accept the ES as being impartial in relation to 5.1.1 second bullet, 5.1.2 second bullet, or 5.3.3. Nowhere in the ES is there any mention of concerns or alternative approaches and recommendations in relation to minimum separation distances from dwellings, and the contention that the distance of 10 X Rotor dia. is either 'appropriate' or 'best practice' is not true from an industry perspective and is one of our core concerns in relation to the proposed development.

- 1.1.4 Lack of impartiality in relation to design process description:** Table 5.1, Layout 2 iteration describes revisions made to the initial site layout, in response to 'advice received from technical and environmental specialists'. It is stated here that "To minimise landscape impact a tip height limit was applied, for consistency between the proposed Altaveedan scheme and the height of the nearby Gruig Wind Farm. Since the second bullet states that the PPS 18 separation was also applied, are we really expected to believe that tip height limit was reduced for any reason other than to achieve setback distances which would allow the project any possible chance of being approved? (Currently the design proposes 82.4m rotor diameter with the nearest house being 824m).

Is this a case of proposing an initial layout that is clearly outside any reasonable standard of planning acceptance and then modifying it back to a less extreme standard and claiming in the process that changes have been made 'to minimise landscape impact'? Is it impartial to represent that changes have been made to 'minimise landscape impact' when the nearest dwelling is exactly on the limit of ten rotor diameters?

- 1.1.5 Rights of Way, Cycle Routes and Scenic Driving Routes:**

We do not believe that Sections 6.3.32 to 6.3.39 have been written impartially. For example, 6.3.32 and 6.3.33 describe the Ulster Way and the Moyle Way. Although they state that the Moyle Way passes within 2.5km of the Site, there is no mention of how views from this route will be impacted. Yet the following Section 6.3.34, begins with the statement: "There are also other sections of the Ulster Way within the study area from where views or physical impacts from the proposed wind farm are unlikely". This is written in such a way as to infer that views or physical impacts from the proposed wind farm are unlikely from the Moyle Way, which is absolutely not the case. We do not consider it impartial to qualify references to certain areas by stating views and physical impacts will not arise, while omitting to similarly qualify references to other areas where views will be impacted.

- 1.1.6 Historic Parks, Garden and Demesnes:**

We do not believe the statements relating to Lissanoure Castle are impartial. Section 6.3.39 states: "Preliminary site survey work as part of this Baseline Assessment indicated that the castle's grounds are well enclosed by woodland and would be unlikely to experience landscape or visual impacts from the proposed wind farm".

The current owners of Lissanoure Castle do not agree and have written a letter of objection to Planning Services HQ describing the project as “particularly insensitive and unsightly”, and stating that: “The turbines would have a substantial negative impact on tourism in the area as the surrounding countryside is still relatively unspoilt. This will not only have a negative impact on our wedding business at Lissanoure Castle, which draws people from all over the world, it will also have a hugely negative impact on the local bed and breakfast businesses. The windfarm will dominate the landscape over the village of Loughguile detracting from its charm and reducing the footfall through local businesses.

Please also refer to Section 1.1.2 above in relation to the viewpoint selected to be representative of the views of people travelling to and from Lissanoure Castle, which is seriously misleading and inaccurate.

- 1.1.7 **We believe that the descriptions of the landscape and impact on it of the proposed wind farm have not been developed impartially and give a biased assessment of the landscape and possible impact of the wind farm on it.** Since a negative impact on the landscape is our greatest fear, and in our opinion one of the core reasons for RES being required to carry out the ES in the first place, we are deeply concerned as to the methods employed in the ES for establishing this impact.

The ES sets out a complex and detailed approach for defining landscape value, landscape sensitivity and magnitude of impacts. It requires diligence to work through the text to get to the final conclusion. Our concerns in respect of this process are as follows:

- 1.1.7.1 **Overall assessment:** The Impacts on Landscape Character are summarised in Table 6.4, which we feel presents an almost unbelievably biased assessment. Only 4 of the LCA's included in the table are within 6 km of the proposed site, with the vast majority being more than 15km away. Even those LCA's which do come within a few km of the proposed site extend to 18, 25, or 30km away from the site. The assessment is therefore only valid (even if you accept the individual LCA assessments) as an overall assessment of views, mostly from areas where because of sheer distance alone, the wind farm would not be likely to have a significant impact.

Surely the issue here is not whether someone standing in Coleraine farmland 30km away from the Site would be impacted by the development? From the same Coleraine farmland it is also not possible to see the Giant's Causeway, but that would hardly be relevant in the context of deciding whether or not anyone could justify building a wind farm there. Surely it's obvious that the concern about landscape character can only be assessed from areas where that landscape is actually visible. Table 6.4 is in our opinion a whitewash of the true impact, assembling as it does mostly irrelevant data from areas too remote to be impacted by the development. At the same time, and as further noted below, it minimises the effect on the local landscape by the judicious and subjective selection of sensitivities and impacts.

By way of providing some balance to this discussion, we refer to a specialist in Landscape Assessment from Planning Service HQ – Mr. M Miller, Principal Landscape Architect in the Landscape Architects Branch. *“Landscape Architects*

Branch has significant concerns regarding the potentially adverse impacts which this wind farm would have on both the visual amenity and landscape character of this area. The proposed development will impact on key views of the AONB from the lowland landscapes to the west and will be seen in the context of the distinctive skyline of Slieveanorra. Landscape Architects Branch also has concern at the cumulative impact of the proposed development which will extend the influence of wind farm development further to the north and will undermine the integrity of the landscape”

The majority of residents in the local area have already written to the Planning Service with similar concerns. How then can the ES, especially Table 6.4, be considered as impartial, listing as it does only one area where the significance of the effect would be ‘moderate’, with the effect in all other areas rated as ‘not significant’.

- 1.1.7.2 **Individual LCA Assessments:** We refer by way of example to the assessment of LCA 118 Moyle Moorlands and Forest, from 6.3.45 to 6.3.49. The description of the landscape is reasonable until 6.3.49, which states: *“Man made influences on higher ground include the harsh lines of managed coniferous forests, radio masts, wind turbines and several public roads. There is a disused quarry at Knocklayd”* As stated below, the ‘harsh lines of managed forestry extend into the AONB, and hardly devalue the landscape. Likewise there are public roads passing through the AONB throughout Northern Ireland; As for the wind farms, yes we agree that they do devalue the landscape, as the proposed Altaveedan wind site would also do, but RES have gone to great pains in other sections of the ES to make a case that there is no cumulative effect from the existing wind farms in the area, so how can they imply here that they somehow devalue the landscape? Whatever the reason, the overall assessment of landscape value for LCA118 is given as ‘High to Medium’. Going back to the category definitions of Landscape Value provided in Section 6.2.5, we find that there is no ‘medium’ value. There is a category of Moderate Landscape Value, which is defined as: *“Landscapes with overall good aesthetic qualities where some characteristic features remain intact but others that are not in optimum condition are fragmented and/or spoilt. The areas may contain a smaller number of features of interest and be of local importance.”* There is no mention in the descriptions given in 6.3.45 to 6.3.48 of any characteristics of the landscape in LCA118 which are not in optimum condition which are fragmented and/or spoilt. As evidenced by many of the consultation responses, the area contains a high number of features of interest, from both ecological and archaeological perspectives. Also, some of these features (e.g. the site of the Battle of Orra) is not just of local interest, which the Planning Service will be aware of having received letters of representation from those concerned about the Ulster Scots heritage; there is therefore no validity in assigning a landscape value of high to medium.
- 1.1.7.3 **We also refer to Section 6.3.51, which states:** *“The proposed site is located in an upland area which is in relatively good condition and fairly typical of the character of this LCA. However, it is not within the AONB and the site and surrounding area is a working landscape which has been impacted upon by man made features such as extensive commercial forestry, peat cutting, cleared moorland, telecommunications masts and access tracks”.* This is written in such a way as to imply that the proposed site is ok for development because it is not pristine; is the reference to man made features such as ‘extensive commercial forestry’ and

'peat cutting' to be taken seriously? Do RES realise that these 'man made features' apply to the land on the other side of Slieveanorra, right inside the AONB area? Commercial forestry, peat cutting and access tracks exist right into and through the Glens AONB. Does this mean that the AONB itself should be considered ripe for development into wind farms? Also the masts and access tracks are at the top of Orra Mountain and again inside the AONB. How can it be considered impartial to use these attributes to somehow condition the landscape of the site in this way?

RES conclude on the basis of the above that the Landscape Sensitivity is Medium to Low. Again referring back to earlier section where these categories are defined, we find that Medium Landscape Sensitivity is defined as: "A landscape with a combination of attributes that is capable of absorbing some degree of change without affecting the overall character. There are unlikely to be large numbers of people or other sensitive receptors. ", while Low Landscape Sensitivity is defined as "A landscape where the majority of attributes are robust and/or tolerant of change to the extent that change or development would have little or no effect on overall character. It is likely to be easily restored and the frequency and sensitivity of receptors is likely to be low but not exclusively so".

It's almost insulting that RES can describe the Landscape Sensitivity as Medium to Low, given the above definitions. The SPG itself describes the LCA118 landscape character as generally excellent; the SPG itself rates the overall sensitivity as high to Medium, as the ES acknowledges in Section 6.3.52. However, this section also quotes selectively from the SPG in relation to certain parts of the LCA landscape, while failing to acknowledge that those factors were already taken into account by the SPG when rating the sensitivity as High to Medium; RES seem to be using text from the SPG to downgrade the rating already given by the SPG. Furthermore the Planning Service's own specialist believes the sensitivity of the landscape is such that the development would undermine the integrity of the landscape. Referring to the actual definition of Medium Landscape Sensitivity above, we completely refute the idea that the installation of turbines over 100m tall into our generally excellent landscape will not affect its overall character. It is ludicrous to suggest otherwise.

We also refute the idea that there would not be a large number of people or other sensitive receptors, and again refer to the petition with hundreds of signatures from those living locally, and the concerns stated in 1.1.6 above in relation to other visitors to the area, not to mention those walkers following the Moyle way or other tourists accessing the Glens through the Orra Scenic route. Once again, we have not had the time or resources to investigate the way the other LCA's have been assessed, but find the arbitrary and subjective process applied by RES to be far from impartial, and completely unacceptable given the sensitivities around this development; given the total inaccuracy of this assessment for LCA 118 we believe that all other LCA assessments within the ES should be disregarded until such time as they can be reviewed by an independent third party.

1.1.7.4 Section 6.3.53 attempts to use the SPG recommendations in relation to Key Locations, Siting, Layout and Design Characteristics;

- it correctly quotes from the SPG that: “consideration should be given to setting wind energy development well back from the steep upland and plateau edges to help contain it’s visibility” and then goes on to state: “*The proposed wind farm is located in accordance with this recommendation*”. Could RES explain how they believe this assertion to be true? From the site location Map, (Fig 1 of Volume 2 of the ES), the edge of the proposed site is 1.75km from the summit of Slieveanorra. Within this 1.75km, the elevation changes from 285m to 508m. On this basis, how can the site be considered as being well back from steep upland?

- The same section 6.3.53, second bullet quotes incorrectly from the SPG as follows: “*Care [should have said particular care] needs to be taken to avoid significant impacts on key views from either the lowland landscapes to the west or from adjacent glens to the north, east and south and on the wild character of the area. The landscape interests of natural and cultural features and recreational resources should be respected*”; this is a particularly important recommendation, with which we obviously concur. RES response is to state that: “*As noted in the description of Key Views above the proposed wind farm is unlikely to be visible from the three Key Views that have been identified in the NILCA and which face the direction of the proposed wind farm*” Can RES please advise where the NILCA defines three Key Views and advise as to which views they are?

- the third bullet of Section 6.3.53 again quotes incorrectly from the SPG as follows: “*Care [should have said particular care] needs to be taken to avoid impacting upon the wild character of the area*”. Once again this is a particularly important recommendation, with which we obviously concur. RES response – which is highly misleading - is as follows: “*The proposed wind farm is located at the edge of a principally farmed landscape on land which is currently crossed by a network of access tracks and field drains. It does not contribute to the wild character of more remote parts of the LCA.*” This is a staggering misrepresentation of the facts; we refer to Figure 5.4 of Volume 2 (Final Layout Drawing) which shows that the proposed wind farm is bounded on 3 sides by a combination of 1) Areas of Special Scientific Interest, 2) Areas of Outstanding Natural Beauty, and 3) Special Protection Areas. The farmland to which RES refer forms a boundary on portions of one boundary only, and much of the land at that boundary is rough unimproved grassland. It is quite amazing that the SPG recommendation can be dismissed in such an arbitrary and subjective way. Also worrying is the contention that the land is “*currently crossed by a network of access tracks and field drains* “. This may be true, but we have witnessed these access tracks and field drains being developed since the wind farm was first considered and discussed with the landowners – in their current form they were not a natural feature of the land prior to that time. This reference to access tracks is disturbing and needs to be assessed carefully by the planning service given the context. The final sentence is difficult to understand: “*It does not contribute to the wild character of more remote parts of the LCA*“. We should not be concerned here about more remote parts of the LCA, the question is whether the proposed wind farm would impact on the wild character of the area....namely the area it is going to be placed in, and not areas 20 or 30km away. The LCA itself describes the area as having ‘open skylines’ which ‘are extremely visible and very sensitive to change’. There is a complete lack of impartiality in the way the SPG recommendation referred to in 6.3.53 has been addressed.

- the fourth bullet of Section 6.3.53 quotes from the SPG as follows: "The landscape interests of natural and cultural features and recreational resources should be respected." In reply RES have stated: The proposed wind farm is unlikely to have direct landscape or visual impacts on these resources. The potential impacts are described in further detail in **Section 6.5**. The potential impacts on Ecology and Archaeology are examined in **Chapters 8 and 10** of the Environmental Statement." Once again this is an arbitrary assessment made by RES which is wholly without justification, for the following reasons:

a) as noted above in 1.1.7.1, The RES assessments in 6.5 (incl. Table 6.4) are based on an 'average' assessment across the entire study area, with a weighting towards areas remote from the proposed site. The assessment in 6.5.3 of the effect on the local landscape extends the same theme by saying that *"The proposed wind farm will have a direct physical impact on a very small part of this character area..."* this is only true in relation to the size of LC118 and the fact that the wind farm sits near its western edge. The 'very small part of the character area' referred to contains the townlands of Shelton South, Aldorough, Altaveedan North, Altaveedan South and Turnavedog, and is home to hundreds of residents, most of whom, along with the Planning Services own Principal Landscape Architect, have already stated their belief that the wind farm would have a substantial and seriously detrimental impact to the landscape. RES description of the landscape effect is not impartial.

b) The RES assessment in 6.5.3 also says *"The lower plateau landscape which the proposed wind farm falls within is less sensitive due to its simple uniform land cover and convex landform, which lends some topographic screening"* but fails to mention the fact that the location will directly impact on the distinctive skyline of Slieveanorra, which forms the backdrop to many of the key view from the west. In fact, as previously mentioned, SPG for LCA 118 specifically states that *"particular care needs to be taken to avoid significant impacts on key views from .. the lowland landscapes to the west"*. Once again we think it is obvious that the assessment by RES is not impartial in this regard and refer to the concerns of Mr. Miller, Principal Landscape Architect: *"Landscape Architects Branch has significant concerns regarding the potentially adverse impacts which this wind farm would have on both the visual amenity and landscape character of this area. The proposed development will impact on key views of the AONB from the lowland landscapes to the west and will be seen in the context of the distinctive skyline of Slieveanorra."*

We also note that in 6.5.3 RES describe the wind farm as being on a 'lower plateau' landscape, which in accordance with the SPG they describe as less sensitive, whereas in 6.3.65 they say that the proposed site is located on a 'rising upland slope'. It seems that the site description can be adjusted as required.

c) The last sentence of 6.5.3 re-states earlier attempts by RES to downgrade the landscape character by reference to man made features and human activity. For the reasons stated in detail in 1.1.7.3 we believe this is a cynical approach and shows a distinct lack of impartiality. We also believe the reference in this sentence to existing wind farms (and their contribution to RES downgrading of the landscape character) is a matter which should be carefully reviewed by the planning service, as once accepted, it sets a dangerous precedent where the expansion of wind farms across the area will inevitably lead to further

downgrading of landscapes and justification for future wind farms, a process which could continue until the entire countryside is dominated by wind turbines.

- 1.1.7.5 **Inaccurate representation of number of properties in close proximity to the wind farm:** In Section 6.3.84 of the ES, RES admit that the Residents of small settlements and Individual Dwellings in the Countryside are “judged to be highly sensitive because they are static receptors that will experience views for long periods of time.” The Section goes on to say “There are a number of residential properties which are in close proximity to the wind farm site”. While this is a true statement, we don’t believe it is an impartial assessment of those residents who will experience views for long periods of time. There are in fact approximately 60 dwellings within the immediate local area (i.e. on Altnahinch and Shelton Roads) which have direct views of Slieveanorra and the proposed wind farm site. Most of these properties were built and oriented to have this view, and their enjoyment of it will be completely destroyed by the wind farm.
- 1.1.7.6 **We believe that the ‘Conclusions of Visual Appraisal’ stated in Sections 6.3.95 – 6.3.100 also lack impartiality:**

6.3.95 states: *“The proposed site lies on a rising slope on the western side of the Antrim Hills. It is overlooked by a more prominent upland plateau that runs from north to south. In the south west the Long Mountain ridge also runs in a north-south direction. In the north the land rises slightly towards the cliffs of the north Antrim coast. These two upland areas and the rising land to the north effectively contain views from the central agricultural lowlands between them and create a distinctive linear north-south pattern to most panoramic views”*. Referring to Figure 6.4 of Volume 2 of the ES (15km ZTV Blade TIP) there are vast areas directly to the west of the proposed site from which the blades will be visible. How does this fit with the description in 6.3.95 of views being effectively contained? We refer also to SPG guidance in relation to LCA 118, which states: *“Particular care needs to be taken to avoid significant impacts on key views from .. the lowland landscapes to the west..”* The ZTV blade tip chart does not indicate that this has been achieved.

6.3.96 states: *“The majority of lowland parts of the study area are well vegetated, working agricultural landscapes with settlements ranging from large towns to small clusters of houses scattered throughout it. These settlements provide focal points for local communities to gather. They are linked by a network of primary to tertiary roads and a rail route through the centre of the study area. Sensitive visual receptors in rural houses are also concentrated across lowland parts of the study area and less so in upland areas”* We are not sure of the relevance of this statement, but on a cursory reading, it might imply that the sensitive visual receptors in lowland parts of the study area would not have a view of the wind farm. Again, referring to Figure 6.4, 7-9 turbines will be visible from the settlements of Magherahoney, Ballymoney, Cloughmills, Dervock, Stranocum, Dunloy, Armoy, with 4-6 turbines visible from Cloughmills. Also, many of the most sensitive visual receptors in the local area around the proposed site are on higher ground off the main roads, and not in lowland areas.

6.3.97 states: *“Outdoor passive and active recreation is largely focussed around the coast and within the three AONBs that fall within the study area. The majority*

of highly sensitive receptors are also likely to be located in these areas which lie outwith the Zone of Theoretical Visibility". While it may be true that a greater number of people will be visiting the coast or the AONB's this statement is a great example of the lack of impartiality applied throughout the ES, since it makes no reference whatsoever to the highly sensitive visual receptors who ARE located within the ZTV, especially those within a few km of the proposed site. These would include:

Ramblers	(and we note that the route through Aldorough has been a favourite starting point for local ramblers heading for Slieveanorra and the hills.)
Anglers	especially around Altnahinch Dam
Cyclists	(a growing number of clubs are using local routes)
Horse Riders	(there are numerous trekking paths within a few km of the site)
Others	Including motor cycle clubs, motor cycle road racing supporters, ornithologists, ecologists and historians, visitors to the Millenium Centre, visitors to Lissanoure Castle, visitors to Loughgiel Hurling Club.

We think it is remarkable that a supposedly impartial ES would fail to make any reference to this group of receptors and try instead to deflect attention by saying that a greater number of people would be visiting the coast and Glens

Section 6.3.99 refers to the existing wind farms in the study area, and radio masts. We refer to our comments in 1.1.7.4 above; RES argue in other sections of the ES that there is no cumulative effects of this proposed development in addition to the existing and planned wind farms, but in Section 6.3.99 they seem to take a different view, implying that the existing and planned wind farms have to be taken into account when deciding on landscape value and appraisal. Is this an impartial approach?

Section 6.3.100 continues the trend, emphasizing the positive and ignoring the negative. The first sentence *"The ZTV diagrams generally indicate that a large proportion of the study area will not obtain views of the proposed wind farm"* could equally be written as *"The ZTV diagrams generally indicate that a large proportion of the study area will not obtain views of the proposed wind farm"*. Should RES be reminded of their own comments in Section 1.4.3 of the ES: *it is impartial, its objective being to inform the decision-maker rather than to promote the project"*? Section 6.3.100 continues by listing areas where the wind farm will not be visible from, while choosing not to mention those areas where it will be visible.

The final sentence relates to views of the wind farm from the Causeway Coast or Binevenagh AONB's (not visible) and the Antrim Hills and Glens AONB (language is not clear, but we assume RES are saying it will be visible only from very small parts of the Antrim Hills and Glens AONB) and further stating that: *"In addition, it is unlikely to add significantly to the visibility of other existing, planned or proposed wind farms from these areas"*. This comment makes no sense in relation to the Causeway Coast or Binevenagh AONB's because RES have already stated the wind farm would not be visible from there. In relation to the Antrim Hills and Glens AONB, we do not agree with the statement and refer to RES own

Figure 6.9 (viewpoint 1) of Volume 2 of the ES. In this view, the proposed Altaveedan wind farm does add significantly to the visibility of other existing wind farms – more than 50% of the skyline in this view is impacted by wind turbines. (While this view is not itself in the AONB, Fig 6.3 of Vol. 2 shows the viewpoint to be on the edge of the AONB, so similar views will apply from the AONB). We believe the reference to ‘only very small parts’ of the AONB is also misleading; it may be technically true, given that the AONB itself covers a very large area, but as can be seen from Figure 6.4, the wind farm will be visible from a substantial area of land designated as an AONB. Even RES’ own Section 6.7.7 states that *“The proposed wind farm is judged to have a substantial cumulative effect on Viewpoint One where it would be visible in close proximity to sensitive receptors and alongside a number of other wind farms, thus increasing the visibility of wind farms within the view”*. How does this gel with the final sentence of 6.3.100?

Section 6.3.101 states that the final selection of 17 viewpoints *“are located in various parts of the study area and are representative of different receptors and types of views including views from residential properties, community facilities, designated landscapes, public rights of way, the transport network and tourist destinations”*. For all the reasons stated in the foregoing 1.1.1 through 1.1.7.6 we do not believe the study to be representative as stated; as we have pointed out at least one of the views was extremely biased, and did not represent for that locality the true viewpoint which would result from the development.

1.1.7.7 Throughout Section 6.5, we believe the RES assessments continue to show a bias and to be in conflict with the requirement that the role of ES is to be “impartial, its objective being to inform the decision-maker rather than to promote the project” We refer by way of example to the comments made in Sections 6.5.45 through 6.5.50:

The descriptions given in 6.5.45 and 6.5.46 may be technically correct for the single point designated as Viewpoint 6, but are not true for the wider area around Lissanoure Castle. A drive along the Ballyveely Road 1-2 km on either side of Lissanoure Castle will indicate that there are plenty of views of the wider landscape. (6.5.45 says there are few). The ‘glimpses of light industrial / commercial buildings’ apply almost entirely from the specific viewpoint and do not apply from the rest of the Castle environs. The church mentioned in 6.5.46 is not ‘further along Ballyveely Road - it is almost directly behind the location for Viewpoint 6.

To say that Sections 6.5.48 through 6.5.50 display a bias would be an understatement. Some of the following is a restatement of points already made in 1.1.2, 1.1.6 and other paragraphs above, but unfortunately it is necessary since the ES seeks to reinforce biased or incorrect assessments by repeating them throughout the document.

“The blade tips of 3 of the proposed wind turbines will be visible beyond the industrial premises in the middle distance’. Since RES carefully selected the location of viewpoint 6 this initial statement may be technically true. However, this statement would not be true for viewpoints a few hundred metres either side of the selected viewpoint 6. (nor would the ‘industrial premises’ be visible from these other viewpoints)

RES asserts that *'views to other turbines will be effectively screened by foreground vegetation.'* They qualify this by stating later in the paragraph that *"The turbines may be slightly more visible in the winter months but not significantly so".* We believe the difference would be significant, not slight, in our opinion there is no reason to think otherwise. (We note similar approach taken by RES in relation to comments about screening; for example their comment that in Figure 6.10, Viewpoint 2, "this level of screening will be reduced in winter months when the trees are without leaves", which is an understatement; 3 turbines almost totally obscured in their photograph will become almost totally visible).

RES state that *"The wind farm is unlikely to be noticed by the casual observer travelling along the Ballyveely Road".* How did RES come to this conclusion? By their own admission in 6.5.45 the views of the Antrim Hills and the summit of Slieveanorra provide a backdrop to this view. It is inconceivable that the wind farm would not be noticed, even by a 'casual observer' travelling along the Ballyveely Road. This is another example of an arbitrary assumption being made and represented as fact in the ES. This assertion is used to justify their summary that the Magnitude of Visual Impact is "negligible".

RES summarise all their above assumptions by stating in 6.5.49 that *"The proposed wind farm will be barely perceptible and may be missed by the casual observer"* and concluding that the Significance of visual Impact is *"not significant"*. We can only restate that we believe these conclusions to be totally inaccurate and not based on any logical reasoning. We again refer the planning service to the comments made by the current owner of Lissanoure Abbey in his letter of Representation: He describes the project as *"particularly insensitive and unsightly"*, and states that: *"The turbines would have a substantial negative impact on tourism in the area as the surrounding countryside is still relatively unspoilt. This will not only have a negative impact on our wedding business at Lissanoure Castle, which draws people from all over the world, it will also have a hugely negative impact on the local bed and breakfast businesses. The windfarm will dominate the landscape over the village of Loughquile detracting from its charm and reducing the footfall through local businesses."*

In 6.5.50, RES state: *"There are no other existing or proposed wind farms in this view"*. Again, this is only true in relation to the exact view from viewpoint 6. RES have expanded their assessment in 6.5.46 to 6.5.48 to comment on observers travelling along the Ballyveely Road, but did not choose to mention the Ballyveely Road in the context of other wind farm views. In fact those same casual observers already have full view of the existing Corkey, Slievenahanaghan and Gruig Wind Farms, extending over many kilometres as viewed from the Ballveely road from Cloughmills. This view would be compounded by the Corkey extension if it went ahead, and with Altaveedan would ensure views of wind farms over most of the entire 5km length of road from Cloughmills. How can any of the impact assessments in the ES be taken seriously, given the level of bias shown in this one example?

1.1.7.8 Further examples of lack of impartiality and arbitrary unsupported statements appear in:

Section 6.5.126: *“Only three viewpoints are judged to be significantly affected by the wind farm.”* On what basis were these judgements made? Were any surveys taken of the people who leave or regularly visit those areas? Viewpoint 9, for example: referring to RES own photograph, Fig. 6.17, is it true to say that the view shown in the photograph is not significantly affected by the wind farm? Also viewpoint 4....even allowing for the fact that the judiciously placed camera puts the barn in prominent view, is it true to say that the view would not be significantly affected by the wind farm? In fact from this view, some of the blades are visible only partially above the existing terrain and/or buildings; this is a scenario which the SPG says should be avoided as it can be distracting.

6.5.126 / Table 6.5: Viewpoint 1: Although the Visual Prominence is recorded by RES as being ‘Prominent’ and the Sensitivity of Receptors is note as being ‘High’, the Magnitude of the Visual Impact and therefore the Significance of the Visual Impact is concluded to be ‘Moderate’. On what basis is this conclusion reached? We believe (and think any reasonable person looking at Figure 6.9 of Vol. 2 would agree), that the Significance of Visual impact on this view is Substantial.

6.5.126 / Table 6.5: Viewpoint 2: Once again, while the Visual Prominence is recorded by RES as being ‘Prominent’ and the Sensitivity of Receptors is note as being ‘High’, the Magnitude of the Visual Impact from this view is ‘moderate’. This is an extraordinary conclusion; this is not a case of bias, this is a misrepresentation of fact. We challenge anybody to look at Fig. 6.10 of vol. 2 of the ES and say that the Magnitude of Visual Impact is not Major and/or Substantial.

We further note that that the presentation of this table (and the entire ES) seeks to promote the view that significant impact only occurs from a very limited number of viewpoints. For the sake of impartial assessment, we believe the ES should state that the Magnitude of Visual Impact will be Major, and the Significance of the Visual Impact will be Substantial, for almost all viewpoints close to residences or access / tourist routes in the townlands of Shelton South, Aldorough, Altaveedan North, Altaveedan South and Turnavedog.

- 1.1.7.9 **Section 6.7.2 further stresses the illogical, subjective and biased conclusions reached through the various sections of Article 6**, some of which we have commented on above. The derisory summary states: *“The proposed wind farm development will have a very limited effect on landscape character. The only direct physical effect will be within a small part of the Moyle Moorlands and Forest LCA. The proposed wind farm will not have direct physical effects on any designated landscapes. The magnitude of landscape impact on this small part of the LCA will be moderate (refer to Section 6.5.3 – 6.5.5). However in relation to impacts on the entire LCA, the magnitude of effect will be slight because it is a large LCA and the proposed wind farm would only affect a small part of it. The magnitude of impact on other LCAs within the study area ranges between Slight and Negligible”.*

Very limited effect on landscape character?? As previously stated the Planning HQ’s own Principal Landscape Architect in the Landscape Architects Branch would not agree: *“Landscape Architects Branch has significant concerns regarding the potentially adverse impacts which this wind farm would have on both the visual amenity and landscape character of this area. The proposed development will*

impact on key views of the AONB from the lowland landscapes to the west and will be seen in the context of the distinctive skyline of Slieveanorra. Landscape Architects Branch also has concern at the cumulative impact of the proposed development which will extend the influence of wind farm development further to the north and will undermine the integrity of the landscape". The many hundreds of residents of the townlands in the study area closest to the site would not agree – they feel the wind farm will have a devastating effect on the landscape, and have petitioned to that effect. The owners of businesses attracting visitors to the area do not agree, and have stated that the wind farm is "particularly insensitive and unsightly" and "will dominate the landscape over the village of Loughguile detracting from its charm and reducing the footfall through local businesses"

1.1.8 In relation to Cumulative Effects of this wind farm to those existing, planned and proposed wind farms, we also find serious flaws and inadequacies in the information and conclusions presented by RES.

Distance and Direction from boundary of the Site to nearest turbine of the following wind farms:	According to RES, ES Vol. 1 Table 2.1	According to measurements taken from maps provided in Vol. 2 of the ES.
Slievenahanaghan	1.5 km south	3.5 km
Corkey Extension	5 km south	2.7 km
Corkey	5 km south	4.0 km
Gruig	6 km south	5.3 km

The heading in the RES Table is 'Approximate Distance' but that does not excuse the inaccuracy of the above distances. Some of the other measurements are given to one decimal place, implying that the distances are accurate to that level. No reasonable person reading the Table would expect the measurements to be inaccurate by almost 50%. These distances could be easily checked by RES (and the planning service) and such a misrepresentation, on such a significant point is deeply worrying and once again casts doubt on the accuracy of the rest of the ES.

We note that the SPG in Section 3.2 states:

"Wind farm development and applications for development have so far affected a relatively small number of LCAs. While this is beneficial in some respects, concentrating the impacts in localised areas, it also means that issues of cumulative impact will increasingly come to the fore in these areas. In the future it will be important to ensure that wind energy developments do not come to completely dominate the landscape character of these areas. The experience of the consultancy firms who carried out initial work associated with this guidance suggest that separation distances ranging from 6km (for smaller sites in landscapes with some enclosure) to 12km (for larger sites in open exposed landscapes) are desirable to prevent the landscape becoming dominated by wind farms and to reduce intervisibility. Conversely, their experience suggest that if some wind farm developments are located less than 3-5km apart (to the outermost turbines of each site), they may be seen as a cluster or single coherent group."

This recommendation by the SPG makes the inaccuracy of Table 2.1 even more questionable and unacceptable. The greatest distance between any of the wind farms would be 3.5km, which places the Altaveedan development clearly in the category of development which the SPG recommends against; We would like to see an explanation from RES as to why the distances were inaccurately recorded, and also from the planning service as to why this fact was not taken into greater account in their initial evaluation. We believe this is a very substantial issue and as stated above believe these inaccuracies cast doubt on the validity of the entire ES.

We also take issue with the selection and description of cumulative effects from some of the viewpoints and for the landscape in general.

1) We do not believe the viewpoints selected are an accurate representation of the cumulative effects; for example, Viewpoint 2 as shown in the photograph in fig 6.10, Vol 2 of the ES). The existing wind turbines cannot be seen in this view because the camera is pointing directly at the proposed site; An observer turning 90 degrees and looking up the road would see the hubs and tips of existing wind turbines at Corkey or Gruig. In fact, the existing wind farms are visible from almost all the houses on the Shelton Road, e.g. 21, 22, 26, 26A.....

2) We refer to previous comments in relation to Table 6.6 and the various viewpoints. We believe that RES' own Section 6.7.7 comments s that *"The proposed wind farm is judged to have a substantial cumulative effect on Viewpoint One where it would be visible in close proximity to sensitive receptors and alongside a number of other wind farms, thus increasing the visibility of wind farms within the view"* will apply to many of the views from the wider area around the proposed site.

In their summary in Section 6.7.12, RES have stated: *"Whilst the presence of the wind farm will bring about change and would significantly alter the character of the site and its immediate surroundings, it is well located to be in keeping with the landscape and visual character of the wider landscape. The study area and this part of the Antrim Hills have the capacity to accommodate the levels of change that the proposed wind farm would bring about"*. Again, this is not so much a question of showing bias as it is one of misrepresentation. There is no evidence whatsoever to support the statement that massive structures over 100 metres tall are 'in keeping' with beautiful countryside on the slope of a prominent regional mountain, bordering on an AONB. Neither do we accept that the study area or this part of the Antrim Hills has any capacity to accommodate the further destruction of the countryside from wind farm developments across the area.

We do not agree (and again would consider that no reasonable person would be able to agree) that *"the effects of the proposed development are substantially reversible and, following decommissioning, they would have no substantial residual effect upon either the physical landscape or the visual environment. Overall the wind farm is judged to be acceptable in landscape and visual terms"*.

Some of the physical effects might be reversible, but to provide a balance we would refer to RES' own comments in Section 8.7.48: *"It is generally recognised that future decommissioning is highly unlikely to return areas of semi-natural peatland vegetation to its original state. Once peatlands have been changed by human activities it is very difficult to reverse these changes, and marginal and degraded peatland habitats such as those found at Altaveedan are more prone to significant and irreversible changes (Yellof, Labadz*

and Hunt 2006)". Section 6.7.12 makes no allowance for the impact on quality of life for those living in the local area (again, to be clear, many hundreds of whom have petitioned against the wind farm development). People choose to live in beautiful but remote countryside areas for a reason; how can the devastating effect the wind farm will have on their quality of life over a 25 year period be reversed?

- 1.1.9 PPS 18 and Renewable Energy:** We note that Section 8.3.17 quotes the following PPS 18 guidance on Renewable Energy Developments: "In Policy RE 1 Renewable Energy Development states: "Any development on active peatland will not be permitted unless there are imperative reasons of overriding public interest". As previously stated in 1.1.1, we do not believe that the development of the Altaveedan Site is 'imperative' in terms of overriding public interest. Our justification for this view comes in part from the Northern Ireland Planning Service, and also from the DETI, since as referenced in the EirGrid / SONI All-Island Generation Capacity Statement 2012-2021:

"Assumptions of total renewable generation capacity to be commissioned by 2021 in Northern Ireland can be derived by referencing the Strategic Environmental Assessment (SEA) and the Strategic Energy Framework (SEF) produced by the Department of Enterprise, Trade and Investment (DETI). These DETI publications indicate that even higher amounts of renewable generation may connect over the next few years. (EirGrid / SONI All-Island Generation Capacity Statement 2012-2021).

Also, information provided for onshore wind farm connections by Northern Ireland Electricity (NIE), the Northern Ireland Planning Service indicate that there will be much more onshore wind connected by 2021." In other words, the Governments 2020 targets do not require the development of this particular wind farm.

We therefore question RES and also the planning Service as to how this application has been able to proceed to this stage, since from the above it would clearly seem to be in conflict with PPS 18.

- 1.1.10 Incorrect statements re Ancient Woodlands:** Section 8.3.26 mentions the Ancient Woodland Inventory defining AW and stating that there are no AWI woodlands in the study area. We find that this statement is not true. The Woodland Trust Web Site indicates that there are over 25 woods in the study area classified as Ancient (3), including one (Wood 1259) in the Lissanoure Estate. The Ancient Woodland Trust Website also clarifies that there is another designation of possibly ancient woodlands called Long Established Woodlands (land that has been continuously wooded since the first comprehensive maps of Ireland were produced in 1830-44, but which cannot be proven ancient), of which there are many in the study area, including over 20 in the Lissanoure Estate alone.

We should not need to point out that we believe these errors with regard to Ecological aspects of the study area add further weight to our contention that the entire ES is suspect and cannot be relied upon.

- 1.1.11 We notice discrepancies / lack of impartiality in the reporting of important ornithological concerns:**

Table 7.5: The Sensitivity of Curlew is listed in this table as 'Medium'. RSPB in their Consultation Response stated: "*we are cautious about this classification because of the recently published Pearce-Higgins et al paper. In addition there is uncertainty about the*

actual number of breeding curlew in Northern Ireland. As flagged in the ES current numbers available for this species are based upon estimates from the all-Ireland figures presented in *The Status of Birds in Ireland: An analysis of conservation concern 2008-2013 (Irish Birds 2007)*. We provided an estimate to RES in July 2010 of between 450-840 pairs, but the actual number is not known. If declines have continued as steeply as occurred from 1988 to 2002 (86% decline) then this figure could be even lower” Also in Table 8.1 RES quote the RSPB feedback recommendation as “The RSPB commented that the site is a known breeding ground for curlew which is a species of conservation concern in Northern Ireland. They recommended that a curlew habitat management area may be required. They accepted that the designation features from the SPA are not regularly apparent across the Altaveedan site in display, transit or foraging behaviours”; In fact, rather than saying a mitigation plan may be required, the RSPB went quite a bit further “We support the proposed Outline Habitat Management Plan (OHMP) (Appendix 8.5) and request that this becomes a condition of approval as it incorporates the management of the habitat for curlew. We understand this is due to be completed with the Department at the pre-construction stage, the aims and objectives of which we so far support (ibid, 1.5). The HMP will not only improve the ecological value of the land but should provide suitable habitat for any displaced breeding waders.

We note the importance of the area of land labelled as block E due to its distance from the proposed turbines, its area and its lack of management. As the landowner is awaiting entrance to CMS (1.3.6) we are happy to see alternative prescription options have been listed (1.6.3) however, we would be concerned that the management options prescribed if not under CMS control would not be enforced.

We request that the management of block E is prioritised as this land is very significant for any potentially displaced species. We request that the completion of the HMP is a condition to be met prior to any works on the site. We request that the Department seeks confirmation as to how the applicant will be supported in the application of management actions should they not be accepted to the CMS. We are aware from our agri-environment work in the Glenwherry area that transferring management prescriptions to actions is not always straightforward. We would therefore support a habitat management steering group to provide on the ground advice to the landowners and would be happy to offer further advice on this matter should it be requested.”

- 1.1.12 **We have serious concerns about the way the Environmental Statement deals with Noise;** for local residents, because this wind farm is being built in such close proximity to so many dwellings, noise is a very significant concern, and we do not believe it has been treated impartially in the ES:

- 1.1.12.1 **Sections 9.1.7 to 9.1.10 are supposed to provide a ‘General Overview of Wind Turbine Noise’.** The tone is overwhelmingly positive mechanical noise is now less than aerodynamic noise and “aerodynamic noise from wind turbines is generally unobtrusive; it is broad band in nature and in this respect is similar to, for example, the noise of wind in trees... aerodynamic noise is usually only perceived when the wind speeds are fairly low. In higher winds, it is generally masked by the sound of wind blowing through the trees and around buildings.” One would hardly think, given the above overview, that wind turbine noise is one of the most emotive issues around development of wind energy in the UK and Ireland. There have been numerous documented cases of excessive noise around wind farms; there have been settlements reached between some residents and wind farm developers as a result of claims brought to the courts. There have been papers written around the world calling for more realistic and appropriate ways

of measuring wind turbine noise. Following an investigation of wind farms in Wales, the Welsh Affairs Select Committee concluded that *"... we are satisfied that there are cases of individuals being subject to near-continuous noise during the operation of the turbines, at levels which do not constitute a statutory nuisance or exceed planning conditions, but which are clearly disturbing, unpleasant and may have some psychological effects."* We can also quote copiously from independent and sometime peer reviews studies that indicate that wind turbine noise is not adequately addressed by current regulations and development practices. The fact is that the 6 line overview provided by RES in the ES is incredibly biased.

1.1.12.2 We also have concerns about the equipment used and actual practices followed for the background noise checks:

Page 51 of ETSU-R-97 states: *"At the nearest residences to wind farms, even though the wind speed will usually be less than at the wind farm site, the local wind speed may still rise above 5m/s during periods when measurements are required. One should therefore exercise caution to ensure that measurements are not contaminated by wind noise on the microphone and consider the use of secondary shields"*. Page 84 further states: *"Even using the $L_{A90,10min}$ noise descriptor there is a risk that measured noise levels can become contaminated by the effect of wind noise on the microphone when using the wind shields available commercially. Studies are currently being undertaken to evaluate the constraints on existing measurement systems with a view to offering suggestions for improved windshield design."* Can RES advise to what extent the windshields used on their noise apparatus took into account the results of the studies referred to in ETSU-R-97?

Page 58 of ETSU-R-97 states: *"Measurements performed near or at a building façade will exhibit higher noise levels due to the reflection of the sound from the façade. As this effect is dependent on the measurement position, it is difficult to allow for in noise predictions and therefore free-field noise levels which are unaffected by the façade of a building are preferred. The potential for "hot-spots" due to particular building configurations should be discussed with the EHO during the initial site assessment. For example, courtyards with an open side facing the site of the proposed wind farm will require special consideration."* Chapter 7 provides even more detail and says "in order to ensure that measurements of wind turbine noise are not influenced by reflections off buildings the microphone should be positioned at least 10M away from the façade." Can RES confirm that the Noise Apparatus in relation to H3 was positioned 10m from the façade of the building? It certainly does not appear from Plates 9.1 and 9.2 (of App 9 of Vol. 3 of the ES) to be 10m away.

Charts 9.6 through 9.11 of Appendix 9.3, Vol 3 of the ES show the data actually used for analysis, as well as extraneous data and rainfall. We have three concerns regarding this data:

A) In charts 9.6 there is a very significant amount of extraneous data during the Quiet Waking Hours. Similarly in Chart 9.10 and 9.11 during the Night-Time periods. These extraneous data points appear throughout the charts, and across a

wide range of wind speeds. Surely this would indicate that these are not suitable locations for noise measurements? We understand that RES have employed some filtering technique to supposedly eliminate such data points but we have no confidence in the ability of any system to accurately determine what is and is not extraneous, given such a large spread of values.

B) ETSU_R_97 states that the locations of the noise apparatus should be agreed with the EHO. Can RES provide confirmation that this was done? We are concerned that in the case of H3, the noise apparatus has been placed at the front of the house, close to the Altnahinch Road. While we recognise that Page 86 does say that *"measurements affected by human or animal activity during the night, i.e. traffic passing along nearby roads or owls in nearby trees, should be considered as the noise environment at the dwelling,"*, we remind RES that they are proposing to use background noise readings from H3 as being applicable also to H1, H2 and H4, and that list of properties designated as H1 through H19 is not a complete list of properties closest to the turbines, but is a list of 'representative properties' (in RES' opinion of course). We can confirm without data that other properties being 'represented' by H£ have areas of amenity located much further away (perhaps up to 6 times the distance) from the road than the noise apparatus placed at H3. Therefore we do not accept noise measurements taken at H3 as being representative of those other properties.

C) ETSU-R-97 clarifies that rainfall can have a substantial effect on background noise measurements: *"Background noise levels will also change according to the amount of rain that may have fallen during the preceding days; levels in deep valleys in mid-Wales have been found to vary by as much as 25 L_{A90,10min}".* We note that RES have removed data points supposedly affected by rainfall, but we also note that the rain gauge was located at the mast, which is some distance away from the noise measurement apparatus – over 1km in the case of H3. We have seen micro climatic effects in the area and there is no certainty that the noise measurement periods coincided exactly with the periods of rainfall. We believe that rain gauges should have been placed adjacent to each microphone, and do not believe that the adjustments for rainfall are accurate.

1.1.12.3 **While we appreciate that PPS 18 recommends the use of ETSU, we do not accept that it is an adequate assessment method.** There is certainly a question of lack of impartiality – in Section 9.1.2 RES admit to being involved in the development of the 1996 ETSU document – but our concerns are much wider than that. The ETSU guidelines were prepared as preliminary guidelines 16 years ago, when there was little operating experience from the larger wind turbines in used today in close proximity to housing. In Section 9.1.2, reference is made to several papers that have been produced by RES for certain professional bodies – the most recent of these papers is 12 years old. Again, given the significant concerns and complaints that have been made over recent years, we do not really see the relevance of papers written over 12 years ago.

* The ETSU guidelines recognised that they were founded on inadequate data and recommended that it be reviewed within 2 years. No such review appears to have been carried out. There is now an increasing body of experience which confirms that the ETSU recommendations for minimum separation distances do not guarantee local residents the freedom from noise that was hoped for.

ETSU proposes the use of noise measurements based on the levels that are exceeded for 90% of the time for both background and turbine noise whereas it is the peak levels of turbine noise that would cause the problem. It seeks to compensate for this by setting noise limits on the assumption that the turbine LAeq noise level is some 1.5 to 2dB higher than its LA90, but in practice the difference can be larger than this and the noise at nearby homes correspondingly more intrusive.

ETSU assesses background noise as a rough average and a 5dB margin is then added to define acceptable wind farm noise. This ignores the large spread of background noise readings and the fact that for half of the time the background levels are below the average, sometimes much lower. It is when background noise levels are at their lowest that turbine noise would be most intrusive. Since the ETSU report was published the World Health Authority has lowered the sleep disturbance criteria from 35dB to 30dbLAeq, which is linked with an assumed 15dB attenuation through an open window. This compares with the 10dB attenuation assumed in ETSU. This is a significant difference and emphasises the uncertainty in assessing the effects of turbine noise on residents

A rhythmic variation in the total noise emission of a turbine is heard as a thumping noise, which can be particularly intrusive. The range in noise levels leading to the thumping effect from a single turbine may be only 1dB, which would be acceptable at 700 metres. This is not so with a group of machines. For three machines that variation in noise level or thumping effect increases to a 5dB variation, to which many people would be sensitive. A further factor influencing noise levels is attenuation due to the ground. The RES's evaluation assumes ground absorption coefficient of 0.5, midway between soft, vegetation covered ground and hard frozen ground. The received noise level could be as much as 2dB higher with frozen ground. Noise can also be reflected from hard surfaces such as walls and patios resulting in a further 2dB increase.

Wind speeds at blade height have been found to be frequently much higher than those at the 10 metres measurement height. This means that the background noise levels are relatively lower, making the turbine noise more intrusive. The van den Berg paper (AIR 94) states that at night the wind speed at hub height is 2.6 times higher than expected at a 17 turbine wind farm causing a higher rotational speed of the turbines and 15dB higher sound levels relative to the same speed in daytime. The turbines produce a thumping impulsive sound, especially at high wind speeds, increasing annoyance further. The paper concludes that the prediction of noise emission at night from tall turbines is underestimated when measurement data are used assuming a wind profile valid in daytime.

As it has become clear that ETSU (and other guidelines such as PAN 45) is seriously deficient in providing adequate assurance against noise, additional criteria are being proposed by some planning authorities, for example, specifying a minimum distance from occupied dwellings of not less than 20 times the height to blade tip. It would be irresponsible to site turbines so that they are at the extreme limit of noise acceptability, as is proposed at Altaveedan.

Numerous studies / papers have indicated that the superficial comments made in the ES, such as those stated in 9.3.8 (and attributed to the BWEA, which can hardly be described as an independent body) represent only one subjective viewpoint and that there is sufficient evidence to believe that there are serious concerns:

In a survey, Dr Amanda Harry, a British physician, found that 13 out of 14 people living near a 16-turbine installation reported an increase in headaches, and 10 reported sleep problems and anxiety. Other symptoms included migraine, nausea, dizziness, palpitations, stress, and depression. The pulsing, low frequency type of noise emitted by wind turbines cannot be assessed by simple dB measurements and topographical and atmospheric effects are critical and not possible to fully determine using theoretical models.

A report by South Cambridgeshire NHS Primary Health Care Trust 29 includes the following comment: Noise *"...is the major drawback of wind turbines. It comes from both the mechanical gearing (which can be controlled) and from the aerodynamic properties of the rotating blades (uncontrollable). At present there is no established method for predicting in advance the wind turbine noise levels to be generated by wind farms."*

several studies have been conducted which show that wind turbine noise is experienced as more annoying than airport, truck traffic, or railroad noise at the same sound pressure level or less (Pedersen, E. and Persson Waye, K., "Perception and annoyance due to wind turbine noise: a dose-response relationship" (2004) 116:6 J. Acoust. Soc. Am. 3460 ("Pedersen 2004"); van den Berg, F., Pedersen, E., Bouma, J. and Bakker, R., "Project WINDFARM perception: Visual and acoustic impact of wind turbine farms on residents: Final Report" (2008) FP6-2005-Science and Society-20 Project no. 044628, University of Groningen and University of Gothenburg ("van den Berg et. al. 2008")). He stated that the dynamic modulations, both audible and inaudible, that are unique to wind turbine noise are more directly responsible than the absolute sound level for why people respond more negatively to wind turbine noise. Mr. James referred to studies by Pedersen (2004) and van den Berg et. al. (2008) which found that annoyance from wind turbine noise is experienced at sound levels that are 10 dB lower than the sound levels that would cause annoyance from other common noise sources.

'Wind Turbine Syndrome: A Report on a Natural Experiment' which is a peer-reviewed report by a Nina Pierpont, a Johns Hopkins University School of Medicine-trained M.D. and Princeton (Population Biology) Ph.D. This book has received great acclaim, including the following:

"Impressive. Interesting. And important" ROBERT M. MAY, PhD, Professor Lord May of Oxford OM AC Kt FRS. President of the Royal Society (2000–05), Chief Scientific Advisor to the UK government (1995–2000).

"Dr. Pierpont has clinically defined a new group of human subjects who respond to low frequency, relatively high amplitude forces acting upon the sensory and other body systems. Her rigorous clinical observations are consistent with reports of the deleterious effects of infrasound on humans". F. OWEN BLACK, MD, FACS, Senior Scientist and Director of Neuro-Otology Research, Legacy Health System, Portland, Oregon. Dr. Black is widely considered to be one of the foremost

balance, spatial orientation, and equilibrium clinical researchers in America. *"This is an extraordinary book. It is personal and passionate, which makes it compelling reading. But it is much more—authoritative, meticulous, and scholarly. . . . It clearly takes its place as the leading work on the topic. . . . A must-read for all health care professionals"*. ROBERT Y. McMURTRY, MD, FRCS (C), FACS. Former Dean of Medicine and Dentistry at the Schulich School of Medicine & Dentistry, University of Western Ontario. Founding Assistant Deputy Minister of the Population and Public Health Branch of Health Canada, and currently a member of the Health Council of Canada

The UK Noise Association report "[Location, Location, Location](#)" also recommends a minimum distance of 2 km between industrial wind turbines and inhabited residences.

