



**Montgomery and Brecon & Radnor Branches  
Campaign for the Protection of Rural Wales**

**Written by: Christine Hugh-Jones, Jill Kibble,  
Margaret Tregear**

**Address for correspondence: Peter Seaman MBE.  
peter.seaman@btinternet.com  
Brynhyfryd, Scethrog, Brecon, LD3 7EQ**

Environment Quality & Regulation Branch  
Welsh Government  
Floor 3 South  
Cathays Park  
Cardiff  
CF10 3NQ

5<sup>th</sup> December 2016

Dear Madam/Sir

**Consultation on Air Quality and Noise Management in Wales**

1. The Campaign for the Protection of Rural Wales (CPRW), established in 1928, is Wales' foremost countryside charity. Through its work as an environmental watchdog it aims to secure the protection and improvement of the rural landscape, environment and the well-being of those living in the rural areas of Wales – aims which we are sure that Powys County Council also shares.
2. This report is prepared by Committee Members of the Montgomery and Brecon & Radnor Branches of CPRW which represent all of Powys.
3. CPRW Montgomeryshire and Brecon & Radnorshire Branches welcome the opportunity to comment on this consultation. We make a number of overall observations and then address some specific questions.

**We have overall concerns as follows:**

We welcome the recognition of the importance of air quality and noise management for the health and well-being of residents in both urban and rural areas. We welcome also the recognition of the potential for nuisance from agricultural activities in rural areas. The consultation paper though remains focussed on those sources of nuisance most associated with urban living. Welsh Government and local government policy needs to recognise rural sources of air and noise pollution, chief amongst which are intensive livestock units and renewable energy generation, in particular wind energy.

**Q1. In section 6 of this consultation document we asked a number of questions about the changes we are considering taking forward in the first year of this five-year Assembly, alongside a review of national planning policy and guidance on air and noise pollution.**

**Please use this space to answer the questions asked in section 6 of this document. Is there anything you think we should be doing differently?**

Qu 6.2. Whilst we would welcome the sharing of expertise across Local Authority boundaries we would not, in view of the already considerable area within Powys, support a widening of the geographical base for the preparation of annual progress reports and/or local air quality strategies beyond Powys Local Authority boundaries.

Qu6.5. We believe air and noise pollution should figure within a Local Authority's well-being objectives in such a way as to reflect that authority's particular challenges. For rural authorities such as Powys, this requires recognition of the noise and air quality impacts that intrusion of industrial development into a rural area, such as wind/solar and intensive livestock units (ILUs), is likely to cause and the issues arising from each must be specifically addressed in that LA's objectives. Annual progress reports should include information on achievement of the authority's specific noise/air quality objectives.

Qu6.6. We agree local action plans should include the information recommended.

Qu6.7. Rural and urban local authorities will face some different challenges in protecting and improving air quality. Local authorities with a high burden of ILUs must consider which pollutants, in addition to particulates and NO<sub>2</sub> are also of concern and these must be included in their local action plan. We would suggest that ammonia would be an additional pollutant which should be included in Powys's air quality action plan.

Qu6.9/10/15. We support the proposals within these sections.

Qu6.13. Rural sources of noise nuisance must not be ignored. We would recommend a requirement for rural authorities to carry out a similar review of changes in numbers of noise complaints received, current levels of service to the public, and commitments to take action against noise nuisance. This is essential to the preparation of appropriate action plans.

Qu6.14. Noise mapping must be an entirely transparent process if it is to provide useful information and be useful in the protection of residents. We cannot be confident that Natural Resources Wales has sufficient distance from Welsh Government renewable energy policy to be an appropriate partner in noise mapping exercises in rural Wales.

**Q2. There is considerable uncertainty about the extent to which we will still be bound by our current EU obligations relating to air and noise pollution following the UK's withdrawal from the European Union. Therefore, we are not yet in a position to state precisely what further action we propose to take forward in the second, third, fourth and fifth years of this Assembly.**

**Bearing this uncertainty in mind, along with the information provided on the current state of play in Wales in sections 1 to 5 and Annex A of the consultation document, please tell us what further action, if any, you would like to see taken forward on air and noise pollution in the next five years?**

We welcome the recognition of the importance of reduction of air and noise pollution and of serious health/mental health and quality of life issues associated with both, and the recognition of agricultural sources of air quality and noise pollution. We also welcome the recognition that 'tranquil soundscapes', as generally experienced in rural areas, contribute to human wellbeing, for residents and visitors alike.