Professor Henrik Moller of Aalborg University is a world-leading specialist in low-frequency sound. He and his team of acousticians were consulted by DEPA, the Danish Environmental Protection Agency. But he later stated that their recommendations have been ignored: *"We had many objections to the proposal, but none of these were accommodated in the final version"*. Answering a question from EPAW, the Professor explains how the new regulations will not effectively enforce the 20 dB(A) limit of **low-frequency noise levels** regarding wind farms, but that this limit is indeed being applied to other industries. Notes Mark Duchamp, of EPAW: ***"In reality, this is a case of double standards."*** In his email to EPAW dated Feb. 5, 2012, Professor Moller wrote: *"All these errors sum up to probably not far from 10 dB, which means that the limit is suddenly not 20 but rather 30 dB(A). But the rules are claimed to give the same protection as for industrial sources, which is simply not true."* *"At low frequencies,"* continues the Professor, *"the perceived intensity, the loudness, increases more steeply above threshold than at higher frequencies. This means that when the level is a few decibels above the 20 dB limit, the consequences are more severe, than if a limit for higher frequencies is exceeded by the same amount. Few people would probably accept 25 dB(A) in their home at night and hardly anyone would accept 30 dB(A) "*

Even within the renewable energy industry there is recognition that noise from wind turbines is a serious issue which is not being adequately addressed by the wind industry. The Feb 23rd 2011 edition of Renewable Energy Magazine (see <http://www.renewableenergyworld.com/rea/news/article/2011/02/looking-for-wind-industry-leadership-in-reducing-noise-impacts?cmpid=WNL-Wednesday-February23-2011>) included an article calling for developers to acknowledge some of the research that has been done and work to develop more acceptable solutions. The author refers to various studies which strongly suggest that it is not possible to assess wind turbine acoustic impact by simple decibel measurements, including the work of Rob Rand, an acoustician in America with 30 years' experience of noise measurement, who has done analysis showing how noise effects in rural areas are a particular problem and concluding that there is a *"complete disconnect between medical impact and regulatory framework"*

- 1.1.12.4 **Concerns about the guidelines followed by the ES:** ETSU states that: "it gives indicative noise levels thought to offer a reasonable degree of protection to wind

farm neighbours, without placing unreasonable restrictions on wind farm development or adding unduly to the costs and administrative burdens on wind farm developers or local authorities". It is therefore a means of offsetting loss of amenity to residents against costs to developers and others

ETSU is based on a series of unfounded and sometimes inaccurate assertions. The standards it adopts are unacceptable as a measure of impact. BS4142 states that an excess of 5dB over background noise is considered marginal and an excess of 10dB is likely to give rise to complaints. Local authorities generally apply a limit on a new noise of 5dB above the background noise. ETSU first embraces BS4142 but then goes on to suggest that, rather than the 5dB excess normally used, between 7dB and 11dB would be appropriate for wind farms. This is a level at which BS4142 says that complaints are likely.

Noise levels can be stated in different ways. BS4142 uses the measure LAeq to describe the noise to be assessed, which is effectively an average. BS4142 uses LA90 to define background noise, which is the level exceeded for 90% of the time. The LA90 is close to the minimum noise level. ETSU states "It is proposed that the background noise levels upon which limits are based, and the noise limits themselves, are based upon typical rather than extreme values at any given wind speed.....A more sensible approach is to base limits upon typical or average levels, but to appreciate that both turbine and background noise levels can vary over several dB for the same nominal conditions". This is inconsistent with normal practice. In using BS4142, it is usually a requirement to measure at the quietest part of the period in question.

In addition, ETSU states that in low background noise conditions there should be an absolute lower limit. What this states is that turbine noise level inside people's houses of just less than that at which the World Health Organisation (WHO) says people can resume sleep is satisfactory. Our view is that this must be the very upper limit of acceptability. Since that time the WHO has revised its guidance to a level which is 5dB lower.

For day time ETSU states that: "there is no evidence for or against the assertion that wind farm noise is acceptable up to and including LA90,10min levels of 40dB(A) even when background noise levels are 30dB". This statement is nonsense. BS4142 states that there are likely to be complaints under these conditions. ETSU's conclusion on a day time standard is that: "external noise limits should lie somewhere between that required to avoid sleep disturbance even if the occupant is outside the property and the higher level that would still prevent sleep disturbance inside the property". It is odd that day time noise criteria should be based on sleep disturbance. The document's general conclusion is that for wind farms noise levels can be at least 10dB above background levels, a level that would be unacceptable in any other circumstances.

We believe that the Altaveedan wind farm would result in a major loss of amenity at night at all the assessed properties and at most other properties in the Shelton Road and Altnahinch Road area in the vicinity of the site. Table 9.17 of the ES shows predicted noise levels at night at selected properties at night. The figure shows that turbine noise at property H9 (for a wind speed of 7m/s would be about 7dB below the night time standard of 43dB. The turbine noise would be

about 36dB, but this is measured as LA90. The noise level measured as LAeq, as required by BS4142, would be 38dB. The average background noise level from Table 9.11 is about 28dB. The turbine noise would be 10dB in excess of the average background noise level and, according to BS4142, complaints would be likely. For some of the other properties and/or at other wind speeds, the situation would be worse. The turbine noise could approach 15dB above background in BS4142 terms.

Table 9.16 of the ES shows predicted noise levels in the Quiet Waking Hours. The turbine noise at 7m/s wind speed would be about 3dB above the background noise curve. Adding 2dB to convert turbine noise to LAeq and another to convert to realistic background noise the turbine noise would be 7dB in excess of the background noise level. This loss of amenity would be significant.

On the basis of the above, we do not agree with the methodology employed, do not believe that an assessment that fails to mention the many concerns and studies over recent years can be considered impartial, and believe that the wind farm development could have a substantial impact on some if not all the properties within 2 km of the wind farm.

1.1.13 Archaeology and Cultural Heritage Assessment.

1.1.13.1 Section 10.4.1 through 10.4.3 of the ES describe the site of archaeological interest (ANT 18:38) that is located within the proposed development site. This site is also referred to by the Historic Monuments Unit of the NIEA in their consultation responses. In their letter of March 2011 the NIEA: HMU confirmed that the proposed *"site is located in an archaeologically sensitive upland location, which has a long history of human occupation in the area dating to prehistoric times. Our records indicate that one archaeological site is located within the application site, an enclosure identified from aerial photography of possible prehistoric date."* NIEA: HMU also noted *"the potential for further, previously unrecorded, buried archaeological remains associated with human occupation in this area since the prehistoric period."*

Following review of other consultation responses / appeals from members of the Orra Action Group, NIEA:HMU advised that *"if this application is to be approved, it should be conditional on the agreement and implementation of a developer-funded programme of archaeological works, to identify and record any archaeological remains in advance of new construction, or provide for their preservation in-situ, as per PPS 6, Policy BH 4. The attached condition would be appropriate in this case (L15 & L05A)."* While we are grateful to the NIEA:HMU for this additional condition we remain concerned as to why any development should be allowed on a site which has a known site of archaeological interest, as well as others in the surrounding area. (In Section 10.4.8 RES themselves admit that a total of 60 sites of archaeological interest – including 12 scheduled monuments - are located within a 5km radius of the proposed development site.) We wonder if NIEA:HMU were perhaps misled by the sections of the ES referenced in 1.1.1 and 1.2 above, and might have had more conservative views if:

a) the need for development had been properly described by RES, i.e. that the Government's 2020 targets for renewable energy can be met with or without this particular development; and/or

b) RES had provided a proper assessment of alternative sites, as we believe they are mandated to do by current regulations.

1.1.13.2 **We would also point out that, (as noticed by NIEA:HMU), even in relation to the known archaeological site within the development area,** the best that RES can in terms of reassurance is to say that *"this site will not be directly physically impacted upon by the proposed wind farm development"*. It may not be physically impacted, but given safety rules within the wind turbine industry recommending that people should not access within 10 X rotor diameter (in this case 824m) of an operational wind turbine. This effectively means that this site, and any others within that operational area, will be out of bounds for an indeterminate period which we believe will not be less than 25 years.

1.1.13.3 **Throughout Section 10.4, the ES lists the 12 scheduled monuments listed above (the remaining 48 sites are listed in Appendix 10.2).** The list gives some idea of the richness of the area in archaeological terms, with sites including Hugh McPhelim O'Neill's tomb, the site of the Battle of Orra, numerous souterrains and standing stones. The local residents have always been proud of this heritage, and feel that the archaeological sites make a substantial contribution to the character of the area; this is one of the many reasons why we have been so concerned about the impact of the proposed development.

RES summary of impact is simply to state, as in 10.4.27, 10.4.33 etc, that these archaeological sites will not be 'directly physically impacted' by the wind farm development. Section 10.5.10 goes even further, stating that the 'Significance of Impact' to ANT 18:38 is *"No Change"*. While it may be possible to interpret this statement as technically true, we do not believe it be an adequate and impartial assessment of the situation. Neither Stonehenge or Newgrange would be 'directly physically affected' by a wind farm built beside them, but there is no doubt that the ability to enjoy those sites would be very significantly affected by such a development. We think any reasonable person would accept that the enjoyment and gravitas of standing on an ancient battle ground or burial site loses most of its appeal when nine turbines over 100m tall are spinning just hundreds of metres away. We believe that these ancient sites should be memorialised and developed further as tourist attractions rather than being dismissed by the proposed development as if they were almost irrelevant.

We do not accept the Section 10.5.10 statement that the 'Significance of Impact' to ANT 18:38 is *"No Change"* as being accurate or impartial, for the reasons stated above. It is patently obvious that there is impact to an archaeological site if that site cannot even be visited for 20+ years as a result of the development. In support of this view, we refer to methodology / guidelines employed by Historic Scotland and the Institute of Field Archaeologists (UK) Working Group - see 10.6.6 and 10.6.9 of the ES:

Historic Scotland advise of factors that contribute to the characterisation of the setting of an historic environment asset, including the following:

- *Visual prominence of the site, but bearing in mind that sites need not necessarily be visually prominent to have a significant setting*
- *Visual dominance of the proposed development relative to the scale of the site and its current place in the landscape*
- *Views both to and from the site including the cases where the development and the site may not be indivisible but are both caught in important views-key vistas/prospects/panorama/sightlines*
- *Presence, extent and scale of existing development within the surroundings of the site and how that currently affects the site's setting*
- *Nature and scale of the landscape which comprises the setting of the site and its ability to absorb new development without eroding the key characteristics and value of the site*
- *Less tangible experiential qualities e.g. sense of remoteness/evocation of historic past/sense of place/cultural identity/spiritual responses"*

The Historic Scotland document states: "*in general, it is the relationship of the historic environment asset with its current surroundings, not with any hypothetical sense of 'original' (i.e. historic) setting which is of concern, though clearly any elements of original, historic setting will be very important.*" We concur with this argument and believe it demonstrates why the avoidance of 'direct physical impact' is only a small part of the consideration which needs to be made.

Similarly, the Institute of Field Archaeologists (UK) Working Group document titled "Setting Standards-A Review" (April 2008 referenced in Section 10.6.9 of the ES assesses current guidelines and research in the analysis of the impact on the setting of heritage features, and includes the following observations:

- *'Setting' is how the physical surroundings of an asset are perceived in relation to its value, understanding or appreciation.*
- *The importance of an asset is not the same as the sensitivity of its setting to change; both need to be considered.*
- *People's appreciation of the setting of a place may be instinctive or subliminal and incidental to why they are there.*
- *In assessing setting impacts, physical and visual changes of the surroundings of a place must be related to how they affect the special interest of the asset.*

Despite quoting the above reference documents, the ES in Sections 10.6.12 through 10.6.42, assesses in detail only the 12 scheduled monuments. The archaeological item of interest, ANT 18:38, within the development site is not discussed, nor are the Battle of Orra site, the Grave of McPhelim O'Neill, the B-17 crash site or any of the other 45 sites of sites of archaeological interest.

Even for the scheduled monuments, we disagree with the simplistic assessments and conclusions listed in the ES, for example:

- a) 10.6.14, in relation to ANT 18:46. RES admit that at least two of the turbines are fully visible from this location. However, we would like to understand on what basis they have concluded that: "*The movement of the blades may have a very minor impact upon the setting of the monument*". Was this surveyed in any way? We believe that the movement of the blades would have more than a minor impact in terms of distraction. We also do not accept that the views of even two fully visible 100m+ wind turbines would not affect the monuments 'remote, rural

setting' as RES have claimed. b) A similar approach is taken in relation to ANT 13:20 (Section 10.6.21). RES mentions that from this view only the blades and hubs are wholly visible. This may not be a mitigating factor, as it gives rise to a distracting view which the NIEA's Supplementary Planning Guide (See photo 13, page 51 of the SPG) says should be avoided.

We request Planning Service to review all our comments and concerns above in sections 1.1.13.1 through 1.1.13.4 since as an absolute minimum we believe the ES displays a lack of impartiality in relation to these assessments. It is our strong opinion that even by the UK and Scottish guidelines referenced by RES, the wind farm would have a very significant impact on regional archaeological and historic sites that are considered by the local community as contributing massively to the character of the area. We do not accept RES attempts to dismiss these concerns with arbitrary and subjective statements.

1.1.13.4 Sections 10.4.41 and 10.4.42 of the ES refer to the crash site of a B-17 Flying Fortress, which crashed while on a ferry flight to Prestwick. There are a number of errors in the statements provided:

- a) The aircraft serial number was 124451, not 41-24451, as stated in the ES
- b) The ES states that all eight crew members on board were killed. This was not the case. There were ten crew, eight of whom were killed. Corp. Leon R. Harrison and PFC Norman Wickes, survived the accident.
- c) The flight did not originate in the USA, as stated in the ES. The aircraft was part of a flight of seven aircraft which left Gander, Newfoundland (Canada) on Oct. 2nd 1942.

While the details above may not be material in respect of the wind farm development, we are concerned that the ES is so inaccurate in relation to a matter which is easy enough to verify. Given the inaccuracy of the statements in 10.4.41 through 10.4.42, how are we – or anyone else relying on the ES to be accurate and impartial for their review purposes – supposed to have confidence in the rest of the ES? Can RES, and the Planning Service, please inform as to what checks / verifications have been done on all aspects of the ES?

1.1.13.5 Section 10.4.43 mentions a prisoner of war camp within 5 km of the site and refers to Figure 10.2. However, there is no reference in Figure 10.2 to this feature. Can RES please advise where exactly the feature is located?

1.1.14 Inaccuracy in relation to Section 14 of the ES (Existing Infrastructure, Telecommunications, Television Broadcasting, Aviation and Military Interests)

We refer in particular Section 14.3.9, which states: In relation to risk of collision, Paragraph 1.3.67 states that *"in the interests of aviation safety, lights may be required on wind turbine development and is mandatory in all cases where the structure exceeds 150 m high."* *The use of lighting is not considered further in this assessment because the proposed Altaveedan wind turbines have a maximum tip height of 101.2m".* We were surprised to

read this, given that military helicopters often fly training sorties across and through the valley directly in the location of the site, and sometimes at extremely low, estimated at 100-200m. Reviewing the consultation responses, we find that the Ministry of Defence do require the use of Aviation lighting: we refer to their letter of 14th July 2011, in which it is stated: *"In the interests of air safety, the MoD requests that the development is fitted with aviation lighting. All turbines should be fitted with 25 candela omni-directional red lighting or infrared lighting with an optimised flash pattern of 60 flashes per minutes of 200ms to 500ms duration a the highest practicable point"*.

Given that the use of aviation lighting is now mandatory, can RES and/or the Planning Service confirm that the various consultations relating to impact of the wind farm will be repeated? e.g. RSPB, NIEA etc. will be advised of the requirement to see if it impacts on the conclusions arrived at by those bodies, assessments of impact on landscape character, assessments of impact on historic monuments etc. will all be repeated with this factor in mind?

1.1.15 **Lack of impartiality in Section 16 Air, Climate and Renewable Energy:**

Section 16 of the ES is clearly **not** impartial. As with some of the previous sections, sweeping statements are presented as fact, while contrary views and opinions, even those of distinguished scientists and respected bodies, are not even mentioned.

Sections 16.3.1 through 16.3.3 refer to global warming; the most recent source quoted by the ES in these sections date from 2007 – i.e. five years ago. In the intervening years there has been intensive debate about climate change and the accuracy of some of the earlier calculations and assessments. Orra Action Group is not saying that they do not accept climate change may be occurring, but given the ES is supposed to be impartial we are surprised that no other view is represented.

Section 16.3.4 states that: *"the generation of electricity from fossil fuelsby emitting SO₂ and NO_x also contributes to acid rain"*. This is scaremongering; there is no problem of acid rain in the UK or Ireland, and the latest generation of Combined Cycle Gas Turbines comply with the EPA requirements of all European countries – NO_x emission permit levels are generally around 25 parts per million, while the GT's themselves often maintain NO_x emissions around single digit ppm levels.

Section 16.3.5 states: *"Since the production of electricity from operating renewable energy sources either has no gaseous emissions (in the case of wind, solar and hydro power) or is at worst CO₂ neutral (in the case of biomass), there is no net contribution to climate change"*. This might be theoretically true if it were possible to provide all electricity from renewable sources, but the production of all Ireland's electricity from wind energy is a practical impossibility. Not only are alternative power generation technologies required when the wind is not blowing, they are also required when the wind **is blowing**, to provide back-up power and enable grid security. It is a well-known fact, and an issue which the system operators in Ireland (EirGrid and SONI) are struggling with, that wind energy requires back-up generation to be on line, even when the wind is blowing. So for anybody to claim that wind energy is CO₂ neutral in the context of the Irish Grid is disingenuous. There are other very significant factors related to the increasing amount of wind energy being added to the system, none of which are mentioned in Section 16 of the ES.

We believe strongly that as a supposedly impartial document, the ES should have taken into account the following:

1.1.15.1 The supposition that increasing wind energy will reduce CO₂ emissions:

A number of studies have been carried out which indicate that the environmental benefit of wind turbines is vastly different in practice than was anticipated when Government policies were established and renewable energy targets put in place. These studies cannot all be dismissed or ignored, and their authors have made themselves and their data available for debate.

* * Dr. Fred Udo, a graduate of the Technical University of Delft, the MIT of the Netherlands, spent a good part of his career at CERN, Switzerland, performing analyses of engineering and scientific data. He is retired, has no financial interest in RE. He performed several studies of the real-time, 1/4-hr data published by EirGrid. (The Irish grid was chosen because EirGrid, the grid operator, makes available the most complete real-time, 1/4-hour grid operations data for study) Details of the study conducted by Dr. Udo are presented in Appendix 1. In summary, from his analysis of the November 2010 to August 2011 EirGrid grid operations data, he found that:

The supposition that one MWh of “clean” wind energy offsets one MWh of “dirty” fossil fuel energy and its associated CO₂, i.e., a 1 : 1 ratio, cannot be achieved. Using the available data, the ratio is 0.7, and this would reduce to 0.6 or less if the EirGrid data took account of the extra fuel/kWh and CO₂ emissions/kWh due to:

- Increased spinning plant operations
 - Increased start/stop operations
 - Increased part-load-ramping operations
 - less than optimum economic scheduling of generating units for balancing wind energy
 - increased line losses to gather the distributed wind energy
 - energy drawn from the grid by wind turbines during low/no-wind periods
- Furthermore, the study showed that the greater the wind energy percent on the grid, the lower the ratio, i.e., adding still more wind energy becomes less and less effective for CO₂ emissions reduction. - at very high wind energy percent on the grid, the ratio will ultimately go to zero and then become negative, i.e., adding still more wind energy to the grid will actually INCREASE CO₂ emissions.

While the above might seem surprising, it is a result of a fact based study using real data, rather than those studies – often carried out by individuals funded / sponsored by the RE industry – which use assumptions, estimates and theoretical models. The conclusions are not a surprise to those closely involved with the subject; reference the following quote from George Wood, formerly a National Grid Power Systems Operations Engineer at both Regional and National Control Centres and latterly the person who developed the contractual and testing parameters of generation operations on the National Grid Network for Ancillary Services which included load management operation specifications for frequency response and reserve strategies (These strategies were carried over to the existing NETA balancing services): *“I do believe that ‘K Le Pairs’ research and*

others have some merit in being critical of the minimal CO2 savings in the deployment of wind turbines in Electricity Networks. Also, I believe that the more wind-turbines that are deployed, the situation will be exacerbated and that is why more interconnectors to Europe are currently being planned to export or import power to try and even out the wind energy generation outputs when excesses or shortfalls occur. In my view the economics of continuing the 'dash for more wind turbines' is nonsensical and will be detrimental to the UK's ability to compete industrially because of the increased electrical energy costs that would be incurred by having a higher proportion of intermittent wind energy.I offered Chris Huhne and DECC to set up a team of unbiased Engineers and Mathematicians that would, through my leadership, evaluate the UK's power network to determine the major CO2 emissions question and all I received from Charles Hendry through my local MP, Jeremy Wright, was an answer that 1MW of energy generated by wind-turbines is 1MW of CO2 emissions saved from conventional energy generation. This is clearly NOT the case. The other significant area of omission by DECC is the carbon footprint of the double power station build requirements to support the deficiencies of wind turbines, their enforced inefficient reserve operations and the increased carbon footprint of additional transmission network requirements and their power losses through remote connections "

Please see Appendix 1 for more details and references to other independent studies supporting the above views.

In summary, we do not accept the simplistic statements made in respect of displaced emissions in Section 16, and in particular Section 16.4.2 / Table 16.1, which indicate a clear bias and are factually incorrect.

1.1.15.2 Displacement of conventional plant

Section 16.5 of the ES covers the possible contribution of the proposed wind farm to Energy Supplies. It fails to mention the requirement for wind energy to be backed up by conventional plant. The impression given by the ES is that each MW of wind energy will displace one MW of energy generated from conventional plant. The calculations in Appendix 16.1 and summaries provided in 16.5 are deeply flawed since they don't take into account the fact that the energy generated by wind turbines is not always available when needed to meet demand. By way of example, (according to data from the EirGrid Web Site, (<http://www.EirGrid.com/operations/systemperformancedata/systemdemand/>) on 17th August 2012, peak demand in the Republic of Ireland was 3,434 MW, at 12:45 pm. At that time, the total capacity available from the 1,600MW plus of installed wind turbines was 195 MW. In fact availability of energy from wind rarely matches with peak demand. E.on is one of the largest utilities in Europe, and is very familiar with this scenario. In their evidence to the House of Lord's Economic Affairs Committee submitted in June 2008 E.on stated that based on their practical experience, only 8 per cent of capacity can be relied upon in winter months:

"Our assessment of winter wind generation data in 2007 indicates that the system operator could rely on 8 per cent of total UK wind capacity to meet winter peak

demand at the same level of dependability as thermal plant.

"On this basis, if the UK required, say, 40,000MW of wind capacity to meet its renewable target by 2020, only 8 per cent of this renewable capacity (3,600MW) could be relied on to meet winter peak demand.

"This would avoid the need to build 3,600MW of new thermal plant but the remaining 36,400MW of renewable capacity would need to be 'backed-up' by thermal plant to meet winter peak electricity demand in 2020."

"The extent to which wind speed, and thus output from wind generation, correlates with periods of high electricity demand is important in assessing the extent to which we can rely on wind generation to meet winter peak electricity demand.

"Winter is generally windier than the summer, with the median output for a winter day higher than in the summer. However, on the coldest days (with temperatures below zero), there tends to be little to no wind, corresponding to winter anti-cyclones.

"There is an increased risk of very low wind speeds, with wind generation output less than 10 per cent of theoretical maximum, on high demand days."

In fact, other studies have indicated that Eon may even have overestimated the 8% and that the actual figure is even lower.

Eon are not the only major utility to question the capacity benefit of installed wind power. Rupert Steele, regulation director, Scottish Power (Iberdrola) is quoted as saying: *"Thirty GW of wind maybe requires 25 GW of backup."*

Based on the above, only 1.44MW of the 18MW rated capacity of the proposed wind farm at Altaveedan can be relied upon to meet winter peak demand. It is distressing for all of us in the Orra Action Group that we have to fight so hard to save the local character of our landscape and protect all that is precious to us as a community, all for the sake of a reliable output (i.e. in terms of displacing conventional plant) from the proposed wind farm of around 1.44MW.

The actual operation of the Irish Grid already reflects the above issues, with some CCGT power plants running through the night at their minimum generation levels to provide a back-up for wind. At such levels, as described in Appendix 1, these plants are at their most inefficient. These CCGT plants use low-emissions combustion systems that require a minimum generation level in the region of 50% of total plant output. On some occasions the system operators will dispatch even older, less efficient plant to provide back-up for wind energy, since such plant has no or much lower minimum generation levels. The net result is that instead of displacing conventional generation, wind energy on the system requires conventional generation to run at much lower loads, where they are much less efficient.

Another factor that RES have ignored in Section 16 is the effect of existing transmission and distribution system constraints. A casual reader of the ES would assume that the output from wind farms would allow conventional plant to be shut down, whereas certain transmission constraints exist that require some of these plants to operate. For example, the "Transmission Constraint Groups" published by Eirgrid and SONI and effective from 17th May 2012 includes the following SONI TCG: *"Coolkeeragh CCGT must remain on load when the NI system demand is above 1000 MW to ensure system security in the North West"*. This

TCG will apply at the moment regardless of whether the proposed Altaveedan wind farm or other wind farms are built.

Can RES explain why the ES does not take into account any of the above in the ES and does not even mention or refer to these concerns? Can the planning Service advise on what basis they can recommend approval given the total lack of impartiality in significant aspects of the ES, such as in section 16? If RES and the planning service ignore the points made in this section 1.1.15.2, they should consider that they are disagreeing not with the Orra Action Group, but with the assessment of one of the largest Utilities in Europe.

1.1.15.3 Effect on Grid Stability and Security.

We note with dismay that RES have not made any reference whatsoever in the ES to the substantial challenges being posed by the build out of wind energy onto the Irish Grid system. Once again, we would request the Planning Service to consider the lack of impartiality in the ES and to reflect on the validity of the entire document.

Within the SEM (Single Electricity Market) in Ireland, EirGrid and SONI (System Operator Northern Ireland) are jointly responsible for operation of the Transmission System throughout the island of Ireland. Over the last few years, the subsidies available for Wind Energy development have encouraged fast build-out of wind energy, while at the same time, as a result of the recession system demand remains below 2008 levels. As a result, on an intermittent basis, Ireland already has some of the highest levels of wind penetration in Europe. EirGrid and SONI find themselves in unknown territory, trying to keep the grid secure whilst dealing with the increased amount of wind energy. In fact, they regularly have to curtail / constrain the output from wind farms because the Grid simply cannot sustain greater than approx. 50% of demand coming from wind energy.

As reported in their own study and consultation documents (bold highlights by us):

*"The power system of Ireland and Northern Ireland is changing. **The combined system will have more windfarms installed and operated as a percentage of the overall annual energy requirement by 2020 than anywhere else in the world.** This is driving major changes in not only the need for appropriate infrastructure but, as importantly, in the behaviour of the power system over a wide range of operational metrics. ...*

*The current and expected 2020 level of installed wind across the island (in percentage terms) is, and will continue to be, greater than any other synchronous region in Europe over this timeframe. **This transformation requires significant and appropriate investment in the necessary transmission and distribution infrastructure....***

***In addition, this transformation will induce significant changes to the nature and behaviour of the power system** which needs to be fundamentally understood in order to be managed effectively. Based on this understanding, an appropriate holistic programme of work can be formulated to ensure the evolution of the necessary plant portfolio capability and reliable performance levels combined with complementary system operational policies and real-time support tools. It is*

only through this co-ordinated approach, based on a fundamental understanding of the behaviour of the system, that the continued secure, reliable and efficient operation of the power system can be ensured.

EirGrid and SONI released the "Facilitation of Renewables" (FoR) studies in June 2010 which identified the expected changes to system behaviour up to 2020.

Amongst the many issues the studies identified, it showed that system frequency response would be difficult to manage with reduced synchronous inertia, and issues related to the rate of change of frequency (RoCoF) of distribution protection and generation capability would be problematic. In addition, reactive power control, especially during voltage disturbances, would be important in order to preserve the transient stability and integrity of the system. These studies were based on thousands of detailed dynamic simulations of the power system at distinct load levels and portfolio dispatches. Moreover, the simulations were based on models where it was assumed that generators, in general, met the performance standards stipulated under the Grid Codes." (Ensuring a Secure, Reliable and Efficient Power System in a Changing Environment, June 2011)

To manage the operational element of their work over the coming years, EirGrid and SONI have established a programme of work entitled "Delivering a Secure Sustainable Electricity System (DS3). The programme contained 11 workstreams each focussing on a different technical challenge. One of these workstreams deals with the ability of the system to manage high Rates of Change of Frequency ROCOF:

"The "Facilitation of Renewables" report indicated that the key limit to allowing high real time penetrations of wind power plants on the system was the rate of change of frequency (ROCOF). Specifically, the studies identified that with increasing wind power plant the synchronous on-line inertia on the system would reduce. The "Ensuring a Secure, Sustainable Electricity system" report indicated that this would on average reduce by 25% with an assumed portfolio consistent with the renewable policy objectives. This reduced inertia will result in higher ROCOF being experienced for the loss of a single large generation unit ... The current Grid Code in Ireland only requires generators to be able to ride through ROCOF of 0.5 Hz/s. It is not currently clear what standard is required of each distribution generator in Northern Ireland (NI) but it is understood to be in the range of 0.25 to 0.4 Hz/s. From the year 2000 onwards, all transmission connected conventional generation in NI should as part of their connection agreement meet a Minimal Functional Specification ROCOF requirement of 1.5Hz/s From operational experience and analysis, ROCOF in excess of 0.5 Hz/s are likely to be encountered when the system exceeds a 50% system non-synchronous penetration (SNSP) level or the synchronous inertia falls below 25000 MW-seconds. In addition, the loss of mains protection utilised in the distribution network in Ireland and employ ROCOF in excess of 0.6 Hz/s. Operating a power system where a ROCOF of greater than 0.5 Hz/s is likely to occur for a probable event (loss of a single generator) and could lead to the cascade tripping of all remaining generation would not be prudent. Therefore, in order to securely operate a power system with high penetrations of wind power plant there needs to be a reliable level of performance from generators and any associated protection equipment, i.e. that the plant can securely operate with ROCOF well in excess of 0.5 Hz/s or that the inertia on the system with respect to the size of

largest in feed remains high (in the order of 25000 MW-seconds for the Ireland and Northern Ireland power system)." ("EirGrid and SONI DS3 Rate of Change of Frequency (ROCOF) Workstream" Dec, 2011)

In September 2011 EirGrid issued a Grid code modification proposal (MPID 219), to increase ROCOF limits that generators must remain connected for, from 0.5Hz/s to 4.0 Hz/s, stating that ***"If the modification is not implemented, then it will limit the amount wind generation or other non-synchronous generation allowed on the system. This will severely increase the curtailment of wind generation in the future"***. Most of the conventional generators have responded that the 4.0 Hz/s limit is unrealistic and impossible to implement. EirGrid and SONI are now requesting capabilities of 2 Hz/S.

Consultations with existing generators operating in the SEM have revealed that committing to higher ROCOF capability is not an easy task. As of the date of this document, the generators have not confirmed their capability and significant studies are required:

"Some generator owners on the Island have stated that they cannot support any changes to the Grid Code in relation to higher RoCoF values until a detailed review has been performed on their plant.

This review would need to cover the control, instrumentation, mechanical and electrical impacts. This is likely to require 8-10 months to complete per generator. For some generator owners with large portfolios, there is a working assumption that this process could take longer to complete. Preliminary results might be achievable in 12-14 months if prioritization of generators for RoCoF investigation occurs..... Based on the above, there are likely to be delays to the timelines originally published for this RoCoF workstream" (EirGrid and SONI DS3 Programme Advisory Council Status Update, 15th May 2012)

It should also be noted that the studies mentioned above will be expensive, and will ultimately result in an increase in the cost of electricity to the consumer; Just one of the many hidden costs which are never taken into account when discussing the impact of wind energy on the electrical system.

It is remarkable that RES have chosen not to mention any of the above in the ES. The issues will be well known to RES and all relevant information is available on the EirGrid and SONI web sites. We certainly do not see this as an impartial approach to the ES and believe Section 16 is a whitewash.

1.1.15.4 Cost of wind energy generation

There is no mention in the ES of the costs of wind energy to the consumer. It is clear that development of wind energy is attractive to developers such as RES given the subsidies in place; it is only in the last few months that the Government had to drop its plans to make a substantial reduction in wind energy subsidies.

In fact, the true costs of wind energy are still to be assessed. Massive infrastructure developments are needed to support the build-out of wind energy: ***"EirGrid calculates that to facilitate the necessary increase in renewable***

generation and to adequately meet the demands of the electricity customer, the capacity of the bulk transmission system will need to be doubled by 2025. This will be achieved through major reinforcements to the existing network using the best technological solutions available". (Grid 25: A Strategy for the Development of Ireland's Electricity Grid for a Sustainable and Competitive Future, published by EirGrid). The strategy document goes on to describe the 1,150 km of new transmission lines that will be required.

It's interesting to note that neither the ES for the Altaveedan project, nor any of the media articles expounding on the virtues of wind energy, take into account the effect on the landscape, the effect on the environment including CO₂ from construction and installation of the T&D infrastructure, or the very significant additional cost associated with the T&D changes required to facilitate wind energy. Surely the consumer, especially those whose local neighbourhood character is going to be so severely impacted, deserves to be told not only of the environmental impacts, but also how this T&D investment will ultimately result in higher electricity costs.

Other cost factors associated with wind energy development (which ultimately all have to be paid by the consumer) include the following:

- Increased O&M costs for conventional plant, as a result of increased cycling operation.
- Cost of studies and investigations as noted above, to try to establish if conventional plant can be modified to meet the requirements of the system operators as a result of increasing wind power on the grid.
- Increased investment and O&M costs associated with any modifications required to meet the new system requirements and/or any maintenance effects that result from them.
- Increased cost due to running CCGT's at their most inefficient operating levels and/or operating even older peaking plant to provide flexible back-up for wind.

The paper "POWERFUL TARGETS: Exploring the relative cost of meeting decarbonisation and renewables targets in the British power sector" by AF-Mercados, a global energy consultancy, looks at the lowest cost way of getting to the targets the UK has accepted for reducing its total greenhouse gas emissions by 80% by 2050. The report concluded that: (highlights by us)

*"Our modelling indicates that in order to meet our 2050 target for carbon reduction emissions for power we need to spend around 25% more than we would if we had no such target. **To achieve exactly the same amount of carbon reduction – but with the renewable targets as well – would add around another 15%, or about 40% extra overall costs compared to no targets.***

Without carbon dioxide reduction targets there would be no renewable or new nuclear. This illustrates the obvious point that carbon credits or other government policies are required to achieve power generation that is less carbon intensive.

*If our only policy driver is to reduce carbon emissions, then **the lowest cost way of meeting our emissions targets requires a mixture of gas and***

nuclear new build. Coal has no place in this least cost scenario – because of its emissions. **Nor has wind, either onshore or offshore – because of its additional cost.** To meet the UK's targets does require some offsetting by carbon capture and storage. This is a technology that is still in its infancy and is unproven.

It is only when we require renewables for their own sake – and not only to reduce carbon emissions – that wind, both offshore and onshore, becomes part of the generation mix. Even in this scenario solar power has no role because of its additional cost. These are interesting conclusions. **If we are concerned about cost, then renewables have no part to play in reducing greenhouse gas emissions by 80% before 2050.** Rather it is gas and nuclear alone that creates the least cost mix.

What is clear is that current policies, under DECC's own central projections, are not delivering emissions reductions using the lowest cost means. Indeed according to this analysis, current policy is set on a relatively high cost path. **The model shows that the cost of having a renewables target over and above an emissions target alone is high. It is often not clear whether the aim of that policy is to reduce carbon dioxide emissions, or to deliver renewables for their own sake.** Understanding the difference is key to understanding the costs to the British economy.

Given the economic impact, it is important that the case for renewables is made independently and cogently. There may be valid policy reasons to go for a costlier mix, but if this is the case, it needs to be articulated openly and honestly, giving stakeholders robust forecasts of the costs and benefits. We hope that this paper encourages debate and sheds light in this important area of our lives.”

The above conclusions are startling, but are not isolated; other experts in the industry are coming to similar conclusions. What is clear is that there is more than one side to the story, and that there are questions to be answered regarding the overall effectiveness of the current policies.

We in the Orra Action Group believe that any representations made about wind energy should be impartial and honest, and include reference to the above aspects, instead of painting a picture, as in the ES, of wind power being the golden solution, providing cost-effective and clean alternatives to conventional generation. Anyone reading the ES deserves to be given a more informed and impartial assessment. We also point out that the need for impartiality is a formal requirement of the ES, and that the ES is therefore deficient and unacceptable.

References:

Strategic Environmental Assessment: (www.offshoreenergy.co.uk).

Onshore Renewable Electricity Action Plan (OREAP) for Northern Ireland

Strategic Energy Framework:

(www.detini.gov.uk/strategic_energy_framework__sef_2010_.pdf)

Northern Ireland Planning Service:

http://www.planningni.gov.uk/index/advice/advice_apply/advice_renewable_energy/renewable_wind_farms.htm

Noise Radiation from Wind Turbines Installed Near Homes: Effects on Health;
Barbara J Frey BA MA and Peter J Hadden BSc FRICS, February 2007

The Woodland Trust

<http://www.backonthemap.org.uk/WoodlandTrust/Core/TemplateHandler.aspx?NRMODE=Published&NRORIGINALURL=%2fwoodland%2fwoodSearch%2ehtm&NRNODEGUID=%7bCA871613-262C-4A28-AD57-39640ECBB267%7d&NRCACHEHINT=Guest>

AIR 94 Van den Berg, G.P. (2003) Effects of the Wind Profile at Night on Wind Turbine Sound. Journal of Sound and Vibration

* some extracts from evidence provided by Sir Donald Miller and Keep Corlic Wild in relation to proposed wind farm at Colick Hill / Devol Moor, Greenock.

** : As reported by Willem Post BSME New Jersey Institute of Technology, MSME Rensselaer Polytechnic Institute, MBA, University of Connecticut. P.E. Connecticut. Consulting Engineer and Project Manager (on the Energy Collective Web Site – which is sponsored by Siemens)

Ensuring a Secure, Reliable and Efficient Power System in a Changing Environment, EirGrid and SONI, June 2011

EirGrid Grid code modification proposal (MPID 219)

EirGrid and SONI DS3 Rate of Change of Frequency (ROCOF) Workstream” Dec, 2011

EirGrid and SONI DS3 Programme Advisory Council Status Update, 15th May 2012

“POWERFUL TARGETS: Exploring the relative cost of meeting decarbonisation and renewables targets in the British power sector” by AF-Mercados, 4th March 2012.

Grid 25: A Strategy for the Development of Ireland’s Electricity Grid for a Sustainable and Competitive Future, published by EirGrid

1.2 Shortfall in relation to Mandatory Requirements

- 1.2.1 **Failure to provide alternatives:** Section 1.5.1 of the ES states that, in accordance with Schedule 4 of the EIA Regulations, the following MUST be included within the ES: *“An outline of the alternatives studied by the applicant and explanation of why the particular option was chosen. Chapter 5 provides these details”.*

In fact, Chapter 5 does not contain any reference or discussion around alternative sites. Instead, section 5.3.1 basically confirms that the ES will define its own rules by stating: *“Given the large scale deployment of renewable energy that is required to meet Northern Ireland and UK targets, described in **Chapter 4**, a site selection process that assesses sites against a set of criteria (designations and residential properties) is deemed more appropriate than a site selection process based upon comparative site virtues. The end objective has therefore been the selection of an appropriate site”*

How can RES decide whether or not they comply with something which they themselves state as being a mandatory regulatory requirement? One of the key observations made by the Orra Action Group has been that other sites should be investigated which a) will not be so close to existing housing b) will not be so close to existing wind farms and c) would not result in a destruction of the landscape and character of the local area.

Please note that we also take issue with RES' attempted justification of this approach by referring to the *“large scale deployment of renewable energy that is required to meet Northern Ireland and UK targets”*. Firstly, as stated in 1.1.1 above, in theory the targets can be met with or without the proposed wind farm development and secondly, as stated in 1.15.3, there are many other factors to be addressed before the Northern Ireland and UK Targets for renewable energy can be met, the more significant of which are Grid stability/security and Transmission and Distribution (T&D) issues. We therefore refute RES' attempt to avoid meeting this mandatory requirement of the EIA regulations in respect of alternative sites.

The lack of alternative sites in this ES owes much to RES' failure to carry out a proper assessment of different landscapes with different potential capacities to absorb impacts. Indeed, the approach to site selection focused on wind speeds / energy yields related to 'economic viability' and 'an adequate return on investment'. That itself flies in the face of the Companion Guide to PPS22 which notes that developments in technology and the electricity market over recent years has increased the viability of wind farm developments across the United Kingdom. *“Wind speeds are seen to be less pivotal in the site selection process and wind farm developments can reasonably be expected to be proposed in all regions of the country.”*¹⁷ It follows that there must be numerous sites which were automatically excluded from consideration in the Environmental Statement. We also note that the Supplementary planning Guidance (SPG) to accompany PPS18 includes the following recommendation as a key principle of Good Siting, Layout and Design: *“Identify and avoid impacts on areas of wild character and on features of natural or cultural*

heritage interest that contribute to landscape character and landscape value, including important habitats and earth science features; vulnerable bird habitats and species; areas of significant archaeological interest; and historic monuments, designed landscapes, conservation areas, listed buildings and their settings". Even the ES itself admits that the proposed site has wild character, contains important habitats and vulnerable bird habitats and species, contains known archaeological features etc.

It is noteworthy, that, in their Site Selection process, RES have listed in Section 5.1.1 aspects which relate to their subjective evaluation of what is adequate in relation to project viability, economics, life-span etc.; Landscape and visual design considerations are listed almost as an afterthought, per the last bullet in Section 5.1.2 ...as an 'additional factor' which will also 'influence' the scale and viability of a project: Landscape and visual design considerations also need to be taken into account. Given the importance of landscape and visual considerations to those resident in the local townlands we do not consider it impartial for this aspect to be treated as such a minor part of the site selection process.

1.2.2 Failure to provide adequate data: Section 1.5.1 of the ES also states that, in accordance with Schedule 4 of the EIA Regulations, the following MUST be included within the ES: *"The data required to identify and assess the main effects that the development is likely to have on the environment"*. We believe that the ES falls short of this requirement in a number of areas:

- Data is only provided to support a biased viewpoint, as outlined in Section 1.1 above. There is either no data or insufficient data on some key issues relating to the effect the development is likely to have on the environment.
- In some cases, as outlined in Section 1.1 above, data provided in the ES is factually incorrect (e.g. distances between wind farms).
- Background noise readings, which are significant data, are not reliable for reasons stated in Section 1.1 above.

References:

1: CD17 Planning for Renewable Energy: A Companion Guide to PPS22 (paragraph 1; Annex 8 - paragraph 38)

1.3 Lack of Provision for obtaining feedback from key stakeholders:

Given that a wind farm development such as Altaveedan will always have more impact on those living close to it, we believe that the developer should have made more effort to gather and then include in the ES the opinion and feelings of local residents. There is no mention in the ES of the strong concerns and fears of the local residents, nor of any efforts being made to address them.

Perhaps our point is best addressed by asking the Planning Service to indicate to us what provisions are in the ES for obtaining feedback from key stakeholders such as local residents? There may have been a public exhibition and 2 door to door visits, but the fact remains that any feedback provided by local residents was ignored. Many of our group wrote to the planning service and the only reply they received was a letter saying their letter would be reviewed. None of the feedback points raised were ever answered.

When RES were selecting views for the ES, were local residents involved in that selection process?

When assessing the impacts from those views, were local residents asked for their input?

Would it not have been reasonable to take a survey and from the answers received form an opinion as to the impact of the views, instead of RES being subjective?

1.4 Lack of adequate opportunity for environmental concerns to be addressed.

Developers such as RES have vast resources to apply to the preparation of ES documentation. In addition, much of their work on the ES is based on templates developed from previous projects.

Local Residents, on the other hand, have no experience of planning regulations and /or the technical matters which have to be addressed in reviewing an ES of this nature, or even dealing with all the Government bodies involved. More importantly, local residents are required to work to support their families, some of them even overseas, so have limited time to devote to analysis of Environmental Statements and intricacies' of planning regulations; they would expect the planning service to ensure that the ES is accurate and impartial.

What we have found in the case of the Altaveedan proposal is that a developer will churn out volumes of documents, photographs, copies of regulations etc. much of it packaged in a way as to make interpretation difficult, and that it is left to local residents to point out the errors and omissions in that document. We are obliged to seek help, at our expense, from consultants in these fields. And inevitably, as listed above, we find countless examples of misinformation, subjective and arbitrary assessments, and incorrect data. Compared to the time RES had to develop the ES in the first place, we are given very little time to address our concerns, and when we have done so in the past, our questions have not been answered.

So we think it is clear that the ES and the process around it, does not provide adequate opportunity for environmental concerns to be addressed.

Appendix 1

Taken from: “Wind Energy CO2 Emissions Reductions are Overstated” by Willem Post. See:
<http://theenergycollective.com/willem-post/89476/wind-energy-co2-emissions-are-overstated>

BACKGROUND INFORMATION ON THE IRISH GRID

The Irish grid will be a major focus of this article because EirGrid, the grid operator, makes available the most complete real-time, 1/4-hour grid operations data for study.

Ireland’s Energy Generation: Ireland’s total electricity production was about 26,000 GWh in 2010. Gas-fired OCGTs and CCGTs provided about 65.5%, coal 13.2%, peat 8.2%, wind 9.8%, hydro 2.5% of which 1.7%, or 442 GWh, was impounded/run-of-river hydro. Ireland imports 100% of its coal, about 90% of its gas and produces 100% of its peat.

Wind Energy: In Ireland, good wind energy months are April, May, June, November and February. On the west coast of Ireland, wind energy is greatest during summer daytimes, because of increased wind speeds as the lands warms up. The west coast wind energy coincides with greater daytime demands which is fortuitous. However, much of the energy needs to be transmitted to the east coast (line and transformer losses), as few people live on the west coast.

This video, based on EirGrid data, shows wind output, MW, and total system output, MW, versus time, from 2001-2011. As Irish wind output increased from year-to-year, it became an increasingly larger fraction of the total system output, especially during very windy nighttime periods when demand is minimal.

<http://www.youtube.com/watch?v=TYtsUkgMhwU>

Coal/Peat: The below website shows coal/peat plants are base-loaded, i.e., not used for balancing wind energy, i.e., their CO2 emission intensities are essentially constant.

<http://ee.ucd.ie/erc/member/2005transdenny.pdf>

Hydro: Ireland has many small hydro plants and a few larger plants, such as the Ardnacrusa power plant, built 1929, capacity 85 MW, output 332 GWh/yr, Cathaleens Falls 45 MW, Poulaphuca 30 MW and Inniscarra 19 MW. The below website shows hydro plant outputs follow daily demand, i.e., not used for balancing wind energy.

<http://www.dconnolly.net/files/Modeling%20the%20Irish%20Energy-System%20-%20Data%20Required%20for%20the%20EnergyPLAN%20Tool.pdf>

The almost 40-year old, 292 MW Turlough Hill pumped-storage facility pumps to add to its upper reservoir during low nighttime demand and produces energy during peak daytime demand. Its net effect is to “flatten” the daily demand profile. It is not used for balancing wind energy. Currently, it operates at about 50% of capacity, because of ongoing modifications.

Combined-Heat-Power: Ireland has about 195 units totaling about 282 MW of operating combined-heat-power, CHP, plants of which a few larger units totaling 248 MW are dedicated to industrial processes, such as food, manufacturing and pharmaceutical. The output of these units is independent of the weather.

CHP energy generation was 6.3% of Ireland's total energy generation in 2008 (latest data).

Only 11 CHP units (mostly associated with industrial processes) exported 1,013 GWh to the grid in 2008, or $1,013/260 = 3.9\%$ of total production. EirGrid includes the exported energy and associated CO₂ emissions of these units in its 1/4-hour data sets.

CHP heat generation was 4% of Ireland's total heat generation in 2008 (latest data).

The above indicates CHP operations have no material impact on the 1/4-hour CO₂/kWh posted by EirGrid.

http://www.seai.ie/Publications/Statistics_Publications/EPSSU_Publications/CHP%20in%20Ireland%202010%20Report.pdf

OCGTs/CCGTs: A part of the OCGT/CCGT capacity serves base-load, follows daily demand, provides peaking power and performs voltage and frequency regulation. It also performs wind energy balancing, i.e., ramps down with smaller wind energy surges and ramps up with small wind energy ebbs.

Because larger wind energy surges and ebbs are unpredictable, additional OCGT/CCGT capacity needs to be in spinning and part-load-ramping mode for balancing wind energy; the greater the wind energy, the greater the additional spinning and balancing capacity.

Because of much degraded heat rates, Btu/kWh, and their combustion process becoming unstable, gas turbines are rarely operated below 40% of their rated output which limits their ramping range from 40 to 100 percent of rated output.

<http://theenergycollective.com/willem-post/57905/wind-power-and-co2-emissio>

How EirGrid Calculates CO₂ Emissions/kWh: The following is a direct quote from the EirGrid website:

“EirGrid, with the support of the Sustainable Energy Authority of Ireland, has developed together the following methodology for calculating CO₂ Emissions.

The rate of carbon emissions is calculated in real time by using the generators MW output, the individual heat rate curves for each power station and the calorific values for each type of fuel used.

The heat rate curves are used to determine the efficiency at which a generator burns fuel at any given time.

The fuel calorific values are then used to calculate the rate of carbon emissions for the fuel being burned by the generator“

Grid operators know the heat rate curves of the plants on their grids which were obtained by testing. They need to know this for economic dispatch.

EirGrid takes the percent of rated output each plant is operated at and multiplies it by the heat rate for that output percentage (from the above mentioned heat rate curve) to calculate the fuel consumption/kWh and CO2 emissions/kWh every 1/4 hour. It posts the grid CO2 intensity (CO2 emissions of all plants/total kWh produced by all plants) as gram CO2/kWh on its website every 1/4 hour.

The EirGrid CO2 emissions/kWh are understated, because they do not account for the extra fuel/kWh and CO2 emissions/kWh due to:

- Increased spinning plant operations
- Increased start/stop operations
- Increased part-load-ramping operations
- less than optimum economic scheduling of generating units for balancing wind energy
- increased line losses to gather the distributed wind energy
- energy drawn from the grid by wind turbines during low/no-wind periods

Note: In my discussions with Mr. O'Sullivan, energy systems analyst of EirGrid, he confirmed:

- EirGrid does not account for degradation of heat rates due to up/down ramping, and for starting/stopping of units, i.e., EirGrid's 1/4-hour data understate the grid CO2 emission intensity, g/kWh.
- CO2 emissions reduction is secondary, as there are other reasons for building out wind energy, such as the Brussels' mandated renewable energy percentages that provide Ireland with subsidies for wind turbine facilities.
- Ireland wants to reduce its fuel imports and increase its wind energy exports to Britain.

STUDY OF WIND ENERGY ON THE IRISH GRID

The Irish grid was selected to determine the CO2 emission reductions due to wind energy on the grid.

EirGrid, the grid operator, is one of the few operators that publishes the following real-time, 1/4-hr grid operations data which are, for study purposes, superior to the 1-hr data published by Texas and Colorado.

- grid CO2 emission intensity, gram/kWh
- wind energy produced, GWh
- total energy produced, GWh

Dr. Fred Udo, a graduate of the Technical University of Delft, the MIT of the Netherlands, spent a good part of his career at CERN, Switzerland, performing analyses of engineering and scientific data. He is retired, has no financial interest in RE. He performed several studies of the real-time, 1/4-hr data published by EirGrid.

<http://www.clepair.net/lerlandUdo.html>

<http://www.clepair.net/Udo-okt-e.html>

<http://www.clepair.net/Udo-curtail201205.html>

Analysis of the November 2010 to August 2011 EirGrid grid operations data shows at an average wind energy penetration of 12.6%, the average efficiency of reducing CO2 emissions is about 70%, i.e., a ratio 1 : 0.7, for that 10-month period.

Wind energy: 12.6%

System, with wind energy: CO2 = 451.3 g/kWh

System, without wind energy: CO2 = 495 g/kWh

Fossil plants only: CO2 = 518.1 g/kWh

Reduction: $(495 - 451.3)/495 = 8.9\%$

Efficiency: $8.9/12.6 = 70.6\%$

See Table 2 in <http://www.clepair.net/lerlandUdo.html>

This ratio would be further reduced to about 1 : 0.6, or less, if the CO2 emissions from increased spinning and start/stop operations, efficiency decreases due to ramping, less than optimum economic scheduling of generating units and increased line losses were included.

The analysis of the EirGrid data also found:

- the greater the wind energy percent on the grid, the lower the ratio, i.e., adding still more wind energy becomes less and less effective for CO2 emissions reduction.

- at very high wind energy percent on the grid, the ratio will ultimately go to zero and then become negative, i.e., adding still more wind energy to the grid will actually INCREASE CO2 emissions.

See Figure 1 in <http://www.clepair.net/Udo-okt-e.html>

In the gas-energy-dominated Irish system, wind energy displaces mostly CCGT energy which, at zero wind energy on the grid, has CO2 emissions of 117 lb of CO2/(million Btu x 1 kWh/7,000 Btu) = 0.819 lb/kWh x 1/2.205 = 371 g/kWh, at an average turbine efficiency of (3,413 Btu/kWh)/(heat rate of 7,000 Btu/kWh) = 48.85%.; Ireland has mostly newer model CCGTs.