However, the consultation document fails to identify:

- Wind turbines in any proximity to homes as a very significant source of rural noise pollution;
- ILUs as important sources of both noise pollution and air pollution. In the case of ILUs, authorities must recognise the likelihood of multiple air pollutants including poultry dust, particulates and ammonia.
- Traffic implications of both the above as a source of both air and noise pollution.

## **WIND TURBINE NOISE:**

Powys residents are already suffering severe noise problems associated with turbines, and this is receiving insufficient recognition by the Local Authority. A government which supports both intensive farming and renewable generation in rural areas must take full account in policy of the noise nuisance and pollutant potential of both and ensure that policies fully protect citizens. Noise nuisance from turbines, including AM noise and low frequency noise, is well researched and documented. In areas of small hills and 'sound box' valleys any noise issues are likely to be exacerbated and central and local government can only fulfil wellbeing obligations and ambitions for the reduction of noise and air pollution by adopting precautionary approach in terms of the siting of turbines. Government must recognise that residents' experience of noise nuisance in Powys demonstrates that existing guidance/practice is currently failing to ensure the protection of homeowners. The 'Well-being of Future Generations (Wales) Act 2015' has created specific obligations on local and central government to address these issues – see national indicators 26, 29, 31. We have expanded on this in Qu.3 below and our specific recommendations are that:

1. Those within Local Authorities with responsibility for advice to planners and complaint investigation regarding turbine noise should receive appropriate training from independent acoustic bodies with expertise in this field;
2. LA Environmental Health departments must acknowledge an underpinning responsibility for the protection of human health (a requirement of the Well-being of Future Generations Act);
3. Local Authorities must be required to publish a clear noise nuisance investigation policy;
4. Existing wind developments which have given rise to residents' complaints must be investigated for compliance with existing noise limits i.e. ETSUR-97;
5. New wind energy developments should be subject to an extended period of monitoring;
6. Government should commit to the overhaul of ETSUR-97 which, now twenty years old, requires to be brought up to date by a body independent of the wind industry, and account taken of the potential for noise nuisance from low frequency noise and amplitude modulation.

Annex A, A.4: We don't understand how 'population-weighted' averages are computed in relation to air quality and question whether this may be tending to underestimate air pollution issues in low population areas. We would welcome mapping and presentation of data which gives directly comparable data for urban and rural areas as more informative.

**Q3. We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:**

The consultation paper as a whole has played down air and noise pollution in rural areas at the same time as central government policy is contributing to both. We have mentioned the specific issues of ILUs and wind turbines in rural areas, it's also relevant to mention the government's encouragement of closures of local schools and removal of funding for local transport as substantially increasing the number and length of car journeys in rural areas and so having consequences for rural air pollution.

#### **WIND TURBINE NOISE:**

We are aware that many complaints have been made to Powys Council about noise from wind turbines, but FOI evidence provided by the council demonstrates that Powys Environmental Health has no policy for the investigation of these complaints and keeps no systematic log of complaints, their investigation and outcome. Local Authorities must have both the knowledge and the tools to protect residents against harm from development. This requires understanding of the issues within authorities and appropriate industry regulation. This also requires adoption of a consistent precautionary approach, and recognition of the changing noise profile of turbines as they age.

There is a great deal of evidence and research supporting the view that poorly placed wind turbines can have a major impact on local residents (whether or not developments are compliant with industry designed noise compliance regulations) of which this is just a sample:

1. Research undertaken by the Independent Noise Working Group:  
<https://www.heatonharris.com/reports-publications>
2. "Cotton Farm Wind Farm Monitoring Experience. May 2015"  
<http://www.intertwined.co.uk/The%20Cotton%20Farm%20monitor%20experience0615.pdf>
3. "Wind Turbines, Noise and Health" by Dr. Amanda Harry  
<https://www.windturbinesyndrome.com/wp-content/uploads/2012/11/Amanda-Harry-Wind-Turbines-Noise-and-Health-2007.pdf>
4. Research papers on wind turbine noise and health <http://waubrafoundation.org.au/>

If it is central and local government policy to encourage wind energy generation, this must not be done at the expense of residents' quality of life and health. We would strongly advocate that adoption of the recommendations within our response to Qu.2 above.