The addition of wind energy to the Irish grid requires a part of the gas turbine fleet to operate in:

- starting/stopping mode (which is less efficient; more fuel and CO2/kWh)
- spinning mode (which produces no energy, but emits CO2, as an idling car)
- decreased part-load mode (which is less efficient; more fuel and CO2/kWh)
- increased part-load-ramping mode (which is less efficient; more fuel and CO2/kWh)

The increased CO2 emission/kWh trend was verified by preparing a scatter diagram of the EirGrid data. The fit lines of the scatter diagrams of CO2 emission intensity, g/kWh, versus wind energy, %, show increasing CO2 emissions/kWh of the fossil units as wind energy percent increases. Where the fit line intersects the Y-axis, i.e., no wind energy, is the lowest CO2 emissions/kWh.

See Figure 1 of <http://www.clepair.net/Udo-okt-e.html>

This appears entirely reasonable to power system engineers who know the more their power generators are operated in part-load and part-load-ramping mode, the less efficient they become and the less efficient the whole grid becomes.

Here is the testimonial of a UK power systems engineer with decades of experience in the utility industry. He is retired, i.e., finally free to speak up, and claims CO2 emission reduction due to wind energy is minimal.

<http://fifewindfarms.org.uk/wind-turbines-do-they-increase-carbon-emissions/>

Here are two articles by William Palmer, a retired power systems engineer of the Ontario Power System.

<http://www.masterresource.org/2012/02/ontario-windpower-case-study-i/>

<http://www.masterresource.org/2012/03/ontario-windpower-case-study-ii/>

Just as a car, if operated at 20 mph, then accelerated to 50 mph and back down again a few hundred times during a 24-hour trip would use more gas and pollute more than operated at a steady speed, so would the balancing CCGTs and OCGTs.

However, gas turbines operating in part-load-ramping mode have even greater degradations of heat rates, Btu/kWh, than gasoline and diesel engines. The extra fuel consumed and extra CO₂ emitted by the gas turbines are so much that they significantly offset what wind energy was meant to reduce.

Grids Using Primarily Hydro Plants for Balancing: Balancing wind energy with hydro plants incurs the least cost/kWh and CO₂ emissions/kWh. The outputs of hydro plants are controlled by varying the water flow to the turbines. The turbines need to operate in part-load-ramping mode for balancing wind energy which is less efficient, i.e., more waterflow/kWh, and incurs more wear and tear than if they were operated to follow daily demands without wind energy on the grid.

An example of such grids is the Danish grid. Danish wind energy in excess of Danish demand is absorbed and balanced by the hydro plants of Norway and Sweden thereby maintaining their reservoirs at higher levels than they would have been. Other than the CO₂ emissions associated with transmission losses and the loss of efficiency due to the turbines being in more-rapidly-varying, part-load-ramping mode, little additional CO₂ emissions occur due to wind energy balancing.

Note: Norway and Sweden buy the Danish excess energy mostly at very low nighttime rates. They use the saved water in their reservoirs to generate energy to serve their domestic daytime demands when rates are higher. In addition, they charge Denmark a fee for providing balancing services.

A good deal for Norway and Sweden, a bad deal for Denmark. The extra costs are rolled into Danish household electric rates (31.5 euro cent/kWh in 2011, highest in Europe), while industrial rates are kept low for international competitive reasons, as are Germany's household (27 euro cent/kWh in 2011, second highest) and industrial rates.

Grids Using Primarily Coal Plants for Balancing: Older coal plants were designed to be base-loaded, not designed to have the high ramping rates required for wind energy balancing. Newer coal plants, if designed for higher ramping rates, are more suitable for wind energy balancing. Whereas the operating range of gas turbines is about 40 - 100 % of rated output, of coal plants it is about 50 -100 % of rated output.

The operation of coal plants in part-load-ramping mode for balancing wind energy, especially during high-wind-speed periods, may destabilize combustion control systems causing extra fuel consumption, CO₂ emissions and

NOx emissions/kWh, and destabilize air quality control systems causing extra particulate, NOx and SOx emissions/kWh.

The extra fuel consumption and CO2 emissions causes the average efficiency of reducing CO2 emissions to become about 70%, i.e., a ratio 1 : 0.7, as shown by the Texas and Colorado grids when coal plants of various vintages were used for wind energy balancing during high wind speed periods, because of insufficient available capacity of quick-ramping gas turbines.

<http://docs.wind-watch.org/BENTEK-How-Less-Became-More.pdf>

<http://theenergycollective.com/willem-post/64492/wind-energy-reduces-co2-emissions-few-percent>

Grids dominated by coal plants of various vintages and an ANNUAL wind energy percentage of 5% or greater, have significant operational challenges regarding frequency and voltage regulation and balancing of wind energy, especially during high windspeed periods when INSTANTANEOUS wind energy on the grid may be 20% or greater during periods of low demand, such as at night when wind speeds usually are greatest.

In a system dominated by coal, wind energy primarily displaces gas turbine energy and coal energy which has CO2 emissions of at about $2.15 \text{ lb/kWh} \times 1/2.205 = 975 \text{ g/kWh}$.

Note: Modern subcritical boilers, supercritical boilers, ultra-supercritical boilers are more efficient and have CO2 emissions of 838 g/kWh, 800 g/kWh, 770 g/kWh, respectively.

Any CO2 emissions reduction in such a coal-dominated grid would depend on the weather-dependent wind energy %, the fuel types and consumption, and the changes of:

- start/stop operations, and the type of units
- spinning plant operations, and the type of units
- part-load operations, and the type of units
- part-load-ramping operations, and the type of units
- scheduling of units to integrate wind energy; likely less economical than without wind energy.

INCREASED ENERGY EFFICIENCY

Ratios of 1 : 0.95 are likely to occur due to energy efficiency measures. EE is the low-hanging fruit, has not scratched the surface, is preferred to wind energy, because:

EE is invisible, AND it does not make noise, AND it does not destroy pristine ridge lines/upset mountain water runoffs, AND it would reduce CO2, NOx, SOx and particulates more effectively than wind energy, AND it would not require the transmission network build-outs for wind energy, AND it would slow electric rate increases, AND it would slow fuel cost increases, AND it would slow depletion of fuel resources, AND it would create 3 times the

domestic jobs and reduce 3-5 times the Btus and CO2 per invested dollar than wind energy, AND all the technologies are fully developed, AND it would end the wasteful subsidizing of expensive wind energy tax-shelters mostly benefitting the top 1% at the expense of the other 99%, AND it would be more democratic/equitable, AND it would do all this without the public resistance and controversies associated with wind energy.

Crockan Cottage
49 Shelton Road
ARMOY
Ballymoney
Co Antrim
BT53 8YH
2nd June 2013

Your Ref: COR/279/2013

F.A.O. Alex Attwood Minister for Environment
DOE Private Office 8th Floor
Goodwood House
44-58 May Street
Town Parks
BELFAST
BT1 4N

Dear Mr Attwood

RE: Wind Farms Orra Mountain Loughguile Ref No D/2010/0356/F

Thank you for your letter of the 21st May 2013 via your private office. Since then you have put out a Press Release and have appeared on UTV 6.00 News on Thursday 30th May 2013 given your endorsement of the LEDS (Local Electricity Discount Scheme) for residents living within 2.7km of the Altaveedan Wind Farm here in Loughguile to receive discounted Electricity bills.

You were obviously aware of these LEDS payment when you wrote to me last and that we as the community that will suffer any consequences of Wind Farms should have had input and been informed before the Press. We found out when the BBC radio arrived in the area to ask how we felt.

We strongly feel that as Energy Minister for Northern Ireland and as head over Renewable Energy team within the Planning Department you should not be swaying/endorsing your opinions in favour of RES in a bid to push/influence this or any planning proposal through the process. As Energy Minister you should be totally impartial until such times as any planning proposal has been fully assessed. As D/2010/0356/F is not complete your role can be and I quote "My view is that the Department should support appropriate forms of renewable energy development as it represents a major economic opportunity for the island of Ireland" and leaving it to the planning department to assess planning proposals and now making behind the scene deals to enhance the passage of this or any other planning proposal. This we feel is being construed as a bribe, a sweetening, a bung and should have been referred to the community first.

The devil will be in the detail and in the terms and condition of this contract, which you obviously looked at before you gave your endorsement and judgment as being a "practical benefit to the Community" before consulting the Community. Normally the planning Department write to Consultants to ask their opinion before making informed decisions and perhaps we the Community would have decided differently?

We have now been bombarded with questions which you need to give us answers as you now have passed judgment and given support to LEDS Payments Contracts.

- Who arranged this LEDS agreement on this particular planning proposal and which member of the Community attended?
- Who decided or agreed the distance of 2.7km for qualification ?
- Who decided the level of payment to be £200 per year per household?
- Who will this contract be with - RES, your Energy Supplier or the D.O.E?
- Will you be entered into a particular “Wind Farm Tariff” where you could be paying a different or elevated rate per unit of Electricity before you are then discounted?
- Should this proposal be approved and the Wind Farm is never made operational do RES receive any payments as we residents will not receive any discount unless its operational.
- If RES sell on their interest to a third party once they are up (which they usually do) will the new owner uphold these contracts?

These are all questions and more that are being raised and until such time as they have been answered this planning proposal needs to be put on hold. We would also urge caution in signing up to any agreement or contract until the planning application is decided and that you are aware of the above or feel happy to go ahead.

The Freedom of Information Act dictates that we should know all the details of such agreements and the identity of all parties involved

- (a) Who is being paid these LEDS and how many?
- (b) The level of Community payments already and further payments?
- (b) What level of payment the Land owners are being paid and how many are there?
- (c) What is RES being given in subsidies and ROCS payment for this proposal?
- (d) Are their any other payments being made to individuals or interested parties?

As you are now endorsing this agreement/contract that anyone living within 2.7km of a Wind Turbine which then qualifies for LEDS payments then you are agreeing that this is compensation for loss or injury or to cancel out the effects of disturbance from Wind Farms. Your views are not reflective of PPS18 which states 10 times rotor diameter to occupied property and as such PPS18 now needs to be amended to read 2.7km or that compensation should now be part of the Planning Process in respect of Wind Farm Generation within Northern Ireland.

You now have divided the Community even further. We had those that were for or against Wind Farms and they are entitled to their view, but we now have those that are paid, those that are not paid and now those that will have to pay in their Electricity bills for these LEDS payments who will now also have their views.

There is an existing precedent set in England where if you live near a Wind Farm your Rates Band is brought down. If compensation payments are now being endorsed there is no requirement for LEDS and as such can be written into the PPS18 Planning process.

As Minister of the Environment for Nr Ireland you need to make clear the Planning Process as regards compensation payments for renewable energy Wind Farms and have a planning process that upholds all the various issues within PPS18 and be rewritten to reflect this process, not setting up contracts with Renewable Energy Firms (RES) etc. Until this is within PPS18 and this hash up is sorted this Planning proposal at Altaveedan must **HALT NOW**. This Planning Process needs to be open and transparent to us all.

We are sending a copy of this letter to be entered as a further objection to the Planning Department on **D/2010/0356/F** and an open letter to the editor of the Ballymoney Chronicle for release to the public at large to make them aware of what is happening.

I await your reply

Yours sincerely

Barbara Laverty
ORRA Action Group
Tel: 028 20751133
E'mail lavertyb@btinternet.com

cc: First and Deputy First Ministers
Ian Paisley Grn MP

Open letter to editor Ballymoney Chronicle
Further object to Jane Curley Planning Dept D/2010/0356/F

Paul Quinn

Dear Sir /Madam:

I am writing to submit a testimony against the planned installation of 35 wind turbines in the area encompassing Newtownhamilton. As Principal of the local Primary School I am proactive in encouraging the use of renewable energy although I do believe that wind turbines are best placed off shore until further investigation has been completed into the adverse effects of turbines on a range of Special and medical educational needs. From a professional point of view I see that children with special educational needs find progression throughout school a more challenging experience than their peers. For this challenge to be enhanced through exposure to potentially damaging side effects would be seriously detrimental to their future educational and life success.

Renewable energy is something that must be generated but there is enough off shore areas that could generate the power needed without communities such as Newtownhamilton being fractured because of something that may have side effects on the most vulnerable.

A close associate of mine has informed me that 35 turbines intended for erection close to the town of Newtownhamilton are at various stages of the planning process. The number planned for such a small area is staggering. House prices in Northern Ireland are the only region in the UK that still shows no sign of recovery from the economic recession. The very existence of wind turbines close to people's homes will depreciate their home's value

Newtownhamilton has had its fair share of rough calls from governmental hierarchy in the past. The town used to be a hive of trading activity with a population that provided over 100 children to the local school. The erection of barriers during the troubles that prevented traders and customers moving freely through the town dealt the town a trading and social blow that it has never recovered from. The barriers may be down but the traders and many inhabitants also left before their removal. Another recent negative move was the relocation of the agricultural mart from Newtownhamilton to Markethill. This has left the footfall on a Saturday drastically reduced.

The community in Newtownhamilton in the majority do not want these turbines. This has been expressed to me on many occasions by parents and the wider school community.

Newtownhamilton is an area with high levels of social deprivation and the financial benefits that can be put across for the erection of turbines will in no way affect those families who need it most. That is a fact.

The turbines are required to be at least a kilometre and a half from a habitable home. Closer scrutiny on the planned turbines will show that many do not adhere to this stipulation. On that basis and on the more fundamental basis that the majority of residents in Newtownhamilton do not want these turbines, I would recommend the Inquiry into Wind Energy conclude that the off shore method for the installation of wind turbines is the more favourable one. This would not only benefit our environment, but the continuing prosperity of local rural communities also.

Yours Sincerely

Paul Quinn

Principal
St.Michael's PS
Newtownhamilton

Patrick Galbraith

From: Pat Galbraith
 Sent: 28 February 2014 19:11
 To: +Comm Environment Public Email
 Subject: We dont want wind farms in our area.Find out the truth for us.

Firstly thank you for having this enquiry. It is not possible to get all the information you need to be aware of in this email. I feel that we as a community in Northern Ireland should be able to make representation direct to your committee. You are the only voice we have so I feel you need to be aware of all the facts. Our major concern is the possible future health implications people have, should these commercial wind farms be imposed on our rural areas. The first point we need to ask is if these turbines are so beneficial why do they need government subsidies taken from our electricity bills to be a viable concern? Huge companies are making vast profits at our expense. Let me explain...

1 mega watt of wind energy is worth approx. £800000.

(www.telegraph.co.uk/comment/columnists/christopherbooker how much profit will a turbine turn 03/03/2012) of which approx. half this amount is subsidy. The wind companies offer minimal community benefit of £1000 per mega watt which equals 0.125%. In parts of Scotland and England they offer £5000 per mega watt which equals 0.625%. This goes to local communities, often many miles away to provide a bribe for play areas and football fields while we will have to live with these unbearable living conditions for the rest of our lives. We must remember that all of these projects are funded by overseas banks and electricity companies who only see profits without any concern for real people and communities. We only have to look at what happened in the Irish Republic during the Celtic Tiger years and how it all crumbled. Sadly the ordinary people were left to pick up the pieces. We believe that NO should mean NO and no matter what profit large companies make it should not be at our expense. We notice on a lot of these applications that protection is given to bats and wildlife which are European protected species. Surely men, women and children should demand and be entitled to the same protection.

Let me give you a quick breakdown on some real facts which are on the internet.
www.renewable.co.uk These are NI stats only.

Operational turbines (351) 558.71 mega watt producing £446968000.00

Under construction (16 turbines) 42.48 mega watt producing £33984000.00

Consented (440 turbines) 604.35 mega watt producing £483480000.00

This totals approx. £964432000.00 per year which approx. half of this is subsidies paid by every electricity user. Our electric bills always increase therefore our businesses are not competitive because of the high costs yet these big companies make millions. They estimate each turbine is paid for within a 5 year timescale. How much are these companies contributing to the NI economy? We regularly hear of budget cuts in our health and education departments with England cutting back on a regular basis. Should NI Assembly impose a 50%+ levy on these companies to at least give something worthwhile back to us. Instead it would take 10 years payback for them but would be more benefit to our economy. This would mean us not going cap in hand to Westminster looking for hand outs. These companies use clever accountants to bluff the system to make it appear to be not as profitable but the facts are out there for all to see.

The media states Ireland is a wind rich country but what is coming back to our communities? AFTER ALL THE ARABS HAVE OIL BUT THEY DON'T GIVE IT AWAY FOR NOTHING. WHY ARE WE DOING SO WITH OUR WIND ENERGY? We also need to look at the real problems in our

communities. People are left helpless because the large companies don't want to give us a chance. Ordinary people need to be listened to over real issues and be compensated.

I will tell you the story we have in our local community. Approx. 3 years ago companies came to our area contacting landowners who happened to live in what we regard as an area of natural beauty. The area is quite high, anywhere from 200m to 280m above sea level, they signed up approx. 30 people to apply for wind turbines to be used on the farm with excess been sold back to the grid in reality many of these farms will be selling all of the electricity to the grid some of them don't even live in the area so therefore they will have no concerns about health issues. Newtownhamilton is a small town of a few hundred people and the outskirts of the town would be largely farming communities that can trace there family roots back hundreds of years to this area. Farms have been handed down for generations at present there are 35/40 commercial/industrial turbines anywhere from 55m/120m high within a 2 to 3 mile radius of the town outside this area are many more similar projects we as a community will be living in a wind farm these turbines are made for remote areas, mountaintops not next to people. We do not know the companies who wish to put these here, individual agents get permission for smaller turbines then reapply for bigger machines, in the early days often without the proper safety checks being done i.e. noise, shadow flicker, etc. some of the landowners live as close as two hundred meters from these monsters they have not been told of the problems. One thing that is wrong is that safety checks are being done by the agents themselves, this should be done by an independent agency as i said before we have 35/40 turbine applications we know that 6 of them belong to one company Gael electric which does not have a good record of sorting out problems for other people see (KEANE STOREY COUNTY ROSCOMMON ON WWW. WINDWATCH.ORG ANOTHER SITE WORTH LOOKING AT IS GEMA AND SEAN MCGLINCHEY STOREY WIND WATCH TYRONE WHO HAVE PROBLEMS WITH OTHER COMPANIES) as i said we have no idea who are putting up the other 30 plus turbines no public meetings have ever been held these agents will sell the sites to the highest bidder, this is not good enough. Another thing the agents do is use data for a new WTN 250 KW turbine for the noise reports etc. (which is one of the quietest on the market) cost approx. £400000 but many are going to use second hand/reconditioned turbines cost approx. £75000 but these machines cannot meet noise conditions and do not have any data. This has to be looked at, these machines are cheaper to buy but we must remember that they are 20+ years old and have been taken from wind farms in Europe to be replaced with newer models. the company that makes the WTN 250KW STATE THAT TO ACHIVE 35DBA THE TURBINE SHOULD BE 440 METRES APPROX. FROM A DWELLING, ONE OF THE COMPANIES THAT SUPPLIES THESE IN ENGLAND STATE THAT THE WTN 250 KW SHOULD BE A MINIMUM 420 METRES FROM A DWELLING (www.halmarkpower.co.uk) but the agents try to get them under 300 m. PPS18 states that 10 times rotor diameter or 500 M MIN SHOULD APPLY BUT ON THE LARGER 70M BLADES machines which should be 700m from a dwelling they use 500m distance this will have to be dealt with. Can you get this PPS 18 ISSUE CLARIFIED

Many countries that have wind energy for years are now recommending bigger set back distances because of problems (see www.Windbyte.co.uk or www.Windwatch.co.uk) many say 1 to 2 miles from dwellings the British noise association say 1 mile, other medical books state concerns THE NEW ENGLAND JOURNAL OF MEDICINE, THE LANCET, THE BRITISH MEDICAL JOURNAL (BMJ) you can get a lot of real life stories on the internet i will list some sites at the end of this email.

On the original planning applications a lot of miss information was given. No neighbour notification, wrong house addresses, the planners told us that they did not have to notify anyone it was up to us to check local press not everyone buys local papers another told us he would notify neighbours within 90 m this has to be improved these turbines are 50m/120m high which is up to 15 times higher than a two storey house people have got to be told about these health hazards coming next to them, we have discovered that building houses in the country side has become very difficult under PPS21, CTY13 AND CTY14 which state that sites are unable to provide a suitable degree of enclosure and will be unduly prominent in the

landscape and be a detrimental change to the rural character of the countryside how can you justify putting turbines 15 times higher in these areas while stopping our children building homes on family owned farms it looks like policy was put in place to clear the way for these wind farms 25% of house applications are passed in the country yet 89% of wind turbine applications are passed.

Where are our Human Rights in all This.

I have recently built a new home for my family on family owned land that has been ours since the 1950's it is in a beautiful area my nephew also has planning permission for a house next to our site he does not know what to do as 4 commercial turbines have been applied next to us one at 250m one at 400m one at 500m and one at 650m we will have them all around us how will this affect our property values AFTER ALL WOULD YOU OR ANY OF YOUR COMMITTEE MEMBERS WANT TO BUY A HOUSE IN THESE CIRCUMSTANCES. He has not built his house yet he is waiting to see what is going to happen in this area we have an north/south interconnector since the 1970's the pylons are a real blight on the country side now they want to put turbines here as well they will turn our community into a waste land with all our young people moving away because they will not be allowed to build here, when the pylons were built some people found it difficult to get mortgages will the same happen with the wind turbines.

The deals that the land owners have signed has not always looked after them I notice that they get paid a rental for their land plus a percentage for electricity produced there is no mention of any share of the ROC payment which is the biggest part of the payment,also they put turbines next to their houses,the landowner may be ruled out from the 35 dba noise limited but what about their partner and children or visitors staying overnight should they not be protected from this noise after all the manufacture states 440 metres minimum from a dwelling will you be leaving the local authority liable for claims because they allowed these turbines closer to a dwelling after the manufacture told them the minimum distance,that is the reason for the 500m in pps 18 i think you should get legal advice on the matter I know many people have spoken to their solicitors and have been told there may be a case because we rely on our public representatives to make the right decisions.

The payment for a 250 kw turbine is as follows cost approx £500000.00 production of electricity on a good site approx £25000 .00 per year therefore it would take 20 plus years to payback ROC payment (taken from our electricity bills) £75000 .00 per year for 25 years Total income approx £100000 .00 per year of which the landowner gets approx 5% to 7% of the £25000.00 = £1750.00 plus rental of land.

wind turbine company gets £75000.00 plus £23250.00 (balance of electricity produced) total of £98250.00 for 25 years does not seem worth risking your family and neighbours health for such a small amount.I have a lot more information if you want to contact me i can share this with you, I will give you the following websites for information:

www.todaytonightadelaide.com.au/stories/wind-farms enter wind farm into search bar.

www.quixoteslaststand.com/category/victim-videos

www.masterresource.org/2012/10/20-bad-thing-wind-3-reasons-why

www.illwind.org/index- PHP reports.

Search on google- Life with industrial turbines in Wisconsin Part 9

There are plenty more sites with information concerning these problems on the internet.

We appreciate your help.

Thank you,
Patrick Galbraith

Paul Malloy

From: Paul Malloy [mailto:paulmalloy123@yahoo.co.uk]
Sent: 11 January 2014 22:57
To: +Comm Environment Public Email
Subject: Enquiry into Wind Energy

Recently it has been quoted by a group called "West Tyrone Against Wind farms" that there is a huge amount of opposition to Wind Turbines in the West Tyrone Area. I have to say that is total rubbish.

As a West Tyrone resident, I can say this is not true. There are allot of local residents who are happy enough for wind turbines to be set up

- a) A lot of local farmers are benefiting due to rents generated if turbines are located on there land.
- b) Land which would have been economically unviable, has now an opportunity to generate income for local families with minimal labour.
- c) A lot of local sporting and cultural organisations are benefiting from grants from the Wind Farm companies in question
- d) Its a clean source of energy, with very little risk of pollution. Which is better Wind Energy or Fracking, Its a no brainer!.
- e) The industry is very well regulated
- f) New turbines currently going up are very quite. These can be turned off at night, and at other times to prevent shadow flicker.
- g) It will create jobs in the construction field.
- h) Local roads are being upgraded by these Wind farm companies so to transport the equipment. These rural roads would not have been fixed otherwise.
- i) A lot of local professional businesses from legal firms, planning companies and architects are benefiting from this capital investment
- j) Very few homes are located close to these turbines.
- k) Northern Ireland will benefit overall from this clean source of energy.
- l) The government has targets to be achieved by 2020. Which is better Renewables, Carbon based(Oil, Coal, Gas(Fracking)) or Nuclear.

Most of the vigorous opposition from the groups such as West Tyrone Against Turbines (The Not in my backyard brigade) is created via jealousy, they feel they are missing out or have heard stories that there neighbours are financially benefiting from it. They are pouring out scare stories which do not stack up at all.

A small minority should not be allowed to risk a fantastic opportunity for West Tyrone. Wind is one of Northern Irelands natural resources and we should try to harness this clean form of energy.

Best Regards

Paul Malloy

Paul Webster

From: Webster, Paul (P.D.)
Sent: 27 February 2014 13:04
To: +Comm Environment Public Email
Subject: Response to the Environment Committee's Wind Energy Call for Evidence

Committee for the Environment
Parliament Buildings
Stormont
Belfast BT4 3XX

27 February 2014

Dear Anna Lo,

I welcome the opportunity to respond to the Environment Committee's Wind Energy Call for Evidence. I believe that it is imperative that we support the development of Northern Ireland's renewable energy resources. There are many benefits of doing so. These include lower carbon emissions, a more diverse energy supply, stabilising the volatile fossil fuel prices upon which so much of Northern Ireland relies and demonstrating our genuine commitment to addressing climate change.

A range of policies are already in place to mitigate any of the potential impacts of wind energy development. For example, PPS18, which sets out the planning framework for renewables, is an appropriate policy for the assessment of wind farm developments in Northern Ireland. The ETSU-R-97 limits are considered to be acceptable in assessing noise levels and these are the limits proposed across the UK by experts in their field.

Separation distances between wind farm developments and houses are not required by statute anywhere in the UK or Ireland and I do not believe that Northern Ireland should impose such limits. However, 500m is a common set-back distance and added to this is the ability of planners to set noise level limits at the houses likely to be significantly affected, and require these to be met by planning conditions.

I would also like to highlight that I support renewable energy and believe that Northern Ireland has among the best wind energy resources in the world. I think that it is important to support the development of these resources in a responsible manner. Policy-making in the complex arena of energy requires strong and robust evidence and a clear, ambitious vision for a low-carbon future.

Yours sincerely,

Paul Webster

Paul Wright

Northern Ireland Assembly
Committee for the Environment
Inquiry into Wind Energy
Email committee.environment@niassembly.gov.uk

Dear Sir/Madam

Committee for the Environment - Inquiry into Wind Energy

RE: Planning Application No O/2009/0756/F Erection of Single Wind Turbine 46.5M Hub Height, Blade Diameter 39.4M 80 M North West of 96 Mullavilly Road, Tandragee, BT62 2LX

I will briefly outline my situation. My family have lived at our present address for over 36 years. In the autumn of 2010 Rapid International, an engineering company located on Mullavilly Road, erected the above wind turbine with is approx **180M** from my home. Our peace was shattered. Because of the constant, pulsating noise from the turbine we are subjected to sleep disturbance and are woken from sleep in the night. Even in the day time the noise can be heard in our home with the windows closed. (The windows are double glazed.) It is impossible to derive any pleasure whilst in the garden. As you can imagine being subjected to this constant noise has had a detrimental effect on my health and well being.

Many other residents in the area have complained of this noise nuisance, shadow flicker and loss of amenity. My home has lost at least 25% of its value because this turbine is so close to our property. No-one would want to buy a home with a wind turbine beside it. This is my children's inheritance which has significantly decreased.

We feel very let down by the Planning Department and Environmental Health Department.

We assumed that these departments are there to look after the interests of the public.

Policy RE1 'Renewable Energy Development' states

Development that generates energy from renewable resources will be permitted provided the proposal, and any associated buildings and infrastructure, will NOT result in an unacceptable adverse impact on:

- (a) public safety, human health, or residential amenity;
- (b) visual amenity and landscape character etc.

My health has most certainly been detrimentally affected and I have lost the pleasure of living in this home and have lost the use of the garden because of the noise.

Planning Policy Statement 18 'Renewable Energy' and The Assessment and Rating of Noise From Wind Farms ESTU-R-97 has afforded me and other local residents NO protection whatsoever from noise nuisance, related health issues, shadow flicker or loss of amenity.
They Are Not Fit for Purpose.

(A) Noise Limits

The current guidelines promotes the use of the La90 noise indicator. This is not appropriate. LA90 10 mins is the tenth percentile of the distribution of the A-rated sound level measured over a ten minute period. In layman's terms, it is calculated by measuring the noise level over a ten minute period, disregarding the noisiest 90% of the time and taking the maximum noise level in the remaining (quietest) 10% of the time. As the human ear does not disregard 90% of noise experienced, this measurement indicator is considered inappropriate for wind turbine noise assessment. LAeq is the energy average of the noise over a given period. This is the

noise indicator which must be used as it quantifies average sound levels experienced. This is in line with standards accepted and implemented across the EU.

In a recent study 'Effects of industrial wind turbine noise on sleep and health' compiled by Michael A Nissenbaum, Jeffery J Aranieni and Christopher D Hanning the conclusion reads:

We conclude that the noise emissions of industrial wind turbines disturbed the sleep and caused daytime sleepiness and impaired mental health in residents living with 1.4 km of the two industrial wind turbine installations studied. Industrial wind turbine noise is a further source of environmental noise, with the potential to harm human health. Current regulations seem to be insufficient to adequately protect the human population living close to industrial wind turbines. Our research suggests that adverse effects are observed at distances even beyond 1 km. Further research is needed to determine at what distance risks become negligible, as well as better estimate the portion of the population suffering from adverse effects at a given distance.

(B) Separation Distances

The interpretation of PPS18, where Policy RE1 on 'Renewable Energy Development' states that:

'For wind farm development a separation distance of 10 times rotor diameter to occupied property, with a minimum distance not less than 500m, will generally apply.' It appears to me that both PPS18 and the Best Practice Guidance use the term 'wind farm' throughout to refer to all wind energy developments, with the possible exception of small single turbines (under 50Kw and under 15m in height.) It can therefore safely be concluded that, irrespective of the number of turbines involved in an application, PPS18 will apply, so how did this industrial size turbine get planning approval 180m from a residential property?

(C) Shadow Flicker

The guidelines introduces the concept of shadow flicker being an issue with 10 rotor diameters of a dwelling and which should be dealt with appropriately. A condition should be attached to all planning permissions for wind turbines to ensure that there will be **no shadow flicker** at any existing dwelling or other existing affected property, with 10 rotor diameters of any wind turbine. A further condition should be include which states that if shadow flicker does occur, then necessary measures, such as turbine shut down during the associated time periods, will be taken by the energy developer or operator to eliminate the shadow flicker. The language is too loose and does not put any legal obligation on the developer to adhere to this guidance. The guidelines are not based on scientific research and are totally inadequate.

The guidelines do not prescribe mandatory conditions for eliminating shadow flicker incidence on dwellings. **Mandatory elimination is a must.**

Given that the noise limit or sensitive locations can be seen to have increased vs the 2006 guidelines and set-back distance has remained the same, then it is now clear that shadow flicker controls provide no further amenity protection, with respect to influencing setback distances to a safe and responsible distance. In any case, the shadow flicker guidance is applicable only as a control to those residents living on the northerly side of the east-west plane of a turbine.

(D) Human Rights

European Convention on Human Rights:

Right to private life (Article 8) states

Article 8.1: "Everyone has the right to respect for his private and family life, his home and his correspondence." THIS RULING IS NOT **Being Adhered to.**

Summary:

Policy RE 1. Energy generated from renewable resources in THIS instance has had an adverse impact on residential amenity and human health. PPS 18 & ESTU-R-97. LA90 is not appropriate. LAeq must be used. PPS 18. Set back distance guideline of 500m minimum is obviously not being administered. I feel that even this is not sufficient to protect residential amenity and human health as many studies in this field have concluded a set back distance of 2km is necessary. Shadow flicker controls provide no amenity protection whatsoever.

ECHR Article 8. My human right to a private life has not been respected or protected.

Yours sincerely

Paul Wright

Pauline and Keith Graham

Submission on

Wind Energy

to

The Environment Committee

Stormont

February 2014

Keith Graham BSc, LIBMS

Pauline Graham BA, MA, MIBMS

88 Kildoag Road, Killaloo, Derry BT47 3TH, Northern Ireland

kw.graham@hotmail.co.uk

p.graham@keyed-up.com

CONTENTS

INTRODUCTION3

ADEQUACY OF PPS18.....3

WIND TURBINE NOISE AND SEPARATION DISTANCES4

ENGAGEMENT BY WIND ENERGY PROVIDERS6

 RATES REDUCTIONS / CONCESSIONS 7

 ELECTRICITY CHARGE REDUCTIONS / CONCESSIONS..... 7

CONCLUSIONS7

APPENDIX9

 TABLE 1. RECOMMENDATIONS FOR SETBACK OF RESIDENTIAL PROPERTIES FORM INDUSTRIAL WIND TURBINES² 9

 PHOTOGRAPHS OF SLIEVE KIRK PHASE 1 10

Figure 1. War of the Worlds on Slieve Kirk: 7 of the 12 x 110m Siemens 2.3MW turbines..... 10

Figure 2. Slieve Kirk wind turbines showing T19 (centre), the closest of the 12 x 110m Siemens 2.3MW turbines 10

REFERENCES.....11

Introduction

In order to validate my views and experiences it is vital to give a brief outline of my background and circumstances. This will also give direct relevance to the specific terms of reference laid out by the enquiry.

My wife and I are science graduates in Microbiology, geology and combined sciences, respectively, and have worked as biomedical scientists within the Altnagelvin Area Trust for twenty seven years. From this background we have extensive experience in the production of and interpretative understanding of scientific data. Post university we have lived for ten years in Derry city and ten years in the rural countryside. This has exposed us to the reality of acoustic background profiles of both environments with direct relevance to pre and post wind turbine noise exposure. Our present home is located on the perimeter of Slieve Kirk Phase 1 (A/2004/1130/F), consisting of 12 x 110m 2.3MW turbines. On the adjacent hills are Curryfree (6 x similar turbines), Carrickatane (9x similar turbines) and a single 60m 225KW turbine. Also pending planning applications are Slieve Kirk phase 2 (A/2011/0202/F) 5 x 110m 2.3MW turbines and a single 75KW 24m turbine (A/2012/0154/F) 320m from our house.

Prior to the actual experience of industrial utility wind turbine electricity generation we had viewed the development of alternative energy as a beneficial addition to the reserve power supply. For this reason we had not forwarded any concerns to Planning. It is fair to say that our profile presents as the fastest increasing demographic observed by the Irish Wind Energy Association (IWEA) and Renewable UK, i.e., educated, ethically and environmentally considerate and pro/non antagonistic to wind power development, pre-exposure. Post exposure, we are hostile and incensed that there is no redress and very little if any political or legal protection for the citizen. As a committee, the reason for an individual constituent's fundamental change of opinion based on first-hand experience is the elephant in the corner of this enquiry. In order to keep my submission factually relevant I will only comment on issues which are a direct effect on the circumstances of my own household.

For the committee to understand why noise is such an important factor there must be an understanding of why it is intrinsically linked to adverse health issues. The noise, characterised by its loudness, vibrational pulsating character, low frequency component and its continuous nature, is a constant and very disturbing presence in our home- in short acoustic torture. The detrimental effect this low frequency noise has on health has been investigated and "Wind Turbine Syndrome" has been observed worldwide in people living close to turbines^{14,15}. For us sleep disturbance caused by this noise at night is our biggest problem. As biomedical scientists our job involves the complex analysis of tests leading to the direct diagnosis of clinical illness. Our working hours comprise day and night so sleeping hours are not restricted to conventional night time periods. The lack of quality sleep manifests as constant tiredness leading to an inability to cope with normal day to day activities. This impairment of cognitive ability and concentration has potentially dangerous implications relating to our work.

Adequacy of PPS18

In order to assess the adequacy of PPS18 one must include its reliance on ETSU-R-97 as a base line for assessment. These guidelines are significantly out of date in relation to turbine size and multiple turbine cluster effect. Almost all professional commentators are stating that ETSU-R-97 with its

present analytical criteria is vague, open to interpretation, immeasurable and thus unenforceable. This is especially the case with large turbine clusters in topographically variable upland sites. It is very telling that PPS18 describes the framework for measurement of calculated noise levels as offering a ***reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development***. For me this is the problem facing the unsuspecting proximal residents to wind turbines. It is clear from my experience of detrimental acoustic effect that the guidelines of ESTU-R-97 and PPS18 were hopelessly inadequate in protecting my household and those of my neighbours.

As MLAs and MPs, it is the first duty of elected representatives to protect the citizen and litigate against exploitation. The enquiry will have to accept that the immense political / corporate power of the IWEA and Renewable UK over the last ten years has led to development with impunity and complete disregard for those affected. Such is the level of contempt for rural residents that people like myself are categorised as NGAs : Naïve, Gullible and Apathetic, as we have until now no individual or collective voice.

Wind turbine noise and separation distances

As the enquiry will be receiving multiple submissions from the wind industry it is vital for balance that the committee members take testimony of individuals affected.

Our property is 1250m from the closest turbine (T19 Slieve Kirk A/2004/1130/F) and receives the maximum noise distortion through the air exiting the main turbine cluster with a prevailing south west to north east wind. The blade swish is clearly audible outside our property but it is the low frequency pulsating noise (20-200Hz) infrasound which invades our home especially at night which is intolerable. The noise is created and magnified by the interaction of varying air velocities through the multiple turbine cluster. This is also enhanced by excessive wind shear and varying upland topography in our locale. The noise is an effect of resistance of airflow on the turbine blades at varying speeds. On the Slieve Kirk Phase 1 (12 X 110m) turbines the variation in air strike velocity over the length of the blade (hub to tip) is considerable. For this reason it is almost impossible to accurately predict potential acoustic ill-effect using ESTU-R-97 based desktop modelling.

The present setback distance guidance for large turbine clusters (>100m high) and single turbines (<40m high) are hopelessly inadequate. It is clear from my representations to NI Strategic Planning Division and Derry City Council Environmental Health that current guidelines are totally ineffectual.

The experiences of my wife and I are in keeping with case study evidence presented by multiple scientific contributors. Amplitude Modulation Effect by Dick Bowdler¹ and Infrasound Related Sleep Disturbance by Dr Christopher Hanning² are in stark contrast to the views presented by the DEFRA commissioned Salford study³ which are entirely theoretical with no resident communication. From [Table 1](#) (see [Appendix](#)) it can be seen that set back distances ranging from >1km – 2.5km have been recommended as long ago as ten years.

In my affected area at Slieve Kirk Phase 1 a recent noise verification report stated that noise levels at proximate properties had not exceeded 37.5dBL90 over day and night time testing. I found these results impossible to reconcile with my experiences at our home since the turbines were commissioned. Our experiences are in keeping with the data recorded at Makara Valley in New

Zealand⁴. The Makara turbines, operational since May 2009, have measured levels that are consistent with levels reported in European studies in which typical noise exposure from turbines range from 24dB to 50dB. Long term measurements, undertaken by the developers at various residences, show that while average outdoor levels ($L_{A90\ 10min}$ dB) are largely compliant with consent conditions, they still range between 20dB and 50dB depending on meteorological conditions.

The choice of $L_{A90\ 10min}$ dB measurement within ESTU-R-97 is in itself contentious as it masks the above stated anomalies between developers' acoustic projections and residents' experiences.

It is my view that L_{Aeq} is the noise indicator that must be used as it quantifies average sound levels experienced at proximal dwellings. The problem with $L_{A90\ 10min}$ is that it disregards the noisiest 90% of the measured period and as such it is best suited to measuring background noise levels. As the human ear does not disregard 90% of noise experienced then this measurement indicator is considered inappropriate for wind turbine noise assessment. It should be remembered that wind turbine noise unlike road traffic, aircraft or workplace environment acoustics, which is transient, is relentless day and night. Case studies by Pederson 2004⁵, Pederson 2007⁶ and Van den Berg 2006⁷ have shown that wind turbine noise was several times more annoying than other noise sources for equivalent noise levels. Since the commissioning of Slieve Kirk the experience of my wife and I are in keeping with the above presented case study data.

It should be noted that the recent proposed extension at Slieve Kirk (Phase 2 A/2011/0202/F) currently under NI Strategic Planning consideration has requested operational daytime noise levels of 40dB $L_{A90\ 10min}$. This potential escalation in noise pollution on the residents during the daytime will exponentially increase the detrimental affect up to the levels permissible at night which are currently 43dB $L_{A90\ 10min}$. It defies belief that within the UK, ESTU-R-97 is the only guidance anywhere in the world which permits a higher sound level at night than during the day, completely contrary to common sense, noise pollution legislation and World Health Organisation (WHO) guidelines. Within the enquiry's terms of reference of the perceived impact of wind turbine noise, it is vital that there is an understanding of what decibel values and scale mean and their effect on residents. For example, with the decibel scale being logarithmic, a 6dB increase is equivalent to a doubling in sound pressure level and a 12dB change is a quadrupling.

The low frequency infrasound experienced, particularly by my wife, is also in keeping with case study data in hilly and mountainous areas in recent years. Phipps et al, 2007⁹, showed that over 1100 residents surveyed (604 responding), 75% of all respondents reported being able to hear noise annoyance at a distance up to 3.5km from two large wind farm developments in upland areas. Van den Berg 2004⁸ found that residents up to 1900m from a wind farm expressed annoyance with invasive noise. Dr Amanda Harry 2007¹⁰ had similar findings in case studies near several different turbine sites in the UK. The latest Japanese research study, Yano 2013¹¹ showed conclusive evidence that a minimum of 1.5km separation distance is required to minimise "severe annoyance".

The evidence of turbine related noise issues on proximal residents is increasingly documented in recent years and in almost all case studies the effects are in keeping with my own household experience. All show that setback distances of 1.5 – 2.5km especially in upland areas with variable topography are required to give sufficient, "**not reasonable**" protection to the resident.

In order to lay out clear guidance, and give sufficient protection for residents in future I would suggest a default setback distance of 15 times base to tip height. With significant height and blade radius increases in recent years a formulaic distance calculation is essential rather than the current set-point value which has proved totally ineffectual to date.

Engagement by Wind Energy Providers

In order to evaluate the extent of engagement by wind energy developers with communities it is necessary to comment on the practices to date. To take the experience of my wife and I as a case in point, there has been no engagement either pre- or post-development. It is not surprising that there is no engagement pre-development as there is no legal obligation to do so other than by public advertisement. It is however in the interests of the developer to engage with the land owner to acquire the land asset. What I find most shocking is the non-engagement in a post-development phase even when legitimate representations are made regarding the issues described before. I have written to NI Strategic Planning Division on December 2012, August 2013 and Derry City Council Environmental Health December 2012. To date I have only received confirmation of representation by said agencies but no comment from the developer (SSE / Airtricity). I have also written to Mark H Durkan MLA, Mark Durkan MP and Gregory Campbell MLA, MP in August 2013 with the only response coming from Gregory Campbell. Again, there was no response from the developer. Politically it does not inspire confidence that the views of detrimentally affected constituents are not even acknowledged by the current holder of the environment portfolio.

From my experience I can only conclude that engagement is driven by the developer's need to acquire the land asset and planning approval with proximal residents' issues being of little concern. In short, the developer gravitates towards landowners with interests that are not compatible with households affected by issues. It is also my view that because of this attitude the health and well-being of communities, families and the local environment are being sacrificed for financial and political expediency.

The enquiry will also have to consider what engagement actually means on the ground given its remit is to ascertain how it may best be promoted. To date it presents as volunteered gains, developer offers, community funds, community ownership or in the eyes of those affected bribery. These funds represent a minute fraction of the profits earned by developers and are at best selective in their beneficiaries. Also such funds come with a caveat that payment is dependent on no adverse opposition to the interest of the developer or owner. This is the arrangement currently in place regarding Altahullion development between Dungiven and Limavady, now owned by RES-GEN Ltd.

In Europe and increasingly in England, elected representatives and commercial institutions are seeing the need to offer compensation to proximal residents in order to maintain unrealistic development targets. Traditionally this has involved subsidy to land owners and donations to local community groups ranging from sporting to educational institutions. However, in the interests of social justice and parity to all affected a new strategy is required. This could be achieved by a reduction in rates and electricity charges on an incremental scale determined by distance from the installation.

Rates Reductions / Concessions

In the last decade there has been substantial anecdotal evidence that wind farm development has had a negative effect on property values. More recently in parliament Hansard reports some Local Authorities are already giving Council Tax reductions thus acknowledging the devaluation of some affected properties. However the London School of Economics (LSE) study by Stephen Gibbons¹² in November 2013 has shown a clear link. This study based on postcode transactions in England and Wales over a twelve year period has clearly shown a 5-6% value reduction in properties within a visible 2km distance to sites comprising eleven turbines. The devaluation increases up to 12-15% for more proximal properties and for large multiple turbine wind farm sites. It is worth remembering that in rural areas where most wind farm development is located the levels of amenities and services available to the rate payer is miniscule in comparison to their urban counterpart. The proliferation in wind turbine development in this area has already led to a significant reduction in property values, and in some instances an inability to sell at all. Visual appearance on the landscape has resulted in equity reduction for the homeowner.

Electricity Charge Reductions / Concessions

This is the most pressing area where action by political representatives is required. Currently, wind farms are attractive businesses for developers and landowners because the electricity they generate is eligible for Renewables Obligation Certificates, which are issued by the sector regulator (OFGEM) and guarantee a price at a premium over the market rate. This premium price is subsidised by a tariff on all consumer energy bills. So as my wife and I are consumers, perversely we are effectively paying for our own torture! Add to this the huge profit margins by the developer which in our case can be seen in SSE's share price and end of year results. So on inspection of said profit margins the question is not can the developers afford to pay for these concessions but is there any political will to make them pay? It is clear that electricity, as a vital requirement of the wind farm proximal consumer is not distributed at a cost which is reflective of the above issues.

Conclusions

In responding to the environment committee enquiry I have tried to bring a personal account of the issues as experienced by the individual. This perspective is always lost in the bigger picture of economics, strategic planning and political ideology. However the collective voice of the ever increasing number of constituents like me will eventually cause political collateral damage at the ballot box. To see the future you need look no further than the political landscape in England.

As regards the gold rush developments of the wind energy providers in the last fifteen years the economic changes, namely subsidy withdrawal, are coming and they are not favourable. As a geology graduate, I have been aware of the potential of hydraulically fractured shale gas deposits for many years. This has been an economic game changer in the USA and will be the next battle for subsequent environmental committees here. Still it is no surprise to see David Cameron, George Osborne and Arlene Foster salivating at their respective dispatch boxes.

As regards the enquiry's objectives, especially that of promoting engagement, the status quo cannot continue. There will have to be a fundamental change in the governance of the wind industry. All new industries are evolutionary and wind power will be no different. This will take a degree of political will which has to date not been seen.

For my wife and I, the most depressing aspect of formulating a response is that all the issues described are not new and have been in the public domain for many years (i.e., evidence submitted to the House of Lords Select Committee on The Economics of Renewable Energy in 2008 by Julian and Jane Davis¹⁴) The wind industry's knowledge and lack of acceptance of these issues is reminiscent of the tobacco industry's approach of yesteryear. As a final reality check I have enclosed two photographs (see [Appendix](#)) of what it is like for me and my neighbours to live up close and personal to an industrial utility wind turbine cluster. As committee members you have to ask yourself, is it fair and what would you do if you were in my shoes?

Keith Graham BSc, LIBMS

Pauline Graham BA, MA, MIBMS

Appendix

Table 1. Recommendations for setback of residential properties form industrial wind turbines²

Authority	Year	Notes	Recommendation	
			Miles	Kilometres
Frey & Hadden	2007	Scientists. Turbines >2MW	>1.24	>2.0
Frey & Hadden	2007	Scientists. Turbines >2MW	1.24	2.0
Harry	2007	UK Physician	1.50	2.4
Pierpont	2008	US Physician	1.50	2.4
Welsh Affairs Select Committee	1994	Recommendation for smaller turbines	0.93	1.5
Scottish Executive	2007	See note 1	1.24	2.0
Adams	2008	US lawyer	1.55	2.5
Bowdler	2007	UK Noise Engineer	1.24	2.0
French National Academy of Medicine	2006	French physicians	0.93	1.5
The Noise Association	2006	UK scientists	1.00	1.6
Kamperman & James	2008	US Noise Enginneers	>0.62	>1.0
Kamperman	2008	US Noise Engineer	>1.24	>2.0
Bennett	2008	NZ Scientist	>0.93	>1.5
Acoustic Ecology Institute	2009	US Noise Enginneers	0.93	1.5

Note 1. The 2km limit from edges of towns and villages seems to have been set more for visual than noise reasons

Photographs of Slieve Kirk Phase 1



Figure 1. War of the Worlds on Slieve Kirk: 7 of the 12 x 110m Siemens 2.3MW turbines



Figure 2. Slieve Kirk wind turbines showing T19 (centre), the closest of the 12 x 110m Siemens 2.3MW turbines

References

1. Bowdler Dick, Amplitude Modulation of Wind Turbine Noise. A Review of the Evidence
2. Hanning Christopher, Sleep Disturbance and Wind Turbine Noise, on behalf of Stop Swinford Wind Farm Action Group (SSWFAG), June 2009
3. DEFRA, Universtiy of Salford BERR UK, Research into Aerodynamic Modulation of Wind Turbine Noise: Final Report
4. Shepherd David, et al, Evaluating the Impact of Wind Turbine Noise on Health-Related Quality of life. *Noise & Health* , Sept-OCT 2011, 13:54, 333-9
5. Pederson E and Persson Waye K. 2004. Perception and Annoyance due to Wind Turbine Noise- a dose-response relationship *J Acoust. Soc.Am.* 116 3460-347
6. Pederson E and Persson Waye K. 2007 response to Wind Turbine Noise in difference Living environments *Occup. Environ. Med.* 64 480-6
7. van den Berg G P. 2006 The sound of high winds: the effect of atmospheric stability on wind turbine sound and microphone noise *Doctoral Thesis* Groningen, The Netherlands; Rijksuniversiteit Groningen
8. van den Berg GP. 2004. Effects of the wind profile at night on wind turbine sound. *Journal of Sound and Vibration.* 277:955-970
9. Phipps R et al. 2007. Visual and noise effects reported by residents living close to Manawatu wind farms: preliminary survey results. Evidence to the Joint Commissioners, 8th-26th March 2007, Palmerston North
10. Harry A. 2007. Wind turbines, noise and health. www.savewesternny.org/pdf/wtnoise_health_2007_a_barry.pdf
11. Yano at al, Dose-response relationship for wind turbine noise in Japan, presented at InterNoise (Noise control for Quality of Life conference), Innsbruck, Austria, Sept 2013
12. Gibbons Stephen, 2013. Gone with the wind: valuing the local impacts of wind turbines through house prices. London School of Economics and Spatial Economics Research Centre, London, United Kingdom. (email: S.Gibbons@lse.ac.uk).
13. Davis Julian & Jane, June 2008. Evidence for Submission to: The Select Committee on Economic Affairs, House of Lords, on The Economics of Renewable Energy
14. Pierpoint N. 2005. Health, hazard, and quality of life. Wind power installations – how close is too close? www.windturbinesyndrome.com.
15. Pierpont N. 2006. Wind Turbine Syndrome: Noise, Shadow Flicker, and Health. www.windturbinesyndrome.com.

Prof Alun Evans

Professor Emeritus Alun Evans

Dear Antoinette Bowen

Thank you for your message of 9th January concerning the Committee for the Environment's Inquiry into Wind Energy. Apart from the mounting evidence that this source of 'renewable' energy is extremely costly, inefficient and unreliable, I have major health concerns about where wind turbines are currently being erected and these specifically relate to the first two Terms of Reference you have set out:

- i) In terms of general human health I have grave concerns about the indiscriminate sanctioning of wind turbines on blanket bog, and
- ii) The current setback distances from human habitation are woefully inadequate to protect the inhabitants from a number of deleterious health effects.

I also have concerns over the third Term of Reference because I suspect that 'promoting engagement' will involve the Wind Industry making small financial inducements to inveigle people into enduring an environment which is inimical to their health.

I have addressed the first two issues in the attachment. Please ensure that this email and the attachment do not become separated. This also pertains to Ref 27 which is attached to this email.

I trust the Committee will take my observations into account. It seems scandalous to me that the Department, which appears to be chiefly advised by the wind industry, is prepared to inflict harm on our rural communities. I write as a retired Professor of Epidemiology with over 40 years of experience in Cardiovascular Disease and a more than 20 year association with WHO.

With best wishes

Alun Evans

Professor Emeritus Alun Evans
Visiting Senior Research Fellow
Centre for Public Health
The Queen's University of Belfast

Committee for the Environment's Inquiry into Wind Energy

Response I:

- Term of Reference I: (...with due regard for emerging technologies and independent environmental impact assessment;)

There is mounting evidence that peatlands provide one of the best repositories of carbon dioxide on the planet. In Ireland alone it is estimated that the remaining near-intact peatlands store the equivalent of 200.000 tonnes a year.¹ Unfortunately this process is reversed when the peatlands are degraded, as they have been on a grand scale. As a consequence they make a net contribution to greenhouse gas emissions which is running at the equivalent of 9.6 million tonnes of carbon dioxide released into the atmosphere every year.¹

An article in the current 'Natural World'² stresses the importance of peatlands as carbon dioxide sinks. It describes the vast lengths being gone to in Yorkshire to restore the damage done to the peatlands by a massive drainage hagricultural service. The article observes that "...the draining and burning of South East Asian peat forests [sic] contributes eight per cent of the world's carbon emissions as damaged bogs release their once-safely stored carbon to the atmosphere." It goes on to quote the Head of the UN Environment Programme, who pronounced peatland restoration, "a low-hanging fruit, and the most cost-effective of options for mitigating climate change." In fact "...peatland restoration,...is a critical part of the world campaign to stop catastrophic climate change.

Apparently, "All four UK country environment ministers have signed a joint declaration to restore our British and Northern Irish peatlands." It is hard to take this statement seriously when a massive scramble to erect as many wind farms as possible on upland blanket bogs is being sanctioned by our own Department of the Environment, eg in the Sperrins and the Antrim plateau. It is not just the massive excavations of peat to build the turbine bases which is the problem, it is more the construction of mile upon mile of service roads across the bogs which does the major damage. This drains the bogs and kills them so that all their carbon is released. On top of this, thousand of cubic metres of the excavated peat has to be dumped somewhere, usually on the side of mountains where it is sometimes optimistically called a 'Peat Regeneration Area.'

What is being sanctioned under the current policy is difficult to reconcile with statements made by Mark Durkin quoted in The Irish Hare. He wants: "... a stronger economy but not at the expense of the environment, rather in tandem with it." He invokes the "precautionary principle" in Planning matters: "... where there are likely significant risks of damage to the environment its protection will generally be paramount," adding "unless there are imperative reasons of overriding public interest." One suspects what these might be, but the risk of accelerating Global Warming must surely be of overriding public interest. Elsewhere he states "...we cannot exploit our surroundings without regard for the long term consequences." Mr Durkin's Department will be publishing the first Northern Ireland Climate Change Adaptation Programme.' One of the first things he should look at is the current policy of erecting wind farms on blanket bog.

A recent scientific paper reviewing the economics of such a policy has found⁴ that the carbon dioxide release involved in manufacturing and erecting turbines on blanket bogs is never recovered. It concludes: "Given the clear advantages in terms of carbon payback time of locating windfarms on mineral soils, and the marginal future savings of carbon by locating windfarms on peats, construction of windfarms on undegraded peatlands is best avoided as far as practicable." In short, erecting windfarms on blanket bog is likely to exacerbate Global Warming, and, in consequence, everyone's health will suffer as a consequence of climate de-stabilization.

References:

- 1 Daly G, Gonzalez G. Picture of Ireland: Where are our peatlands. The Irish Times News Review, 30th March 2013, P 6.
- 2 Anon. Natural World: News from Wildlife Trusts across the UK. Winter 2013, Pp 6-9.
- 3 Durkin MH. Q & A with our Environment Minister. The Irish Hare, Winter (Ulster Wildlife's Membership Magazine) 2013, P 14.
- 4 Smith, J. Nayak DR, Smith P et al., Wind farms on undegraded peatlands are unlikely to reduce future carbon emissions. Energy Policy 2013: <http://dx.doi.org/10.1016/j.enpol.2013.10.066i>

Response II:

- Term of Reference II: (...perceived impact of wind turbine noise and separation distances with other jurisdictions and

According to the World Health Organisation's recent report, 'Night Noise Guidelines for Europe,'¹ environmental noise is emerging as one of the major public health concerns of the twenty-first century. It observes that, "Many people have to adapt their lives to cope with the noise at night," and the young and the old are particularly vulnerable. This is because hearing in young people is more acute and, in older people, a loss of hearing of higher sound frequencies renders them more susceptible to the effects of low frequency noise. It is a particularly troublesome feature of the noise generated by wind turbines due to its impulsive, intrusive and incessant nature. A recent case-control study conducted around two wind farms in New England has shown² that subjects living within 1.4 km of an IWT had worse sleep, were sleepier during the day, and had poorer SF36 Mental Component Scores compared to those living further than 1.4 km away. The study demonstrated a strongly significant association between reported sleep disturbance and ill health in those residing close to industrial wind turbines.

The major adverse health effects caused seem to be due to sleep disturbance and deprivation with the main culprits identified as loud noise in the auditory range, and low frequency noise, particularly infrasound. This is inaudible in the conventional sense, and is propagated over large distances and penetrates the fabric of dwellings, where it may be amplified. It is a particular problem at night, in the quiet rural settings most favoured for wind farms, because infrasound persists long after the higher frequencies have been dissipated.

Sleep is a physiological necessity and the sleep-deprived are vulnerable to a variety of health problems^{2,3} particularly Cardiovascular Disease in which nocturnal noise is an important factor.⁴ Sleep deprivation in children is associated with increased bodyweight,³ which is known to 'track' into later life, and predisposes to adult disease. That is why "Encouraging more sleep" is a sensible target in the Public Health Agency's current campaign to prevent obesity in children. It also causes memory impairment because memories are normally reinforced in the later, Rapid Eye Movement, phase of sleep; again, it is the young and the old who are most affected.

Sleep deprivation is associated with an increased likelihood of developing a range of chronic diseases including Type II Diabetes, cancer (eg breast with shift work⁶), Coronary Heart Disease^{7,8} and Heart Failure.⁹ Although the quality of the data are mixed, those on Heart Failure reported recently from the HUNT Study⁹ are quite robust as they are based on 54,279 Norwegians free of disease at baseline (men and women aged 20-89 years). A total of 1412 cases of Heart Failure developed over a mean follow-up of 11.3 years. A dose-dependent relationship was observed between the risk of disease and the number of reported insomnia symptoms: i) Difficulty in initiating sleep; ii) Difficulty in maintaining sleep; and, iii) Lack of restorative sleep. The Hazard Ratios were '0' for none of these; '0.96' for one; '1.35' for

two; and, '4.53' for three; this achieved significance at the 2% level. This means that such a result could occur once by chance if the study were to be repeated 50 times, significance is conventionally accepted at the 5% level.

Another important, recent study is MORGEN which followed nearly 18,000 Dutch men and women, free of Cardiovascular Disease at baseline, over 10-14 years.⁸ In this period there were 607 events: fatal CVD, non-fatal Myocardial Infarction and Stroke. Adequate sleep, defined as at least seven hours, was a protective factor which augmented the benefits conferred by the absence of four traditional cardiovascular risk factors. For example, the benefit of adequate sleep equalled the protective contribution of not smoking cigarettes. Given that cigarette smoking is such a potent risk factor for Cardiovascular Disease, this result is striking. The findings built on earlier ones from the MORGEN study.⁷ It seems that adequate sleep is important in protecting against a range of Cardiovascular Diseases which result when arteries of different sizes are compromised: large (coronary, cerebral) arteries in heart attacks and stroke, small arteries (arterioles) in heart failure.

All of these studies share the weakness that they are 'observational' as opposed to 'experimental' and, as such, their results do not constitute 'proof.' We now have the evidence of an experimental study carried out in human volunteers which shows that the expression of a large range of genes is affected by sleep deprivation of fairly short duration.¹⁰ This might be the key to understanding why the health effects of sleep deprivation are so diverse. It could also shed light on the 'Wind Turbine Syndrome,' a cluster of symptoms which include sleep disturbance, fatigue, headaches, dizziness, nausea, changes in mood and inability to concentrate.¹¹ In this condition infrasound is a likely causal agent.

This research group has now shown in another small intervention study that mistimed sleep desynchronized from the central circadian clock has a much larger effect on the circadian regulation of the human transcriptome (i.e., a reduction in the number of circadian transcripts from 6.4% to 1% and changes in the overall time course of expression of 34% of transcripts).¹² This may elucidate the reasons for the large excess of cardiovascular events associated with shift work found in a meta-analysis of over 2 million subjects in 34 studies.¹³ The results demonstrate that any interference in normal sleeping patterns is inimical to cardiovascular health.

The old admonition that 'What you can't hear won't harm you,' sadly isn't true. It is now known that the organ of Corti in the cochlea (inner ear) contains two types of sensory cells: one row of inner hair cells which are responsible for hearing; and, three rows of outer hair cells which are more responsive to low frequency sound.¹⁴ The infrasound produced by wind turbines is transduced by the outer hair cells and transmitted to the brain by Type II afferent fibres. The purpose is unclear as it results in sleep disturbance. Perhaps it served some vital function in our evolutionary past which has persisted to our detriment today? In fact, many animals use infrasound for communication and navigation. This could well have a genetic basis as it is only a minority, albeit a sizable one, which is affected. This may well be the group which is also liable to travel sickness. Schomer et al have now advanced the theory that as wind turbines increase in size they increasingly emit infrasound with a frequency below 1Hz (CPS).¹⁵ Below this frequency the otoliths in the inner ear respond in an exaggerated way in a susceptible minority who will suffer symptoms of the Wind Farm Syndrome. Previously it was thought that the brain was only under the control of electrical and biochemical stimuli but there is new evidence that it is sensitive, in addition, to mechanical stimuli.¹⁶

The problem of infrasound and low frequency noise was well-recognised in a report by Casella Stanger,¹⁷ commissioned by DEFRA in 2001, and since ignored: "For people inside buildings with windows closed, this effect is exacerbated by the sound insulation properties of the building envelope. Again mid and high frequencies are attenuated to a much greater extent than low frequencies." It continued: "As the A-weighting network attenuates low frequencies by a large amount, any measurements made of the noise should be with the instrumentation

set to linear.” It drew heavily upon the DOE’s Batho Report of 1990.¹⁸ In fact, these problems had already been elucidated and the measurement issues addressed in a trio of papers by Kelley (et al) in the 1980s.¹⁹⁻²¹ This research again has been ignored or forgotten so the problem continues to be seriously underestimated. When measured using a tool which can detect it, levels of infrasound and low frequency noise are disturbingly high, with ‘sound pressure levels’ greater than previously thought possible.²²

There are a number of other adverse effects associated with sleep deprivation. Tired individuals are more likely to have road traffic accidents and injure themselves while operating machinery. In addition, wind turbines can, and do, cause accidents by collapsing, blade snap, ice throw, and even going on fire. They induce stress and psychological disorder from blade flicker, which also has implications for certain types of epilepsy and autism. Even the current planning process, with its virtual absence of consultation, is stress inducing, as is the confrontation between land owners, who wish to profit from erecting turbines, and their neighbours who dread the effects. Finally, wind turbines considerably reduce the value of dwellings nearby and this has a negative long term effect on their owners’ and their families’ health.²³ This means that they cannot hope to buy an equivalent property elsewhere. On top of this, increasing numbers of families will be driven into fuel poverty by spiralling electricity costs which are subsidising wind energy. It is galling that SSE’s current, seductive advertising campaign is being supported from these sources.

‘Wind Turbine Noise’ was reviewed in an editorial in the British Medical Journal in 2012.²⁴ The authors concluded that “A large body of evidence now exists to suggest that wind turbines disturb sleep and impair health at distances and noise levels that are permitted in most jurisdictions...” This remains the case today. The Public Health Agency has dismissed this editorial as falling short of a ‘systematic review,’ which is fair enough, given the constraints of the format, yet ignores at least one, excellent, recent systematic review.²³ Interestingly, that review records the fact that in 1978 the British Government was found guilty in a case taken to Europe by the Irish Government of applying five techniques, including subjection to noise and deprivation of sleep. These were used in Ulster to ‘encourage’ admissions and to elicit information from prisoners and detainees. They amounted to humiliating and degrading treatment, ie torture.²³

The Public Health Agencies in the UK are now relying on a document published in April 2013.²⁵ It was written by a group of acousticians at the University of Salford, which begs the question as to why such a group was selected to give advice on health issues. Since acousticians derive a significant proportion of their income from the wind industry, their scientific objectivity might be open to question. Similarly, if a profession, which worked closely with the tobacco industry, was asked to report on health, questions would be asked.

The wind industry has at times acted in a way that is reminiscent of the tobacco industry in the past. Recently a Vestas Powerpoint presentation from 2004 has surfaced²⁶ demonstrating that Vestas knew a decade ago that safer buffers were required to protect neighbours from wind turbine noise. They knew their pre-construction noise models were inaccurate and that “...we know that noise from wind turbines sometimes annoys people even if the noise is below noise limits.” Some of this is due to the methods they use to measure noise. Presenting mean amplitude data means that 50% of the peak noise is disguised. In 2011 the CEO of Vestas wrote²⁷ to the Danish Minister of Environment admitting that it was not technically possible to produce wind turbines which produced less noise. Similarly, we are repeatedly told that modern turbines are quieter and produce less ILFN which in reality is the reverse of the case.²⁸

The Salford Report concludes that there is “...some evidence for sleep disturbance which has found fairly wide, though not universal, acceptance.” The increasing weight of evidence of sleep deprivation’s association with several chronic diseases is totally ignored. The authors of the report are at pains to deny any ‘direct’ health effects. In terms of prevention any differentiation between ‘direct’ and ‘indirect’ is irrelevant: the introduction of iodine

supplementation in milking cattle to improve their “reproductive performance” during the 1960s indirectly led to a reduction in endemic goitre in humans. This was thanks to the unforeseen spillover of iodine into milk and dairy products.²⁹

In 2008 the distinguished American acoustic engineers, George Kamperman, and Richard James posed the question,³⁰ “What are the technical options for reducing wind turbine noise emission at residences?” They observed that there were only two options: i) Increase the distance between source and receiver; or, ii) reduce the source sound power emission. It is generally accepted that as larger and larger wind turbines are built, the noise problems are aggravated.²⁹ They added³⁰ that neither solution is compatible with the objective of the wind farm developer to maximise the wind power electrical generation within the land available.

Although the associations between noise pollution and ill health can be argued against, and there are gaps in our knowledge, there is sufficient evidence to cause grave misgivings about its safety. Further research, supported by adequate funding, remains necessary. Good and caring Government should entail acting with greater caution when its policies could jeopardise the health and human rights of its people. It is essential that the ‘*Primum non nocere*,’ or ‘Precautionary’ principle should be applied.

In conclusion, there are serious adverse health effects associated with noise pollution generated by wind turbines. It is essential that separation distances between human habitation and wind turbines are increased. There is an international consensus emerging for a separation distance of 2 km, indeed some countries are opting for 3 km. The current guideline on separation distance is based on ETSU-R-97 and is manifestly out of date. It is only relevant to the small turbines of that era. The vastly increased scale of today’s turbines means that the current recommendation on turbine separation is grossly inadequate.

References

- 1 World Health Organisation. Night noise guidelines for Europe. Copenhagen. 2009.
- 2 Nissenbaum MA, Aramini JJ, Hanning CD. Effects of industrial wind turbine noise on sleep and health. *Noise & Health* 2012;14: 237-43.
- 3 Basner M, Babisch W, Davis A et al. Auditory and non-auditory effects of noise and health. *Lancet* 2013, dx.doi.org/10.1016
- 4 Hume KI, Brink M, Basner M. Effects of environmental noise on sleep. *Noise & Health* 2013:IP 193.171.77.1
- 5 Carter PJ, Taylor BJ, Williams SM, Taylor RW. Longitudinal analysis of sleep in relation to BMI and body fat in children: the FLAME study. *BMJ* 2011;342:d2712
- 6 Chung SA, Wolf TK, Shapiro CM. Sleep and health consequences of shift work in women. *J Women’s Health* 2009;18:965-77.
- 7 Hoevenaar-Blom MP, Annemieke MW, Spijkerman AMW, Kromhout D, van den Berg JF, Verschuren WMM. Sleep Duration and Sleep Quality in Relation to 12-Year Cardiovascular Disease Incidence: The MORGEN Study. *SLEEP* 2011;34:1487-92.
- 8 Hoevenaar-Blom MP, Annemieke MW, Spijkerman AMW, Kromhout D, Verschuren WMM. Sufficient sleep duration contributes to lower cardiovascular disease risk in addition to four traditional lifestyle factors: the MORGEN study. *Eur J Prevent Cardiol* 2013; doi: 10.1177/2047487313493057.
- 9 Laugsand LE, Strand LB, Platou C, Vatten LJ, Janszky I. Insomnia and the risk of incident heart failure: a population study. *Eur Heart J* 2013 doi:10.1093/eurheartj/eh019.

- 10 Möller-Levet CS, Archer SN, Bucca G, et al. Effects of insufficient sleep on circadian rhythmicity and expression amplitude of the human blood transcriptome. PNAS 2013; doi/10.1073/pnas.1217154110.
- 11 Pierpont N. Wind Turbine Syndrome: A Report on a Natural Experiment. K Selected Publications, Santa Fe, New Mexico 2009.
- 12 Archer NA, Laing EE, Möller-Levet CS et al. Mistimed sleep disrupts circadian regulation of the human transcriptome. PNAS 2014; www.pnas.org/cgi/doi/10.1073/pnas.1316335111
- 13 Vyas MV, Garg AX, Iansavichus AV et al. Shift work and vascular events: systematic review and meta-analysis. BMJ 2012;345:e4800 doi.
- 14 Salt AN, Lichtenhan JT. Responses of the inner ear to infrasound. IVth International Meeting on Wind Turbine Noise, Rome, Italy April 2011.
- 15 Schomer PD, Edreich J, Boyle J, Pamidighantam P. A proposed theory to explain some adverse physiological effects of the infrasonic emissions at some wind farm sites. 5th International Conference on Wind Turbine Noise Denver 28-30 August 2013
- 16 Ananthaswamy A. Like clockwork. New Scientist, 31st August 2013 Pp 32-5.
- 17 Casella Stanger. Report on Low Frequency Noise Technical Research Support for DEFRA Noise Programme (on behalf of DEFRA, Department of the Environment, Northern Ireland, Scottish Executive, National Assembly for Wales). 2001.
- 18 Noise Review Working Party Report (Batho WJS, Chair). HMSO, London 1990.
- 19 Kelley ND, Hemphill RR, McKenna HE. A methodology for assessment of wind turbine noise generation. Trans ASME 1982;104:112-20.
- 20 Kelley ND, McKenna HE, Hemphill RR, Etter CI, Garrelts RI, Linn NC. Acoustic noise associated with the MOD .. 1 wind turbine: its source, impact, and control. Solar Energy Research Institute, A Division of Midwest Research Institute, 1617 Cole Boulevard, Golden, Colorado USA. February 1985
- 21 Kelley ND. A proposed metric for assessing the potential of community annoyance from wind turbine low-frequency noise emissions. Presented at the Windpower '87 Conference and Exposition San Francisco, California, October 5-8, 1987. Solar Energy Research Institute. A Division of Midwest Research Institute 1617 Cole Boulevard Golden, Colorado USA, November 1987
- 22 Bray W, James R. Dynamic measurements of wind turbine acoustic signals, employing sound quality engineering methods considering the time and frequency sensitivities of human perception. Proceedings of Noise-Con; 2011, July 25-7;Portland, Oregon.
- 23 Frey BJ, Hadden PJ. Wind turbines and proximity to homes: the impact of wind turbine noise on health (a review of the literature & discussion of the issues). January 2012. http://www.windturbinesyndrome.com/wpcontent/uploads/2012/03/Frey_Hadden_WT_noise_health_01Jan2012.pdf
- 24 Hanning CD, Evans A. Wind Turbine Noise. BMJ 2012: 344 e 1527
- 25 von Hünerbein S, Moorhouse A, Fiumicelli D, Baguley D. Report on health impacts of wind turbines (Prepared for Scottish Government by Acoustics Research Centre, University of Salford), 10th April 2013.
- 26 <http://aefweb.info/data/AUSWEA-2004conference.pdf>
- 27 See attachment to covering email message.

- 28 Møller H, Pedersen CS. Low-frequency noise from large wind turbines. *J Acoust Soc Am* 2011;129:3727-44.
- 29 Phillips DJW. Iodine, milk, and the elimination of epidemic goitre in Britain: the story of an accidental public health triumph. *JECH* 1997;51:391-3.
- 30 Kamperman GW, James R. The "How To" guide To siting wind turbines to prevent health risks from sound (P 8): <http://www.windturbinesyndrome.com/wpcontent/uploads/2008/10/kamperman-james-8-26-08-report-43-pp.pdf>

TRANSLATIONZ

Suite 413, 1 Queens Road
Melbourne, VIC 3004
Melbourne Phone (03) 9005 6661
Sydney Phone (02) 8003 5446
Brisbane Phone (07) 3040 0226
Perth Phone (08) 6102 1211

www.translationz.com.au

Vestas

Karen Ellemann, Minister of Environment
Department of Environment
Højbro Plads 4
1200 Copenhagen K

[Stamp:RECEIVED
BY THE DEPARTMENT
30 JUNE 2011]

Date
Randers, 29 June 2011/erkjs

Dear Karen Ellemann,

Following previous correspondence, I am writing this letter to express my concern regarding the limits for low frequency noise from wind turbines now being proposed.

Back in January 2011 we applauded your announcement of the new regulations regarding low frequency noise and the fact that you also then emphasised that those regulations would not be tightened and that it was a question of improving the security in connection with the installation of wind turbines. Accordingly, the reaction from the industry branch back in January 2011 was positive, although as an industry we were uneasy about having heavier demands imposed on us than other industries.

When the new regulations were then published on 26.05.2011, we were of course convinced of your initial point of view. As a result, we were extremely surprised to find that the proposed new regulations do in fact include a significant and severe tightening of the previous noise regulations.

In fact, according to our analyses, the most economical turbines, the 3 MW category, are the ones that will be strongly affected by the new rules. This applies to open terrain in particular, where in future low frequency noise will dictate and increase the distance requirements to neighbours for close to half of the projects that we are already aware of over the next 2 to 3 years.

In a small country such as Denmark this means that a significant number of projects will not be viable as the increased distance requirements cannot be met whilst maintaining a satisfactory business outcome for the investor.

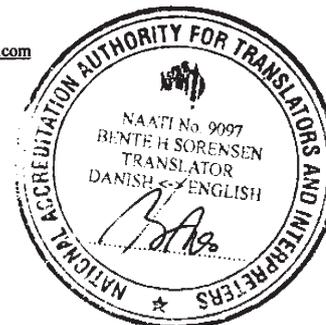
The Danish market for wind turbines is of minor importance for Vestas in terms of sales, typically less than 1% of our sales per year. However, the Danish market provides a number of other functions for Vestas which are of considerable value from a business point of view. By means of its high wind penetration, 24% in 2010 - still a world record - Denmark has a role as a forerunner country and a full scale laboratory for conversion to renewable energy.

This means that other countries often look to Denmark when adjusting their legislation regarding wind energy. We are therefore concerned - justifiably so as history shows - that the proposed Danish regulations for low frequency noise from wind turbines will spread to a large number of other markets with much higher commercial impact for Vestas and consequently for employment in the business.

The Danish wind turbine industry employs approx. 25,000 people in Denmark and boasts an export which is about 8.5% of total Danish exports. Such "over-proportional" presence has become possible because Denmark

Vestas Wind Systems A/S

Alsvej 21, 8940 Randers SV, Denmark
Ph.: +45 9730 0000, Fax: +45 9730 0001, vestas@vestas.com, www.vestas.com
Bank Nordea Bank A/S, Reg. No. 2100, Account No. DKK ... [illegible]
Company Reg. No.: 10 40 57 82
Company Reg. Name: Vestas Wind systems



TRANSLATIONZ

Suite 413, 1 Queens Road
Melbourne, VIC 3004
Melbourne Phone (03) 9005 6661
Sydney Phone (02) 8003 5446
Brisbane Phone (07) 3040 0226
Perth Phone (08) 6102 1211

www.translationz.com.au

Vestas

Page
2/2

has been able to create the conditions for good correlation between demonstration, education and industry research and development. In reality we fear that the demonstration element will suffer irreparable damage as a result of the new regulations regarding low frequency noise. When combined with the imminent danger that important markets will copy the new Danish regulations, I consider the new regulations to be extremely damaging to the prospects of further popularisation of land-based wind energy.

At this point you may have asked yourself why it is that Vestas does not just make changes to the wind turbines so that they produce less noise? The simple answer is that at the moment it is not technically possible to do so, and it requires time and resources because presently we are at the forefront of what is technically possible for our large wind turbines, and they are the most efficient of all.

In the light of this it seems strange that the wind turbine industry is being discriminated against compared to other industries. All other industries are subject to differential noise requirements regarding low frequency noise for night and day (20, respectively 25 dB), whereas the wind turbine industry are subject to requirements of 20 dB 24 hours a day.

The proposed low frequency limit values may hinder the development of onshore wind in Denmark, including meeting our commitments in relation to the EEC. Ultimately, we consider there is a danger that the regulations will be copied by other countries and accordingly this will provide an obstacle to the popularisation of wind energy at a global level. Both issues will damage Vestas as a business, including affecting Danish activities.

Yours sincerely,

Vestas Wind systems A/S

[Signature]
Ditlev Engel
Chief Executive Officer

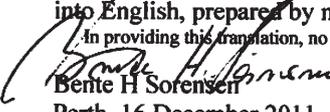
Alsvej 21, DK-8940
Dir. +45 9730 0000, www.vestas.com

A copy of this letter was sent to Lykke Friis, Minister for Climate and Energy

End of Translation

I believe this to be a true and accurate translation of the document before me, from Danish into English, prepared by me to the best of my knowledge and understanding.

In providing this translation, no warrant is given as to the authenticity or otherwise of the source document presented.


Bente H Sorensen
Perth, 16 December 2011



Regional Development Committee

Committee for Regional Development

Room 435

Parliament Buildings

Tel: 028 90521063

Email: committee.regionaldevelopment@niassembly.gov.uk

FROM: Paul Carlisle – Clerk to the Committee for Regional Development

TO: Sheila Mawhinney – Clerk to the Committee for the Environment

DATE: 17 January 2014

SUBJECT: Inquiry into Wind Energy

At its meeting on 8th January 2014, the Committee for Regional Development considered correspondence from the Committee for the Environment regarding the Terms of Reference for its Inquiry into Wind Energy.

The Committee agreed to write to you to highlight its opposition to the siting of wind turbines/wind farms on land owned by the Department of Regional Development and its Arm's Length Bodies in Areas of Outstanding Natural Beauty, such as the Mournes.

Regards

Paul Carlisle, Clerk to the Committee

RES

**RES UK & Ireland Limited**

Willowbank Business Park, Willowbank Road, Millbrook, Larne
 County Antrim, Northern Ireland BT40 2SF, United Kingdom
 T +44 (0)28 2844 0580 F +44 (0)1923 299 299
 E info@res-group.com www.res-group.com

Environment Committee,
 Room 247,
 Parliament Buildings,
 Ballymiscaw,
 Stormont,
 Belfast BT4 3XX

Our Ref: DV01-010700

28 February 2014

Dear Sir / Madam,

RES Response to Environment Committee Wind Inquiry Call for Evidence

RES is one of the world's leading independent renewable energy project developers with operations across Europe, North America and Asia-Pacific. RES has been at the forefront of wind energy development for more than 30 years and has developed and/or built more than 8,000 MW of wind energy capacity worldwide, including projects in the UK, Ireland, France, Scandinavia and the United States. RES has been developing wind projects on the island of Ireland since the early 1990s, having developed 17 operating wind farms in Northern Ireland and 4 operating wind farms in the Republic of Ireland, totalling over 278MW. Within Northern Ireland, RES currently has 55MW of wind capacity consented and awaiting construction, over 45MW of new wind generation in the planning system and numerous other projects in the pipeline.

RES is a member of the Northern Ireland Renewables Industry Group (NIRIG). NIRIG will be submitting a consultation response on its members' behalf. RES, as a responsible developer, fully endorses the NIRIG response and adds the following evidence for the inquiry into wind energy by the Assembly Committee for the Environment based on the Terms of Reference.

1. To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment;

RES firmly believes that PPS18 and the associated guidelines in place are balanced and fit for purpose in assessing wind farm developments in Northern Ireland. The robust assessments undertaken to demonstrate compliance with policy criteria clearly identify environmental impacts and ensure appropriate mitigation as required.

PPS 18 has allowed considerable progress to be made towards the Strategic Energy Framework target, Programme for Government targets and the aims outlined in the Sustainable Development Strategy and Regional Development Strategy. Furthermore, development of large-scale wind energy has contributed to many of the sustainable energy aims highlighted in the 2011 manifestos of all the main Northern Ireland political parties.

PPS18 is the product of extensive public consultation, which shaped and refined the policies contained within it. An Environmental Impact Assessment identifies and assesses the likely environmental effects of the proposed development and establishes an appropriate range of mitigation measures in order to reduce any potential adverse impacts.

2. To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development; and Wind Turbine Noise

Within Northern Ireland, noise from wind farms is controlled within the planning context by PPS18. Best Practice Guidance to PPS 18 refers to the use of the Department of Trade and Industry's 'The Assessment and Rating of Noise from Wind Farms' – ETSU-R-97. It is therefore considered that the use of ETSU-R-97 as a criterion for assessment of wind farm noise fulfils the requirements of PPS 18. The methodology described in ETSU-R-97 was developed by a working group comprised of a cross section of interested persons including, amongst others, environmental health officers, wind farm operators and independent acoustic experts. Based on the advice of planning policy, as outlined above, a wind farm which can operate within noise limits which have been derived according to ETSU-R-97 is considered to be acceptable.

Northern Ireland, like the rest of the UK, uses ETSU-R-97 for the rating and assessment of wind farm noise based on a margin above background noise (existing noise conditions) and a fixed limit for low background noise levels. Other countries such as Ireland, Australia and New Zealand have similar noise limits based on background noise levels and a fixed lower limit. Where noise limits exist in other countries most set fixed noise limits, although only a few have wind farm specific criteria.

The application of the ETSU-R-97 assessment methodology has recently been reviewed by the Institute of Acoustics (IoA), at the request of the Department for Energy and Climate Change (DECC). In May 2013 the IoA published the document "A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise". The Good Practice Guide (GPG) provides guidance on all aspects of the use of ETSU-R-97 and reaffirms the recommendations of the Acoustics Bulletin article on "Prediction and Assessment of Wind Turbine Noise" with regard to propagation modelling and wind shear, published in 2009¹.

The Northern Ireland Executive has added its endorsement of the IoA's Good Practice Guide to the application of ETSU-R-97 for wind turbine noise assessment and therefore joins the other regions of the UK (England, Scotland and Wales) in approving the guide.

Separation Distances

ETSU-R-97 does not specifically use separation distance as a criterion for limiting noise from wind farms, but instead uses the existing noise environment to determine the acceptability of wind farm noise.

Setback distances are relatively common in the United States and Canada where specified setbacks can provide legislatively approved fixed minimum distances from wind turbines to noise sensitive receptors. Whilst they provide a reassuringly simple means of control readily understood by all, they do have substantial drawbacks²:

Internationally existing set backs are typically in the range 300 to 500 metres (with the exception of Germany and Scotland where larger set backs are recommended, but routinely put aside in the light of evidence on the appraisal of impacts at shorter distances). These distances are below the minimum for large scale wind turbines resulting from the use of the ETSU-R-97 methodology in the UK which typically results in a minimum separation distance of 10 times the hub height i.e. 750 to 850 metres for a modern 2 to 3 MW turbine. Different

1 Prediction and Assessment of Wind Turbine Noise, Bowdler et al, Acoustics Bulletin Vol 34 No 2 March/April 2009
 2 Report on Health Impacts of Wind Turbines, University of Salford, and Prepared for Scottish Government by: Sabine von Hünerbein, Andy Moorhouse, Dani Fiumicelli, David Baguley 10th April 2013.

power rated turbines and the same power rated turbines from different manufacturers have different noise characteristics. Consequently any setback would have to be fixed so as to cope with the noisiest turbine; thereby unreasonably prejudicing the use of less noisy turbines.

Use of fixed setbacks would mean there would be no consideration of the existing noise climate which would result in a higher noise impact in quiet environments compared to areas with high background noise.

Fixed setbacks would also remove the incentive for developers to incorporate consideration of local noise conditions in the selection of an appropriate number of turbines with the relevant noise characteristics for the circumstances.

Setbacks do not take into account the many factors that influence the magnitude of any impact, including the surrounding topography and local wind shear effects and the number of turbines. Consequently; any setback would have to be fixed so as to cope with the worst case immission scenario i.e. no topographical attenuation, high wind shear and a large number of turbines thereby unreasonably prejudicing schemes where these factors are likely to result in lower noise levels.

Continued improvements in wind turbine technology are leading to reductions in noise emissions for existing scale turbines; and larger turbines are coming on the market with higher noise immission characteristics. Consequently, any setback regulation would start to become unduly restrictive or obsolete as soon as approved and require regular review and approval.

They do not take account of the potential to use noise management systems to restrict specific noise impacts under particular wind conditions.

In light of the above it is considered that a more effective means of managing wind turbine noise impacts is to set noise level limits at the noise sensitive receptors likely to be significantly affected, and require these to be met by planning conditions. This presents a practicable means of appropriate case by case assessment and control balanced against the benefit in terms of renewable energy production.

3. To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

RES has an industry leading track record in community engagement and delivery of tangible benefits to the local communities that host our onshore wind projects, both across the island of Ireland and throughout the UK.

For all proposed wind farm projects in Northern Ireland RES implements a pre-application Public Information Programme, to inform local residents, communities and their elected representatives about the proposal, to provide them with an opportunity to give feedback and to provide them with a point of contact for further information.

Prior to undertaking formal public consultation, RES will carry out desk-based research (through local newspapers, Council websites and the internet) to identify key local stakeholders and community groups.

Those identified will include:

- Elected members of the local Council, including those representing Wards around the proposed site;
- Local MPs/MLAs;
- Community Development Associations closest to the proposed wind farm.

RES then seeks informal discussions with the key stakeholders outlined above to confirm that the desk based research has provided accurate and comprehensive information. RES gains local knowledge from these discussions and frequently adds further names to the key stakeholders list. Numerous meetings, telephone calls and correspondence takes place during this stage as RES communicates the project information and responds to feedback and queries from the key stakeholders.

In RES' experience Community Development Associations are frequently the most engaged and involved organisations in respect of onshore wind projects and their associated community benefits, as these groups usually provide facilities and services across all age groups and can have development plans already in place. Community Development Associations can also be visionaries within their local community, comprising dedicated and focused individuals who have the community's best interests at heart.

For our most recent projects RES has established Stakeholder Panels/Community Liaison Groups in which key community representatives meet with RES staff in the early stages of consultation to discuss the key issues arising. RES has found these fora to be particularly conducive to effective engagement where all voices can be heard, and open and frank conversations had.

The next stage is to carry out door to door visits within at least a 2km radius of each proposed wind farm. RES staff visit properties within the radius and speak to as many householders as possible. At properties where no one is available to speak with RES staff, a letter giving details of the project including contact details and date of the public exhibition will be dropped through the letterbox.

At this stage RES will also mail out to community organisations, sports clubs, churches and schools to inform them about the proposed project and to invite them to the public exhibition. This typically covers a 10km radius from the proposed site and in the region of 200 – 300 groups and individuals.

RES will hold a Public Exhibition at a venue near to the proposed wind farm, allowing local residents the opportunity to come along and speak to staff, ask questions, provide feedback and find out more about the community benefits being offered. This event again provides RES with the opportunity to find out more about the local community, perhaps identifying additional community groups in the area, learning more about the history and culture of the village/town and listening to concerns of local residents. Details of all conversations are noted and taken back to the office for further consideration/research before planning submission.

To coincide with public exhibition date RES will launch a website dedicated to the specific wind farm proposal. Examples include:

- www.meenamullan-windfarm.co.uk
- www.barrcregg-windfarm.co.uk
- www.altaveedan-windfarm.co.uk

Post consent, RES will continue to engage with both the Stakeholder Panel/Community Liaison Group and local residents ensuring that pre-construction and construction information is provided in a timely and effective manner. RES will utilise a variety of communication tools including the project website, community newsletters and mailings to maintain contact with the local community.

A site specific local example is provided as an Annex to this response.

Community Benefits/Local Electricity Discount Scheme (LEDS)

RES begins to discuss the Community Benefits Package at an early stage however each community places a varying level of importance on the community benefits generated by a proposed onshore wind energy development. RES does not seek to make any restrictions on

how the community benefit funding we provide should be spent. For example, we frequently find that our funds are used to cover administrative costs of community bodies, such as electricity bill, telephone, insurance and heating. These are the costs that can be difficult for groups to find funding for but yet are essential to keep the groups in operation, keep community buildings open and in doing so sustain and generate further community funding/initiatives.

Our innovative Local Electricity Discount Scheme (LEDS) is a direct tangible benefit for properties on mains electricity within the Qualifying Area of our new wind farms.

LEDS is the first Local Electricity Discount Scheme to be introduced by any wind farm developer in NI. RES has committed to delivering LEDS at all new onshore wind projects over 5MW submitted to planning from 2013 onwards. RES has committed to delivering LEDS on all its onshore wind projects over 5MW that are consented and awaiting construction, as well as at projects that are currently under construction. LEDS has been launched at 5 sites in Northern Ireland – Craiggore (nr Garvagh), Barr Cregg (nr Claudy), Altaveedan (nr Loughgiel), Castlecraig (nr Omagh) and Meenamullan (nr Castlederg). Currently there are 700 Eligible properties qualifying for £200 annual discount and the average Qualifying Distance 3.1km.

This new form of benefit was a direct response to public consultation and research carried out by RES. With the introduction of LEDS, RES now offers a Community Benefits Package totalling £5000/MW.

Barriers to Engagement

Some of the barriers experienced during Community Engagement include:

- Local people do not want to be involved in discussions until the proposals are more advanced.
- Public meetings at very early stages can lead to frustrations as some questions cannot be answered until detailed site surveys, and land agreement, for example, are finalised.
- The definition of 'community' varies from project to project.

At recent public exhibitions, RES has experienced the attendance of non-local groups or individuals for the purpose of protesting, and this has limited the ability of the local community to engage effectively with RES and access the information provided. RES will continue to carry out public exhibitions; however format and timings may have to be reviewed to ensure safety of staff and other attendees at events.

Post Submission Community Engagement

Post Submission, RES continues to engage with the local community around our projects. RES will issue letters to all local residents, councillors/MLAs, Community Development Associations, community organisations, sports clubs, churches and schools, stating the planning service reference number should anyone wish to respond to the application. RES is always open to contact from the local community and our contact details are made readily available throughout the process.

Conclusion

In conclusion RES would like to thank the Environment Committee for the opportunity to engage on these issues.

RES believes that the benefits of developing our wind resources far outweigh the perceived negatives, and indeed a considerable number of policies are already in place to mitigate any of the potential impacts of wind energy development. RES promotes responsible development: this includes adherence to policies and guidance in place in Northern Ireland, as well as a voluntary industry protocol on community engagement and benefit.

RES considers that PPS18, the key planning policy document for renewable energy in Northern Ireland, was the product of extensive public consultation, which shaped and refined the policies contained within it. RES firmly believes that PPS18 and the associated guidelines in place are balanced and fit for purpose in assessing wind farm developments in Northern Ireland.

RES considers that the most effective means of managing wind turbine noise impacts is to set noise level limits at the noise sensitive receptors likely to be significantly affected, and require these to be met by planning conditions. This presents a practicable means of appropriate case by case assessment and control balanced against the benefit in terms of renewable energy production.

RES has an industry leading track record in community engagement and delivery of tangible benefits to the local communities that host our onshore wind projects, both across the island of Ireland and throughout the UK.

RES regularly carries out positive community engagement over and above statutory requirements. RES believe that the renewables sector may be considered a leader in good practice with regards to community engagement and community benefits, as although well established within the onshore wind sector, it is less common in other development sectors such as retail, commercial and housing.

RES believes that community engagement should be inclusive, transparent, accessible and accountable.

We also believe that in order for community engagement to be fully effective, it requires all key stakeholders to:

- Enter into constructive dialogue
- Assist, where possible, in identifying other key stakeholders within the community
- Assist, where appropriate, in identifying the full range of local opinion about the development

RES is in principal supportive of proposals by national, devolved and local government to promote the benefits that developers of onshore wind farms provide to local communities. It is, however, important that any guidance on community engagement and community benefits provides the flexibility required to:

- Allow genuine engagement between communities and developers;
- Deliver long term community benefit in a commercially feasible way, and;
- Prevent developers/operators becoming arbiters of disagreements between communities and local councils.

RES strongly believes that community benefit should be community-led and not subject to potentially onerous policy considerations. We therefore welcome further clarity from the Northern Ireland Government on this point.

Yours sincerely,



Lucy Whitford

Head of Development – Ireland

lucy.whitford@res-ltd.com · D +44 (0)28 2844 0592 · M +44 (0)77 8638 1443

Annex 1: Public Information Programme for Meenamullan Wind Farm

The UK's leading independent renewable energy company, RES has been developing wind energy projects on the island of Ireland since the early 1990s. RES is committed to comprehensive and effective preapplication consultation with all its stakeholders, including local residents and businesses, and believes that the views of local people are an integral part of the development process. RES seeks to be a good neighbour to the communities that host our renewable energy projects and we listen to and address all questions and concerns that interested parties might have. A comprehensive process that engages with local people and stakeholders at an early stage allows an informed debate that helps RES identify issues of concern, explore solutions and design projects that will be welcomed as a positive asset by the local community.

RES is also committed to providing real, tangible benefits to communities that host its renewable energy projects. RES offers £5,000/MW Community Benefit Package at onshore wind projects over 5 megawatts (MW), consisting of a Community Benefit Fund distributed to a number of local charities/community groups and also its pioneering Local Electricity Discount Scheme (LEDS) that provides money off the annual electricity bill of those properties closest to the wind farm for the lifetime of the wind farm. Through our pre-application consultation we therefore aim to engage with the local community about how local organisations, charities and initiatives could benefit from our Community Benefit Funds.

In 2013 RES undertook extensive public engagement and consultation on its Meenamullan Wind Farm Project in Co Tyrone, ahead of submitting a planning application in November that year. Prior to undertaking formal public consultation, RES carried out desk-based research (including local newspapers, Council websites and the internet) to identify key local stakeholders and community groups. Those identified included:

- Elected members of the local Council, including those representing wards around the proposed site;
- Local MPs/MLAs;
- Community Development Associations closest to the proposed wind farm.

RES subsequently sought informal discussions with these key stakeholders, gaining local knowledge and adding further names to the key stakeholder list. Numerous meetings, telephone calls and correspondence took place during this early stage of consultation stage as RES communicated project information and responded to feedback and queries from the key stakeholders.

RES then established a Stakeholder Panel in which 6-8 key community representatives met with RES staff to discuss the key issues arising from the proposals. RES has found this forum to be particularly conducive to effective engagement where all voices can be heard, and open and frank conversations had.

The next stage of consultation saw door to door visits within a two kilometre radius of the proposed wind farm site. RES staff visited properties within the radius and spoke to as many householders as possible. At properties where no one was available to speak with RES staff, a letter giving details of the project including contact details and date of a public exhibition was dropped through the letterbox.

In order to maximise community awareness of, and attendance at, the public exhibition, RES placed advertisements containing details of the venue, date and time of exhibition in three local newspapers - the Ulster Herald, the Tyrone Constitution and the Strabane Chronicle - a week in advance of the event.

To ensure that the local community were aware of the public consultation, RES directly mailed 163 community organisations, sports clubs, churches and schools to inform them about the proposed project and to invite them to the public exhibition. This covered a 10km radius from the proposed site.

A 6 hour Public Exhibition was hosted at a local venue close to the proposed site of Meenamullan Wind Farm and easily accessible to local residents - the Killeter Heritage & Enterprise Centre - enabling the local community the opportunity to come along and speak to staff, ask questions, provide feedback and find out more about the community benefits being offered. The exhibition was open at 3pm – 9pm, allowing the maximum number of interested parties to attend. This event again provided RES with the opportunity to find out more about the local community, identifying additional community groups in the area, learning more about the history and culture of the village/town and listening to concerns of local residents. Details of all conversations were noted for further consideration/research before planning submission.

To coincide with public exhibition date RES launched a dedicated website for the specific wind farm proposal - www.meenamullan-windfarm.co.uk. This website will be updated and maintained throughout the projects lifetime, from pre-submission stage right through until post construction.

Meenamullan Wind Farm is currently in planning and during the post-submission phase RES continues to engage with the local community. This has included issuing letters to local residents within 2km from the site, councillors/MLAs, Community Development Associations, community organisations, sports clubs, churches and schools, stating the planning service validation number should anyone wish to respond to the application. RES is always open to contact from the local community and our contact details are made readily available throughout the process. Should Meenamullan Wind Farm receive planning consent, RES will continue to engage with both the Stakeholder Panel and local residents ensuring that construction information is provided in a timely and effective manner. RES will utilise a variety of communication tools including the project website, community newsletters and mailings.

Robert Graham

To committee.environment@niassembly.gov.uk.

From Mr R Graham

Inquiry into Wind Energy by the Committee for the Environment.

My response below follows the terms of reference for the Inquiry:

To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment;

1. Policy Context (Chapter 2.0 of PPS18)

On 22 January 2014, the European Commission unveiled their proposal for 2030 climate targets, confirming plans not to renew the current 20-20-20 strategy for the following decade. The 20-20-20 are the three targets for 2020 set in 2008 by the president of the European Commission and EU leaders: a 20% reduction in emissions based on 1990 levels, a 20% share of renewable energy and a 20% increase in energy efficiency. The first two were binding, while the third was an indicative goal.

The new strategy proposes a binding target for reducing emissions by 40% from 1990 levels by 2030. But most notably, the Commission has retreated from the idea that a renewable energy target should be binding on member states and instead proposes an objective of increasing the share of renewable energy to at least 27% of the EU's energy consumption by 2030; this would apply only to the total energy mix across the whole EU. Without individual obligations on member states this renewables target is made of straw, reflecting serious concerns about the viability, efficacy and capacity of current renewable technologies. Amongst others, the UK government has strongly opposed any further renewable energy target and supports a technology-neutral approach.

On 30 January 2014 the Northern Ireland Renewables Industry Group (NIRIG) announced that "Throughout December wind energy regularly contributed upwards of 40% of Northern Ireland electricity demand." Consequently it seems that Northern Ireland already has in operation existing wind turbines capable of producing upwards of 40% of electricity demand in December, a traditionally high demand month. Many more have been approved but not yet built. This is quite apart from the other forms of renewables that are included in the renewables target and expected to generate at least 10% of all electricity consumed in Northern Ireland.

It is little wonder that local opposition to wind turbine developments is growing rapidly in Northern Ireland (mirroring a similar situation in the Republic of Ireland) as people begin to realise and experience the impact of installations located too close to their homes. A briefing note for the Environment Committee by Suzie Cave and Anne Campbell on Approved Wind Farm Applications and Buffer Zones dated 5th November 2013 grossly understates the density and impact of wind turbines because it omits single wind turbines (see section below on definition of a wind farm). Yes, wind energy has a valuable role to play, in the right locations, but the maps provided do serve to indicate that many wind turbine sites have already been approved too close to houses and that Northern Ireland's capacity for acceptable generation of wind energy is already saturated across most of the country.

The degree of saturation could usefully be further examined by augmenting the set of maps in the Suzie Cave Report to show all wind turbines and marking 500m, 1km, etc. separation zones around each approved turbine instead of around each dwelling. Such "Wind

Energy Impact Maps” would help to better understand and track the impact of wind energy development on Northern Ireland’s sustainable human habitat from a health and wellbeing perspective.

Paragraphs 2.9 and 2.10 of PPS18 remind us that ‘First Steps towards Sustainability – A Sustainable Development Strategy for Northern Ireland’ recognises that *“Northern Ireland has enormous potential to develop renewable energy sources”* and sets *“challenging targets above those set at national and international level”*.. *“where technologically and economically feasible”*. However, for humans, sustainability is the potential for long-term maintenance of well-being as discussed below under ‘Policy Objectives’; any development strategy without wellbeing at its core and applied as a universal principle is not sustainable.

Professor Dieter Helm, member of the Economic Advisory Committee to the UK Secretary of State for Energy and Climate Change and in 2011 Special Advisor to the European Energy Commissioner addresses this in his book *“The Carbon Crunch”* which was published in 2012. He describes *“current renewables”* (wind, solar and bio-energy) as *“some of the most expensive ways known to man to marginally reduce carbon emissions”*, and contrasts them with *“future renewables”* and new technologies whose potential he describes as *“awe-inspiring”*. Professor Helm’s assertion on expense is consistent with the results of objective independent studies such as the comprehensive report on *“Costs of Generating Electricity”* by the Royal Academy of Engineering in 2004.

He explains in detail why wind energy does not contribute to our energy security and he shows that *“Working out why wind is so expensive and has little hope of making much difference to climate change is far from straightforward and requires careful navigation through a minefield of misrepresentation.”* To give just one simple example, *“To generate at full capacity, the wind needs to be not too strong, not too weak, and not too gusty. When it is – which is most of the time – something else has to help meet the demand for electricity.”* Generating 40% of electricity from wind in Northern Ireland means having power-stations capable of supplying 40% lying idle in case the wind doesn’t blow; and when the share of wind in the total energy mix is significant, the intermittent demand can put the marginal costs of generating this electricity through the roof. To make matters worse, across the UK, tens of millions of pounds are being paid each year to wind farms NOT to produce electricity when wind energy peaks. The impact of the consequent high energy prices on jobs and the economy has only recently begun to be widely recognised.

Professor Helm’s theme is that we need future renewables because *“None of the existing technologies, save perhaps nuclear, has the capacity to provide a substantive impact on emissions sufficient to make decarbonisation a realizable objective.”* He points out that investment now in current renewables is money not available for other options. He advises taking advantage of the fact that energy generation using gas produces very much less CO₂ than coal or oil and adopting a less aggressive renewables build.

The inescapable conclusion from the above is that, from any perspective, Northern Ireland (and its electricity consumers) would be ill-advised to continue committing more and more of our economic resources long term in a headlong rush to generate energy through more wind turbines and compromising our economic (and green) potential. To coin a phrase, *“Enough is enough”*.

Yet, as demonstrated below, it seems that wind energy development is being pursued through PPS18 in a fashion that may impair public health and that generates other concerns; that is not in the public interest.

2. Policy Objectives (Chapter 3.0 of PPS18)

The Policy Objectives stated in PPS18 are as follows:

- 3.1 The aim of this Statement is to facilitate the siting of renewable energy generating facilities in appropriate locations within the built and natural environment in order to achieve Northern Ireland's renewable energy targets and to realise the benefits of renewable energy.
- 3.2 The objectives of the Statement are:
- *to ensure that the environmental, landscape, visual and amenity impacts associated with or arising from renewable energy development are adequately addressed;*
 - *to ensure adequate protection of the Region's built and natural, and cultural heritage features; and*
 - *to facilitate the integration of renewable energy technology into the design, siting and layout of new development and promote greater application of the principles of Passive Solar Design.*

In the Programme for Government, the Northern Ireland Executive has committed to the following priorities:

1. growing a sustainable economy and investing in the future;
2. tackling disadvantage;
3. improving health and wellbeing;
4. protecting our people and the environment;
5. building a strong and shared community and;
6. delivering high quality services.

These priorities serve to highlight the first glaring omission from the aims and objectives of PPS18, namely that the Executive's priority 3 of "improving health" is entirely absent. There is also no reference to "protecting our people" (Priority 4), or "building a strong and shared community" (Priority 5), or "tackling disadvantage" (Priority 2).

This is relevant to PPS18 because all of these priority issues have emerged as serious problems in respect of wind energy development in Northern Ireland, they are not adequately addressed in PPS18 and its implementation, and the situation is rapidly getting worse as the growing number of wind turbine applications and approvals feeds through a defective planning process. Health concerns are sparking an outcry principally over noise issues due to inadequate separation of homes from existing or proposed wind turbines, and also over shadow flicker, reflection, ice throw and vibration. Instead of being protected, there are already numerous examples of peoples' lives and homes being sacrificed to the interests of developers.

In some senses the biggest failure of all in PPS18 and its implementation is that wind turbines are bitterly dividing local communities by creating winners and losers and putting them at loggerheads through a Planning process that is unfairly weighted to the developer, fails to protect health, wellbeing and amenity, and appears to be subjective and opaque in practice and dominated by production targets.

My point is that the legitimate interests and concerns of ordinary people who are, or could be, adversely affected by wind energy development are ignored in the aims and objectives of PPS18. And, although there are fine words in Policy RE1, this underlying attitude is reflected in the body of PPS18 and the Best Practice Guidance, and in their interpretation and application by many developers and decision makers.

The aim of PPS18 stated in 3.1 “to facilitate the siting of renewable energy generating facilities in appropriate locations within the built and natural environment in order to achieve Northern Ireland’s renewable energy targets and to realise the benefits of renewable energy.” is not compatible with the Executive’s Programme for Government as it stands. At the very least, this aim in 3.1 should be qualified explicitly to confirm that the aim is subject to the priority of protecting people’s health and wellbeing.

Accordingly the objectives in 3.2 of PPS18 need to be clarified and strengthened.

In particular, a new bullet point objective in 3.2 is required specifically to ensure that health and wellbeing are adequately protected. Wellbeing has to do with noneconomic aspects of peoples’ lives; what they want to do and what they can do, how they feel, and the environment they live in; as well as their economic resources. Wellbeing includes objective measures such as health, personal activities, environmental conditions, social connections, political voice, and insecurity; and subjective measures such as happiness, satisfaction, positive emotions such as joy and pride, and negative emotions such as pain and worry.

Whether levels of well-being can be sustained over time depends on whether stocks of natural, physical, human and social capital that matter for our lives are passed on to future generations. A process of assembling an energy infrastructure that is biased, subjective and opaque or that fails to adequately protect health, wellbeing and amenity cannot be consistent with building a sustainable future. The existing first bullet point objective in 3.2, “to ensure that the environmental, landscape, visual and amenity impacts associated with or arising from renewable energy development are adequately addressed” is not a meaningful objective at all. Instead, it is a licence for lip-service by bureaucratic carousel and mitigation by token gesture. As a result PPS18, for example in paragraphs 4.6 and 4.12, refers to mitigation measures as if the planning of a mitigation measure can inevitably overcome any adverse effect. In 4.14, it is disingenuous to suggest in respect of landscape and visual effects that “some of these impacts may be temporary if conditions are attached to planning permissions which require the future decommissioning of turbines” when the turbines in question are intended to be there for 25 years, i.e. for a lifetime. The objective in this bullet point should be that the environment, landscape and amenity are protected from unacceptable impacts associated with or arising from renewable energy development.

As a corollary to the above, the role and technical capacity of the Environmental Health Department should be reviewed and may need to be strengthened considerably.

3. Policy RE1 (Chapter 4.0 of PPS18)

Single turbines, definition of a “wind farm”, and separation distances.

There is unnecessary confusion over what is meant by “wind farm development” in the key statement in Policy RE1 that “For wind farm development a separation distance of 10 times rotor diameter to occupied property, with a minimum distance not less than 500m, will generally apply.” Many developers and decision-makers appear to suppose that a single wind turbine is not a “wind farm development “ and that therefore the minimum separation distances do not apply. They also contend that the minimum separation distance applies “generally” and therefore is not an absolute requirement.

However, the intention of the statement in Policy RE1 is clearly and properly that the minimum separation distance should apply to every turbine with hub height exceeding 15metres, whether it is a single turbine or part of a group. The Guidance does not distinguish between individual turbines and wind farms; instead, the Guidance distinguishes between wind farms and smaller single domestic turbines that are less than 15metres hub height (see e.g. PPS18 paragraph 1.3.25). There is confirmation of this in published information and in personal responses from the Department around the time that PPS18 was finalised.

As an example, after PPS 18 was published in its final form in August 2009, the Department placed on their website a summary of the consultation responses they had received and how these had been addressed. The following is the most directly relevant:

Summary of Consultation Responses

30 Some respondents felt it would be desirable for a minimum separation distance between wind energy development and dwellings. It was considered that this would provide assistance to renewable energy developers in identifying potentially suitable sites for wind energy development proposals as well as providing more certainty to the public.”

“Response:

In response to points raised through the public consultation, the Department has decided to amend the policy text to include reference to a recommended separation distance that should be applied as a general rule to applications for wind energy development. The distance is expressed as 10 times rotor diameter or a minimum distance of 500 metres to occupied property.”

Note that this response states that the minimum separation should be applied as a general rule to applications ‘for wind energy development’. A single turbine is ‘wind energy development’.

The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012 Schedule 2, Category 3(j) provides a clear definition of wind farms as:

“Installations for the harnessing of wind power for energy production (wind farms)” where:

- *“the development involves the installation of more than 2 turbines; or*
- *the hub height of any turbine or height of any other structure exceeds 15 metres.”*

This established definition, which is in line with other jurisdictions, confirms that a single turbine is classed as a wind farm if its hub height is more than 15 metres.

It is also common sense that a commercial wind turbine, usually intended primarily to export power to the grid, is subject to the same level of protections as any group of turbines. The impacts (noise, landscape, shadow flicker etc.) on the health, wellbeing and amenity of local residents of a single turbine with, say, 30 metre hub height can be just as unacceptable as a group of turbines; their assessment and therefore their required separation distance from dwellings is tested, as it should be, using the same measures and against the same standard set of criteria. Each of these single turbines intrudes in the countryside on an industrial scale, easily amongst the highest structures to be seen and dwarfing even the local churches, and makes an incessant, fluctuating noise.

Different treatment or different criteria for single turbines would also give rise to other problems because even independent turbines will tend to coalesce for purely practical reasons such as local wind conditions and connection to the grid. It would also be open to abuse; there are already numerous examples of single wind turbine planning applications coming in succession one at a time, or of applications for a pair of turbines being made as two separate single turbines. Legal ownership of the turbines can be diverse, for example by each individual turbine being owned by a different limited company. Whether they arise by coincidence or by design, these confluences have all the adverse characteristics of a multi-turbine wind farm, or, worse, they impact on the local community from several directions across an even larger area. The adverse impact on the local community of such single turbines and the need for protection is every bit as real as if they had been approved in combination from the outset.

Thus there is every reason to apply the same minimum separation distance from dwellings to each and every turbine whether it is part of a group or not. For the avoidance of doubt, this should be made clear in PPS18.

Separation Distances

It is essential to specify minimum separation distances between wind turbines and dwellings that are applied universally. This is for two reasons:

- i. to enable a more efficient planning process and more certainty to the public by setting a simple minimum protection that anyone can easily check and making it less likely that an application will fail on the other criteria, both objective and subjective, that are necessarily more expensive to test; and
- ii. to provide an essential safety net to protect health and wellbeing in a process which otherwise is necessarily subjective and/or complex and not well understood (particularly noise, amenity and health aspects) and consequently wide open to manipulation and abuse. The current process appears to tolerate insecure procedures and reports that seem prone to significant omissions and errors/misrepresentation and that can take advantage of selecting from menus of different approaches to producing results in order to achieve the 'right' result for the developer.

I would support a **minimum** separation distance of **10 x tip height** from the turbine to the nearest dwelling and its amenity areas, and not less than 500 metres. (The tip height is the distance from ground level to the highest point reached by the tip of the turbine blades.) This should apply to each and every turbine, whether it is single or part of a group.

In my view this is the minimum acceptable formula for separation to address the issues in i. and ii. above and it should not be taken to override the other considerations, including noise, amplitude modulation and visual amenity which should continue to apply. The noise limits in ETSU-R-97 are clearly not sufficient to protect health or amenity (see comments on ETSU below), but if, despite all the criticism, ETSU-R-97 should have to be retained for practical reasons, then a more adequate minimum separation distance is essential.

In an annex to this letter, below I have provided information on blade failure and ice throw. In my view this indicates that minimum separation distances from public thoroughfares and amenity areas should also be reviewed as should any requirements for minimum separation from private land bordering the turbine site.

Amenity

Item (vi) of Policy RE1 requires applications to demonstrate *“that the development will not cause significant harm to the safety or amenity of any sensitive receptors (including future occupants of committed developments) arising from noise; shadow flicker; ice throw; and reflected light;”*

Visual dominance is a very important amenity factor that is not listed in Policy RE1. This omission is particularly relevant because the movement and noise of a wind turbine, and the flashing beacon at night, command attention and keep drawing the eye back to the rotating turbine in the manner of a television set in a room.

Accordingly, the effect of visual impact on amenity ought to be explicitly recognised in PPS18 and its Guidance, in addition to the existing focus on visual impact in the landscape generally.

4. Best Practice Guidance (BPG) to PPS 18

As a general observation, this “Best Practice Guidance” is not at all “best” and in some important respects it appears to be, in common parlance, more observed in the breach. What we really need is “Good Practice Guidance” that is clear and that is actually required. Although some factors in the Planning process are necessarily subjective, there is little value in providing guidance that is largely voluntary.

The following are just some of the areas where the BPG is defective and needs to be improved:

- There are no requirements for independent evidence or verification, no effective requirements for professionalism and apparently no effective sanctions for applications which are careless or misleading.
- On important topics, the BPG is often ambiguous, discursive and inconclusive; for example, 1.3.31 gives developers a free hand to cherry-pick the content and “refine” the format of what they submit for Visual Assessments and without reference to the good practice guidelines drawn up by the Landscape Institute.
- The minimum separation distance specified in 1.3.43 is inadequate, as discussed elsewhere, and even this inadequate requirement is not “generally” applied for wind turbine development. It appears to be selectively applied so that it does not present an obstacle to wind energy development, most notably in the case of single turbines. The requirements should be adequate, clear and of universal application.
- The BPG is overwhelmingly biased in its reasoning and presentation of “facts” in order to achieve the desired outcomes in a process which is already loaded in favour of the developer. For example:
 - i. In paragraph 1.3.9 In respect of bird strikes the BPG states that : *“Most evidence to date suggests that the risk of collision is minimal.”* And in 1.3.12 In respect of bats: *“...there is little evidence to date to suggest that significant numbers of deaths or injuries will occur.”* Both comments are now manifestly incorrect.
 - ii. In paragraph 1.3.43 it states that: *“Noise levels from turbines are generally low and, under most operating conditions, it is likely that turbine noise would be masked by wind-generated background noise.”* With wind turbines typically producing around 100dB(A), this statement can only be valid if there is a sufficient separation distance; as a result, the statement is extremely misleading in that it provides false reassurance to concerned neighbours of a proposed development.
 - iii. Table 1 in paragraph 1.3.43 shows indicative noise levels for everyday activities for comparison with the 35 to 45 dB(A) noise of a wind farm at 350m distant. For most people, the most important of these comparisons will be with the noise level in a quiet bedroom.

It is quite startling that the table shows a “Quiet bedroom” as 35dB(A). This is some 10 to 20 dB(A) above the bedroom noise level at night in a typical rural area where wind turbines are likely to be located. In other words, it indicates a noise level that is more than double the actual noise level that the reader is likely to associate with a quiet bedroom.

At the top end of the scale, the threshold of pain shown in Table 1 as 140 dB(A) is more generally quoted as 120dB(A) up to a maximum of 140dB(A) for certain people, with eardrum rupture occurring at 150dB(A).
 - iv. In 1.3.44 we read that *“Aerodynamic noise from wind turbines is generally unobtrusive – it is broad-band in nature and in this respect is similar to, for example, the noise of wind in trees.”*

In fact residents affected by wind turbine noise have variously described it as “like a passing train that never passes” or “like a boot in a washing machine”; and acoustics experts talk of the character and the changing frequency content of the noise, and how it obtrudes in a rural environment.

Expert consultants MAS Environmental state that *“It is not uncommon to hear anecdotal evidence about wind farm noise and character; however, the majority of anecdotal evidence relates to visits to wind farms during day time and typically within close proximity of the turbines. These are not the same conditions or circumstances in which complaints from wind farm noise are made.”*

- v. Paragraph 1.3.51 concludes incorrectly that *“Blade failure is therefore most unlikely.”* and in paragraph 1.3.79 the risks of ice throw are summarily dismissed. These are addressed in the annex below. Further, there is no acknowledgement in paragraph 1.3.78 of the annoying and dangerous strobe effects of sunlight reflected from turbine blades.

5. ETSU-R-97 and its Guidance

It is well known that there is widespread criticism of the outdated report ‘The Assessment and Rating of Noise from Wind Farms’ (ETSU-R-97) which was completed in September 1996 when wind turbines were in their infancy and little was known about their noise. For this reason, the working group who produced the report recommended in their Introduction that the report and its recommendations should be reviewed in two years’ time. No review of the noise limits in ETSU-R-97 has ever been carried out. Instead, Guidance to ETSU-R-97 was published in May 2013 (and adopted in Northern Ireland in January 2014) giving rise to a further crescendo of criticism.

In my view the unacceptable shortcomings of ETSU-R-97 include:

- i. The fixed minimum noise limit that is permitted for noise levels at night is up to 8dB(A) higher than the daytime limit and, at 43dB(A), this minimum night time limit is also considerably higher than World Health Organisation guidelines would allow.
- ii. An even higher fixed minimum limit of 45dB(A) is permitted day and night *“where the occupier of the property has some financial involvement in the wind farm.”* Even if such an occupier willingly foregoes his amenity, this increase in noise cannot be acceptable on health grounds, particularly when present or future occupants may include children and elderly people. Participation in community projects and community benefits also increases the potential exposure to excess noise under this standard. All this, in a situation where the majority may be completely unaware of the noise and health issues associated with wind turbines.
- iii. The impact of the character of wind turbine noise and its changing frequency content is not properly reflected in ETSU-R-97, as recent developments in England and the introduction of the “Den Brook” condition are demonstrating. Amplitude Modulation manifests itself in different ways and dwellings need to be properly protected in respect of it.
- iv. ETSU-R-97 fails to require proper correction for wind shear, particularly where theoretical projections are permitted for smaller developments. In the recent Guidance this failing is exacerbated, with previous misjudgements being protected in perpetuity.
- v. ETSU-R-97 in conjunction with the associated Guidelines, particularly the latter, give far too many options for approximation, from how to measure and allow for wind shear, to the degrees of freedom permitted in fitting curves to data points on graphs. Where the Guidance is better in respect of process, it appears to be largely voluntary.

-
- vi. ETSU-R-97 is totally inconsistent with the respected, longstanding noise standard BS4142.

To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development;

My observations here are that

1. ETSU-R-97 is the only turbine noise standard in the world that sets a higher noise limit at night than during the daytime; and
2. Due to the relatively small scale of the hills, valleys and plains of Northern Ireland's landscapes and the proliferation of hedges and trees in many areas, wind shear is likely to be very high at many wind turbine sites, particularly at night, and it is site specific in every case. Direct measurements of wind shear are essential in all cases because the rule of thumb approximations and extrapolations are not good enough.
3. ETSU-R-97 is far out of step with other noise standards, so that for example biomass plants may have to meet levels of 25dB(A) at night in quiet countryside whilst wind turbines can operate at over 40dB(A) when background noise may be well below 30dB(A).

To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

Local experience of engagement by a developer applying to carry out a wind energy development in the midst of several dwellings is that the community was not informed of the application, but fortunately they were alerted (by an anonymous letter) just in time to submit objections. The community had not even recognised the location given in the advertisement. Thereafter, the community had to track the twists and turns of the developer for themselves as best they could.

In another, recent case, the application for a wind turbine erroneously indicated that a nearby dwelling was financially linked to the project whereas the owner-occupier was completely unaware of the application.

My recommendations for promoting community engagement are:

1. Official Notification to a minimum of twelve of the closest Noise Sensitive Locations, including all within 10 x tip height of the proposed turbine site, as soon as a Planning application is received.
2. Provide an adequate opportunity for at least two objecting community representatives to research and prepare and make presentations at any community information session arranged by the developer.
3. Require that the Planning guidelines in respect of process and consultation are properly followed, particularly for noise assessments, and require effective prior notification to the community of any background noise survey and the detailed arrangements at least two weeks before it commences.

Thank you for reading my submission to the Inquiry.

Robert Graham

24 February 2014

Annex

Blade failure and separation distances

The threat of injury due to a failure in the structure or components of a turbine is much more common than is generally known (partly because there is no requirement to report accidents which do not cause death or injury), and bears directly on the issue of separation distances.

Blade failure is particularly dangerous for neighbours of wind farms because detached blades can 'plane' for long distances and fragments are cast using the velocity of the spinning blades to travel significantly further. As can be seen in Figures 1 and 2 below, the blade fragments in this case went through the roof of an office building and lodged in the door of one of the offices.



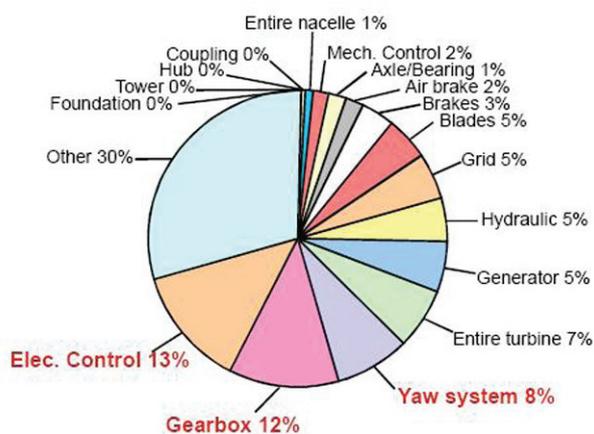
Fig 1



Fig 2

Loughborough University recently undertook research with the aim of identifying the problems of component failure and offering support to address it. The following is an extract from their research in the UK:

Typical turbine failures



It has been estimated that from 8 to 10% of wind turbine blades will fail in some manner, the brakes controlling the speed of the blades will fail in another 7% of turbines, and the structure of 3% of turbines (which obviously support the blades) will fail.

In their Summary of Wind Turbine Accident data to 31st December 2012, the *Caithness Windfarm Information Forum (CWIF)*, which monitors wind turbine accidents, reports that by far the biggest number of incidents found was due to blade failure. (www.caithnesswindfarms.co.uk). "Blade failure" can arise from a number of possible sources, and results in either whole blades or pieces of blade being thrown from the turbine. Pieces of blade are documented as travelling up to one mile.

Fire and structural failure were found to be the second and third most common accident causes. In high winds, fire results in burning debris being scattered over a wide area, with obvious harmful consequences. Structural failure mainly concerns wind damage to turbines and tower collapse under conditions which components should be designed to withstand. Just such a failure occurred on 23 March 2013 when a 75m wind turbine mast “snapped” and came crashing down near Maas, Portnoo in County Donegal. The Donegal News reported a local person as saying that, “There are houses nearby to where this turbine was blown down and debris was scattered over a wide area.”

On 11 December 2011 the Daily Telegraph reported that RenewableUK (the UK’s leading renewable energy trade association) confirmed that there had been 1500 wind turbine accidents and incidents in the UK alone in the past 5 years. The turbines in use in Northern Ireland are no different from those used in the rest of the UK: with 14% of the UK’s operating turbines, we should expect around 14% of the turbine accidents.

The above information clearly demonstrates that there is a significant risk of blade throw and flying debris from a wind turbine during its expected 25 years in operation.

Ice Throw

In Northern Ireland at higher elevations where wind turbines are often located, ice formation is common in the wintertime and therefore ice throw from turbine blades does present a potential safety hazard.

In this regard it should be noted that earlier claims that rotor sensors would stop the turbine blades when ice build-up was detected, have now been shown to be in error. Even wind energy companies now admit that “ ‘rime’ ice formation appears to occur with remarkable symmetry on all turbine blades, with the result that no imbalance occurs and the turbine continues to operate.”

Robert Wallace

From: Robert Wallace
Sent: 27 February 2014 23:28
To: +Comm Environment Public Email
Subject: Re: Wind energy

I feel strongly that the installation of all new wind turbines should be halted until the findings of this committee have been published.

1. The evidence of the decrease in property values in the vicinity of wind turbines is growing to such an extent it can be no longer denied and questions need to be asked who is going to compensate the home owners unlucky enough to live near a wind turbine. There are lots of property owners stuck with properties they cannot sell even at a reduced price because a wind turbine has been erected near them. The decrease in value has been backed up by experts in this area like John Earley who states values can be effected by as much as 50%
2. The set back distance has to be urgently brought into line with all other regions of the U.K. and Ireland , with a min of 500m and this should apply to all planning permissions already granted but not already commenced.
3. The issue of noise has to be addressed and the level reduced to 30dba for both day and night and particular a care should be given to the fact that the noise is constant. There have been lots of research into the ill effects of wind turbine noise on sleep and eventually health some of it even carried out in Belfast (Alum Evans Queens University)

As the health of all residents near a wind turbine can be adversely effected be the inappropriate lay sited wind turbine all grants towards turbines should be halted until this review is finished and all planning approvals reassessed before being allowed to progress. This would stop anymore families being put through the misery of living with constant noise.

Yours faithfully

Robert Wallace

RSPB



Northern Ireland Assembly, Committee for the Environment – Inquiry into Wind Energy

A response from the RSPB, 28 February 2014

Introduction

The RSPB is UK's lead organisation in the BirdLife International network of conservation bodies. Working to protect birds and their habitats through direct land management, education and policy advocacy, the RSPB is Europe's largest voluntary nature conservation organisation with a membership over 1 million, around 13,000 of which live in Northern Ireland. Staff in Northern Ireland work on a wide range of issues, from education and public awareness to agriculture and land use planning.

The RSPB is unusual amongst UK NGOs because we engage with individual applications for renewable and other energy infrastructure across the UK, advising developers how they can minimise the impact of their developments, as well as working with Government to develop legislation and policy. Our professional planning and conservation staff are regularly involved with individual project proposals and we comment on numerous individual proposals for wind farms and single turbines in Northern Ireland each year. This gives us an almost unique perspective into the implications of new policy for development on the ground. In Northern Ireland we show our commitment to promoting good planning through the joint RTPI/RSPB Northern Ireland Sustainable Planning Awards, and by involvement with developers and the public on proposed development from wind farms to housing.

The RSPB believes that climate change is the most serious long-term threat to wildlife. We strongly support the Northern Ireland targets¹ to obtain 40% of electricity from renewables and to cut greenhouse gas emissions by 20% against 1990 levels by 2020.

Climate change is one of the most pressing challenges facing our society. With the appropriate policies in place, the planning system can help deliver the necessary levels of renewable generation needed for the country to meet its targets on reducing carbon emissions.

Delivering renewable energy infrastructure at the scale required to reduce our emissions and meet our commitments, whilst remaining sensitive to environmental considerations, is a significant challenge. To achieve this, the planning system in Northern Ireland needs to be more than a consent procedure for development; it should also provide a robust and proactive framework enabling sensitive deployment.

The RSPB is very supportive of wind farm and other renewable energy developments, provided they are not located in areas damaging to wildlife, and we have a long track record of working positively with developers to ensure that these proceed in a sustainable way.

The RSPB therefore welcomes The Environment Committee's Inquiry into Wind Energy.

¹ http://www.detini.gov.uk/strategic_energy_framework_sef_2010_-3.pdf

Summary of Recommendations

1. A more structured and spatially explicit approach should be taken to the planning and deployment of on shore wind (similar to the Strategic Search Areas in Planning Policy Wales).
2. Need to include spatial planning for on-shore renewable in local development plans.
3. Continued need for the precautionary approach used by regulators in decision-making when there is significant uncertainty as to the impacts of a wind energy proposal on sensitive bird populations.
4. Need for consideration of cumulative effects on birds and other wildlife.
5. Continued need for investment into the environmental impacts of renewable technologies, and Governmental role in ensuring delivery of post construction monitoring and critical research.
6. Need for the recommendations of the 2013 Birdlife International Report 'Wind Farms and Birds: An updated analysis of the effects of wind farms on birds, and best practice guidance on integrated planning and impact assessment' for the Bern Convention to be carried through into any review of PPS18 within the context of the Strategic Planning Policy Statement (SPPS) and any subsequent guidance.
7. Reinforce the fact that full and proper scoping is key at the project level.
8. Need for regional and sub-regional strategic capacity assessments.
9. Need for sensitivity mapping to indicate where our most sensitive habitats and species are located.
10. Need for local councils to work collaboratively and use up to date evidence to gather evidence on a sub-regional basis post RPA in 2015.
11. All developers should ensure early and proactive engagement with stakeholders.
12. Determining authority to ensure developer set aside financial requirements are sufficient to support decommission activities, this needs to be strengthened through a bond or similar.
13. A transparent and nationally-agreed protocol should be developed that sets out how and when discussions about community benefit should take place.
14. Community benefits should encompass biodiversity benefits – e.g. through habitat restoration or enhancement.
15. Development of a formula of £/MW/year specifically for biodiversity-related community benefit for on-shore wind.
16. Strategic consideration of community benefits required.
17. Requests that Environment Committee commends the inclusion of the recommendations contained within this response to the Department of the Environment (DOE) in respect of the ongoing consultation exercise in respect of the Strategic Planning Policy Statement (SPPS), and any subsequent technical guidance.

On-Shore Wind Energy

With regards to wind energy, the RSPB focus is on internationally and nationally designated sites and protected species or habitats that may be vulnerable to wind farm development even where these occur outside designated sites. Of particular concern are areas designated as Special Areas for Conservation (SACs) under European Habitats Directive² and Special Protection Areas (SPAs) under the European

² Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora

Birds Directive³. Both are afforded protection under the Conservation (Natural habitats etc) Regulations (NI) 1995.

Regarding species, we would be most concerned about species shown to be vulnerable to wind farm development, such as Hen harriers, Whooper swans, and Greenland white-fronted geese, which are also listed on Annex 1 of the European Birds Directive.

Some breeding wader species of conservation concern in Ireland such as curlew and snipe have also been recorded in published research⁴ as vulnerable to disturbance from turbines and are therefore a serious consideration for us. Curlew are Schedule 1 in The Wildlife (NI) Order (as amended) 1985.

We would also seek to prevent the loss or damage of active blanket bog, a priority habitat under the Habitats Directive.

Issues around onshore wind have changed over the last few years. Many large sites are now operational, have consents or are subject to existing applications. This raises a number of new challenges and opportunities:

- There are many more small proposals coming forward. These can still have the potential to result in significant harm to wildlife if poorly sited or designed and assessment is still time consuming. Overall, this could lead to an increase in processing time per MW installed;
- As more onshore wind in particular is deployed, cumulative impacts on wildlife and landscape are becoming an increasing concern; and,
- As the number of developers, consultants and contractors involved in the industry has increased, so too have the opportunities to co-ordinate and partner up on surveys and/or habitat/species management plans with potential to advocate landscape scale conservation.

If we are to meet the targets without causing significant harm to wildlife, and taking account of other restrictions on development, there will be an increased need to plan strategically and identify areas which are and are not suitable for wind farm development. With the right strategy and planning safeguards, and with co-operation between developers and conservationists, renewable targets can be achieved without significant detrimental effects on birds of conservation concern or their habitats.

A comprehensive and structured approach, identifying areas that are more or less suitable for deployment, would offer a valuable steer to developers. It would also help build public support, reduce risks for all stakeholders, from financiers to conservation groups. This would in turn speed up the consenting process, reducing the risk of contentious and unsuitable projects coming to the application stage.

³ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version) – shortened version The Birds Directive 2009 (codified version)
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:020:0007:0025:EN:PDF>

⁴ Pearce-Higgins, J. W et al. (2009): The distribution of breeding birds around upland windfarms: Effects of windfarms on upland breeding birds. *Journal of Applied Ecology* 2009, 46, 1323-1331; Pearce-Higgins, J.W et al. (2012): Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology* 2012, 49, 386-394).

With ambitious targets for renewable energy, developing plans of where these developments can best be accommodated is vital to the successful roll-out of technologies like wind power.

Need for Continued Investment

Continuing investment in research into the environmental impacts of renewable technologies will be critical, particularly to ensure that the cumulative impacts are monitored in order to know when the thresholds of impacts on species may be reached. Government must take a lead role in ensuring that post construction monitoring is carried out and critical research is delivered, thereby delivering a nationally coordinated and consistent approach which will assist the industry as a whole.

Integrated Planning and Assessment

The RSPB would wish to draw the Environment Committee's attention to the recently published 'Wind Farms and Birds: An updated analysis of the effects of wind farms on birds, and best practice guidance on integrated planning and impact assessment'⁵. This 2013 report was prepared by Birdlife International on behalf of the Bern Convention as an update to the original 2003 report, and provides the latest analysis of the scientific literature of wind energy/avian impacts, and best practice guidance on EIA, strategic planning and project development.

'The report sets out best practice for the integrated planning and assessment of wind energy development in order to avoid or reduce conflicts with nature conservation interests. Vital elements include:

- *Strategic planning of the wind energy industry and the use of best practice protocols for individual project site selection, to avoid or minimise conflicts with nature conservation interests;*
- *Robust Environmental Impact Assessment, including baseline studies, impact assessment and post construction monitoring; and*
- *Integrated, inclusive and iterative project development taking full account of potential interactions with nature conservation through the entire project development process' (Page 5).*

The report sets out a number of recommendations, which in the opinion of the authors would '*facilitate the smooth further development of the wind energy industry in Europe, whilst ensuring the protection of our internationally important bird populations'* (Page 8), which are summarised as follows:

1. Need for coordinated and targeted strategic research on the impacts of wind farms on birds, and the efficacy of mitigation measures so as to inform future project development and decision-making, and reduce uncertainties over wind energy impacts.
 - As part of this, regulator requirement for developers to carry out comparable pre, during and post construction monitoring.
 - Governments and industry partnership working to provide a single web-based resource for this information to inform future research and project development.
 - In light of increasing interest of wind energy projects in upland forests, further research is required to identify the effects of these on forest habitats and sensitive forest bird species.

⁵<https://wcd.coe.int/com.instranet.InstraServlet?command=com.instranet.CmdBlobGet&InstranetImage=2392222&SecMode=1&DocId=2012800&Usage=2>

2. Strategic Planning and associated Strategic Environmental Assessment is a key tool for governments to reduce potential conflicts between protected bird populations and wind energy development. Effective use of spatial zoning and site policy criteria can mediate between biodiversity and wind energy interests and ensure that targets are met in both spheres.
 - Sensitivity mapping should be used by the regulators and industry to inform locational decisions for wind energy development
3. Environmental Impact Assessment is the key process to enable informed and transparent decision-making. Regulators need to ensure that all potentially damaging projects undergo EIA, that EIAs are scoped properly and undertaken by professionally competent ecologists. Inadequate EIA needs to be challenged by regulators who have suitably qualified staff to understand and critically assess these documents.
 - Cumulative impact assessment continues to be generally poorly addressed in wind energy EIAs in Europe. Regulators should ensure EIAs assess this adequately, and work with academics and industry to support further work to facilitate the development of workable assessment methodologies.
4. Precautionary approach used by regulators in decision-making when there is significant uncertainty as to the impacts of a wind energy proposal on sensitive bird populations. Adaptive management in post-construction monitoring and mitigation should not be used to justify consent of development in unsuitable locations where key bird populations may be put at risk.
 - Need for proper implementation of the tests of Article 6 of the Habitats Directive, where wind energy development is likely to have a significant effect on a Natura 2000 site. National governments and the European Commission should act to ensure training and oversight is provided to address this.
5. Developers should seek to apply an integrated planning approach to project development. A collaborative, open and transparent approach, adopted very early in project development with all relevant stakeholders, has been shown to improve project outcomes, and to reduce costs, delays and uncertainties.
6. Innovative mitigation measures such as increased cut-in speeds and radar-based on-demand shut-down systems should be investigated for inclusion in project proposals when relevant. However, further research is needed into these and other mitigation measures to prove their efficacy.
7. The Standing Committee of the Bern Convention and other relevant Conventions should encourage co-operation between Contracting Parties on migration routes to evaluate cumulative impacts and safeguard key corridors and stop-over sites.

Notably, we urged the Department in the consultation exercise of Draft PPS 18 to provide guidance on 'cumulative impact'. For example, in Scotland, cumulative impact on birds is considered within Natural Heritage Zones (NHZs) for which data on bird populations are available from Scottish Natural Heritage (SNH). The RSPB currently requests that developers provide an assessment of the cumulative impact on protected species such as hen harrier by considering local, regional and national impacts on the

population, but this is problematic where there are insufficient data to run population models for those species. To date this has not occurred. The recommendations contained within the Birdlife International Report detailed above, underscore this requirement.

In general terms, the RSPB strongly contends that the recommendations of this Report should be reflected in any revision to the existing planning policy and guidance in respect of on-shore wind in order to ensure it remains fit for purpose.

Learning by Example

Wales

Within the context of Planning Policy Wales (PPW), seven Strategic Search Areas (SSAs) have been established on the basis of substantial empirical research. While these areas are considered to be the most appropriate locations for large scale (over 25 MW) windfarm development, it further establishes that Natura 2000 sites and Sites of Special Scientific Interest (SSSIs) as 'absolute constraints'. (Please refer to Technical Advice Note (TAN) 8: Planning for Renewable Energy (2005) and its annexes for further details).

Notably, PPW acknowledges that not only should an integrated approach be adopted towards planning renewable and low carbon energy development, a similar approach should be adopted for the additional electricity grid network infrastructure to support SSAs. TAN 8 illustrates the geographical extent of each of the seven SSAs and provides details of the various characteristics which are all displayed in each of the SSAs (Paragraph 29).

With regards to onshore wind in other areas, TAN 8 notes that '*most areas outside SSAs should remain free of large wind power schemes*' (paragraph 2.13). More importantly, TAN 8 states that '*local planning authorities may wish to consider the cumulative impacts of small schemes in areas outside the SSAs and establish suitable criteria for separation distances from each other and from the perimeter of existing wind power schemes or the SSAs. In these areas, there is a balance to be struck between the desirability of renewable energy and landscape protection. While that balance should not result in severe restriction on the development of wind power capacity, **there is a case for avoiding a situation where wind turbines are spread across the whole of the County** (our emphasis). As a result, the Assembly Government would support local planning authorities in introducing local policies in their development plans that restrict almost all wind energy developments, larger than 5MW, to within SSAs and urban/industrial brownfield sites. It is acceptable in such circumstances that planning permission for developments over 5MW outside SSAs and urban/industrial brownfield sites may be refused*'. (Paragraph 2.13).

Scotland

Current planning policy in the form of the Scottish Planning Policy⁶ (SPP) requires planning authorities to set out a spatial framework for onshore wind farms of over 20MW. However, RSPB Scotland believes that this misses the opportunity to consider the implications of the many developments of sub-20MW and, as the responsibility is passed to local planning authorities, it does not allow for proper consideration of the national significance (or insignificance) of areas that may be affected by wind energy. As a result, it is RSPB Scotland's experience that, development plans have been of limited use in influencing the location of onshore wind.

⁶ <http://www.scotland.gov.uk/Resource/Doc/300760/0093908.pdf>

It is also worth noting that RSPB Scotland is a partner in the Scottish Government led *GP Wind* project⁷, which seeks to reconcile renewable energy objectives with wider environmental objectives. It has highlighted existing good practice in Scotland and across Europe, barriers to deployment, and lessons that should be learnt. The project has developed a set of good practice guidelines which can be used to facilitate sustainable growth in the renewables sector in support of the 2020 targets. This is a useful reference tool in moving forward.

The Northern Ireland Context

Need for a strategic and integrated approach

As previously stated, the RSPB is very supportive of wind farm (and other energy renewable developments), but this must not be at the expense of wildlife and our most special places. To this end there is an overriding need to have a strategic and integrated approach to on-shore wind energy development in Northern Ireland.

The absence of any coordinated or strategic approach to the siting of on-shore wind turbines in Northern Ireland, is evidenced by both the Northern Ireland single turbine map⁸ and wind farm map⁹ which have been prepared by DOE Planning depicting the spread of single turbines and wind farms from April 2002 to December 2013. In this context, it becomes apparent that Northern Ireland is well on its journey to the situation resisted by Welsh Planning Guidance '*where wind turbines are spread across the whole of the Country*' (Paragraph 2.13 of TAN 8).

The need for such an approach is further apparent when set within the context of the recent statistics available from the DOE Planning website¹⁰. In this regard, the two following set of statistics are relevant:

- (i) Between April 2002 to December 2013 an average single turbine approval rate of 89% is recorded; and,
- (ii) In the nine months leading up to December 2013, DOE Planning received 13.5% of all its applications for wind farms since 2002/03, notably this part year total already exceeds any preceding twelve month period total since 2002/03.

A detailed wind mapping exercise¹¹ was commissioned by the Department of Enterprise Trade and Investment (DETI) in 2003 to help identify areas of particular potential. This map was derived from the windmapping project and has predicted mean wind speed and power in many locations within the range of 8 to 10.5 metres per second¹² which is regarded as sufficient to support economical wind energy projects. This is a useful tool, but it cannot alone generate the strategic framework necessary to create a comprehensive and structured approach to on-shore wind development.

Strategic planning has a key role to play in enabling the renewable energy industry, particularly onshore wind, to grow in a way that minimises conflicts with other objectives, hence avoiding planning disputes.

⁷ <http://www.project-gpwind.eu/>

⁸ http://www.doeni.gov.uk/single_wind_tubines_december_2013.pdf

⁹ http://www.doeni.gov.uk/wind_farms_december_2013.pdf

¹⁰ http://www.doeni.gov.uk/index/information/asb/statistics/planning_statistics.htm

¹¹ <http://www.actionrenewables.co.uk/resources/windmap/>

¹² indicative mean values and should not be used without further on-site measurements in any decision to develop a wind energy site

Doing so should not only involve the collection a robust evidence base of potential to generate energy, but also of other social and environmental factors that need to be considered.

To this end we would support the introduction of a similar approach to that adopted in Wales, where “*the most appropriate scale at which to identify areas for large scale on shore wind energy development is at an all-Wales level*” Paragraph 12.8.13, Planning Policy Wales (PPW) Edition 5 (2012)¹³.

Implications of the Review of Public Administration (RPA) and Planning Reform

While the geography and climate of an area will determine its likely capacity to generate renewable energy, these elements however, have no regard to administrative boundaries, for example local government districts. There will therefore be a need for local councils to use up to date and appropriate evidence and to work collaboratively in order to gather evidence on a sub-regional basis wherever possible (consistent with PPW, Section 12.9). In England for example, the Department of Energy and Climate Change (DECC) in 2010 funded nine regional energy capacity studies¹⁴ to help local authorities and local communities in England identify and maximise opportunities for the deployment of renewable and local carbon energy technologies in their areas.

If we are to meet our on-shore renewable targets in a truly sustainable way, there is an urgent need for similar strategic capacity assessments to be undertaken, particularly given the fact that we are moving towards a two-tier planning system under the Review of Public Administration, where the crossing of administrative boundaries by on-shore proposals could become a greater issue.

Post transfer in April 2015, local authorities must work together to ensure that policies are put in place that deliver renewable energy in accordance with this evidence base. Collecting a robust evidence base of capacity must be done in conjunction with the collection of evidence for other key planning objectives, so as to enable a coordinated approach to spatial policies.

Need for Regional / Sub-regional Spatial Capacity Data

In the absence of either an all Northern Ireland or sub-regional spatial capacity data, it is worth noting one of the five key actions which were identified in the DETI Draft Onshore Renewable Electricity Action Plan 2011 – 2020 (October 2011)¹⁵ as follows:

Action 1 states that there was the need for capacity studies and data gaps to be addressed. The Plan stated ‘*in order to identify the overall level of development that could be accommodated in existing areas of development and other areas, more detailed ‘capacity studies’ should be undertaken at a regional level/area specific level. These studies are essential for providing more specific guidance on where future developments should be located and to feed into the ongoing monitoring of potential significant adverse effects*’ (Page 25).

Such an approach is consistent with the findings of Birdlife Europe (2011) Meeting Europe’s Renewable Energy Targets in Harmony with Nature – Summary Report¹⁶. This report identifies ‘*eight areas where policy makers must help to enable a renewable revolution in harmony with nature, of which one is to “introduce*

¹³ <http://wales.gov.uk/topics/planning/policy/ppw/?lang=en>

¹⁴ <https://www.gov.uk/government/news/decc-publishes-methodology-for-renewable-and-low-carbon-capacity-assessment>

¹⁵ <http://www.nigridentenergysea.co.uk/wp-content/uploads/2011/10/Draft-OREAP-Oct-2011.pdf>

¹⁶ <http://www.birdlife.org/europe/pdfs/RenewableSummaryreportfinal.pdf>

strategic spatial planning for renewables...maps indicating where the most sensitive habitats and species are located are a valuable planning too; for identifying broad zones where renewable development is most appropriate' (Section 3, Page 11).

With regards to the recommendations for national and EU policy makers within the main report ¹⁷, and with particular regard to Northern Ireland, it is worth noting the Report's first and second recommendations (three in total) as follows:

1. Support development of bird sensitivity maps and targeted habitat restoration for Northern Ireland; and,
2. Develop a spatial plan for all renewables on and offshore in Northern Ireland, and include spatial planning for renewables in Local Development Plans (Page27).

Nature Conservation

With regards to the narrative contained within Paragraph 1.3.7 of the PPS 18 Best Practice Guidance, the RSPB does not agree that cows are necessarily a good indicator that wild animals are not affected by renewable energy development. There is, for example, good scientific evidence that wild birds can be disturbed by, and avoid, wind turbines. This reiterates our comments in respect of the same statement contained within the draft PPS 18 documentation.

Furthermore this paragraph states *'beyond designated sites and peatland habitats the impact of a wind farm on local nature conservation interests should be minimal'* and while this may generally be the case, this statement needs to be qualified that assessment of impacts on wildlife and habitats need to be undertaken to quantify the risk, for example wild bird collision, displacement and disturbance risks all need to be quantified.

Decommissioning and Reinstatement

Within this context, Paragraph 1.3.87 of the PPS 18 Best Practice Guidance states *'developers should demonstrate that funding to implement decommissioning will be available when required'*. The RSPB, however is of the opinion that this wording is not sufficiently strong, and as such would reiterate our previous comments made in respect of the Draft PPS18 consultation response. In this regard, we have suggested the following revised wording *'The Department should ensure that sufficient finances to support decommissioning activities are set aside by the developer until the decommissioning date, through a bond or similar. This is already done for offshore wind farm developers who have to prove that decommissioning will take place (e.g. financial guarantees). Conditions of consent outlining decommissioning requirements would allow this to be enforced onshore'*.

Reconciling National Priorities with Local Interests

Stakeholder Engagement

The RSPB believes that an integrated planning process which facilitates co-operation and joint-working between the various stakeholders is key to ensuring the successful delivery of wind energy development in Northern Ireland. Wind turbines can impact on the amenity value of local wildlife and features valued by local communities. Local support is essential for the successful roll out of onshore wind. The RSPB

¹⁷ http://www.rspb.org.uk/Images/Renewable_energy_report_tcm9-297887.pdf

recommends early and proactive engagement with stakeholders as an important way of increasing public acceptability of onshore wind projects.

The current approach to deploying onshore wind energy is market-led in terms of technology choice and locations for new developments. As a consequence, the deployment of onshore wind in Northern Ireland has remained ad hoc and uncoordinated, and is determined by individual planning decisions. This has led to conflicts over individual developments that could otherwise have been avoided. As previously detailed, the RSPB recommends a more structured and spatially explicit approach to the planning and deployment of onshore wind that distinguishes the potential areas where development should be prioritised or avoided. This approach not only offers clarity to developers, but it also supports the early engagement of stakeholders and creates a clear framework for debate between various interests, without which discussions can be divisive and dominated by responses to individual planning applications. Gaining support from local communities at this stage can be valuable in reducing the scale of opposition to individual projects further down the line.

At the individual project level, a good example of positive community engagement comes from Aberdeenshire Council, which holds a pre-application meeting for key stakeholders. Developers are asked to provide a summary of what they are proposing for discussion at this meeting before submitting their Environmental Impact Assessment (EIA) Scoping Report. The information is also made available online. This means that the community is able to engage at a critical point in the decision-making process, and also avoids the potential for communities to think that they are being excluded from key stages, particularly in such circumstances where a strict interpretation of the right to respond may only include statutory consultees.

Public opinion on wind farms has become particularly polarised. If communities come along to consultation events with these opinions fixed in their mind, our experience is that it is exceptionally difficult to allay their concerns, however good the community engagement process may be.

Community Benefits

The RSPB believes that large renewable energy developments should offer community benefits. However, the provision of community benefits should be considered more strategically than at present. Community benefits should also encompass biodiversity benefits, for example through habitat restoration or enhancement, both to meet biodiversity targets and for the ecosystem services that such habitats provide to the local and regional communities. In this context, a formula of £/MW/year specifically for biodiversity-related community benefit for on-shore wind is suggested.

In our response to Draft PPS 18, the RSPB supported the intention of Planning Service to seek community benefits from wind farm and other large scale renewable energy projects, in an approach very similar to that in Wales (Technical Advice Note 8 Annex B). However, at that time, and still of relevance today, we believe there must be firm guidance from DOE about how these benefits will be sought and delivered, to ensure enduring and sustainable community benefits, equality between schemes and developers, and a clear understanding of the Article 40 process by both planners and developers.

We also advocated that there should be guidance on when a planning agreement is likely to be required, as opposed to when an agreement could be used to facilitate a developer offer. Where a developer offer proceeds entirely outside the planning process, there needs to be security that the offer will result in tangible community benefits and not 'greenwash' or superficial unsustainable community projects. There

is a danger, particularly in areas where there are many wind farms or other projects, that there will be no strategic overview of planning agreements or developer offers, such that small piecemeal projects will proceed and the opportunity for larger scale benefits or environmental enhancement through cooperation between developers and communities will be missed. Reliance on developer offers may also mean that less scrupulous developers will not offer or deliver, leading to inequality between receiving communities.

The RSPB's experience of Community Benefit Schemes in Scotland has led RSPB Scotland to question whether it is perhaps a missed opportunity that community benefit schemes typically only benefit a small locality. RSPB Scotland believes that the current ad-hoc nature of community benefit schemes has been a missed opportunity to deliver benefits to the wider natural environment, as such RSPB Scotland believe that there is a need to review this approach to ensure that all of Scotland's communities benefit from the renewables revolution.

RSPB Response to DECC's Call for Evidence in Onshore Wind – Part A Community Engagement and Benefits (November 2012)

The RSPB, in preparing its response to the DECC's call for evidence spoke to a number of its Local Groups in GB to collect their views as members of the public and local communities. The following comments are based on those discussions in 2012:

The general perspective was one of concern and lack of confidence in developers, planners and the Government more generally to be transparent and to act in their best interest when it comes to wind farm developments. For example, our Local Groups felt that developers were following the letter of the law in regard to community engagement but not necessarily the spirit of it, by, for example, arranging consultation meetings for school holidays when many people would be unable to attend.

An RSPB local group also mentioned a parish council that had been approached by a developer and offered community benefits in exchange for a letter of support.

DOE Planning and the Local Authorities (post RPA in 2015) must avoid situations where community benefit is seen to be used essentially as an enticement to secure planning permission. If a wind farm application is consented for sound planning reasons, the community should be eligible for any community benefits agreed, regardless of whether they supported the application or not.

A transparent and nationally-agreed protocol on how and when discussions about community benefit should take place could help to support a more strategic approach to delivering community benefits at a greater scale and which could have more effective and longer term positive impacts.

Strategic Single Planning Policy Statement (SPPS)

The RSPB requests that Environment Committee commends the inclusion of the recommendations contained within this response to the Department of the Environment (DOE) in respect of the on-going consultation exercise in respect of the SPPS, and any subsequent technical guidance.

For further information contact:

*Michelle Hill MRTPI, Senior Conservation Officer (Planning), RSPB Northern Ireland
E-mail: michelle.hill@rspb.org.uk Telephone: 02890491547*

Rural Community Network

The Environment Committee Inquiry into Wind Energy



Rural Community Network SUPPORTING RURAL COMMUNITIES

Response to Inquiry by Rural Community Network

For further information contact:

Rural Community Network
38a Oldtown Street
Cookstown
Co Tyrone BT80 8EF

T 028 8676 6670
aidan@ruralcommunitynetwork.org

February 2014

Background to RCN

Rural Community Network (RCN) is a regional voluntary organisation established in 1991 by local community organisations to articulate the voice of rural communities on issues relating to poverty, disadvantage, equality, social exclusion and community development. Our vision is of vibrant, articulate, inclusive and sustainable rural communities across Northern Ireland contributing to a prosperous, equitable, peaceful and stable society. Our mission is to provide an effective voice for and support to rural communities, particularly those who are most disadvantaged.

RCN has 300 members across Northern Ireland. Our Board is representative of our membership base with more than half of its representatives (12) elected democratically from the community. The remaining representatives are a mix of organisations that provide support or have a sectoral interest within rural communities. RCN's aims are:

- to empower the voice of rural communities
- to champion excellence in rural community development practice
- to develop civic leadership in rural communities
- to actively work towards an equitable and peaceful society
- to promote the sustainable development of rural communities

Rural communities make up 35% of the population of Northern Ireland.

RCN Response to the inquiry

We welcome the ongoing interest showed by the Environment Committee into wind energy and this inquiry is timely in view of the increasing prominence of this issue in rural communities in the past number of years. We welcome the opportunity to respond to the Committee's inquiry.

Our response to the inquiry is informed by the significant contact we have had with rural community groups and rural dwellers regarding wind turbines and wind farms in rural communities over the past 18 months. The majority of groups and individuals contacting us have been seeking support in relation to opposing the development of large scale windfarms in their areas. We have also been working with community groups to explore the potential for micro generation to reduce energy and heating bills in community premises and advising groups of the potential opportunities that community benefit funds accruing from wind farm developments can bring to their area.

From the outset it is important to state that RCN is not against the development of renewable energy or wind energy. We accept the need to diversify away from fossil fuels and towards renewable energies. We accept that the development of renewable energy is essential both in terms of building security of supply and reducing carbon emissions.

However we are concerned at how large scale wind developments and single turbines have proliferated in rural communities in the past decade and the wider community impacts this has had.

Planning Policy Statement 18 Renewable Energy states that "Significant weight will be given to the wider environmental, economic and social benefits of all proposals for renewable energy in deciding whether planning permission should be granted". In our view this gives a presumption in favour of the development of renewable energy. This presumption in favour coupled with the pressure to meet the targets set under the EU Renewables Obligation and the availability of public subsidy through Renewables Obligation Certificates has led to a mushrooming of turbines across rural Northern Ireland in the past ten years. By 2013 531 MW of renewables had been commissioned (the majority of which is wind energy), 649 MW had achieved planning approval and are awaiting connection and 600MW are in planning¹. Between 2003 and 2011 planning consent rates for renewable energy in Northern Ireland (90%) were higher than any other UK jurisdiction². We would suggest that these factors have conspired to push objections to one side and that the impacts of the proliferation of wind energy in rural communities have been sidelined.

The Environment Committee and the Enterprise Trade and Investment Committee should work along with their respective Ministers and the renewable industry to identify the opportunities and challenges in relation to the development of other sources of renewable energy beyond wind turbines. Wind energy will remain a significant part of the energy mix but other sources of renewable energy must also be developed in Northern Ireland to reach renewable energy targets and reduce carbon emissions.

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' was published in 2009 and Supplementary Planning Guidance: Wind Energy Development in Northern Ireland's Landscapes was published in 2010. Both these documents are dated and should be revised and updated to reflect the advances in renewable technologies and the proliferation of wind turbines across Northern Ireland. Updated landscape character assessments combined with landscape capacity and sensitivity studies should be undertaken to identify remaining areas with land suitable for major wind energy developments.

1 Source Presentation by Mervyn Adams Chair of NIRIG Grid Committee at NIRIG seminar 21.01.14 available at <http://www.iwea.com/nirig.policy-workshop-2014-pre> see Appendix one for map.

2 Delivering Renewable Energy Under Devolution (2013):
<http://www.cardiff.ac.uk/cplan/research/deliveringrenewable-energy>

The proliferation of wind farms in rural communities makes economic sense for developers. Logically it is more convenient and more profitable to develop wind farms where wind resource is strongest and where existing grid connections are already established. It is NIE policy to facilitate the clustering of future wind farms by investing in grid upgrades in key areas which have the greatest wind energy potential. Whilst this is understandable it does raise concerns for rural communities in those areas and has hardened community opposition to wind development (see Appendix 1 for map showing effect of clustering in Northern Ireland). Developers must be compelled to engage with host communities at a much earlier stage of the development process and to disclose their plans as early as possible including how many turbines they plan for a site in second or third phases of development. Negotiations between communities and developers in terms of what is appropriate in terms of the size, number and siting of turbines must be meaningful and transparent. In our view there should be a source of independent support and advice for community groups in dealing with wind developers in their areas. Whilst organisations such as Community Places, Fermanagh Trust and RCN have offered advice and support in relation to planning issues and community benefit the resources of community and voluntary organisations are by their nature limited.

The planning process in relation to wind energy should be made as transparent and open as possible. Community groups have alleged that applications are being submitted for single turbines that are claiming to have community support and claim that community consultation has happened where none has taken place. We would suggest that setback distances should be reviewed in light of the advances in technology and the increasing size of wind turbines to ensure they are still appropriate. Agreed setback distances should be specified within any revised planning policy statement and should be made a condition of planning approval.

With regard to the leasing of sites for single turbines there is a need for awareness raising of the complexity of the issues involved amongst farmers and landowners. The leasing of sites for single turbines involves complex land and contract issues that farmers, landowners and small generalist legal practices that represent them may not fully grasp and we believe that it is important that all parties are fully aware of their rights and responsibilities before contracts are signed. There may be a further increase in applications for single wind turbines from farmers and landowners as a result of the zero transfer from Pillar 1 to Pillar 2 of the next Rural Development Programme. This absence of transfer may lead to underfunding of farm diversification measures. If this is the case single turbines may become even more attractive for farmers as a means of maximising farm income leading to further pressure for the development of single turbines in rural areas.

We have had accounts from individual householders who live close to large turbines in relation to noise, shadow flicker and the significant distress and disruption turbines have caused them. Rural dwellers have raised concerns about the potential impact on house prices in areas where wind farms are sited and concerns about the visual impact of wind farms in rural communities particularly where they have clustered. These concerns are much more difficult to quantify but there is no question that these issues have increased opposition to wind development in rural areas. This has proved to be an increasingly divisive issue in rural communities where land owners and farmers, many of whom are under severe economic pressure can make significant additional income for leasing sites to generating companies.

The potential for community benefit should also be developed. A lot of work has been done on this issue by Fermanagh Trust with support from the Assembly's Enterprise Trade and Investment Committee. Although some companies have raised the levels of their community benefit scheme as a result of the lobbying work of Fermanagh Trust and others, many community benefit schemes pay derisory sums to local community projects. The level of community benefit schemes should be set by government in consultation with the renewable industry and the communities impacted to regulate the operation of community benefit schemes. Allowing the Renewables Industry to set their own level of contributions to community benefit schemes is most unhelpful and it ensures that many communities are

getting a 'deal' which is dependent on the developer involved. Communities need support to negotiate the best possible deal for their area. We recommend that the level of developer's contribution to community benefits schemes should be made mandatory and brought into line with the UK of at least £5000 per Mega Watt.

The development of community owned energy schemes should also be supported in partnership with the renewable industry. Levels of community ownership in Northern Ireland are much lower than in other European countries. There appears to be a lack of financial and practical support for local communities to take forward community owned renewable projects and Northern Ireland compares badly with other regions in this regard. The Scottish Government has recently set a target of 500MW of community energy to be generated by renewable sources by 2020. The Department of Environment and Climate Change have also produced a report which gives a commitment to community owned renewable schemes³. We recommend that the NI Executive explores the approaches used by other administrations in these islands and further afield in Europe to community owned energy and produces a strategy that will set ambitious targets for the development of community owned renewable energy schemes in Northern Ireland. This would encourage partnership approaches between developers and local communities and could motivate communities to develop their own renewable schemes. Community energy has great potential to allow community groups to diversify their funding base and could facilitate appropriate wind farm development with community support. We recommend grant funding available to community groups and co-operatives to help develop community owned renewable projects elsewhere in the UK should be extended to Northern Ireland to stimulate the growth of community energy schemes. In addition there could be the establishment of a one stop shop where community groups could access support in relation to the most appropriate choice of renewable energy for their needs and how they might develop an appropriate scheme.

3

<https://www.gov.uk/government/publications/community-energy-strategy>

Scottish Power Renewables



Committee Chairperson Anna Lo MBE
Committee for the Environment
Parliament Buildings
Ballymiscaw
Stormont
Belfast BT4 3XX

28th February 2014

By email to: committee.environment@niassembly.gov.uk.

Re: Response to Wind Energy Inquiry

Dear Chairperson Lo

ScottishPower Renewables (SPR) is an energy company with a remit for developing and operating renewables assets and supplying electricity. SPR is the largest operator of onshore windfarm assets in the UK and the UK's leading developer with over 1,300MW of consented projects and a large pipeline of future projects, with offshore wind, wave and tidal renewable energy projects becoming increasingly significant.

SPR owns and operates five onshore windfarms in Northern Ireland, with a combined capacity of 41.9MW.

In addition, in partnership with Dong Energy, we operate the major offshore wind terminal at Belfast Harbour.

SPR welcomes the opportunity to respond to the Environment Committee's Wind Energy Inquiry. SPR supports the NIRIG response to this inquiry, and would like to reiterate that a stable policy framework is required to allow clear and necessary progress towards our low-carbon energy future.

SPR supports the positions taken by NIRIG and reiterate the following points:

- The benefits of developing our wind resources far outweigh the perceived negatives, and a considerable number of policies are already in place to mitigate any of the potential impacts of wind energy development
- PPS18, the key planning policy document for renewable energy in Northern Ireland, is the product of extensive public consultation. PPS18 and the associated guidelines are balanced and fit for purpose in assessing wind farm developments in Northern Ireland
- The forthcoming Strategic Planning Policy Statement should maintain the current language and approach of PPS18 to enable our Strategic Energy Framework targets and beyond
- Planning policy has been based on robust evidence and scrutinised by experts in their field. Based on the advice of planning policy, a wind farm which can operate within the noise limits which have been derived according to ETSU-R-97 is considered to be acceptable. An additional Good Practice Guidance now underlies the policy and we believe that such expert-led policies are appropriate for the purposes of wind farm noise assessments

ScottishPower Renewables Cathcart House, Spean Street, Glasgow G44 4BE
Telephone 0141 568 4412, Fax 0141 568 4450
www.scottishpowerrenewables.com

ScottishPower Renewable Energy Limited
Registered Office: 1 Atlantic Quay, Glasgow G2 8SP Registered in Scotland No. 326127

- Buffer zones or separation distances are not required by statute in the UK or Ireland. The setting of noise level limits at the noise sensitive receptors likely to be significantly affected, underpinned by planning conditions, is a proven and effective means of managing wind turbine noise impacts.
- SPR would like to highlight that positive community engagement over and above statutory requirements is regularly carried out by wind farm developers in Northern Ireland. Indeed, the renewables sector may be considered a leader in good practice on community engagement in Northern Ireland

SPR would also like to highlight the need for positive leadership from across the political spectrum for the development of Northern Ireland's substantial renewable energy resources. The sustainable energy aims as laid out in a wide range of Executive and Departmental policies, as well as party political manifestos, will only be met through an increasingly diverse and low-carbon electricity system. In delivering these aims the combined efforts of policy-makers, industry and communities will be vital. SPR continues to look forward to and is committed to making progress on developing the renewables sector, and in particular the most cost-effective scalable technology: onshore wind.

In conclusion SPR would like to thank the Committee for the opportunity to engage on this issue and look forward to continued support for the development of our enviable renewable resources and the necessary progress towards meeting our low-carbon commitments.

Yours sincerely

*sent by email, requires no signature

Martin Mathers

Onshore Policy Manager

Shanti McAllister Landscape Planning and Design

1 Castlehill Drive
Belfast BT4 3GS

+44 (0)7713 156 932
+44 (0) 28 9573 4426
info@shantimcallister.co.uk
www.shantimcallister.co.uk

Committee Chairperson Anna Lo MBE 28th February 2014
Committee for the Environment
Parliament Buildings
Ballymiscaw
Stormont
Belfast BT4 3XX

By email to: committee.environment@niassembly.gov.uk

Dear Chairperson Lo,

Response to Wind Energy Inquiry

Thank you for the opportunity to respond to the Environment Committee's Wind Energy Inquiry. I am a Chartered Landscape Architect and sole practitioner who has specialised in the Landscape and Visual Impact Assessment of wind farms in Northern Ireland for over 12 years. My work generally forms part of the Environmental Statements which are submitted as part of the planning applications for commercial wind farms but I have also carried out work for single turbine applications and acted as an expert witness at planning inquiries. I have a good working knowledge of the Northern Ireland landscape and the content of PPS18 and its Supplementary Planning Guidance on landscape character.

I am supportive of the fact that the SPG should continue to provide broad strategic guidance on appropriate locations and other considerations for wind energy development. However, my current overriding concern is that the SPG does not reflect the positivity towards wind energy development that is expressed in PPS 18, and which was highlighted by former Minister Poots in his speech to IWEA in September 2009 where he described it as being of a "*promotive nature*". In contrast, the SPG provides guidance on a total of 130 Landscape Character Areas (LCAs) in Northern Ireland yet finds the majority of them as being of either 'Medium to High' or 'High' sensitivity to wind energy development. Only two LCAs are judged by the SPG as having 'Medium to Low' sensitivity.

I have been involved in the assessment of nearly 20 wind farms in Northern Ireland, of which the majority have been successful applications. However, in my experience, responses provided by Planning Service and Landscape Architects Branch are generally negative and lack consistency. I support the Northern Ireland Renewables Industry Group (NIRIG) response to this inquiry, and would like to reiterate that a stable and consistently applied policy framework is required to allow clear and necessary progress towards our low-carbon energy future.

I would like to reiterate the following points from NIRIG's response to this consultation:

- i. I believe that the benefits of developing our wind resources far outweigh the perceived negatives, and a considerable number of policies are already in place to mitigate any of the potential impacts of wind energy development;
- ii. PPS18, the key planning policy document for renewable energy in Northern Ireland, is the product of extensive public consultation, and I believe that PPS18 and the

associated guidelines are generally balanced and fit for purpose in assessing wind farm developments in Northern Ireland;

- iii. I strongly believe that the forthcoming Strategic Planning Policy Statement should maintain the current language and approach of PPS18 to enable our Strategic Energy Framework targets and beyond;
- iv. I would like to highlight that positive community engagement over and above statutory requirements is regularly carried out by wind farm developers in Northern Ireland and I believe that the renewables sector may be considered a leader in good practice on community engagement in Northern Ireland

I would also like to highlight the need for positive leadership from across the political spectrum for the development of our substantial renewable energy resources. Our sustainable energy aims as laid out in a wide range of Executive and Departmental policies, as well as party political manifestos, will only be met through an increasingly diverse and low-carbon electricity system. In delivering these aims the combined efforts of policy-makers, industry and communities will be vital. Through my own contribution to the wider picture, I continue to look forward to and am committed to making progress on developing our renewables sector, and in particular the most cost-effective scalable technology: onshore wind.

In conclusion I would like to thank the Committee for the opportunity to engage on this issue and look forward to continued support for the development of our enviable renewable resources and the necessary progress towards meeting our low-carbon commitments.

Yours sincerely,



Shanti McAllister

Director

Simple Power



Committee Chairperson Anna Lo MBE
Committee for the Environment
Parliament Buildings
Ballymiscaw
Stormont
Belfast
BT4 3XX

28th February 2014

By email to: committee.environment@niassembly.gov.uk.

Re: Response to Wind Energy Inquiry

Dear Chairperson Lo,

Simple Power is a Northern Ireland owned company specialising in the deployment of single 250kw wind turbine projects, working in partnership with a large number of landowners across the province.

We welcome the opportunity to respond to the Environment Committee's Wind Energy Inquiry. We support the NIRIG response to this inquiry, and would like to reiterate that a stable policy framework is required to allow clear and necessary progress towards our low-carbon energy future.

We support the positions taken by NIRIG and reiterate the following points:

- We believe that the benefits of developing our wind resources far outweigh the perceived negatives, and a considerable number of policies are already in place to mitigate any of the potential impacts of wind energy development
- PPS18, the key planning policy document for renewable energy in Northern Ireland, is the product of extensive public consultation, and we believe that PPS18 and the associated guidelines are balanced and fit for purpose in assessing wind energy developments in Northern Ireland

- We strongly believe that the forthcoming Strategic Planning Policy Statement should maintain the current language and approach of PPS18 to enable our Strategic Energy Framework targets and beyond
- Planning policy has been based on robust evidence and scrutinised by experts in their field. Based on the advice of planning policy, a wind farm which can operate within the noise limits which have been derived according to ETSU-R-97 is considered to be acceptable. An additional Good Practice Guidance now underlies the policy and we believe that such expert-led policies are appropriate for the purposes of wind farm noise assessments
- Buffer zones or separation distances are not required by statute in the UK or Ireland and we believe that an effective means of managing wind turbine noise impacts is to set noise level limits at the noise sensitive receptors likely to be significantly affected, and require these to be met by planning conditions
- We would like to highlight that positive community engagement over and above statutory requirements is regularly carried out by wind farm developers in Northern Ireland and we believe that the renewables sector may be considered a leader in good practice on community engagement in Northern Ireland

We would also like to highlight the need for positive leadership from across the political spectrum for the development of our substantial renewable energy resources. Our sustainable energy aims as laid out in a wide range of Executive and Departmental policies, as well as party political manifestos, will only be met through an increasingly diverse and low-carbon electricity system. In delivering these aims the combined efforts of policy-makers, industry and communities will be vital. We continue to look forward to and are committed to making progress on developing our renewables sector, and in particular the most cost-effective scalable technology: onshore wind.

In conclusion we would like to thank the Committee for the opportunity to engage on this issue and look forward to continued support for the development of our enviable renewable resources and the necessary progress towards meeting our low-carbon commitments.

Yours sincerely



PHILIP RAINEY

Submission by Simple Power to Northern Ireland Assembly Environment Committee's Inquiry into Wind Energy



Simple Power
Arthur House
41 Arthur Street
Belfast BT1 4GB

Tel – 028 90241199

27th February 2014

1.0 Introduction

1.1 On 7 November 2013 the Environment Committee (the Committee) announced it would carry out a full inquiry into wind energy issues. The stated aim of the Inquiry is to

“identify the key issues arising from the generation of renewable energy by onshore wind turbines and to assess the adequacy of existing planning guidance to address these issues.”

1.2 The Committee invited written submissions based on the terms of reference (see below) by 28th February 2014.

1.3 The Terms of Reference are as follows:

- To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment;
- To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development; and
- To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

1.4 Simple Power is the largest developer of single wind turbine projects in Northern Ireland and in conjunction with Strategic Planning Ltd have submitted over 150 applications for single wind turbines to date. Simple Power has developed a significant level of expertise in this sector and is well versed with Planning Policy and Guidance for wind energy developments. In addition Simple Power has made formal presentations on the single wind turbine industry to the vast majority of district councils in Northern Ireland.

1.5 This submission is written in the context of single wind turbine development up to a maximum of 250kW output, hereinafter referred to as small wind.

2.0 Brief Context for Renewable Energy Planning Policy

2.1 The EU has laid down challenging and mandatory targets for increasing the level of renewable energy consumption in all EU member states including Northern Ireland.

- 2.2 The Northern Ireland Renewables Obligation is the main policy mechanism for promoting the generation of electricity from renewable sources in line with the Renewables Directive¹
- 2.3 The need to increase the contribution renewable energy can make to the overall energy mix in Northern Ireland is set out in the Programme for Government 2011 – 2015 (PfG) and the Regional Development Strategy 2035 (RDS).
- 2.4 The PfG target is to reduce greenhouse gas emissions by at least 35% on 1990 levels by 2025.
- 2.5 The RDS is a regional spatial framework which aims to deliver a sustainable and secure energy supply (RG5), and reduce our carbon footprint to mitigate and adapt to climate change (RG9).
- 2.6 DETI's Strategic Energy Framework for Northern Ireland 2010 (SEF) sets the direction for NI's Energy Policy over the next ten years and concentrates on the key areas of electricity, natural gas and renewable energy sources.
- 2.7 In September 2010 while launching the SEF, the DETI Minister confirmed that Northern Ireland was setting itself a new challenging renewable energy target by seeking to achieve 40% of its electricity consumption from renewable sources by 2020.
- 2.8 Renewable Energy Targets formed the backdrop to Planning Policy Statement 18 – Renewable Energy (PPS18) which was published in August 2009. Since then there has been a more recent expression and strengthening of renewable energy consumption targets through the SEF. The Minister made clear that in order to achieve the challenging targets it was important for a number of government Departments to ensure the right conditions were in place. Planning policy that encourages the sustainable development of renewable energy projects is an obvious and very important cog in the overall joint strategy.
- 2.9 More recently the Department has published its draft Strategic Planning Policy Statement for consultation. The core principles of the SPPS include Sustainable Development. Reducing greenhouse gas emissions and supporting renewable energy sources are seen as being important in helping further sustainable development, mitigate against and adapt to climate change.
- 2.10 Department of Environment has invited comments on the consultation document by close of play on 29th April 2014. This is the appropriate mechanism to inform how renewable energy planning policy develops going forward into the Review of Public Administration (RPA) and it is considered untimely to seek to amend current regional renewable energy planning policy during an already uncertain period of planning policy control in NI. Notwithstanding, it is our view that current policy is fit for purpose and this is considered in detail below.

3.0 To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment

Adequacy of PPS18 and Supplementary Guidance

- 3.1 PPS18 sets out the Department of Environment's (the Department) planning policy for development that generates energy from renewable resources. As set out above, the policy was published off the back of NI's legal targets for the production of energy by renewable means. PPS18's key aims and objectives are to:
- Facilitate the siting of renewable energy generating facilities in appropriate locations in order to achieve NI's renewable energy targets
 - Ensure environmental, landscape, visual and amenity impacts are adequately addressed

1 EU Renewable Energy Directive (Directive 2009/28/EC)

-
- In making decisions ensure adequate protection of natural, built, and cultural heritage interests
- 3.2 In line with the aims and objectives of wider Government Renewable Energy policy, renewable energy planning policy has a promotive thrust. However the policy is sufficiently robust to ensure important environmental and planning considerations are carefully considered, there is no presumption to approve development at all costs, there are robust checks and balances inbuilt.
- 3.3 As discussed above Simple Power has acquired an in depth working knowledge of PPS18 and the associated Guidance documents which accompany it, namely the Best Practice Guidance (BPG) and the Supplementary Planning Guidance to PPS18 (SPG), the latter of which relates to wind energy development and landscape character.
- 3.4 Having sought planning consent for over 150 small wind planning projects, we have firsthand experience of the robustness of the policy and guidance. All applications for small wind go through a rigorous examination which includes views being sought from an extensive list of statutory and non-statutory bodies. Small Wind, which typically does not trigger the need for the submission of a formal Environmental Statement, still goes through a process akin to EIA development such is the extensive nature of the assessment of potential impact, consultation and consideration.
- 3.5 The following is a list of areas of considerations which are carried out as routine on all renewable projects:
- Public Safety, Human Health and Residential Amenity
 - Visual amenity and landscape impacts
 - Biodiversity, nature conservation and built heritage
 - Local natural resources, air quality, water quality
 - Public access to the countryside
- 3.6 In addition PPS18 has specific detailed areas of consideration for wind energy including small wind which includes:
- Impact on visual amenity and landscape with regard to the number, scale, size, and siting of turbines
 - Cumulative visual impact
 - Risk of landslide or bog burst
 - Electromagnetic Impact on communications installations, radar, air traffic control, emergency services communications and other telecommunications systems such as commercial mobile phone networks
 - Impact on road, rail and aviation safety
 - Impact on amenity of dwellings, hospitals, schools and churches through noise or shadow flicker from the turbine blades
 - Restoration arrangements in the event of energy production ceasing
 - Protection of peatland
- 3.7 Simple Power's first-hand experience is that as a direct result of the policy requirements the vast majority of applications for small wind require detailed technical evidence to be submitted in addition to normal planning application papers. Additional expert reports/assessments typically requested by the Department for small scale wind planning applications include:
-

- Full Noise Impact Assessment carried out with regard to ETSU-R-97, the UK wide standards for the Assessment and Rating of Noise from Wind Farms. This includes for the assessment of cumulative impacts.
 - Landscape and Visual Assessments including the provision of computerised wireline diagrams based on digital terrain height data with accompanying colour photomontages prepared in accordance with standards set out in the SPG and other UK guidelines². This includes for the assessment of cumulative impacts.
 - Shadow Flicker Assessments. This includes for the assessment of cumulative impacts.
 - Ecological reports most typically to assess impact on species such as Bats and Badgers.
 - Electromagnetic interference reports to assess impacts on important fixed telecommunications links and mobile phone services
 - Aviation Safety Reports including line of sight assessments for impact on airport radar
 - Transport Assessments
 - Tourism Impact Assessment
 - Assessment of Environmental, Economic and Social benefits
- 3.8 PPS18 also seeks to ensure that important environmental, economic and social benefits of all renewable energy developments are acknowledged by the decision maker to ensure wellbalanced decisions can be reached.
- 3.9 It is vital for decision makers to fully appreciate the overall aims of government policy i.e. to tackle climate change by reducing our dependence on fossil fuels, and helping to diversify and bring security of supply to our energy infrastructure, and to understand the importance planning decisions hold in helping achieve these wider aims and objectives. PPS18 achieves this.
- 3.10 It is Simple Power's experience that PPS18 and the related guidance documents are more than adequate in delivering balanced planning decisions for wind energy developments across Northern Ireland on a consistent basis and have assisted progress towards meeting the targets laid down in the SEF and overall sustainable development strategies outlined in the RDS, the Sustainable Development Strategy (SDS) and the PfG. The principles of balanced decision making currently advocated by PPS18 is the correct approach to progress towards the SEF 40% target whilst respecting other important and acknowledged interests Emerging Technologies
- 3.11 Simple Power recognises the importance of creating a renewables mix to bring about diversity and security of supply. However, it is even more important to acknowledge that onshore wind offers the most cost effective means of renewable electricity generation. The wind is clean and it is free. It is also plentiful given the island of Ireland's unique location on the eastern edge of the North Atlantic. Wind Energy technology is also a mature technology unlike many of its counterpart technologies. Wind is the single biggest renewable energy opportunity and it would be remiss not to exploit this free renewable resource to its full extent. The need to promote Wind Energy as the leading form of renewable energy production remains, and as such Planning Policy needs to continue being promotive of onshore wind.
- 3.12 Small scale wind fits well with the Northern Ireland settlement pattern. Northern Ireland's historical rural development pattern has resulted in the countryside being heavily developed by single rural dwellings. Dwellings are a significant constraint to the development of all

2 Countryside Agency and Scottish Natural Heritage (2002) Landscape Character Assessment Guidance for England and Scotland, Countryside Agency and Scottish Natural Heritage.
Countryside Agency and Scottish Natural Heritage (2004), Landscape Character Assessment Guidance Topic Paper 6: Techniques and Criteria for Judging Sensitivity and Capacity, Countryside Agency and Scottish Natural Heritage.
Landscape Institute and Institute of Environmental Management and Assessment (2002) Guidelines for Landscape and Visual Impact Assessment, 2nd edition, Spon.

wind energy development and it is especially difficult to achieve the necessary separation distances between large scale commercial wind farms and dwellings. However, this presents an opportunity as small wind can integrate more readily into this historical development pattern. Separation distance requirements are more easily met, and due to the rigorous assessment process it is possible to integrate a large volume of small wind projects across NI without resulting in a significant adverse impact on our landscapes. The primary reason for this is the scale of the technology involved.

4.0 To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development

- 4.1 In Northern Ireland Noise impact Assessment for all proposed wind turbines is completed in accordance with ETSU-R-97 (ETSU), The Assessment and Rating of Noise from Wind Farms, (September 1996). The BPG to PPS18 identifies ETSU-R-97 as the most relevant guidance on good practice.
- 4.2 ETSU states that noise from the wind farm should be limited to 5 dB(A) above the background level during both daytime and night-time, with the exception of the daytime limits (in low noise environments) 35 – 40 dB(A) or at night-time where there is a fixed limit of 43 dB(A). This night-time noise limit is based on sleep disturbance criteria of 35 dB(A) (an allowance of 10dB(A) has been made for attenuation through an open window and 2dB subtracted to account for the use of LA90,10min, rather than LAeq,10min). For ‘financially involved’ properties, ETSU recommends that the relevant daytime and night-time noise limit is 45 dB(A).
- 4.3 To put these noise targets into context, the Best Practice Guide compares noise generated by wind turbines to other everyday activities (see table 1 below).

Table 1 – Noise Levels Comparison

Source / Activity	Indicative noise level dB(A)
Threshold of pain	140
Jet aircraft at 250m	105
Pneumatic drill at 7m	95
Truck at 30mph at 100m	65
Busy general office	60
Car at 40mph at 100m	55
Wind farm at 350m	35-45
Quiet bedroom	35
Rural night-time background	20-40
Threshold of hearing	0

- 4.4 In May 2013 following a 10 week consultation and two peer reviews, the Institute of Acoustics (IoA) noise working group, published the document ‘A Good Practice Guide to the Application of ETSU-R-97 for Wind Turbine Noise Assessment’. This is the most recent expression of guidance on the application of ETSU and has been endorsed by the Environment Minister Mark H Durkan and Government in England, Scotland and Wales.

- 4.5 ETSU-R-97 requires assessments to take account of the following steps³:
- Predict noise levels from all turbines (existing and proposed) at the nearest receptors;
 - Determine a study area;
 - Identify potentially affected properties;
 - (If required) Undertake a measurement survey consisting of simultaneous measurement of background noise levels at representative properties with wind speed and direction at the proposed turbine site;
 - Analyse the data to remove rain affected and atypical data, and derive the noise limits for the scheme;
 - Update noise predictions & assess compliance with the noise limits for a candidate turbine, and Source / Activity Indicative noise level dB(A)
 - provide design advice if compliance with the limits is considered unlikely.
- 4.6 The main purpose of this procedure is to set out the noise data required, and the subsequent analysis needed to allow a decision maker to make an informed decision to assess compliance with ETSU-R-97.
- 4.7 This scientific assessment (ETSU) and best practice guidance uses existing noise environments to determine the acceptability of wind turbine noise rather than advocating separation distance as a benchmark.
- 4.8 English Planning Policy Statement 22 generally advocates the same approach as PPS18 insofar as noise impact is concerned. Planning Practice Guidance for Renewable and Low Carbon Energy published in 2013 it states:
- 'Local planning authorities should not rule out otherwise acceptable renewable energy developments through inflexible rules on buffer zones or separation distances. Other than when dealing with set back distances for safety, distance of itself does not necessarily determine whether the impact of a proposal is unacceptable. Distance plays a part, but so does the local context including factors such as topography, the local environment and nearby land uses. This is why it is important to think about in what circumstances proposals are likely to be acceptable and plan on this basis.'*
- 4.9 Scottish Policy suggests that within the Spatial Frameworks of Development Plans 'Areas of Search' should be identified where appropriate proposals are likely to be supported. Within such areas a 2km buffer between areas of search and edge of settlements should be adopted in order to guide developments to the most appropriate sites, but decisions on individual developments should take into account specific local circumstances and geography. In September 2013 a review was carried out into the 2km separation distance requirement and concluded there was no supporting evidence to support such a requirement.
- 4.10 Welsh Technical Advice Note 8 (TAN8) advocates 500m as a suitable separation distance to safeguard against noise impact on dwellings however suggests that flexibility is advised as the set distance when applied rigidly can lead to over conservative results.
- 4.11 It is inappropriate to adopt an arbitrary approach to separation distances to safeguard against noise impact. There are too many variables to consider when determining appropriate impact from noise which an arbitrary separation distance policy would fail to consider, such as:
- turbine type and number
 - background noise levels
 - topography
 - wind shear effects

3 Steps from 'A Good Practice Guide To The Application Of Etsu-R-97 For The Assessment And Rating Of Wind Turbine Noise' (May 2013) Page 4

-
- 4.12 In addition, an arbitrary separation distance rule would discriminate against turbines which are quieter than others. In that sense it would also stymie the development of quieter turbines, this would be a regrettable consequence.
- 4.13 Noise Impact Assessment is a technical matter which the Department of Environment Planning seeks advice on from the Environmental Health Department's (EHD) of the local council. Through this consultation process DOE Planning receives the necessary assurance that noise impact has been assessed thoroughly prior to granting planning approval. Indeed, it is our experience that the local council EHOs adopt the most conservative interpretation of the recent IOA guide to the detriment of applications. This ensures an additional layer of protection from noise in the interests of residents.
- 4.14 As part of the decision DOE Planning also attaches conditions to a planning permission which set the noise limits within which wind turbine development is expected to operate. The levels are proposed by the local council and are based on the findings of the Noise Impact Assessment process.
- 4.15 The Committee must also recognise that much of the guidance relating to noise impact from wind energy is written in the context of large scale wind farms, not small scale single wind turbine development.

5.0 To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

- 5.1 Historically the Wind Industry has proven to be a responsible industry and have engaged with local communities prior to lodging planning applications for wind farms. This has been on a voluntary basis rather than being a requirement in planning law.
- 5.2 It is worth noting that the Planning Act (NI) 2011 will put in place a legislative requirement on applicants of major applications to carry out pre-application community consultation. Wind farm development will fall into this category.
- 5.3 The impact of small wind is more localised and impact is not as far reaching as large scale wind farms. As such this type of development will not likely fall into the category of major development and as such it would be inappropriate to lay down in statute a requirement for small scale wind energy developers to carry out extensive pre-application community consultation. Notwithstanding, we have regularly engaged with local community groups and/or community service providers to ensure there are real community benefits to be realised through our wind turbine developments.

6.0 Conclusions

- 6.1 Northern Ireland faces strict and challenging targets for the production of energy from renewable sources. It is on the back of these targets that Government policy has been drawn up. Planning policy is an important part of the overall wider renewable energy policy strategy.
- 6.2 To continue to make progress towards our targets the NI planning policy context needs to maintain the right conditions to foster a strong renewables industry. In that sense the Executive needs to hold firm on the current renewable energy planning strategy to ensure there are meaningful results.
- 6.3 Onshore Wind Energy is undeniably the biggest opportunity to help towards delivering the 40% target by 2020. Wind is clean, free and plentiful and the wind industry is a mature and proven industry unlike many new emerging renewable technologies. As such it is important to maintain faith in onshore wind whilst at the same time allowing a mix of other renewable technologies to provide a supporting role. In addition the importance of small wind in contributing to the overall targets should not be underestimated given the opportunity for this scale of development in the NI countryside.

- 6.4 Simple Power's experience and that of other single wind turbine developers is that PPS18 is a robust policy striking the correct balance between the promotion of renewable energy development and protecting other matters of acknowledged importance such as the environment, residential amenity and heritage interests etc. PPS18 is on balance fit for purpose.
- 6.5 The assessment of noise is based on sound scientific assessment and is current having been reviewed and advised on as recently as 2013. To move away from this approach to an arbitrary rule for separation distances would put NI at odds with the remainder of the UK.
- 6.6 Community engagement is generally to be encouraged and is a responsible approach for developers. Proportionality is key. It is already evident that the Department realise this given that pre-application community engagement on major planning applications will be a requirement of the new Planning Act (NI) 2011. It is however unrealistic to place a statutory requirement on applicants for minor planning applications to engage in this process.
- 6.7 Simple Power wish to ensure the Committee that the regulatory framework in Northern Ireland is extremely thorough and sets the correct and balanced conditions to progress Northern Irelands Renewable Energy strategy and consequently help meet the 2020 target.
- 6.8 Simple Power urge the Committee to consider the comments above and retain the current policy conditions to promote a strong renewables industry.

Sinead Galbraith

From: Sinéad Galbraith
Sent: 27 February 2014 22:47
To: +Comm Environment Public Email
Subject: Review into Wind Energy

I am a young person living in Newtownhamilton, Co. Armagh. At present, there are 35-40 proposed commercial turbines within a 2-3 mile radius of the town. If this is allowed, we will be living in the middle of a wind farm and we will have to live with this for over 25 years, minimum. I am concerned about the possible health issues that these may cause. Also, will I be able to build on land owned by my family considering there are 3 commercial turbines proposed very close to my home? What affect will these turbines have on the wildlife, as we are a rural community and also our countryside will be ruined. You have the power to stop these ruining our communities, so please protect us.

Thank you,

Sinead Galbraith

Southern Group Building Control



Southern Group Building Control Committee Armagh | Banbridge | Craigavon | Newry

February 24th, 2014

For the attention of: Ms. Sheila Mawhinney
Clerk to the Committee for the Environment
Northern Ireland Assembly
Room 247
Parliament Buildings
Ballymiscaw
BELFAST
BT4 2XX

Dear Ms. Mawhinney,

Re: Inquiry into Wind Energy

Thank you for contacting our organisation in connection with making representations to the Committee on the above Inquiry.

Building Control Northern Ireland is keen to engage with the Assembly on matters that concern the citizen, construction and the environment - indeed we have made presentations on several issues over recent years.

We have carefully examined the Terms of Reference of this Inquiry and note that the scope of the Inquiry has been constrained to the siting and location of wind turbines, matters which fall outside the remit of Building Control.

On behalf of Building Control in Northern Ireland we would wish to record our thanks for being offered the opportunity to contribute to the Inquiry but we feel that we must respectfully decline on this occasion.

We look forward to being able to make a contribution on future issues.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Robert Colvin', written over a horizontal line.

Robert Colvin
Chairman
Building Control Northern Ireland



Robert T Colvin BSc (Hons), MBA, DipM, FEng, MCIM
Group Chief Building Control Officer
Civic Centre Lakeview Road Craigavon Co. Armagh BT64 1AL
t: (028) 3831 2591 f: (028) 3831 2444 w: www.sgbc-ni.gov.uk e: info@sgbc-ni.gov.uk



SSE Renewables



83-85 Great Victoria Street
Belfast
BT2 7AF

Chairperson Ms. Anna Lo MLA MBE
NI Assembly Environment Committee
Room 416,
Parliament Buildings Ballymiscaw
Stormont
Belfast BT4 3XX

February 27th 2014

Ref: Inquiry into Wind Energy

Dear Chairperson Lo,

SSE Renewables (SSER) wishes to make the enclosed submission for consideration as part of the current Wind Energy Review by The Northern Ireland Assembly Committee for the Environment, with a focus on the environmental and planning aspects of wind energy development.

SSER welcomes your Committee's long standing interest in wind energy and your acknowledgement of the need to reduce Northern Ireland's dependence on fossil fuels and to meet the European Union's 2020 renewable energy targets.

In the enclosed submission, SSER sets out its view in relation to the three areas under review – the adequacy of PPS18 and related supplementary guidance with regard to wind turbines; the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development and finally the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

We are available, at your discretion, to address any questions or further information you may require.

About SSE Renewables

SSE Renewables (SSER) is part of SSE plc, the leading developer and generator of renewable energy in Great Britain and Ireland, and is Northern Ireland's largest renewable energy developer. The green energy generated at wind farms developed by SSE Renewables helps power SSE Airtricity, Northern Ireland's second largest and greenest energy provider supplying greener electricity and natural gas to over 300,000 homes and businesses across the country.

Since the company entered the domestic electricity market in 2010, it has delivered customer savings of around £17 million to its 185,000 electricity customers in Northern Ireland. The company has also invested £500,000 in the development of Northern Ireland's sustainable energy infrastructure since SSE Renewables is a trading name of 2008 and is committed to investing a further £500,000 over the next 5 years to meet the country's renewable energy targets.

SSE Renewables is a trading name of
SSE Renewables (Ireland) Limited Airtricity House, Ravenscourt Office Park, Sandyford, Dublin 18, Ireland.
Tel: +353-1-6556 400 Fax: +353-1-6556 444 Web: www.sserenewables.com

The Registered Office of SSE Renewables (Ireland) Limited is One Spencer Dock, North Wall Quay, Dublin 1, Ireland.
Registered in Ireland No. 331742. SSE Renewables (Ireland) Limited is part of the Scottish and Southern Energy Group

Directors: Fraser McGregor Alexander (British), Paul Cooley, Caoimhe Giblin, Pamela Walsh, Stephen Wheeler.

SSER has delivered five wind farms in Northern Ireland to date, including the operational 73MW Slieve Kirk Wind Park outside Derry-Londonderry which powers around 60,000 homes. Slieve Kirk Wind Park is Northern Ireland's largest renewable energy generation site.

SSER welcomes the continued strong policy support for increased renewable penetration in the portfolio mix in Northern Ireland. SSER fully supports Northern Ireland's Strategic Energy Framework 2010 which outlines the need to balance the energy mix in order to improve security of supply, reduce exposure to the volatility of world energy prices and reduce reliance on fossil fuels that contribute to climate change. It also supports the Strategic Energy Framework target of 40% of Northern Ireland electricity to be provided from renewable energy sources by 2020.

Northern Ireland is heavily dependent on imported price volatile, carbon intensive fossil fuels. While fossil fuel prices fluctuate up and down in the short-term the sustained trend is upward driven by scarcity, global demand and political risk. These pressures will increase with the growth of emerging economies including Brazil, Russia, India and China. Dependence on fossil fuels impacts the affordability of energy for consumers and business and undermines fuel supply security and environmental sustainability.

Fortunately, NI is endowed with an enviable volume of secure, cost competitive, decarbonised energy in the form of wind power. The realisation of this potential will have significant economic benefits for NI through investment and job creation. NI must focus on how this sector can become a leading pillar of economic growth for Northern Ireland.

SSER supports proper planning and sustainable development and recognises that development of wind energy projects must afford protection to residential amenity and must be delivered in partnership with local communities. SSER also recognises the need to ensure 'best practice' planning and permitting procedures and, importantly, coherence between environmental and renewable energy objectives in order to ensure the delivery of Northern Ireland's targets.

The renewables industry is playing a critical role in achieving Northern Ireland's legally binding 2020 targets for renewable energy through its continued investment in new onshore and offshore generation capacity. The industry makes a very real and sustained contribution to the country's economy, offsetting expensive imports of fossil fuels, providing direct and indirect employment as well as net financial contributions to local communities, services and economies.

The primary constraints for deployment of renewables in Northern Ireland today are planning timelines and grid development. Actions to ensure planning decisions and major grid investment projects proceed within stable and defined timeframes would boost deployment rates for all onshore renewables, and would contribute to the well-balanced, secure and sustainable energy generation portfolio that will best serve Northern Ireland.

In the following sections, SSER provides its feedback and comments on the key focus areas of your Committees' Wind Energy Review.

1. SSER Comments on the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment;

Northern Ireland has a robust planning process which is backed up by PPS18 and related supplementary guidance in regulating proposals for wind turbines. The wind energy industry has called for the timely implementation of the Northern Ireland Planning Bill as it will allow for the expedition of a number of planning reforms contained within the Planning (Northern Ireland) Act 2011. SSER supports, in particular, the inclusion of a statutory duty towards sustainable development and promoting economic development.

In the selection of suitable locations for wind farm development, careful assessment is required and exacting standards should be expected and delivered by the industry. Planning Policy Statement 18 requires that wind energy development demonstrates environmental benefits as well as minimising environmental, human and social impacts through careful consideration of location, scale and design.

Under existing planning legislation, wind farm applicants are required to conduct an Environmental Impact Assessment (EIA). This process is designed to identify and assess the potentially significant environmental, social or economic effects likely to result from a development proposal. The EIA is a well-established part of the planning process and the resulting Environmental Statement (ES) will be given detailed consideration in assessing the individual merits of a wind farm application. SSER strives to achieve the most optimal wind farm layout from an environmental and engineering standpoint through a hierarchy of avoidance, minimisation and mitigation of effects. Where schemes fall below the thresholds required for EIA, the planning application will include information and assessments requested by the planning authority including, where relevant, assessment of noise or other amenity matters.

This statutory assessment, conducted in parallel with detailed local consultation (including the planning authority, local communities, statutory consultees and other stakeholders) at an early stage in the pre-application phase, is designed to ensure that any potential adverse effects are mitigated for each specific application and area

In addition, the existing planning policy framework in Northern Ireland contains supplementary planning guidance for PPS18 on the landscape and visual amenity impacts of onshore wind development.

In the selection of suitable locations for wind farm development, SSE Renewables carries out a detailed feasibility assessment for each potential site. This is followed by an iterative EIA process and cross collaboration of environmental specialists and design engineers, which results in an evolving design to avoid sensitivities as they arise through detailed surveying and investigation.

It is also important to consider the impact of grid availability, in conjunction with all of the other environmental constraints. Many planning approved wind farm projects across Northern Ireland are unable to progress at present due to an inability to connect to the National Grid. It is likely that the grid issues will not be resolved in the near future due to regulator constraints over funding. On recent projects, SSE Renewables has funded the development of the necessary grid infrastructure in partnership with NIE and SONI. After which the operation of the assets reverts to NIE. This represents a significant cost saving to the tax payer. However, SSE Renewables must bear the cost of this within project budgets and it is only possible to do this where economies of scale justify this additional, significant financial investment.

SSE believes that PPS18 and the associated guidelines in place are balanced and fit for purpose in assessing wind farm developments in Northern Ireland. We also support NIRIG's position that the Strategic Planning Policy Statement should maintain the current language and approach of PPS18 to enable our SEF targets.

PPS18 has allowed considerable progress to be made towards the Strategic Energy Framework target, Programme for Government targets and the aims outlined in the Sustainable Development Strategy and Regional Development Strategy.

On the topic of emerging technologies, there is no simple solution - energy demand from electricity, heat and transport, will be met by a portfolio of energy sources - conventional and renewable - combined with demand and carbon abatement measures (e.g. carbon capture and storage). Renewables will make up a sizeable proportion of this portfolio, which in itself will be made up of a portfolio of technologies, determined by market forces. These will include in the near term onshore and offshore wind, hydro, biomass and in the medium term wave and tidal.

As stated in Northern Ireland's Strategic Energy Framework (SEF), the precise mix of technologies deployed depends on specific decisions made by energy companies operating within an effective regulatory framework with strategic interventions from DETI. Imposing an upper threshold on onshore wind development would be a departure from the technology neutral, market led approach that will best ensure the achievement of the 40% renewable electricity target at lowest cost to the consumer.

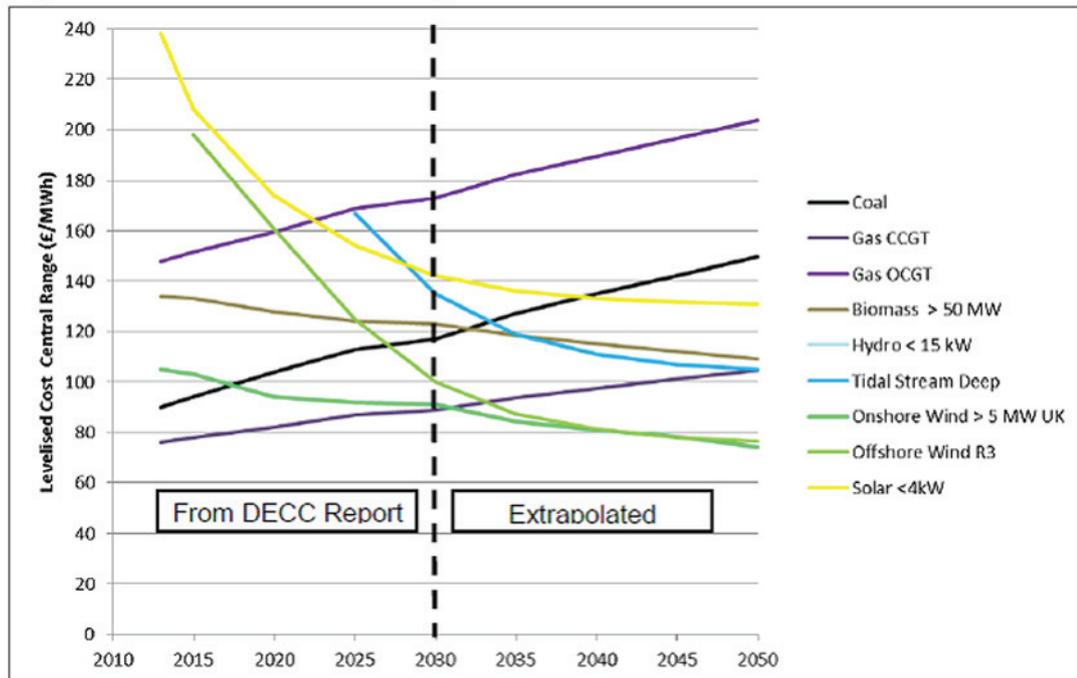
We believe that there should be a focus on deployment rates for onshore renewables rather than a focus on specific technologies. Corrective actions should be proposed, where deployment rates are slower than previously modelled, or deployment conflicts with the overarching goals set within the SEF:

- Building competitive markets;
- Ensuring security of supply;
- Enhancing sustainability; and
- Developing our energy infrastructure

We would also highlight that in the recent paper *Envisioning the Future Considering Energy in Northern Ireland to 2050* commissioned by DETI, it is shown from modelling completed by DECC that onshore wind currently has the lowest levelised cost per MWh of all renewable technologies considered and it is forecast that the levelised cost of onshore wind will be the lowest of all generation technologies by 2050. Northern Ireland's onshore wind resource is thus a huge advantage in decarbonising the economy in the most cost efficient manner.

[http://www.detini.gov.uk/2050_main_report_-_final_version.pdf]

Figure 26 Levelised costs for new generation stations



In addition, it can be seen from DECC's work on ROC banding levels, which is based on the costs and rate of return required to deliver projects, that the costs of onshore wind projects are lower than for other renewable forms of generation. These conclusions are feeding into the ongoing work on Electricity Market Reform Contracts for Difference.

Our parent company, SSE plc, currently operates the UK's largest dedicated biomass facility, a Combined Heat and Power (CHP) facility and is currently constructing a 108MW multi-fuel (biomass and refuse derived fuel) project at Ferrybridge 'C' Power Station. We believe that biomass has a potential to contribute to the future renewable energy mix in Northern Ireland,

but our scoping indicates that the primary constraint on dedicated large scale biomass is the availability of secure long term supply contracts for the biofuels used. Contribution from biomass is therefore likely to be limited to cogeneration at smaller industrial CHP plants – a review of local biomass production studies would help give an overall idea of potential production in Northern Ireland, and could confirm the potential contribution of biomass to the 40% target.

Although comparatively immature compared to other established renewable technologies such as on and offshore wind, marine renewables are gradually reaching maturity. Over the last decade an intensive period of R&D has seen a number of technology concepts emerge, such as Aquamarine Power's Oyster® device, that have the potential to harness significant wave resources.

2. To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development;

SSER follows strict guidelines on wind turbines and noise emissions to ensure the protection of residential amenity. In addition, best practice for a wind farm development indicates a separation distance of 500 metres between turbines and houses to ensure compliance with noise limits.

Wind Farms and Separation Distance

Northern Ireland has a long history of rural housing and ribbon development; as a result most of the country is populated with low density housing. Policy RE1 of PPS18 Renewable Energy includes a suggested separation of 10 times the rotor diameter to an occupied property, with a minimum separation distance not less than 500 metres.

In the selection of suitable locations for wind farm development, SSE Renewables carries out a detailed feasibility assessment for each potential site. This is followed by an iterative EIA process and cross collaboration of environmental specialists and design engineers, which results in an evolving design to avoid sensitivities as they arise through detailed surveying and investigation.

A research paper entitled "Wind Turbines: Planning and Separation Distances" was recently submitted to the NI Assembly (NIAR 767-13)¹. The paper was prepared in response to a request from the Environment Committee and it looks at the issue of wind turbines across the UK and Europe. The paper outlines that:

- A minimum separation distance of 500m has been adopted in Wales and the Republic of Ireland
- In Scotland, a separation of 2km between areas of search and the edge of cities, towns and villages is recommended to guide developments. However, policy states that individual developments should take into account specific local circumstances and geography.
- No specific separation distance has been put in place in England. Several local councils have sought to impose minimum separation distances. It is important to note, however, that Secretary of State for Communities and Local Government, Mr. Eric Pickle, recently outlined that buffer zones backed by residents, were not the measure of whether a wind farm development was acceptable and instructed local councils not to impose minimum separation distances. Earlier this year, the High Court ruled against Milton Keynes Council, which had tried to impose a limit of three quarters of a mile between turbines and homes.
- In Germany, the separation distance for turbines is 300m from an individual property and 500m from residential areas.

¹ Cave, Suzie. 2013. Wind Turbines: Planning and Separation Distances. Research and Information Service, Research paper NIAR 767-13.

- A separation distance of 4 times the total height of the turbine is recommended in Denmark.²

Any proposed increase in separation distances needs to consider the large number of residential dwellings in the Northern Ireland countryside. An exercise carried out in the Republic of Ireland by the All Ireland Research Observatory at NUI Maynooth demonstrated that an increase in the mandatory separation distance would have a significant impact on the potential for wind energy development in Ireland.³

The study found that an increase in the separation distance greatly reduced the land available for wind development. Approximately 23.75% of total land area remained using a 500m setback, and this decreased to 9.4% and 3% when the separation distances were increased to 1km and 2km, respectively.

A similar exercise was carried out for Northern Ireland and this information was presented to the NI Assembly as part of the research paper prepared by the Research and Information Service.¹ However, the results of this exercise are not included in the paper.

SSE Renewables has carried out its own assessment based on 2008 pointer data. However, this exercise did not include a detailed analysis of the pointer data (e.g. approved planning or status of residential properties) and therefore should be considered indicative.

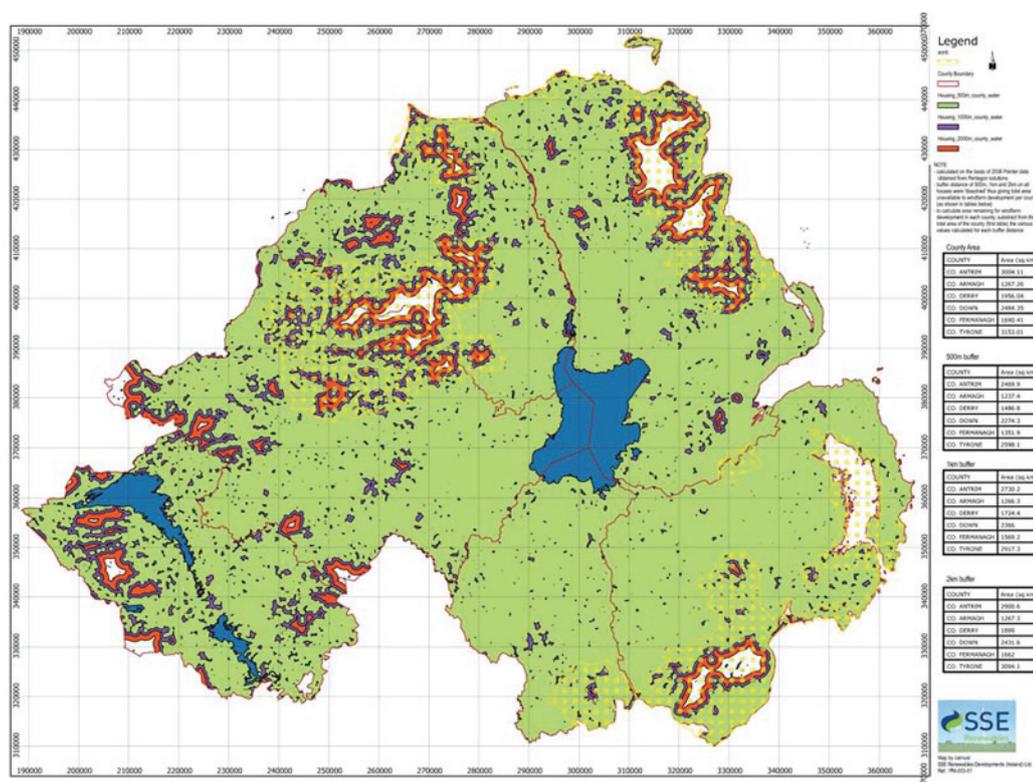
The results of our indicative assessment are presented below. It demonstrates that wind energy development is not possible across a significant portion of Northern Ireland, even when considering a setback distance of 500 metres from residential properties. Increasing this distance will create additional, unnecessary constraints and will severely limit Northern Ireland's ability to meet set government targets. This may unnecessarily rule out locations where wind energy would be entirely acceptable from an environmental and human health perspective.

The indicative analysis we conducted is broken down by county, with large waterbodies (e.g. Lough Neagh and Lough Erne) removed from the total area. It also considered the areas designated as Areas of Outstanding Natural Beauty. SSE Renewables assessment found the following:

County	Total Area (Ha)	Percentage of County Remaining by Separation Distance			Percentage of Co. Remaining (excluding AONB) by Separation Distance		
		500m	1000m	2000m	500m	1000m	2000m
Co. Antrim	3,004.1	17.8%	9.1%	3.4%	5.3%	0.4%	0%
Co. Armagh	1,267.3	2.4%	0.1%	0.0%	1.6%	0.0%	0.1%
Co. Derry	1,956.0	24.0%	11.8%	2.9%	11.1%	2.9%	0.2%
Co. Down	2,484.4	8.5%	4.8%	2.1%	0.2%	0%	0%
Co. Fermanagh	1,690.4	20.0%	7.2%	1.7%	20.0%	7.2%	1.7%
Co. Tyrone	3,153.0	17.6%	7.5%	1.9%	11.2%	4.4%	1.3%

2 Haugan, K. M. B. 2011. International Review of Policies and Recommendations for Wind Turbine Setbacks from Residences: Setbacks, Noise, Shadow Flicker and Other Concerns. Minnesota Department of Commerce, Energy Facility Permitting.

3 AIRO Mapping of asking questions of the new Wind Turbines Bill, found at <http://airo.ie/news/airo-mapping-asking-questions-new-wind-turbines-bill-0>.



It should be noted that the analysis conducted by AIRO at NUI Maynooth and SSE Renewables does not take into account the other key constraints which are used when developing a wind farm site.

Key constraints include the wind resource, suitable site availability, landscape sensitivities, sensitive ecology (e.g. habitats and species), watercourse buffers, avoidance of archaeological features and buffers for aviation and telecommunications interests. When these environmental constraints are applied, the total land area remaining will be significantly reduced. Therefore it should be noted that the area outlined above is an optimistic analysis when all constraints are considered.

SSER believes that the current PPS 18 guidelines are working well and applications should continue to be assessed on a case-by-case basis ensuring wind farms are not unduly prohibited by unnecessary and burdensome mandatory separation distances. It is clearly shown that the current guidelines provide adequate residential protection given the relatively few issues raised to date under these guidelines.

Any proposal for the implementation of rigid minimum separation distances from all dwellings and built up areas would prove detrimental to the potential for wind energy development in Northern Ireland and contradicts the Government's supportive policy position in relation to wind energy. It would also seriously hinder Northern Ireland in meeting its legally binding EU targets for renewable generation.

Wind Farms and Noise

In the selection of suitable locations for wind farm development, careful assessment is required and exacting standards should be expected and delivered by the industry. Existing planning legislation requires that wind energy development demonstrates environmental benefits as well as minimising environmental and social impacts through careful consideration of location, scale and design. SSER follows strict guidelines on wind turbines and noise emissions to ensure the protection of residential amenity. In addition, current best practice for a wind farm development in Northern Ireland indicates a minimum separation distance of 500 metres, but ideally 10 rotor diameters between turbines and houses to ensure compliance with noise limits.

ETSU-R-97⁴

The process for noise assessment is based on the 'The Assessment and Rating of Noise from Wind Farms' produced by the Working Group on Wind Farm Noise for the UK based Energy Technology Support Unit (ETSU)-R-97 in 1996. SSER supports the continued use and further development of these guidelines. It should also be noted that ETSU limits are based on ratings levels derived from BS 4142, assessing the introduction of a new noise source relative to existing noise levels, therefore these are determined irrespective of distance.

ETSU-R-97 recommends that separate noise limits should apply for daytime and for night-time hours. It sets out an absolute lower daytime limit of between 35dB(A) and 40dB(A), or 5dB above background noise levels depending on which is higher. The value selected within this range should be dependent on the number of residential dwellings in the vicinity of the wind farm, the effect of the noise limits imposed on energy generation, and the duration and level of exposure.

During the night, the guidance is based on an assumption that residents will be sleeping inside their home. Therefore, the protection of external amenity becomes less important and the emphasis should be on preventing sleep disturbance. A fixed limit of 43dB(A) or 5dB above background noise levels, is suggested to protect sleep inside properties during the night.

ETSU-R-97 recommends that both the daytime and night-time limits can be increased to a fixed limit of 45dB(A) where a property has a financial involvement in the project.

Supplemental Guidance to ETSU-R-97

Subsequent to the publication of ETSU-R-97, additional guidance documents have been published and incorporated into best practice for noise monitoring and assessment.

The Institute of Acoustics published an update in 2009, which considered the relevant factors for noise assessment from wind energy projects.⁵ The article sets out preferred procedures for the acquisition and analysis of wind data, the prediction of noise from wind turbines at residential receptors and the significance of low-frequency noise. Importantly, the article makes a number of specific recommendations about how wind data should be acquired and the assumptions to be used within noise modelling software in order to correct for errors associated with site-specific wind shear.

In May 2013, the Institute of Acoustics published "A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise" (IoA GPG).⁶ This guidance document is a practical guide to good practice in implementing ETSU-R-97, which recognises the experience and research results that have been gained since the publication of ETSU-R-97.

The IoA GPG sets out a procedure for the individual elements that make up the noise assessment process. It is particularly important as it fully defines the correct process for carrying out the background noise surveys, the timing and duration of the surveys, the monitoring equipment to be used, the siting of the monitoring equipment, the requirements for measurement and analysis of wind speed and rainfall data, the synchronisation of the of the data collected, the steps to follow in the analysis of the data and subsequent derivation of the noise limits as well as the reporting requirements following a noise modelling or measurement survey.

4 Working Group on Noise from Turbines, 1996. The Assessment and Rating of Noise from Wind Farms. ETSU-R-97.

5 Bowdler, D. A. Bullmore, B. Davis, M. Hayes, M. Jiggins, G. Leventhall, and A. McKenzie. 2009. Prediction and assessment of wind turbine noise: Agreement about relevant factors for noise assessment from wind energy projects. *Acoustics Bulletin* 34(2): 35-37.

6 Institute of Acoustics Working Group. 2013. A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise. Institute of Acoustics, Issue 1, May 2013.

SSER believes that ETSU-R-97 together with subsequent guidance allow for sufficient protection of residential amenity and human health.

Noise and the Role of Existing Planning Legislation

Under existing planning legislation, wind farm applicants are required to conduct an Environmental Impact Assessment (EIA). This process is designed to identify and assess the potentially significant environmental, social or economic effects likely to result from a development proposal. The EIA is a well-established part of the planning process and the resulting Environmental Statement (ES) will be given detailed consideration in assessing the individual merits of a wind farm application. SSER strives to achieve the most optimal wind farm layout from an environmental and engineering standpoint through a hierarchy of avoidance, minimisation and mitigation of effects. Where schemes fall below the thresholds required for EIA, the planning application will include information and assessments requested by the planning authority including, where relevant, assessment of noise or other amenity matters.

This statutory assessment, conducted in parallel with detailed local consultation (including the planning authority, local communities, statutory consultees and other stakeholders) at an early stage in the pre-application phase, is designed to ensure that any potential adverse effects are mitigated for each specific application and area.

All results from noise modelling for a wind farm are detailed within the noise chapter of the ES. The turbine tower heights are included in the noise modelling. Therefore, although modern turbines have increased in size over the last ten years, importantly, these increases are reflected in the noise assessments.

All noise modelling for an ES is based on a realistic worst case scenario. No noise attenuation due to wind direction, ground absorption, shielding or screening is accounted for (up to a maximum of 2db) depending on the visibility of the wind turbine from a receptor. A ground absorption value of $G=0.5$ is recommended in the IoA GPG. The ground factor corresponds to the corresponding level of soft versus hard ground between the source, with $G=0.5$ being a midpoint between the two extremes. The loudest turbine that may be suitable for a particular site is also modelled.

During the formal assessment of a planning application, each potential planning constraint will then be assessed at a project specific level and the extent of each constraint clearly justified through the EIA process. SSER strongly supports this approach and calls for the planning authorities to make decisions on a case-by-case basis, in line with trusted policy and guidance.

Noise and the Evolution of Wind Farm Technology

The evolution of wind farm technology over the past decade has rendered mechanical noise from turbines almost undetectable with the main sound being the aerodynamic swish of the blades passing the tower. It is possible to stand underneath a turbine and hold a conversation without having to raise your voice. As wind speed rises, the noise of the wind masks the noise emitted by wind turbines.

Turbines are becoming larger, quieter and more efficient at yielding the maximum energy from a given wind speed. Increased competition in the turbine marketplace is a positive development and technology choice has increased significantly in recent years.

Noise from modern wind turbines is essentially broadband in nature, in that it contains similar amounts of sound energy in all frequency bands from low to high frequency. As distance from a wind farm site increases the noise level decreases as a result of the spreading out of the sound energy but also due to air absorption, which increases with increasing frequency.

This means that, although the energy across the whole frequency range is reduced, the higher frequencies are reduced more than the lower frequencies. This has the effect that, as distance from the site increases the ratio of low to high frequencies also increases. This effect may be observed with road traffic noise or natural sources such as the sea where higher frequency components are diminished relative to lower frequency components at long distances

Turbine technology is advancing year on year. Modern wind turbines have a Noise Reduction Operation mode (NRO). NRO effectively limits the turbines' maximum rotational speed and power output, to reduce the sound levels produced by the turbines. This is one of the options available to wind farm developers, should a noise concern arise.

A study by Bolin et al. (2011)⁷ reviewed the current understanding of low frequency noise (LFN) and potential health effects. The review concluded that LFN (defined as 1-20Hz) from wind turbines was not audible at close range, and that this was even less at the distances where residential properties were located (at distances greater than 300m). It found that the swish sound associated with the turbine blades passing through the air was the main cause of annoyance and that this occurred in the 500 – 1000Hz range. The article concluded that empirical evidence was lacking to support claims that LFN caused significant human health issues.

3. SSER Comments on the extent of engagement by wind energy providers with local communities, and how to ascertain this engagement may best be promoted

SSER acknowledges the growing need for social understanding and acceptance of renewable energy and related infrastructure projects.

Notwithstanding the significant contribution the industry is currently making to the local and national economy, SSE acknowledges the importance of community consultation, engagement and benefit in the delivery of renewable energy and related infrastructure projects. The protection of local communities and the delivery of long lasting benefits to communities is an important way of achieving public acceptability for such projects.

SSE is a member of the Northern Ireland Renewables Industry Group (NIRIG) and was an active participant in the development of its community engagement principles, which set out best practice principles for the industry.

SSE believes excellence in community engagement is critical towards the success of each of its wind farms, not only during development and construction but also through the lifetime of each wind farm's operation. We become an active member of the communities in which we operate over the 25+ year lifetime of our wind farms. We believe in building meaningful relationships with all of the communities in which we operate, establishing real connections that ensure a sustainable and energy-efficient future for all.

The company is the industry's originator and leading promoter of community funding in the Republic of Ireland and Northern Ireland. Since 2005, SSE Airtricity has supported over 250 community projects, in more than 130 communities across Northern Ireland, with Community Fund awards totalling over £500,000. This growth is set to continue as we increase the number of operational renewable energy projects within our portfolio. Last year, the company contributed over £140,000 in community funding to local projects tackling energy inefficiency and promoting energy sustainability in communities beside its wind farms in Northern Ireland. Projects have included insulation and dry lining in community halls and primary schools to solar panels and energy efficient lighting at sports grounds and in village centres.

Our company has a team of dedicated Community Liaison Officers based at the Omagh Enterprise Centre. This team is responsible for delivering our community engagement

7 Bolin, K., G. Bluhm, G. Erriksson, and M. E. Nilsson. 2011. Infrasound and low frequency noise from wind turbines: exposure and health effects. *Environmental Research Letters* 6: 035103 (6pp).

strategy for our wind farm projects across the province and focuses on community and local stakeholder consultation and engagement and also identifies opportunities for local community partnership and benefit. Local partnership, sponsorship and community engagement events play a key role in our community engagement strategy.

In June 2012, SSE hosted a public open day at its Slieve Kirk wind farm to celebrate Global Wind Week. More than 1000 members of the public, including many families attended the event. Visitors were brought on guided tours of the wind farm, which included exploring how a wind turbine works from inside the control centre. Other activities on the day included interactive science shows, magicians, balloon modellers and Airtricity's very own Doc Energy, who was on hand to tell families all about the power of wind energy as well as energy efficiency in the home.

SSE is the principal partner and energy topic advocate for the Northern Ireland Eco-Schools programme, which helps schools to promote sustainable development and in particular to improve their energy efficiency through involving pupils in hands-on learning that can make a real difference. SSE Airtricity has developed a brand new set of resources for children and teachers on energy efficiency that will complement the curriculum, as well as providing schools with the chance of winning energy saving prizes. Resources are available from a website designed to support schools studying energy topics and encourage pupils to get the energy saving message out into the local community. As well as teaching materials and practical activities.

SSE Airtricity hosted the 2013 Eco-Schools Global Wind Awards in Derry-Londonderry on the 20th June. The event was designed to advance young people's understanding of energy use and sustainability and to inspire them to be curious about future energy challenges. Pupils proudly presented on their study of energy efficiency and renewable energy and an exhibition space focused on key energy topics. The event culminated in a trip to SSE's Slieve Kirk wind farm, where pupils were led on a guided tour of a wind. Following the success of the 2013 Awards, more than 1100 Eco-Schools from across Northern Ireland are once again being invited to enter this year's Global Wind Awards as part of the Global Wind Week celebrations.

At SSE, we have a strong community partnership ethos. Two of our core company values are excellence and teamwork. Teamwork, trust and cooperation with our local suppliers and stakeholders are key to the success of our wind farm projects. Working together, we can deliver a wide range of benefits to local communities who host our projects, through the creation of jobs, local business opportunities and through long term community funding.

SSE's investment in Slieve Kirk Wind Park totalled £125 million. Of this, the company invested £36 million during the construction phase with local supply chain companies - supporting jobs and enterprise at over 75 local businesses. Over the next 25 years, SSE will contribute £18.5million to the Co. Derry-Londonderry community through annual commercial rates payments, landowner leases and community funding. This brings to around £55 million the total local investment that SSE will make into the region through Slieve Kirk Wind Park. A link to our economic benefits case study:

<http://www.slideshare.net/SSEIreland/sleive-kirk-wind-park-economic-benefits-case-study>

The building of this Wind Park has not only contributed to Northern Ireland's renewable energy target but also delivered economic benefits for local companies and supported local jobs.

SSE will continue to strive to be a leader and innovator in community engagement and benefit and recognises the importance of early, regular and consistent communication and interaction with local

communities. Our team of local Community Liaison Officers will drive our community engagement strategy going forward.

SSER Conclusion

Northern Ireland has a robust planning process which is backed up by PPS18 and related supplementary guidance in regulating proposals for wind turbine. The wind energy industry has called for the timely implementation of the Northern Ireland Planning Bill as it will allow for the expedition of a number of planning reforms contained within the Planning (Northern Ireland) Act 2011. SSER supports, in particular, the inclusion of a statutory duty towards sustainable development and promoting economic development.

Finally, statutory assessment, conducted in parallel with detailed local consultation at an early stage in the pre-application phase of a wind farm, is designed to ensure that potentially significant adverse effects are mitigated. SSER strives to achieve the most optimal wind farm layout from an environmental and engineering standpoint and community consultation and engagement forms a crucial part of this process.

SSE is available to meet with your Committee to discuss this submission in more detail, should more information be required.

Yours sincerely,

Mr. Paul Cooley

General Manager

SSE Renewables

Strabane District Council

Strabane District Council and Omagh District Council's Wind Farm Working Group Collaborative Corporate Response to the Committee for the Environment Review of Wind Energy Issues

Contact Address: Strabane District Council
47 Derry Road,
Strabane,
Co. Tyrone.
N.Ireland.
BT82 8DY

Email Address: amcaleer@strabanedc.com

Contact Telephone: 028 71 382204 Ex 384

Strabane District Council and Omagh District Council's Wind Farm Working Group (WFWG) commend the Environment Committee for conducting a full inquiry in order to identify the key issues arising from the generation of renewable energy by onshore wind turbines and to assess the adequacy of existing planning guidelines to address these issues. This is a particularly important issue for both Strabane and Omagh District Councils given the concentration and proliferation of wind farms in this area of Northern Ireland.

Each of the areas identified by the review are examined in turn:

To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment

In terms of PPS18, the WFWG are of the opinion that the payment of community benefits should be detailed in Northern Ireland's Planning Policy Statement 18, and Article 40 of the Planning Act should be fully utilised for the payment of benefits. The WFWG would also suggest that the Planning Service should place more emphasis on cumulative impacts when considering planning applications for windfarms. Currently PPS 18 favours development despite evidenced cumulative impacts. Members of the WFWG would also suggest that the Planning Service should place more emphasis on cumulative impacts when considering planning applications for windfarms.

The Wind Farm Working Group are aware that Wind Turbine Noise policy within Northern Ireland is in line with other United Kingdom jurisdictions and understands that noise impacts from wind energy developments be assessed against ETSU-R-97. However, given that ETSU-R-97 was drafted in 1996 when there would have been a much fewer number of wind farms than are currently situated and planned in West Tyrone. Again the impacts of cumulative impacts need to be assessed and the WFWG would call for the ETSU regulations to be revaluated to ensure that the night time threshold is lower than the daytime threshold.

To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development

It is the understanding of the WFWG that renewable energy planning policy within Northern Ireland is in line with other United Kingdom jurisdictions in recommending that noise impacts from wind energy developments be assessed against ETSU-R-97.

Also, the Institute of Acoustics Good Practice Guide has been endorsed in its entirety by the English, Welsh and Scottish governments. In NI the GPG was endorsed on 19 December 2013 but concern was raised over some of the suggested 'Example Planning Conditions'.

Noise limits used in ROI are similar to ETSU-R-97 however, it has recently been proposed that this be simplified to a single fixed noise limit of 40 dB LA90, day and night, with *'a minimum separation distance of 500m between any commercial scale wind turbine and the nearest point of the curtilage of any property in order to provide for other amenity considerations e.g. visual obtrusion.'*

With regard to separation distances, although 500metres-1km has been suggested, the WFWG believe that the commonly held opinion is that 10 times the rotor diameter is still inadequate as an appropriate separation distance recommendation.

Extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted:

The Wind Farm Working Group has been proactively engaged in developing a guidance protocol which outlines recommended levels of community benefits. In the development of this protocol, Members of The WFWG have been made aware of wind energy providers using contrasting methods of community engagement. Types of engagement which both Councils would recommend include the following:

- Developers such as TCI Renewables and DW Walker have engaged local communities whilst the windfarm was still in a conceptual stage, pre-planning application. They proactively sponsored local organisations such as Age Concern and supported local playgroups and youth groups prior to the erection of any turbines.
- RES have put in place mechanisms to make communities aware of Local Electricity Discount Schemes (LEDs). These schemes have been put in place in order to make communities hosting windfarms aware that they are able to receive direct and tangible benefits as a result.
- Others, such as SSE Renewables, have held open days to inform the local community about their community fund. SSE has invested in the administration and organisation of their community fund. They are also very willing to engage with the community and Councils about the fund.
- Other developers have personally gone to every house within the host community to inform them about the new windfarm development.

As a result of the examples of the engagement articulated above, there was a clear awareness of the windfarm development. Local people often had a contact whom they could engage with, if they so wished. It led to a greater degree of acceptance of the development, less mistrust and a sense that the company had a sense of decorum and respect for the people living within the host community. This suggests that the more proactive the community engagement is and the earlier it commences the more positive impact it is likely to have on the communities. As such, wind energy providers should be encouraged to use as many forms of engagement as possible.

However, Members of the Wind Farm Working Group would also like to emphasize the issues that can be created if appropriate and full community engagement is not carried out. Members have been made aware of the divisive impact wind energy providers can have within communities if all community members feel that they are not being given equal representation and are not receiving to or similar equal financial benefits as other members of their community.

Members have been alerted to specific examples of instances when offers and deals being done with particular community residents 'behind closed doors'. This lack of openness and transparency can lead to deep fractures developing within communities and between neighbours. Situations such as these can be extremely detrimental to community relations within areas and can have long lasting consequences such as becoming a barrier to future community led projects. These situations ultimately occur as a result of poor or lack of community engagement by the energy companies involved.

The Wind Farm Working Group believe that the onus is on energy companies to carry out exhaustive measures to ensure community engagement is carried out and that it is appropriate to the scale of the revenue that will be generated from the turbines they have in place. It would be prudent for the energy providers to realise that community engagement has the potential to encourage communities hosting wind farms to accept the project and have a sense of buy-in and ownership of the project. However, the opposite can also be true in that where a lack of or piecemeal community engagement takes place. In these cases communities can feel taken advantage of and left out in the cold.

The Wind Farm Working Group would also be happy to provide a verbal response in order to provide additional information in relation to this consultation response.

Strategic Planning



27th February 2014

Committee Chairperson Anna Lo MBE
Committee for the Environment
Parliament Buildings
Ballymiscaw
Stormont
Belfast
BT4 3XX

By email to: committee.environment@niassembly.gov.uk.

Re: Response to Wind Energy Inquiry

Dear Chairperson Lo,

Strategic Planning acts on behalf of the main single wind turbine developers in Northern Ireland. Having managed over 150 applications for 250kW single wind turbines we have developed a significant level of expertise in this sector and are well versed with Planning Policy and Guidance for wind energy developments. In addition we have represented clients at appeals and made formal presentations on the single wind turbine industry to the vast majority of District Councils in Northern Ireland.

We welcome the opportunity to respond to the Environment Committee's Wind Energy Inquiry. We support the NIRIG response to this inquiry, and would like to reiterate that a stable policy framework is required to allow clear and necessary progress towards our low-carbon energy future.

We support the positions taken by NIRIG and reiterate the following points:

- We believe that the benefits of developing our wind resources far outweigh the perceived negatives, and a considerable number of policies are already in place to mitigate any of the potential impacts of wind energy development
- PPS18, the key planning policy document for renewable energy in Northern Ireland, is the product of extensive public consultation, and we believe that PPS18 and the associated guidelines are balanced and fit for purpose in assessing wind farm developments in Northern Ireland
- We strongly believe that the forthcoming Strategic Planning Policy Statement should maintain the current language and approach of PPS18 to enable our Strategic Energy Framework targets and beyond

- Development Consultancy
- Planning
- Public Relations & Public Affairs



RTPI
mediation of space · making of place

4 Pavilions Office Park, Kinnegar Drive,
Holywood BT18 9JQ
T: 028 9042 5222 F: 028 9042 2888
info@strategicplanning.uk.com
www.strategicplanning.uk.com

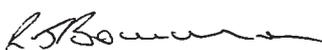
VAT Reg. No. 839 4999 51 • Company Reg. No. NI 54223

- Planning policy has been based on robust evidence and scrutinised by experts in their field. Based on the advice of planning policy, a wind farm which can operate within the noise limits which have been derived according to ETSU-R-97 is considered to be acceptable. An additional Good Practice Guidance now underlies the policy and we believe that such expert-led policies are appropriate for the purposes of wind farm noise assessments
- Buffer zones or separation distances are not required by statute in the UK or Ireland and we believe that an effective means of managing wind turbine noise impacts is to set noise level limits at the noise sensitive receptors likely to be significantly affected, and require these to be met by planning conditions
- We would like to highlight that positive community engagement over and above statutory requirements is regularly carried out by wind farm developers in Northern Ireland and we believe that the renewables sector may be considered a leader in good practice on community engagement in Northern Ireland

We would also like to highlight the need for positive leadership from across the political spectrum for the development of our substantial renewable energy resources. Our sustainable energy aims as laid out in a wide range of Executive and Departmental policies, as well as party political manifestos, will only be met through an increasingly diverse and low-carbon electricity system. In delivering these aims the combined efforts of policy-makers, industry and communities will be vital. We continue to look forward to and are committed to making progress on developing our renewables sector, and in particular the most cost-effective scalable technology: onshore wind.

In conclusion we would like to thank the Committee for the opportunity to engage on this issue and look forward to continued support for the development of our enviable renewable resources and the necessary progress towards meeting our low-carbon commitments.

Yours sincerely,



Richard Bowman
Director

Environment Committee's Inquiry into Wind Energy

25th February 2014



Strategic Planning

4 Pavilions Office Park
Kinnegar Drive
Holywood
BT18 9JQ

T: 028 90 425222

F: 028 90 422888

1.0 Introduction

1.1 On 7 November 2013 the Environment Committee (the Committee) announced it would carry out a full inquiry into wind energy issues. The stated aim of the Inquiry is to

“identify the key issues arising from the generation of renewable energy by onshore wind turbines and to assess the adequacy of existing planning guidance to address these issues.”

1.2 The Committee invited written submissions based on the terms of reference (see below) by 28th February 2014.

1.3 The Terms of Reference are as follows:

- To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment;
- To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development; and
- To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

1.4 Strategic Planning act on behalf of the main single wind turbine developers in Northern Ireland with experience of managing over 150 applications for single wind turbines to date. Strategic Planning has developed a significant level of expertise in this sector and is well versed with Planning Policy and Guidance for wind energy developments. In addition Strategic Planning has represented its clients at appeals and has made formal presentations on single wind turbine industry to the vast majority of district councils in Northern Ireland.

1.5 This submission is written in the context of single wind turbine development up to a maximum of 250kW output, hereinafter referred to as small wind.

2.0 Brief Context for Renewable Energy Planning Policy

2.1 The EU has laid down challenging and mandatory targets for increasing the level of renewable energy consumption in all EU member states including Northern Ireland.

- 2.2 The Northern Ireland Renewables Obligation is the main policy mechanism for promoting the generation of electricity from renewable sources in line with the Renewables Directive¹
- 2.3 The need to increase the contribution renewable energy can make to the overall energy mix in Northern Ireland is set out in the Programme for Government 2011 – 2015 (PfG) and the Regional Development Strategy 2035 (RDS).
- 2.4 The PfG target is to reduce greenhouse gas emissions by at least 35% on 1990 levels by 2025.
- 2.5 The RDS is a regional spatial framework which aims to deliver a sustainable and secure energy supply (RG5), and reduce our carbon footprint to mitigate and adapt to climate change (RG9).
- 2.6 DETI's Strategic Energy Framework for Northern Ireland 2010 (SEF) sets the direction for NI's Energy Policy over the next ten years and concentrates on the key areas of electricity, natural gas and renewable energy sources.
- 2.7 In September 2010 while launching the SEF, the DETI Minister confirmed that Northern Ireland was setting itself a new challenging renewable energy target by seeking to achieve 40% of its electricity consumption from renewable sources by 2020.
- 2.8 Renewable Energy Targets formed the backdrop to Planning Policy Statement 18 – Renewable Energy (PPS18) which was published in August 2009. Since then there has been a more recent expression and strengthening of renewable energy consumption targets through the SEF. The Minister made clear that in order to achieve the challenging targets it was important for a number of government Departments to ensure the right conditions were in place. Planning policy that encourages the sustainable development of renewable energy projects is an obvious and very important cog in the overall joint strategy.
- 2.9 More recently the Department has published its draft Strategic Planning Policy Statement for consultation. The core principles of the SPPS include Sustainable Development. Reducing greenhouse gas emissions and supporting renewable energy sources are seen as being important in helping further sustainable development, mitigate against and adapt to climate change.
- 2.10 Department of Environment has invited comments on the consultation document by close of play on 29th April 2014. This is the appropriate mechanism to inform how renewable energy planning policy develops going forward into the Review of Public Administration (RPA) and it is considered untimely to seek to amend current regional renewable energy planning policy during an already uncertain period of planning policy control in NI. Notwithstanding, it is our view that current policy is fit for purpose and this is considered in detail below.

3.0 To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis, with due regard for emerging technologies and independent environmental impact assessment

Adequacy of PPS18 and Supplementary Guidance

- 3.1 PPS18 sets out the Department of Environment's (the Department) planning policy for development that generates energy from renewable resources. As set out above, the policy was published off the back of NI's legal targets for the production of energy by renewable means. PPS18's key aims and objectives are to:
- Facilitate the siting of renewable energy generating facilities in appropriate locations in order to achieve NI's renewable energy targets
 - Ensure environmental, landscape, visual and amenity impacts are adequately addressed

1 EU Renewable Energy Directive (Directive 2009/28/EC)

- In making decisions ensure adequate protection of natural, built, and cultural heritage interests
- 3.2 In line with the aims and objectives of wider Government Renewable Energy policy, renewable energy planning policy has a promotive thrust. However the policy is sufficiently robust to ensure important environmental and planning considerations are carefully considered, there is no presumption to approve development at all costs, there are robust checks and balances inbuilt.
- 3.3 As discussed above Strategic Planning has acquired an in depth working knowledge of PPS18 and the associated Guidance documents which accompany it, namely the Best Practice Guidance (BPG) and the Supplementary Planning Guidance to PPS18 (SPG), the latter of which relates to wind energy development and landscape character.
- 3.4 Having managed over 150 small wind planning projects, we have first-hand experience of the robustness of the policy and guidance. All applications for small wind go through a rigorous examination which includes views being sought from an extensive list of statutory and non-statutory bodies. Small Wind, which typically does not trigger the need for the submission of a formal Environmental Statement, still goes through a process akin to EIA development such is the extensive nature of the assessment of potential impact, consultation and consideration.
- 3.5 The following is a list of areas of considerations which are carried out as routine on all renewable projects:
- Public Safety, Human Health and Residential Amenity
 - Visual amenity and landscape impacts
 - Biodiversity, nature conservation and built heritage
 - Local natural resources, air quality, water quality
 - Public access to the countryside
- 3.6 In addition PPS18 has specific detailed areas of consideration for wind energy including small wind which includes:
- Impact on visual amenity and landscape with regard to the number, scale, size, and siting of turbines
 - Cumulative visual impact
 - Risk of landslide or bog burst
 - Electromagnetic Impact on communications installations, radar, air traffic control, emergency services communications and other telecommunications systems such as commercial mobile phone networks
 - Impact on road, rail and aviation safety
 - Impact on amenity of dwellings, hospitals, schools and churches through noise or shadow flicker from the turbine blades
 - Restoration arrangements in the event of energy production ceasing
 - Protection of peatland
- 3.7 Strategic Planning's first-hand experience is that as a direct result of the policy requirements the vast majority of applications for small wind require detailed technical evidence to be submitted in addition to normal planning application papers. Additional expert reports/assessments typically requested by the Department for small scale wind planning applications include:

- Full Noise Impact Assessment carried out with regard to ETSU-R-97, the UK wide standards for the Assessment and Rating of Noise from Wind Farms. This includes for the assessment of cumulative impacts.
 - Landscape and Visual Assessments including the provision of computerised wireline diagrams based on digital terrain height data with accompanying colour photomontages prepared in accordance with standards set out in the SPG and other UK guidelines². This includes for the assessment of cumulative impacts.
 - Shadow Flicker Assessments. This includes for the assessment of cumulative impacts.
 - Ecological reports most typically to assess impact on species such as Bats and Badgers.
 - Electromagnetic interference reports to assess impacts on important fixed telecommunications links and mobile phone services
 - Aviation Safety Reports including line of sight assessments for impact on airport radar
 - Transport Assessments
 - Tourism Impact Assessment
 - Assessment of Environmental, Economic and Social benefits
- 3.8 PPS18 also seeks to ensure that important environmental, economic and social benefits of all renewable energy developments are acknowledged by the decision maker to ensure well-balanced decisions can be reached.
- 3.9 It is vital for decision makers to fully appreciate the overall aims of government policy i.e. to tackle climate change by reducing our dependence on fossil fuels, and helping to diversify and bring security of supply to our energy infrastructure, and to understand the importance planning decisions hold in helping achieve these wider aims and objectives. PPS18 achieves this.
- 3.10 It is Strategic Planning's experience that PPS18 and the related guidance documents are more than adequate in delivering balanced planning decisions for wind energy developments across Northern Ireland on a consistent basis and have assisted progress towards meeting the targets laid down in the SEF and overall sustainable development strategies outlined in the RDS, the Sustainable Development Strategy (SDS) and the PFG. The principles of balanced decision making currently advocated by PPS18 is the correct approach to progress towards the SEF 40% target whilst respecting other important and acknowledged interests

Emerging Technologies

- 3.11 Strategic Planning recognises the importance of creating a renewables mix to bring about diversity and security of supply. However, it is even more important to acknowledge that onshore wind offers the most cost effective means of renewable electricity generation. The wind is clean and it is free. It is also plentiful given the island of Ireland's unique location on the eastern edge of the North Atlantic. Wind Energy technology is also a mature technology unlike many of its counterpart technologies. Wind is the single biggest renewable energy opportunity and it would be remiss not to exploit this free renewable resource to its full extent. The need to promote Wind Energy as the leading form of renewable energy production remains, and as such Planning Policy needs to continue being promotive of onshore wind.
- 3.12 Small scale wind fits well with the Northern Ireland settlement pattern. Northern Ireland's historical rural development pattern has resulted in the countryside being heavily developed

2 Countryside Agency and Scottish Natural Heritage (2002) Landscape Character Assessment Guidance for England and Scotland, Countryside Agency and Scottish Natural Heritage.
 Countryside Agency and Scottish Natural Heritage (2004), Landscape Character Assessment Guidance Topic Paper 6: Techniques and Criteria for Judging Sensitivity and Capacity, Countryside Agency and Scottish Natural Heritage.
 Landscape Institute and Institute of Environmental Management and Assessment (2002) Guidelines for Landscape and Visual Impact Assessment, 2nd edition, Spon.

by single rural dwellings. Dwellings are a significant constraint to the development of all wind energy development and it is especially difficult to achieve the necessary separation distances between large scale commercial wind farms and dwellings. However, this presents an opportunity as small wind can integrate more readily into this historical development pattern. Separation distance requirements are more easily met, and due to the rigorous assessment process it is possible to integrate a large volume of small wind projects across NI without resulting in a significant adverse impact on our landscapes. The primary reason for this is the scale of the technology involved.

4.0 To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development

4.1 In Northern Ireland Noise impact Assessment for all proposed wind turbines is completed in accordance with ETSU-R-97 (ETSU), The Assessment and Rating of Noise from Wind Farms, (September 1996). The BPG to PPS18 identifies ETSU-R-97 as the most relevant guidance on good practice.

4.2 ETSU states that noise from the wind farm should be limited to 5 dB(A) above the background level during both daytime and night-time, with the exception of the daytime limits (in low noise environments) 35 – 40 dB(A) or at night-time where there is a fixed limit of 43 dB(A). This night-time noise limit is based on sleep disturbance criteria of 35 dB(A) (an allowance of 10dB(A) has been made for attenuation through an open window and 2dB subtracted to account for the use of LA90,10min, rather than LAeq,10min). For ‘financially involved’ properties, ETSU recommends that the relevant daytime and night-time noise limit is 45 dB(A).

4.3 To put these noise targets into context, the Best Practice Guide compares noise generated by wind turbines to other everyday activities (see table 1 below).

Table 1 – Noise Levels Comparison

Source / Activity	Indicative noise level dB(A)
Threshold of pain	140
Jet aircraft at 250m	105
Pneumatic drill at 7m	95
Truck at 30mph at 100m	65
Busy general office	60
Car at 40mph at 100m	55
Wind farm at 350m	35-45
Quiet bedroom	35
Rural night-time background	20-40
Threshold of hearing	0

4.4 In May 2013 following a 10 week consultation and two peer reviews, the Institute of Acoustics (IoA) noise working group, published the document ‘A Good Practice Guide to the Application of ETSU-R-97 for Wind Turbine Noise Assessment’. This is the most recent expression of guidance on the application of ETSU and has been endorsed by the Environment Minister Mark H Durkan and Government in England, Scotland and Wales. .

- 4.5 ETSU-R-97 requires assessments to take account of the following steps³:
- Predict noise levels from all turbines (existing and proposed) at the nearest receptors;
 - Determine a study area;
 - Identify potentially affected properties;
 - (If required) Undertake a measurement survey consisting of simultaneous measurement of background noise levels at representative properties with wind speed and direction at the proposed turbine site;
 - Analyse the data to remove rain affected and atypical data, and derive the noise limits for the scheme;
 - Update noise predictions & assess compliance with the noise limits for a candidate turbine, and
 - provide design advice if compliance with the limits is considered unlikely.
- 4.6 The main purpose of this procedure is to set out the noise data required, and the subsequent analysis needed to allow a decision maker to make an informed decision to assess compliance with ETSU-R-97.
- 4.7 This scientific assessment (ETSU) and best practice guidance uses existing noise environments to determine the acceptability of wind turbine noise rather than advocating separation distance as a benchmark.
- 4.8 English Planning Policy Statement 22 generally advocates the same approach as PPS18 insofar as noise impact is concerned. Planning Practice Guidance for Renewable and Low Carbon Energy published in 2013 it states:
- ‘Local planning authorities should not rule out otherwise acceptable renewable energy developments through inflexible rules on buffer zones or separation distances. Other than when dealing with set back distances for safety, distance of itself does not necessarily determine whether the impact of a proposal is unacceptable. Distance plays a part, but so does the local context including factors such as topography, the local environment and near-by land uses. This is why it is important to think about in what circumstances proposals are likely to be acceptable and plan on this basis.’*
- 4.9 Scottish Policy suggests that within the Spatial Frameworks of Development Plans ‘Areas of Search’ should be identified where appropriate proposals are likely to be supported. Within such areas a 2km buffer between areas of search and edge of settlements should be adopted in order to guide developments to the most appropriate sites, but decisions on individual developments should take into account specific local circumstances and geography. In September 2013 a review was carried out into the 2km separation distance requirement and concluded there was no supporting evidence to support such a requirement.
- 4.10 Welsh Technical Advice Note 8 (TAN8) advocates 500m as a suitable separation distance to safeguard against noise impact on dwellings however suggests that flexibility is advised as the set distance when applied rigidly can lead to over conservative results.
- 4.11 It would be inappropriate to adopt an arbitrary approach to separation distances to safeguard against noise impact. There are too many variables to consider when determining appropriate impact from noise which an arbitrary separation distance policy would fail to consider, such as:
- turbine type and number
 - background noise levels
 - topography
 - wind shear effects

3 Steps from ‘A Good Practice Guide To The Application Of Etsu-R-97 For The Assessment And Rating Of Wind Turbine Noise’ (May 2013) Page 4

- 4.12 In addition, an arbitrary separation distance rule would discriminate against turbines which are quieter than others. In that sense it would also stymie the development of quieter turbines, this would be a regrettable consequence.
- 4.13 Noise Impact Assessment is a technical matter which the Department of Environment Planning seeks advice on from the Environmental Health Department's (EHD) of the local council. Through this consultation process DOE Planning receives the necessary assurance that noise impact has been assessed thoroughly prior to granting planning approval. Indeed, it is our experience that the local council EHOs adopt the most conservative interpretation of the recent IOA guide to the detriment of applications. This ensures an additional layer of protection from noise in the interests of residents.
- 4.14 As part of the decision DOE Planning also attaches conditions to a planning permission which set the noise limits within which wind turbine development is expected to operate. The levels are proposed by the local council and are based on the findings of the Noise Impact Assessment process.
- 4.15 The Committee must also recognise that much of the guidance relating to noise impact from wind energy is written in the context of large scale wind farms, not small scale single wind turbine development.

5.0 To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

- 5.1 Historically the Wind Industry has proven to be a responsible industry and have engaged with local communities prior to lodging planning applications for wind farms. This has been on a voluntary basis rather than being a requirement in planning law.
- 5.2 It is worth noting that the Planning Act (NI) 2011 will put in place a legislative requirement on applicants of major applications to carry out pre-application community consultation. Wind farm development will fall into this category.
- 5.3 The impact of small wind is more localised and impact is not as far reaching as large scale wind farms. As such this type of development will not likely fall into the category of major development and as such it would be inappropriate to lay down in statute a requirement for small scale wind energy developers to carry out extensive pre-application community consultation. Notwithstanding, in our experience our clients have been willing to engage with local community groups and/or community service providers to ensure there are real community benefits to be realised through their wind turbine developments.

6.0 Conclusions

- 6.1 Northern Ireland faces strict and challenging targets for the production of energy from renewable sources. It is on the back of these targets that Government policy has been drawn up. Planning policy is an important part of the overall wider renewable energy policy strategy.
- 6.2 To continue to make progress towards our targets the NI planning policy context needs to maintain the right conditions to foster a strong renewables industry. In that sense the Executive needs to hold firm on the current renewable energy planning strategy to ensure there are meaningful results.
- 6.3 Onshore Wind Energy is undeniably the biggest opportunity to help towards delivering the 40% target by 2020. Wind is clean, free and plentiful and the wind industry is a mature and proven industry unlike many new emerging renewable technologies. As such it is important to maintain faith in onshore wind whilst at the same time allowing a mix of other renewable technologies to provide a supporting role. In addition the importance of small wind in contributing to the overall targets should not be underestimated given the opportunity for this scale of development in the NI countryside.

-
- 6.4 Strategic Planning's experience and that of other planning practitioners is that PPS18 is a robust policy striking the correct balance between the promotion of renewable energy development and protecting other matters of acknowledged importance such as the environment, residential amenity and heritage interests etc. PPS18 is on balance fit for purpose.
- 6.5 The assessment of noise is based on sound scientific assessment and is current having been reviewed and advised on as recently as 2013. To move away from this approach to an arbitrary rule for separation distances would put NI at odds with the remainder of the UK.
- 6.6 Community engagement is generally to be encouraged and is a responsible approach for developers. Proportionality is key. It is already evident that the Department realise this given that pre-application community engagement on major planning applications will be a requirement of the new Planning Act (NI) 2011. It is however unrealistic to place a statutory requirement on applicants for minor planning applications to engage in this process.
- 6.7 Strategic Planning wish to ensure the Committee that the regulatory framework in Northern Ireland is extremely thorough and sets the correct and balanced conditions to progress Northern Irelands Renewable Energy strategy and consequently help meet the 2020 target.
- 6.8 Strategic Planning urge the Committee to consider the comments above and retain the current policy conditions to promote a strong renewables industry.

TCI Renewables



TCI Renewables Ltd, The Old Throne Hospital
244 Whitewell Road, Belfast, BT36 7ES
T +44 (0) 2890 371 122 F +44 (0) 2890 775 220

M +44 (0)7812 045586
gary.preston@tcirenewables.com
www.tcirenewables.com

Northern Ireland Assembly
Committee for the Environment
Room 247
Parliament Buildings
Ballymiscaw
Belfast, BT4 3XX
Email: committee.environment@niassembly.gov.uk

Date: 26th February 2014

Dear Members of the Environment Committee,

Re: Northern Ireland Assembly Inquiry into Wind Energy - Response by TCI Renewables Limited

TCI Renewables Limited (TCIR) welcomes this Inquiry and its aims to identify the key issues arising from the generation of renewable energy by onshore wind turbines and to assess the adequacy of existing planning guidance. Northern Ireland has a fantastic renewable energy resource in the form of wind which should be harnessed for the benefit of future generations, to help provide a balanced, more secure energy mix and to reduce our reliance on fossil fuel generation. Renewables represent a significant economic opportunity for Northern Ireland and have already created jobs and investment in a time of otherwise challenging economic conditions.

TCIR is a leading independent renewable energy business that develops wind energy projects across Northern Ireland, the UK and North America. Company operations are primarily focused on the design, planning and development stages of large-scale onshore wind farms. In Northern Ireland we have attained consent for 122.8MW of renewable energy generation; we have projects which could generate up to 61.8MW under consideration by Planning NI and a further 100MW in pre-planning development.

The following comments relate to large-scale onshore wind energy development and generation. We hope that our response to the specified Terms of Reference will help inform the Committee's position on these matters. We ask that the information within is treated by the assembly as commercial in confidence.

TOR 1: To assess the adequacy of PPS18 and related supplementary guidance in regulating proposals for wind turbines on a consistent and strategic basis with due regard for emerging technologies and independent environmental impact assessment.

PPS18 – Adequate for the Regulation of Onshore Wind farms

Planning Policy Statement 18 'Renewable Energy' (PPS18) informs all aspects of our wind farm development and assessment work. It is currently our primary policy consideration as wind farm developers and is the product of extensive public consultation, which shaped and refined the policies contained within it.

PPS18 and its associated SPG and BPG documents have been used for the past four and half years to regulate what has been and continues to be a burgeoning and fast changing industry. The permissive nature of the policy is expressed in the opening line of PPS18's Policy RE1, which states

“Development that generates energy from renewable resources will be permitted provided the proposal, and any associated buildings and infrastructure, will not result in an unacceptable adverse impact,” has facilitated the development of an indigenous renewable energy industry which presents a vast range of opportunities to support, expand and diversify the Northern Ireland economy, while at the same time protecting *“public safety, human health, or residential amenity; visual amenity and landscape character; biodiversity, nature conservation or built heritage interests; local natural resources, such as air quality or water quality; and public access to the countryside”*.

It typically takes 18-24 months to prepare and submit a complete wind farm planning application with an accompanying Environmental Statement. TCIR ensures that its applications are designed and progressed to be strictly policy compliant according to the criteria outlined in PPS18, its associated Supplementary Planning Guidance (SPG) and Best Practice Guidance (BPG) documents. Each wind farm is designed to avoid or minimise impacts on landscape, ecology, hydrology, geology, noise, shadow flicker, cultural and built heritage, telecommunications, aviation and transport. In accordance with the requirements of The Planning (Environmental Impact Assessment) Regulations 2012, wind farm planning applications are accompanied by detailed assessments of potential for impact on the above aspects of the environment. These assessments are robust, wide ranging and comprehensive and are carried out by experts in their respective fields, to demonstrate compliance with the policy criteria set out in PPS18. This Environmental Statement (ES) is then subject to independent scrutiny by consultees whose feedback informs the Planning NI Strategic Planning Team’s decision making process. They assess the project both on an individual basis and in combination so as to identify the potential for cumulative impacts. As this strict policy regime ensures independence in the planning decisions issued by Planning NI and since it applies province wide, it ensures a strategic and consistent approach to siting and delivery of renewable energy. In relation to assessment of consistency in regulating proposals, it is difficult to give an opinion without considering all determined applications to date. However, it is TCIR’s opinion that the current decision-making procedure is the best to serve Northern Ireland as the Strategic Planning Team will have sight of all large-scale applications and can therefore take a consistent, strategic approach.

In our view, PPS 18 has allowed considerable progress to be made towards the Strategic Energy Framework target, Programme for Government targets and the aims outlined in the Sustainable Development Strategy and Regional Development Strategy. We strongly believe that the language and approach of PPS18 is appropriate for the regulation of proposals for wind farms in Northern Ireland. We believe that Northern Ireland has an appropriate planning policy framework in place for renewable energy and that the Strategic Planning Policy Statement should maintain the language and approach of PPS 18 to ensure attainment of our renewable energy targets and the siting of renewable energy generating facilities in appropriate locations within the built and natural environments.

We remain in support of the PPS18 document and we welcome the fact that the Policy objectives of PPS18 have been carried forward into the Renewable Energy policy objectives, as set out in paragraph 6.192 of the recently published A Strategic Planning Policy Statement for Northern Ireland Public Consultation Draft, February 2014 (draft SPPS). We also note that the draft SPPS proposes that PPS18, along with other guiding Planning Policy Statements, will be retained until the 11 new local councils adopt their own development plans and policies. Any review of guiding policy for Renewable Energy, and Wind Energy specifically, should seek to retain the permissive stance of PPS18 and, first and foremost should safeguard our considerable wind resources, align with suitable wind energy infrastructure investment, enhance wider understanding of the industry, encourage transparency and responsible development, harness opportunities for local employment and industry, as well as seek to improve levels of social acceptance.

PPS18 – Supplementary Planning Guidance

The SPG to PPS18 is based upon an assessment of Northern Ireland’s landscape which was carried out in the 1990’s in preparation for the publication of the *Northern Ireland Landscape Character*

*Assessment 2000*¹. It was published by the Northern Ireland Environment Agency and provides broad, strategic guidance in relation to the visual and landscape impacts of wind energy development. It includes general guidance on siting and design within Northern Ireland's landscapes and advice on the landscape assessment of proposed developments and is taken into account in assessing all wind turbine proposals. However, the appearance and character of landscape does not remain static over time. The defined Landscape Character Areas and descriptions featured within the SPG no longer accurately reflect landscape conditions today or the wind farm context, which has continued to evolve since the document was drawn up.

We note the recent publication of Northern Ireland's Landscape Charter by the Northern Ireland Environment Agency (January 2014). This document outlines a commitment by NIEA to review the outdated *Landscape Character Assessment for Northern Ireland 2000*, in line with current best practice elsewhere in the United Kingdom, to provide a sound evidence base for our landscape that is up to date and responsive to change. It is essential that this review recognises the significant value of responsible energy generation and safeguards our considerable wind resources for future development.

Renewable Energy Targets and benefits of Wind Generation

The *Strategic Energy Framework for Northern Ireland 2010*² highlights the need for effective action against climate change and the need to ensure energy security and sustainability of supply and costs. As part of a package of measures to tackle energy and climate change, this document sets a generation target of 40% of Northern Ireland's energy from renewable sources by 2020. By January 2014 Northern Ireland achieved the installation and operation of 585MW which equates to c.15%³ of our overall energy needs, which represents almost a doubling of output on our 8% levels back in 2009. However, there is still some way to go to ensure the 2020 target is met and a further 1350-1600MW of renewable energy wind is expected to be required by 2020 to achieve the 40% target set out in the SEF. We are now beginning to look beyond 2020, towards new 2030 EU proposed Renewable Energy targets. The Program for Government (PFG) contains a target of a reduction in greenhouse gas emissions by at least 35% on 1990 levels by 2025. Priority 1 of the PFG and RG5 of the Rural Development Strategy 2035 emphasizes the need to increase the contribution renewable energy makes to the overall energy mix. With an appropriate and permissive policy framework in place and investment in the electricity grid infrastructure, we should be able to reach our 40% target by 2020 and look further beyond that.

Considering these binding targets, and the significant challenges of climate change, dwindling fossil fuel reserves and urgency to improve energy security, it is absolutely essential in Northern Ireland that we build on our current position by continuing to develop more renewable energy projects. Our wind resource is of such quality and abundance that we have a competitive advantage for wind energy generation over most other countries across the globe. Wind energy is also currently the cheapest form of large scale renewable energy generation available in our local context. Continued progress towards the 2020 target by harnessing local wind resources will cut dependency on fossil fuel imports, boost jobs and encourage economic growth.

Speaking in advance of the annual Northern Ireland Renewables Industry Group (NIRIG) conference on 30th January 2014 Gary Connolly, outgoing NIRIG Chairman, said, *"Direct employment in wind, wave and tidal sectors here has now reached 750 people, with a high percentage of these jobs being skilled, technical or managerial. Northern Ireland's wind resources are among the best in Europe and we are seeing the real contribution that wind is making to society in terms of electricity needs and employment. Wind energy is providing a stable, secure, cost-effective supply of home-grown power which can lessen our dependence on fossil fuels. Local onshore wind farms have the potential to*

¹ Environmental Resources Management (1999) *Northern Ireland Landscape Character Assessment*, Environment and Heritage Service Research and Development Series No. 99/1-26.

Environmental Resources Management (2000) *Northern Ireland Landscape Character Assessment 2000*, Corporate Document Services

² Department of Enterprise, Trade and Investment (September 2010) *A Strategic Energy Framework for Northern Ireland 2010* http://www.detini.gov.uk/strategic_energy_framework_sef_2010_-3.pdf

³ Presentation by Robert Wasson, NIE Asset Management Director, at the NIRIG Annual Conference 30/01/14

contribute almost £1million annually to the local economy through rates, whilst the overall potential annual value of the renewable market to Northern Ireland is estimated to be almost £2 billion per annum by 2020 across a range of sectors”.

The Department of Enterprise, Trade and Investment Minister, Arlene Foster, also spoke at the conference and said that it was important not to lose sight of the wider economic benefits offered by the renewables sector, which she said are often left out of the public debate. She said, *"There are currently 230 companies here across the spectrum of renewables, contributing millions of pounds to the local economy"*. Given the importance of the Northern Ireland wind industry for the local economy, planning policy for renewable energy should continue to give significant weight to the economic benefit of policy compliant wind farm developments.

Offshore Wind and emerging forms of Renewable Energy

The Northern Ireland renewables industry is now moving to take advantage of our marine resources. As with onshore wind, these offshore developments have the potential to make a significant contribution towards generation of renewable energy and further reduction in greenhouse gas emissions. A cost comparison between onshore and offshore wind energy carried out by the European Wind Energy Association indicated that the cost of onshore wind energy is significantly lower than offshore. Although the costs of each will further reduce over time, it is projected that offshore wind will remain significantly more expensive than onshore wind until at least 2030⁴. Technology to harness offshore wind, tidal and other marine energy, is still in relative infancy and this type of development is already facing opposition from various stakeholder groups. Onshore wind must remain a focus for the industry in the short to medium term and is essential in the maintenance of progress towards our 2020 targets and beyond.

Other forms of renewable energy generation, including anaerobic digestion, hydro, biomass and solar power are becoming increasingly prevalent across Northern Ireland. These emerging technologies have their part to play in the overall energy mix and indeed movement towards the 2020 target, but the cost of delivering renewable energy by a means other than onshore wind is at present markedly higher. In terms of levelised cost, onshore wind is currently the cheapest renewable technology in the UK.⁵ It is currently the most efficient and cost effective means of renewable energy generation and is likely to remain this way for the coming years.

Whilst the development of appropriate policy for renewable energy is important, one of the key issues requiring urgent action is the upgrading and strengthening of the existing electricity network. It is widely accepted that onshore wind will be the single largest contributor to the 2020 target and it is therefore imperative that suitable infrastructure is made available to facilitate energy export from our wind farms. In 2013 there were 31 operational large-scale onshore wind farms in Northern Ireland with 531MW capacity, as revealed by Jenny Pyper Chief Executive of NIAUR in her speech at the annual Northern Ireland Renewables Industry Group (NIRIG) conference on 30th January 2014 and an additional 600MW of wind energy developments with planning consent currently unable to connect to the electricity grid or contribute to the operational targets as they are either awaiting long standing grid connection offers, or actual connection to the grid having accepted a connection offer from NIE. An absolutely essential component required for attainment of our target is substantial infrastructure investment. Development, installation and operation of the planned North-South interconnector is of critical importance. The interconnector is regionally significant for both NI and ROI in the delivery of the Single Electricity Market and could yield potential savings of £7million per annum to the NI consumer. This measure alone could facilitate the accommodation of an additional 400MW of capacity on the grid. Without this, realizing our renewables energy targets

⁴ Source : <http://www.ewea.org/policy-issues/economics/>

European Levelised Costs	2020	2030
Onshore Wind	57.41 €/MWh	55.19 €/MWh
Offshore Wind	73.8 €/MWh	63.31 €/MWh

⁵ Grantham research Institute on Climate Change and the Environment (Policy Brief, June 2012). The case for and against onshore wind energy in the UK. <http://www.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PB-onshore-wind-energy-UK.pdf>

will be virtually impossible and the multi-million pound investment and economic benefits associated with such development for Northern Ireland could be lost.

Onshore Wind - Planning Decisions

In closing this section, TCIR recognises that the Department of the Environment's Strategic Planning Team has awarded planning permission to a significant number of wind farm applications since the inception of PPS18 and that such consents will take Northern Ireland towards its renewable energy targets. Wind farm developments often comprise complex planning applications and we believe that this Team has developed the experience and expertise in the last few years to reach independent and strategic planning decisions on these developments. We also believe that this Team should remain the appropriate place for the assessment and determination of future wind farm applications. We would suggest that all renewable energy projects generating in excess of 5MW output should continue to be assessed as regionally significant applications by the Strategic Planning Team.

TOR 2: To compare the perceived impact of wind turbine noise and separation distances with other jurisdictions and other forms of renewable energy development.

Perceived wind turbine impacts

Judgement of the perceived impact of wind turbine noise and separation distances on individuals and the environment is subjective. People will estimate the significance of an impact differently depending on perspective, experience and predisposition. As referenced in the Best Practice Guidelines (BPG – Section 1.3.50) wind energy is a safe and quiet technology. It is understood to be one of the safest and most environmentally benign forms of electricity generation with over 100 countries using electricity generated by wind turbines⁶ to reduce CO₂ emissions.

TOR 2 requests a comparison of noise and separation distances in other jurisdictions. It is noted that the Assembly has been provided a review of planning separation distances across various UK, European and worldwide settings, in a Northern Ireland Assembly Research and Information Service Research Paper, Sept 2013. This paper is entitled, "*Wind Turbines: Planning and Separation Distances*"⁷.

Measurable Indicators

Compliance with measurable indicators, such as the ETSU-R-97⁸ noise limits and defined separation distances⁹, allows wind energy developers to demonstrate that impacts to sensitive receptors have been considered and mitigated. The separation distances outlined in PPS18 are based on evidence and best practice elsewhere within the UK. They have been effective so far in ensuring the protection of residential amenity and avoidance of impacts on nearby receptors and we would be content to see these elements carried forward to the final SPPS.

Section 1.3.50 of the BPG to PPS18 states, "*Experience indicates that properly designed and maintained wind turbines are a safe technology. The very few accidents that have occurred involving injury to humans have been caused by failure to observe manufacturers' and operators' instructions for the operation of the machines*". The BPG currently specifies that "*Fall over distance (i.e. the height of the turbine to the tip of the blade) plus 10% is often used as a safe separation distance*"¹⁰. For commercial, large-scale scale wind farm developments with turbines up to, for example, 126m high to upper rotating blade tip, the minimum separation requirement to ensure safety would therefore be 138.6m. There are no examples in Northern Ireland where commercial scale turbines have been placed in such immediate proximity to an occupied property.

⁶ <http://www.renewableenergyfocus.com/view/32463/wwea-100-countries-now-using-wind-power/>

⁷ Northern Ireland Assembly Research and Information Service Research Paper, Sept 2013. "*Wind Turbines: Planning and Separation Distances*" (NIAR767-13) <http://www.niassembly.gov.uk/Documents/RaISe/Publications/2013/environment/12813.pdf>

⁸ Department of Trade and Industry (1996) *The Assessment and Rating of Noise from Wind Farms (ETSU-R-97)*. This is Recommended Good Practice on Controlling Noise from Wind Turbines in PPS18, Best Practice Guidelines (Section 1.3.46)

⁹ As specified in PPS18, Policy RE1

¹⁰ Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy', August 2009, (Section 1.3.52)

Policy RE1 of PPS18, entitled Renewable Energy Development, outlines a clear additional requirement for separation stating, *“For wind farm development a separation distance of 10 times rotor diameter to occupied property, with a minimum distance not less than 500m, will generally apply¹¹”*. Wind farms designed by responsible developers ensure separations are very often in excess of this specified minimum.

This same separation requirement is repeated in the BPG to PPS18¹², which then goes on to state, *“in applying this separation distance, any significant impact on sensitive noise receptors should be minimised, particularly with the increasing number of proposals for turbines in excess of 100 metres in height”*. PPS18 therefore intends the currently specified set-back distance to deliver on protecting sensitive receptors from significant noise impacts.

A defined, hard and fast rule on separation distances between receptors and turbines is not an effective way to ensure noise protection at sensitive receptors. For example, potential noise impact on sensitive receptors does not uniformly reduce with increasing distance from a wind farm, nor does it necessarily increase with increased turbine height, which seems to be suggested by the BPG text. Turbine models have individual patterns of sound generation and noise from turbines will be transmitted differently in different settings, influenced by various elements including the existing noise climate, local terrain, vegetation, climatic conditions, wind shear and direction etc.

ETSU-R-97

In order to address this, the PPS18 Best Practice Guidelines refers to the use of “The Assessment and Rating of Noise from Wind Farms” - ETSU-R-97 as the appropriate standard for noise impact assessment of wind turbines. It is therefore considered that the use of ETSU-R-97 as a criterion for the assessment of wind farm noise fulfils the requirements of PPS 18. The methodology described in ETSU-R-97 was developed by a working group comprised of, amongst others, environmental health officers, wind farm operators and independent acoustic experts. Based on the advice of planning policy, as outlined above, a wind farm which can operate within the noise limits which have been derived according to ETSU-R-97 is considered to be acceptable. This standard sets upper limits for noise levels at nearby residences, within which noise from a proposed development and, if applicable, all other nearby wind energy developments considered cumulatively, must be accommodated. The ETSU-R-97 standard is supplemented by its own best practice guidance, recently published by the Institute of Acoustics entitled Good Practice Guide to the application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, May 2013¹³. This guidance updates ETSU-R-97 to today’s best practice standards and further ensures the protection of health and residential amenity in localities where wind turbines are operational. This guidance was endorsed by the Environment Minister for the Northern Ireland Executive on the 6th of January 2014, confirming it as the latest UK-wide industry good practice.

Detailed assessments of cumulative worst-case wind farm noise impacts are prepared to accompany wind farm planning applications. These are independently assessed by the local Environmental Health Departments (often assisted by Northern Group Systems) to ensure the correct assessment methodology has been undertaken and compliance with the ETSU-R-97 limits has been demonstrated. This evidence-based approach is used by the Environmental Health Departments to advise Planning NI and is a much more effective control on noise impact than enforcement of uniform separation distance.

In addition, technological advances in wind turbine technology continue to address noise reduction as a priority. New turbine models tend to be much quieter than their predecessors and, thus, noise from operational turbines is likely to continue to reduce further over time. The application of any

¹¹ It is notable that when dealing with this fundamental issue of public concern the above guidance has been irresponsibly misquoted on a number of occasions by various parties, including members of the Environment Committee.

¹² Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’, August 2009, (Section 1.3.43)

¹³ Document available at the following location :<http://www.ioa.org.uk/sites/default/files/IOA%20Good%20Practice%20Guide%20on%20Wind%20Turbine%20Noise%20-%20May%202013.pdf>

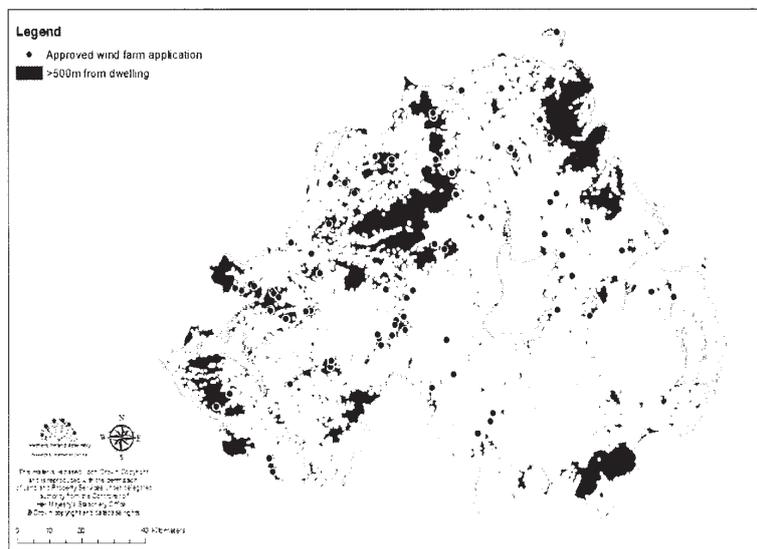
formal set back distance would start to become unduly restrictive as soon as it comes into effect. ETSU-R-97 does not specifically use separation distance as criteria for limiting noise from wind farms, but uses the existing noise environment to determine the acceptability of wind farm noise.

The turbine to dwelling setback distance will deliver more specifically to amenity considerations rather than noise considerations, which we believe should continue to be assessed in accordance with UK best practice standard ETSU-R-97, which sets a noise level limit at noise sensitive receptors, and requires these to be met by planning conditions. This presents a practicable means of appropriate case by case assessment and control, balanced against the benefits in terms of renewable energy production.

Noise is defined as unwanted sound. The impacts of noise are subjective and can vary from person to person. Factors such as the frequency, tones, patterns, existing background noise levels, and the activities being carried out when the person experiences the noise, all affect the impacts of the noise levels being experienced. Occasionally local residents may still hold noise related concerns after an ETSU-R-97 compliant wind farm has commenced operation. This negative reaction may be less driven by evidence of an actual harmful change and more by subjective response to a particular project. Thus, early stage engagement by wind energy providers with local communities and education on technical matters may help to avoid this response. All operational wind farm developments are subject to stringent noise conditions and control by the Environmental Health Departments of the relevant local council and must be complied with during turbine operation.

Dwelling separation distance and other constraints to wind development

In Northern Ireland, dwellings are dispersed across the rural landscape. Finding new areas of land, sufficiently distant from dwellings¹⁴, with a viable opportunity for wind farm development is already a very difficult task. Enforcement of increased separation distances between turbines and the nearest receptors will significantly reduce the land area available for harnessing our valuable wind energy resource and therefore the ability of Northern Ireland to meet its 2020 target. This is illustrated in a recent Wind Energy Research and Information Service Briefing Note¹⁵.



(Image Source: Wind Energy Research and Information Service briefing Note, prepared by Suzie Cave and Anne Campbell, entitled Approved Wind Farm Applications and Buffer Zones, Paper 143/13 5th November 2013, NIAR 804-13)

¹⁴ As required by Policy RE1 of PPS18

¹⁵ Wind Energy Research and Information Service Briefing Note, prepared by Suzie Cave and Anne Campbell, entitled Approved Wind Farm Applications and Buffer Zones, Paper 143/13 5th November 2013, NIAR 804-13 <http://www.niassembly.gov.uk/Documents/RaSe/Publications/2013/environment/14313.pdf>

TCIR have carried out a similar assessment and an estimated 2,111Km² or 15.5% of Northern Ireland's land mass remains for wind energy consideration following the application of a 500m buffer to properties.

If a land area of sufficient size for wind energy development is identified within this estimated 15.5%, further planning and environmental constraint considerations as per standard commercial large-scale wind farm development must be applied to ensure design is in compliance with existing European and NI level policy and guidance. According to TCIR's estimation this could reduce the total land area available for potential wind farm development to a total of approximately 939Km² spread across the province, equivalent to only 6.9% of the Northern Ireland land mass^{16,17}.

Some additional site specific considerations, which further reduce the area where wind farm development would be practical, cannot be accurately mapped in this exercise. These include Identification of viable road access options for the delivery of turbine components to the site, identification of appropriate ground conditions (slope, geology), minimisation of landscape and visual impacts and constraints for sensitive landscape, avoidance of known archaeological features with an appropriate buffer if required, attention to Development Plan zoning if appropriate and the assessment and avoidance of significant adverse noise and shadow flicker impacts at sensitive receptors. Thus, the area remaining for viable, fully policy compliant wind farm development will be significantly smaller than the NI Assembly Briefing Note implies.

It is inevitable that any increase in the currently specified turbine set-back requirement to dwellings will seriously compromise potential utilisation of our valuable wind resource and further limit any associated opportunities. For example, application of a 1km separation distance between wind turbines and dwellings, along with other known planning and environmental constraints would limit wind farm development to within an area of approximately 397km² or 2.9% of the land area of Northern Ireland, halting access to the significant majority of Northern Ireland and its wind resource. Application of such an increased separation buffer would thus sterilise the wind industry, especially in those areas where dwelling density is greatest. It is the case that less developed land areas, with low dwelling density are frequently subject to additional protections for landscape and biodiversity value. By effective exclusion from both densely populated and sparsely populated areas, developers would be forced to seek development potential in small pockets where the wind resource may be poor, resulting in less productive wind energy schemes, which accordingly will be unattractive to the developer as investment opportunities.

Whilst the general consensus of the Northern Ireland Assembly Research and Information Service Research Paper, "Wind Turbines: Planning and Separation Distances"¹⁴, is that most of the countries considered did not set separation distance requirements, the Republic of Ireland guidelines consider a number of issues around the siting of wind turbines and noise is again the primary concern in the establishment of minimum separation. The guidelines state: *"Good acoustical design and carefully considered siting of turbines is essential to ensure that there is no significant increase in ambient noise levels at any nearby noise sensitive locations [...] In general, a lower fixed limit of 45 dB(A)10 or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations is considered appropriate to provide protection to wind energy development neighbours [...] in general, noise is unlikely to be a significant problem where the distance from the nearest turbine to any noise sensitive property is more than 500 metres. Planning authorities may seek evidence that the type(s) of turbines proposed will use best current engineering practice in terms of noise creation and suppression"*¹⁸.

¹⁶ Exclusion of wind farm development within the following areas in accordance with European and NI policy, best practice guidance, impact mitigation and project viability considerations: ASSI, NNR, Ramsar, SAC, SPA, IBA designated areas and RSPB Reserves, Wind Speed 7m/s and below at 75m (Action Renewables), NIE Transmission lines buffer 213m, Main Roads (Motorway, Dual carriageways, A & B roads) buffer 110m, Airport buffer 5km (Belfast International, George Best City & City of Derry), Telecommunication link buffer 135m, Urban Areas, Consented and constructed Wind Farms buffer 350m, Watercourses buffer 60m, land parcels less than 10 acres.

¹⁷ Area of Northern Ireland : 13,548Km² (Ordnance Survey of Northern Ireland Data)

¹⁸ The Department of the Environment, Heritage and Local Government (2002) Guidelines for Wind Farm Development [online] available from: <http://nia1.me/of>

It is noted that this provision is more lenient than the current ETSU-R-97 Noise Standard applicable to the assessment of noise from wind turbines in Northern Ireland and that these guidelines are currently under review.

Subsequent to this, there was a political pressure from some quarters within the Republic of Ireland to increase the minimum separation distance to turbines, based on their overall height. The Environment and Public Health (Wind Turbines) Bill 2012 was introduced to the Oireachtas in November 2012 and proposed to set minimum separation distances of up to 2km between wind turbines and residential property, as follows:

- 500 metres, where the height of the wind turbine is up to 50 metres
- 1,000 metres, where the height of the wind turbine is up to 100 metres
- 1,500 metres, where the height of the wind turbine is up to 150 metres
- 2,000 metres, where the height of the wind turbine is greater than 150 metres

However the Bill was not passed as crucially, it was felt it *"could hinder our ability to meet ambitious but necessary and legally binding EU renewable energy and climate change commitments."*¹⁹ If similar increased separation restrictions were introduced in the Northern Ireland context this would significantly reduce the land area available for harnessing our valuable wind energy resource and therefore our ability in to meet our 2020 target.

Importantly, on the question of whether buffer zones / separation distances are appropriate between renewable energy development and other land uses, the Planning Practice Guidance for Renewable and Low Carbon Energy issued by the Department for Communities and Local Government in 2013 states that, *"Local planning authorities should not rule out otherwise acceptable renewable energy developments through inflexible rules on buffer zones or separation distances. Other than when dealing with setback distances for safety, distance of itself does not necessarily determine whether the impact of a proposal is unacceptable. Distance plays a part, but so does the local context including factors such as topography, the local environment and near-by land uses. This is why it is important to think about in what circumstances proposals are likely to be acceptable and plan on this basis."*

Across the UK and Ireland no separation requirements are written in legislation. Distances are instead suggested in policy and accompanying guidance. Buffer zones or separation distances are not required by statute or required by any national policies.

Future Guiding Policy Focus- Separation Distances and Noise

Addressing the issues arising from climate change requires action and leadership at all levels. Continued movement towards our renewable energy targets and reduction in greenhouse gas emissions is essential. Thus in relation to Noise, rather than future policy focusing on the achievement of defined separation distances, it may be more effective to ensure that those developments that are permitted demonstrate full compliance with the existing measurable criteria, such as those defined in ETSU-R-97.

The separation distances outlined in PPS18 have been effective so far in ensuring the protection of residential amenity and avoidance of impacts on nearby receptors. We would be content to see this standard being carried forward to the final SPPS without increase. It is noted however, that no other methods of renewable energy generation are currently required to comply with specific separation distances to dwellings or other sensitive land uses²⁰. The recently published draft SPPS does not include a requirement for a specified separation distance between wind turbines and a receptor. We ask that any potential guidance on separation distance, seek not to discriminate against the wind energy sector and afford the same balanced treatment in terms of environmental regulations as that afforded to other sectors.

¹⁹ Information on the Bill is available at <http://www.oireachtas.ie/viewdoc.asp?DocID=22164&&CatID=59>

²⁰ As outlined in PPS18 and BPG to PPS18

TOR 3: To review the extent of engagement by wind energy providers with local communities and to ascertain how this engagement may best be promoted.

Community Engagement – NI Planning

Oil and gas reserves are in decline, and it is imperative that we all work to shift attitudes towards the future of our energy supply by highlighting the importance of embracing newer, cleaner energy sources. Ireland and the UK have an abundant wind resource. We need to harness this if we are to benefit from the economic and employment opportunities associated with wind energy development and more fully protect the environment in the longer term.

The responsible development of wind energy in accordance with legislative requirements and PPS18, does not pose health or safety risks. Community engagement is a way of informing local residents of a proposed development, improving awareness of the benefits associated with wind energy development and addressing concerns and queries. TCIR undertake Community Engagement in accordance with the principles of community consultation outlined in the 2011 Planning Act (NI) and carry this out in a way which is inclusive, transparent, accessible and accountable and the specific practices undertaken to facilitate this engagement will vary depending on the community, their concerns and local complexities.

The planning process in its current form affords every member of the public the right to comment on a planning application through the submission of correspondence expressing objection or support. Planning NI are obliged to take this correspondence into account when weighing up the development and reaching a planning determination. Formal engagement with the public by wind farm developers is not currently a statutory requirement or a requirement of the planning process, but it is accepted by most developers to be a very important element in progressing a project in a sustainable, responsible, open manner. To this end, many developers carry out a detailed public information and consultation programme prior to their respective applications being submitted to Planning NI. This goes over and above current policy or legislative requirements. We believe that the renewables sector may be considered a leader in good practice on community engagement in Northern Ireland.

TCIR Pre-planning Community Consultation Process

In terms of current practice and in accordance with The Planning (Environmental Impact Assessment) Regulations 2012, TCIR issue notification of a proposed development to Planning NI in the early stages of project design. Outline information relating to the location and description of the development is issued separately, by the developer to statutory and non-statutory stakeholder bodies on a local, regional and national level, inviting comment and requesting information that may be relevant for consideration in the assessment of potential impact from the proposed wind farm. As part of this process, the relevant local Council's Community Services Officer is requested to provide contact information for community organisations, which may too be interested in the proposed development and may wish to inform their members. Correspondence is issued to each, with details of the proposed development, inviting questions and comment. This early-day consultation is part of pre-planning site scoping and wider investigation of the proposal and will inform decisions relating to site design and indeed the site as a whole as an economic investment opportunity.

As illustrated above, and although not a material planning consideration, TCIR takes a proactive approach to community engagement and responding to the concerns and interests of the general public and ensuring that the dialogue undertaken is constructive, inclusive, transparent, accessible and accountable. Once project viability is recognised and the design of the proposal is well defined, TCIR will host public information events at a venue local to the development site. We will advertise these open events in the local media for a number of weeks prior. Personalised event invites are additionally issued by post to landowners, Councillors, elected representatives, community representatives and interested parties. All parties are welcome to attend. Information relevant to the design of the proposed development including photomontage images, design drawings, environmental survey results and assessment of potential positive or negative impacts are illustrated

and representatives of developers are present to address specific enquiries at these events and at any point thereafter.

Ensuring Effective Community Engagement

Whilst community engagement and the utilisation of public information events have been of benefit to both the developer and the general public in the past, there has been a recent change in some localities where strong anti-wind farm groups have started to voice considerable opinion on proposed wind farm projects. Such opinions have not always been delivered in a professional, respectful manner and this has led to a number of incidents occurring where public exhibition events have been dominated by large numbers of angry objectors and protestors. In certain instances this has resulted in development company staff feeling unsafe and ultimately the event not being fit for purpose for either party. This is obviously a matter of concern going forward for the wind industry as a whole and steps have already been taken at certain wind energy events to curb such occurrences by bringing in event security. TCIR are willing to continue to engage with local communities, provide information and host organised events; however, these must be safe environments and the events must be of benefit to all parties. There is an important balance to be struck on the expectations of engagement.

The increased level of objection in certain areas, referred to above could be attributed to a number of factors, which may include concerns arising from understanding the technical nature of wind farm noise assessment and impacts, turbine spacing requirements, perceived impacts from cumulative build-up of wind farms in certain areas, proliferation of single wind turbine proposals, inappropriate or unsuitably scaled wind farm proposals, difference in planning approach between residential and wind developments and fear of negative impact on house values from wind energy development nearby. However, Planning NI and its associated consultees have a responsibility to act decisively under policy in relation to all wind farm applications and in particular those which are inappropriate. Poorly designed or assessed applications reflect badly on the industry as a whole. Indeed, we welcome Minister Durkan's announcement on 9th January 2014 that one of his key actions to speed up the planning system will include the prompt refusal of planning applications that are substandard.

While it is noted that developers of other commercial enterprises that may similarly impact on local communities are not required to make financial contributions to the local area, the Northern Ireland wind industry is committed to ensuring that communities continue to benefit from onshore wind farm developments through job provision, landowner income, rates generation, road and infrastructure investment, use of local facilities, services and labour, habitat management and enhancement, and financial commitment to community initiatives. TCIR welcomes the opportunity to work closely with the local community in order to deliver real and tangible benefits at the local level. TCIR proposes that, upon operation of newly approved wind farms, site specific community funds would be set up and an amount would be paid annually into this fund over the lifetime of the wind farm. This contribution will be in line with the current NIRIG Community Commitment Protocol published in January 2013.

In conclusion, while the introduction of specific planning regulation on community engagement and an outline of good practice for developers may be prudent, it must be cautioned that any such engagement must be productive, co-operative and, above all, safe for all parties. TCIR would be happy to work with stakeholders in devising a system for appropriate engagement within local communities.

We would like to thank the Assembly Committee for the Environment for affording TCIR the opportunity to submit this written response to its Inquiry into Wind Energy, and we trust that you will find our submission helpful in informing the Committee's position on these matters. TCIR believe that the benefits of developing our indigenous renewable wind resources far outweigh the perceived temporary negatives. We promote responsible development, including adherence to the

appropriate policies and guidance, as well as a voluntary community engagement and commitments to local financial benefits.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'GP', with a horizontal line extending to the right.

Gary Preston,
Head of Development (Ireland),
For and on behalf of TCI Renewables Limited.

Teresa Galbraith

From: Teresa Galbraith
Sent: 28 February 2014 00:39
To: +Comm Environment Public Email
Subject: We do not want to live in a wind farm.

I want to express my concerns regarding the number of proposed commercial wind turbines for the Newtownhamilton area of Co. Armagh. To date there are approximately 35/40 proposed turbines in a 2/3 mile radius of our town that we are aware of. There are many other areas facing the same concerns regarding these proposed developments and I would like bring some of these to your attention.

1. Health Issues. Noise and sleep disturbance caused by these,also shadow flicker.These commercial turbines are being erected to close to dwelling houses.The British Noise Association state a setback distance of 1 mile for these commercial turbines from houses so I have concerns why this isn't been put into practice. PPS 18 states that a minimum distance of 500m from a dwelling should be applied but this is not being recognised by the companies providing these turbines. Please clarify this.
2. People in our communities have not been notified of these developments. When speaking to the planning authorities they told us that neighbour notification did not have to be implemented and it was up to people in general to read of these planning proposals in the local papers etc .I feel this is very unfair as not everyone buys newspapers and therefore would not be aware of what is happening around them.

Another officer told us they use a measurement of 90m as a neighbour notification guideline. This may be ok if someone is building a two story house which is approx. 8m in height but these turbines are anywhere from 50m to 120m in height which is anywhere from 7 to 15 times higher than a two story house. Guidelines need to be in place to notify people in a much wider area.

3. Have studies been carried out on the possible affects these will have on our wildlife and livestock? We notice that on all these turbine applications NiEA are consulted regarding bats which are a european protected species.Surely humans need as much protection but sadly this dosent seem to be the case.We need to consider the wellbeing of our children and families for the future. We are told these turbines will be here for roughly 25 years.What will happen from year 26 onwards? We feel we will be looking at these forever. Has anyone considered this?
4. Another concern people have is the affect this will have on the value of our properties. Will our children be able to build houses on our land? We already have to north south inter connector pylons in this area. People were told by mortgage companies that there houses were unmortgageable if they were to close to these pylons. Will the same happen again if these turbines are allowed? A rural area will be converted into a commercial site. PPS 21 (cty13 and cty 14) are stopping many new houses being built in the countryside. This states that it is unable to provide a suitable degree of enclosure or would be unduly prominent in the landscape and therefore result in a detrimental change to the rural character of the countryside. How will these enormous structures blend into our countryside? After all as we mentioned before these turbines are 7 to 15 times higher than any house in the countryside. We have been told that only 25% of housing applications are being approved yet 85% plus turbine applications are being passed. This information came from the planning authorities. It appears that they are clearing the way for wind farms. We notice that turbines are not allowed in AONB. We consider our areas to be of AONB. You will turn these into commercial waste lands and our children will be deprived of a place to live.

WOULD ANY OF YOUR COMMITTEE CHOOSE TO LIVE NEXT TO A WIND FARM? Please dont enforce this on us.

5. These companies are making huge profits from wind energy. All we notice is that our electric bills increase each year. We are giving large subsidies through the ROC scheme but we are receiving nothing in return. Surely a tax could be imposed on these companies and the money spent on our health and education instead of giving it all away. For more information on our concerns please check the following websites. They have facts from countries who have turbines for many years.

WWW.WINDBYTE

WWW.WINDWATCH

WWW.QUIXOTESLASTSTAND.COM/CATEGORY/VICTIMS_VIDEOS

WWW.TODAYTONIGHTADELAIDE.COM.AU/STORIES/WIND-FARMS

Life with industrial turbines in Wisconsin part9.

There are many other sites giving real facts on the reality of living with wind turbines next to their homes. Many countries are now recommending a set back distance of 1 to 2 miles from a dwelling house.

Thank you

Teresa Galbraith

The Institute of Public Health Ireland



Sheila Mawhinney
Clerk
Committee for the Environment
Northern Ireland Assembly
Room 247
Parliament Buildings
Ballymiscaw
Belfast BT4 3XX
Northern Ireland

29 January 2014

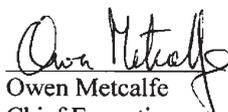
Dear Ms Mawhinney

Thank you for your invitation, on behalf of the Committee for the Environment, to submit a written response to the Inquiry into Wind Energy.

While we were pleased to be considered by the Committee, unfortunately we are not in a position to respond on this occasion due to insufficient in-house expertise on the issues identified in the terms of reference.

With regard to the second term of reference, It may be of interest to the Committee to note a report produced by the Director of Public Health and Planning in NHS Shetland 'Report on Health Impacts of Wind Farms Shetland 2013'. The report considers potential impacts on health from several perspectives: Construction and operational safety; Flicker; Electromagnetic radiation; Noise; and Vibroacoustic disease and wind turbine syndrome.

Yours sincerely


Owen Metcalfe
Chief Executive

The Institute of Public Health in Ireland

Promoting cooperation for public health on the island of Ireland

5th Floor, Bishop's Square, Redmond's Hill, Dublin 2, Ireland
Forestview, Purdy's Lane, Belfast BT8 7ZX, Northern Ireland

Chair: Dr John Devlin

Director: Mr Owen Metcalfe

Associate Director: Dr Kevin Balanda

Tel: +353-1-478 6300

Tel: +44-28-9064 8494

Email: info@publichealth.ie

Website: www.publichealth.ie

Vat No: IE 6382110S

Fax: +353-1-478 6319

Fax: +44-28-9064 6604

Registered No: 362110

Thomas John Johnston

Mr Thomas John Johnston

To Whom It May Concern

Wind Turbine Consultation Process

I would advise that we are currently objecting to proposals to erect an Industrial sized Wind Turbine 300 metres from the front of our properties, in full view of our living room windows (DOE Ref: H/2012/0180/F).

The major problems we have with this proposed Wind Turbine so close to our properties is noise, health issues, visual impact, devaluation of our property and the fact that it would change the character of our area for ever.

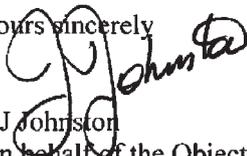
In objecting to this Wind Turbine we have to say that we have found it impossible to get satisfaction from the statutory bodies in what we see is a flawed consultation process, particularly from the local Council, the Public Health Agency, NIEA and the DOE (Roads Service) who in our opinion simply cannot be bothered to give this important process the time or effort required to address the issues.

It is also clear that PPS 18 and its supporting guidance is being ignored or interpreted to suit an objective. This documentation is incapable of addressing the issues and must be replaced in order that clear rules and regulations can be implemented with regard to the erection of all Wind Turbines.

We also note that some politicians, particularly from rural areas, are of the opinion that the erection of Wind Turbines will assist hard pressed farmers financially. This may indeed be the case, and please note that a number of the objectors to the above mentioned Wind Turbine are hard pressed farmers, however a farmer with an outlying property should not be allowed to destroy the lives of his neighbours by forcing them to live 300 metres or less from these dangerous structures while he and his family not only gain financially but live in the comfort and safety of their homes some considerable distance from the proposed Wind Turbine. In a world of equality do we not deserve the same setback distance from this Wind Turbine.

We therefore feel the major issue to be addressed is SETBACK DISTANCE FROM OCCUPIED PROPERTY, and enclose for your attention a copy of documentation that is now, or will shortly be, law in England and Wales. In our opinion this is a fair and reasonable document and if adopted in N Ireland would address most of the issues surrounding the placing of Wind Turbines.

Yours sincerely


T J Johnston
(on behalf of the Objectors)

Enc

TO

Make provision for a minimum distance between wind turbines and residential premises according to the size of the wind turbine; and for connected purposes.

BE IT ENACTED by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

§

1 Planning permission

- (1) No relevant authority may grant planning permission for the construction of a wind turbine generator unless it meets the minimum distance requirement under section 2, subject to the exception in section 3.
- (2) "Relevant authority" means the local authority or government department with the power to grant planning permission for a wind turbine generator. 5

2 Requirements for minimum distance

- (1) The "minimum distance requirement" means the necessary minimum distance between the wind turbine generator and residential premises as set out in subsection (4). 10
- (2) "Residential premises" means any premises the main purpose of which is to provide residential accommodation, including farmhouses.
- (3) If a number of wind turbine generators are being built as part of the same project the minimum distance requirement applies to each wind turbine generator individually. 15
- (4) If the height of the wind turbine generator is—
- (a) greater than 25m, but does not exceed 50m, the minimum distance requirement is 1000m;
- (b) greater than 50m, but does not exceed 100m, the minimum distance requirement is 1500m; 20

Traude Graham

From: Traude Graham
Sent: 27 February 2014 00:22
To: +Comm Environment Public Email
Subject: Inquiry into wind energy by Committee for the Environment

Response to Inquiry into Wind Energy
To the Committee for the Environment

Dear Committee members,

I wish to say the following in response to your inquiry.

1. Noise limits

Wind turbine noise should be measured using LAeq or LAmax and not LA(90) which reflects a noise level that is exceeded 90 percent of the time and it therefore filters and masks the character of the noise from wind turbines.

A 5dB(A) increase in sound level above background is very significant and can have a substantial adverse impact. A 3dB(A) increase above background is the limit that any reasonable person could be expected to accept.

Furthermore, a floor limit of 35dB(A) in daytime or 43dB(A) at night is wholly unacceptable in a quiet rural area where it can permit a doubling or tripling of the noise level. These minimum values for noise limits are truly harmful and must be abolished.

2. Separation distances

Minimum separation distances are critically required as a minimum safeguard because of:

- noise impact and effects on sleep and health
- adverse impact on general amenity of residents
- adverse impact on property values
- potential shadow flicker, reflection, and vibration
- safety concerns when blades etc. fail and are thrown

A minimum separation distance of 10 x total tip height of the turbine, minimum 500 metres, should be applied unambiguously to all turbines. It is spurious to distinguish between single turbines and wind farms.

Thank you,

Traude Graham

Ulster Farmer's Union



475 Antrim Road T: 028 9037 0222
 Belfast F: 028 9037 1231
 BT15 3DA E: info@ufuhq.com
 W: www.ufuni.org

27 February 2013

Shelia Mawhinney
 Clerk
 Committee for the Environment
 Northern Ireland Assembly
 Room 247
 Parliament Buildings
 Belfast BT4 3XX

Committee for the Environment Inquiry into Wind Energy – UFU Submission

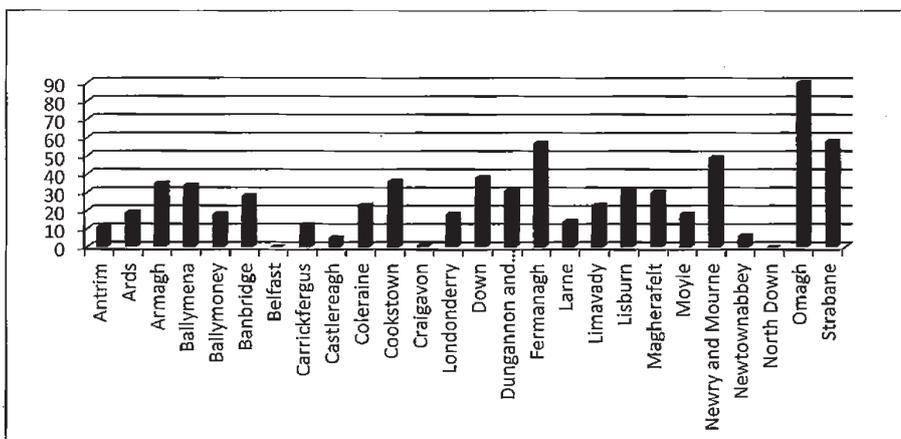
The Ulster Farmers' Union (UFU) is the largest representative of farmers and landowners in Northern Ireland with over 12,000 members. We are the largest single representative of small scale wind generators (<250kW), with many of our members involved in a wide range of renewable projects and we welcome the opportunity to reply to the Committee for the Environment Inquiry into Wind Energy.

The last 5 years has seen a rush to install small scale wind turbines in Northern Ireland with the lure of 4 ROCs to assist uptake. Planning Policy has been seen as one of the significant barriers facing landowners and the following examples are evidence of such.

1. Planning Backlog

As of 31 December 2013, there were 686 single wind turbine planning applications outstanding in Northern Ireland. The Graph One illustrates the outstanding planning applications grouped by council area.

Graph One – Outstanding Single Turbine Planning Permission



Established 1918
 Clarke Black, Chief Executive

Table One below is a snap shot of single turbines approved in selected Local Government areas over the last 10 years.

Table One – Approved Single Turbines 2003 to 2013

	Approved Total 2003-2013*
Omagh	276
Fermanagh	229
Strabane	177
Craigavon	46
Carrickfergus	20
North Down	16

*31 December 2013

There is an East/West split in terms of the granting of planning permission for single wind turbines in Northern Ireland. Point has been made that this reflects that the wind speeds are more accessible in the west of Northern Ireland.

- i. Preference to the West – there are parts of the East where they are as good (if not better) sites for wind turbines. Yet these are ignored either due to the existence of ASSi's or in the eyes of some, preference to the west of the country.
- ii. Gap in expertise - There is a view that there is a gap in renewables expertise between the various planning offices, with the first 3 areas having more experience of renewables than those who approved only 16 over a 10 year period.

This is reflected in a breakdown of the 686 single wind turbines (as of 31 December 2013) still awaiting planning permission. The geographical breakdown is shown below in Table Two below;

Table Two – Pending Planning Decisions for Single Turbines

	Pending Total 2013/14*
Omagh	90
Strabane	58
Fermanagh	57
Carrickfergus	12
Craigavon	1
North Down	0

In Omagh, a ratio 90/276 (one in three) shows the magnitude of single turbines awaiting a planning decision.

2. Time to Process Planning Applications

	Awaiting time (weeks)	Approval rate (%)
Ballymoney	38	100
Limavady	49.4	71
Londonderry	81.2	76
Down	72.2	73

The question which this table asks the question as to why would it take nearly 81.2 weeks for a turbine to be passed in Londonderry where they have 18 single turbines pending, whilst in Ballymoney it is 38 weeks where they have the same number of turbines pending approval.

3. Visual Impact

I hear from many UFU that when planning permission is granted, NI planners tend to prefer lowly located sites with lower visual impact. This has adverse impacts since more often than not it means lower wind speeds. Lower the wind speed, less viable the wind project.

4. Grid Connection Capacity Problems

NIE released a heat map in October 2013, showing areas where the electricity grid is full (or approaching full) to capacity. Connecting individual small scale renewable energy generation units to the electricity network is proving to be a major problem for our members, on both the 11 and 33kV lines.

- **11kV lines** - On electricity grids there is the necessity for generated capacity to match the load. Traditionally this would have been achieved by adjusting the throttle control in the central power station (in other words through generation). However, the nature of small scale renewable generators (embedded and intermittent) joining the grid, means that equilibrium between demand and supply has to be met through the control of loads as well as a generation. Initially, the UFU were inundated with calls from landowners complaining about very expensive grid connection quotes. It transpired that this was attributed to lack of capacity on the 11kV network. This congestion has been brought about by "circuit level" activity. In other words, embedded capacity of small scale generation currently connected to the 11kV network.
- **33kV lines** - The situation worsened last year, with NIE identifying that capacity limitations are now arising on parts of the 33kV network. The Aggregated Volume of generators building up created problems at 33kv level and led to what is known as reverse power activity. The "conventional" power flow is from high to low. Yet, when connecting small scale renewables to the grid, this is done through embedded generation. Embedded generation alters the characteristics of the distribution network as it changes this network from a passive network with power flows in one direction to an active network with reverse power activity. The main problem is that AD plants create Permanent reverse power and this is unprecedented in network systems. In light of these problems with the 33kV lines, NIE have issued conditional offers for those landowners applying to connect to the grid. The conditionality means that the project will not proceed until a decision is made from the Competition Commission

and then the Utility Regulator. This means that there will be a delay to many projects and a significant number will not be completed due to the significant upgrade/infrastructure costs likely to be borne by the landowner.

Whilst this matter has been raised with NIE, DETI and the Utility regulator, but in line with this inquiry, the UFU believes that it is linked to the planning permission problems as set out below. “Conditional offers” have led to uncertainty for applicants and could have been avoided had our planning policy mirrored that in GB;

5. Distribution Grid Connection and Planning Permission

In Northern Ireland, grid connection offers can only be made by NIE after planning permission has been granted for a site. The problem is that with many cases, by the time planning permission is granted, the grid is full to capacity and either the applicant is unable to connect (it issued with a conditional offer) or facing very expensive grid connection costs meaning it is not worthwhile proceeding and upfront costs are written off as lost.

This is in contrast to GB where the two applications can be made simultaneously.

Had this been the case the above log jam could have been eased. We will clarify this point by say that it would not have been avoided, rather it formed part of the structural barriers we have described above. Parallel planning and grid connection applicants would mean that less farmers would not be left in a state of limbo.

6. Emerging Technologies and Engagement with local Communities

The terms for reference points “Emerging technologies” and “Extent of engagement with local communities” can be covered by the following evidence;

Lecale DSU is a joint initiative involving the Down District Farmers for Renewable Energy (DDFFREE), B9 Technology, South West College, East Down Rural Community Network, Invest NI, local residents groups and the UFU.

The proposal is to develop a “micro-grid” and storage solution for the area, generating and storing their own energy and utilising the surplus for their own use and even selling it to local community in Ardglass/Ballyhoran.

“Load Control” is one way to relieve grid capacity problems on the distribution network and this can be achieved through Storage and/or heat transformation such as suggested by Lecale DSU. Storage up until now has been the “holy grail” for small scale renewables, the problem up until now has been the electricity has been generated when it was not needed and there has been no way to store it.

The former airfield at Bishopscourt airfield has been identified as the preferred location for a “centre of excellence”/demonstration park for the micro-grid serving the energy and heat requirements of 300 homes in nearby Ballyhoran. The project will incorporate a broad mix of renewable technology; small scale wind, Solar PV, on-farm AD and the Seagen tidal test site at Portaferry.

Storage will initially be in the form of 2nd life traction battery charging (from Electric cars). Longer term, the storage solution will be met by ICAES (Isothermal Compressed Air Energy Storage) will be central to a Northern Ireland Energy Storage Demonstration Park located in the local area. This will be the first of its kind outside USA. As well as being stored, excess wind can be put to other uses; Ammonia Production. An Ammonia production plant is proposed for Ardglass. Ammonia can be used to power tractors, fishing trawlers and in charging Electric Vehicle. However, this project will take it to another level. Excess wind can be converted to hydrogen, via electrolysis, reacted with scrubbed nitrogen to produce ammonia.

Curtailment of renewable energy has been mooted by some as a means of getting more small scale generation capacity on to an already stretching grid. However, storage such as this will provide load and therefore avoid the need for curtailment. The System Marginal Price is very low during curtailment. Yet storage helps maximise the opportunity for arbitrage to the benefit of generator and customer alike. The idea would be that the electricity could be sold to the 300 specified homes in Ballyhoran at a cheaper price than what they currently pay and hence of benefit to the local community.

Going forward, there is much work to be done (interaction with the Utility Regulator and NIE) but if this "intelligent" solution does get off the ground it could be rolled out to other areas in NI and ease the grid connection problems. By creating a Northern Ireland Energy Storage Demonstration Park, this will promote Northern Ireland as a Centre of Excellence and the idea could be exported to other parts of the world. In addition to regulatory specific consideration being paid to Competition Law if the micro-grid revenue stream is to be realised and made available.

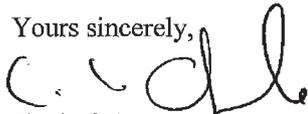
Lecale DSU proposal allows existing grid to be used and avoid the significant cost to the industry and wider consumer as already noted by NIE/Utility Regulator.

The UFU along with Lecale DSU met with Environment Minister Mark H Durkan in January and made the case that microgrid and storage projects should be given due consideration in any Area Plan revisions.

7. Overview of UFU position

More needs to be done to accommodate small scale renewables (energy and heat) into planning policy in NI. The UFU believe that previous planning policy focused too much on large scale applications and any future policy should be adapted to take better consideration small on-farm generators who utilise the generated electricity/heat on their farms and/or those who provide energy to a micro-grid which serves a local community. The UFU have been calling for this for many years and any resulting revision in the Local Area Plans would be an ideal opportunity to incorporate this scale of renewable into Northern Ireland Planning Policy.

Yours sincerely,



Chris Osborne
Senior Policy Officer
Dairy and Rural Enterprise

Victoria Berryman

From: Vicky Berryman
Sent: 25 February 2014 17:32
To: +Comm Environment Public Email
Subject: Inquiry into Wind Energy in Northern Ireland

Sheila Mawhinney
Clerk
Committee for the Environment

Dear Madam,

I write this letter because I am a victim of a wind farm threat in West Yorkshire. My life is dominated by the outrage that I feel because a group of wind enthusiasts have had the arrogance to impose their simplistic solutions to global warming on our precious landscape (and our lives). Typically, they claim that their need to produce a ludicrously small amount of energy which wouldn't be viable without subsidies, justifies desecrating our precious moorland.

Of course, they live on the lowlands, safely out of site of these giant (100m high) monsters, and are rubbing their hands in glee at the vast amount of money that they calculate will be coming their way. They have already had a European grant to fund their planning application.

Worse still, they have bribed their supporters because they are doing this in the name of a cooperative and promise to give 25% of their profits back to the community. Their actions could not be more divisive. Moreover, they consistently remove our publicity. They have spent years preparing this scheme and their leader is paid a salary. Their planning application consists of 94 documents, none of them identifiable without being downloaded and we were given just under 4 weeks consultation period, and have to pay all our expenses ourselves.

Our planning legislation could be undermined by the community angle. This is still uncharted territory. How can it be right for one group, no matter how large, to ride roughshod over those who will be most affected by their actions? Community status should only be a planning consideration if it is unanimous.

We are all having to pay for these subsidies and now, those living in the shadow of the turbines will have to pay still more (see the recent LSE study in damage to property values). There are also over 600 groups of people who maintain that the noise impact is inadequately monitored in the UK.

Please, please, save not only your environment, but also your communities from this major harm. Of course energy problems must be addressed, but not in this insensitive, ad hoc, and ill-thought out way.

Yours sincerely,

Victoria Berryman

Violet Wright

Northern Ireland Assembly
Committee for the Environment
Inquiry into Wind Energy

Email committee.environment@niassembly.gov.uk

Dear Sir/Madam

NORTHERN IRELAND - INQUIRY INTO WIND ENERGY
RE: PLANNING APPLICATION NO O/2009/0756/F
ERECTION OF SINGLE WIND TURBINE 46.5M HUB HEIGHT, BLADE DIAMETER 39.4M
80 M NORTH WEST OF 96 MULLAVILLY ROAD, TANDRAGEE, BT62 2LX

I will briefly outline my situation. My family have lived at our present address for over 36 years. In the autumn of 2010 Rapid International, an engineering company located on Mullavilly Road, erected the above wind turbine with is approx 180M from my home. Our peace was shattered. Because of the constant, pulsating noise from the turbine we are subjected to sleep disturbance and are woken from sleep in the night. Even in the day time the noise can be heard in our home with the windows closed. (The windows are double glazed.) It is impossible to derive any pleasure whilst in the garden. As you can imagine being subjected to this constant noise has had a detrimental effect on my health. I have had to attend my GP to request medication for anxiety and sleeping tablets.

Many other residents in the area have complained of this noise nuisance, shadow flicker and loss of amenity. My home has lost at least 25% of its value because this turbine is so close to our property. No-one would want to buy a home with a wind turbine beside it. This is my children's inheritance which has decreased significantly.

We feel very let down by the Planning Department and Environmental Health Department. We assumed that these departments are there to look after the interests of the public.

Policy RE1 'Renewable Energy Development' states

Development that generates energy from renewable resources will be permitted provided the proposal, and any associated buildings and infrastructure, will NOT result in an unacceptable adverse impact on:

- (a) public safety, human health, or residential amenity;
- (b) visual amenity and landscape character etc.

My health has most certainly been detrimentally affected and I have lost the pleasure of living in this home and have lost the use of the garden because of the noise.

PLANNING POLICY STATEMENT 18 'RENEWABLE ENERGY' and THE ASSESSMENT AND RATING OF NOISE FROM WIND FARMS ESTU-R-97 has afforded me NO protection whatsoever from noise nuisance, related health issues, shadow flicker or loss of amenity. THEY ARE NOT FIT FOR PURPOSE.

(A) Noise Limits

The current guidelines promotes the use of the La90 noise indicator. This is not appropriate. LA90 10 mins is the tenth percentile of the distribution of the A-rated sound level measured over a ten minute period. In layman's terms, it is calculated by measuring the noise level over a ten minute period, disregarding the noisiest 90% of the time and taking the maximum noise level in the remaining (quietest) 10% of the time. As the human ear does not disregard 90% of noise experienced, this measurement indicator is considered inappropriate for wind turbine

noise assessment. LAeq is the energy average of the noise over a given period. This is the noise indicator which must be used as it quantifies average sound levels experienced. This is in line with standards accepted and implemented across the EU.

In a recent study 'Effects of industrial wind turbine noise on sleep and health' compiled by Michael A Nissenbaum, Jeffery J Aranieni and Christopher D Hanning the conclusion reads: We conclude that the noise emissions of industrial wind turbines disturbed the sleep and caused daytime sleepiness and impaired mental health in residents living with 1.4 km of the two industrial wind turbine installations studied. Industrial wind turbine noise is a further source of environmental noise, with the potential to harm human health. Current regulations seem to be insufficient to adequately protect the human population living close to industrial wind turbines. Our research suggests that adverse effects are observed at distances even beyond 1 km. Further research is needed to determine at what distance risks become negligible, as well as better estimate the portion of the population suffering from adverse effects at a given distance.

(B) Separation Distances

The interpretation of PPS18, where Policy RE1 on 'Renewable Energy Development' states that:

'For wind farm development a separation distance of 10 times rotor diameter to occupied property, with a minimum distance not less than 500m, will generally apply.'

It appears to me that both PPS18 and the Best Practice Guidance use the term 'wind farm' throughout to refer to all wind energy developments, with the possible exception of small single turbines (under 50Kw and under 15m in height.) It can therefore safely be concluded that, irrespective of the number of turbines involved in an application, PPS18 will apply, so how did this industrial size turbine get planning approval 180m from a residential property?

(C) Shadow Flicker

The guidelines introduces the concept of shadow flicker being an issue with 10 rotor diameters of a dwelling and which should be dealt with appropriately. A condition should be attached to all planning permissions for wind turbines to ensure that there will be no shadow flicker at any existing dwelling or other existing affected property, with 10 rotor diameters of any wind turbine. A further condition should be included which states that if shadow flicker does occur, then necessary measures, such as turbine shut down during the associated time periods, will be taken by the energy developer or operator to eliminate the shadow flicker. The language is too loose and does not put any legal obligation on the developer to adhere to this guidance. The guidelines are not based on scientific research and are totally inadequate.

The guidelines do not prescribe mandatory conditions for eliminating shadow flicker incidence on dwellings. Mandatory elimination is a must.

Given that the noise limit or sensitive locations can be seen to have increased vs the 2006 guidelines and set-back distance has remained the same, then it is now clear that shadow flicker controls provide no further amenity protection, with respect to influencing setback distances to a safe and responsible distance. In any case, the shadow flicker guidance is applicable only as a control to those residents living on the northerly side of the east-west plane of a turbine.

(D) Human Rights

European Convention on Human Rights:

Right to private life (Article 8) states

Article 8.1: "Everyone has the right to respect for his private and family life, his home and his correspondence." THIS RULING IS NOT BEING ADHERED TO.

Summary:

Policy RE 1. Energy generated from renewable resources in THIS instance has had an adverse impact on residential amenity and human health.

PPS 18 & ESTU-R-97.LA90is not appropriate. LAeq must be used.

PPS 18.Set back distance guideline of 500m minimum is obviously not being administered. I feel that even this is not sufficient to protect residential amenity and human health as many studies in this field have concluded a set back distance of 2km is necessary. Shadow flicker controls provide no amenity protection whatsoever.

ECHR Article 8. My human right to a private life has not been respected or protected.

Yours sincerely

Violet Wright



information & publishing solutions

Published by Authority of the Northern Ireland Assembly,
Belfast: The Stationery Office

and available from:

Online

www.tsoshop.co.uk

Mail, Telephone, Fax & E-mail

TSO

PO Box 29, Norwich, NR3 1GN

Telephone orders/General enquiries: 0870 600 5522

Fax orders: 0870 600 5533

E-mail: customer.services@tso.co.uk

Textphone 0870 240 3701

TSO@Blackwell and other Accredited Agents

£24.50

Printed in Northern Ireland by The Stationery Office Limited
© Copyright Northern Ireland Assembly Commission 2015

ISBN 978-0-339-60555-8



9 780339 605558