**The issues of wind turbine noise are well summarized by the Noise Abatement Society (<http://noiseabatementociety.com/campaigns/wind-turbines/>) below:**

**"Each year the NAS receives many complaints about noise from wind turbines.**

The noise and penetrating sound of the rotating blades has been compared to the low thud of base notes from loud music or the sound of a constant helicopter at a distance. While there remains dispute regarding the source and definition of this sound, there is no doubt that residents remain disturbed and distressed by its promulgation.

A group of turbines produce pulses of sound which cause greater effect when they synchronise. The sound then resembles distant pile-driving, or as one resident put it, "*an endless train*". The turbine sound acquires a distinct 'beating' character, the rhythm of which is in agreement with the blade passing frequency and this effect is stronger for more modern, taller wind turbines.

### **Felt as much as heard**

A family living near a wind farm in Askam, Cumbria (7 turbines, 62.5m tall) describe the noise as ‘*a washing machine that’s gone wrong. Its whooshing drumming just goes on and on, it’s torture*’ and ‘*it is an audio version of Chinese Water Torture. The noise is such that it is felt as much as heard*’. So far there has been no success in reducing this invasive noise, caused by wind turbines, which can continue unabated day and night for extended periods and can travel several miles. There are recognised health problems such as pulse irregularity and sleep disturbance associated with this type of low-frequency sound.

### **Low Frequency Noise and Infrasound**

Wind energy developers measure the audible range of noise, but not the lower frequencies – which are sometimes below audible limits. In 2004, the DTI commissioned the Hayes McKenzie Partnership to report on claims that LFN and infrasound were causing health effects. Their report noted that a phenomenon known as Aerodynamic Modulation was occurring in ways not anticipated by UK regulations relating to wind farms ETSU-R-97 (ETSU).

Research by Dr. Amanda Harry showed that all but one of the fourteen people living near Bears Down wind farm in Cornwall had experienced increased incidents of headaches, migraines, nausea, dizziness, palpitations, tinnitus, sleep disorders, stress anxiety and depression.

### **Vibration**

Wind turbines are now being built to a greater height and blade span than when the original environmental assessments were made for smaller turbines. It is in anticipation of such changes that ETSU guidance itself called for its own review. Unsurprisingly, therefore, recent research studies have highlighted previously unidentified problems.

Professor Peter Styles, Keele University, in the UK, published a study on vibrations from the 60m high wind turbines at Dun Law, Scotland. He found that ‘*... when the windfarm starts to generate, even at low wind speeds, considerable infrasound signals can be detected at all stations out to circa 10Km*’ and ‘*... we have clearly shown that wind turbines generate low frequency sound and acoustic signals which can be detected at considerable distances (many kilometres) from wind farms on infrasound detectors and on low-frequency microphones*’.

Whilst earlier studies conclude that there was no significant risk to human health from vibrations produced by wind farms, these studies are dated, and refer to older, much smaller turbines. Concern has increased as most modern wind turbines are in excess of 100 metres high, (much bigger than those at Dun Law). Some developers are proposing to install these devices as close as 650 metres to human habitation and, in some cases, closer. (Ref 1)

While it is noted in the report that turbines should be placed at least 10Km away from any resident, it must also be stressed that acoustic signals relative to distance and disturbance of residents and siting of wind turbines must be reviewed on a case by case basis.

### **Out of date regulation**

Doubts are shared by many acousticians with regard to the continued usefulness of current UK noise regulations relating to wind turbines, ETSU-R-97, which are now some ten years old and refer to a previous generation of much smaller turbines.

The current method of calculating noise from a wind turbine is not able to predict noise levels accurately. A range of factors affect the possible noise pollution: the turbine design, atmosphere, wind speed, terrain, time of day, all of which cannot be contained within even the most complicated algorithm.

A study carried out on a 30MW, 17 turbine wind farm on the German/Dutch border showed that 'there is a distinct audible difference between the night and daytime wind turbine sound'. (Ref 3)

The study found that night time wind speeds were some 2.6 times the expected levels calculated which resulted in sound levels from turbines some 15dB higher than the predicted emissions.

The national calculation models used measured wind speeds at a height of 10m, however, at a hub some 58m above the ground, they were up to 18dB noisier than the calculated value suggested.

#### **New research required**

In order to protect the public, the Noise Abatement Society would like to see this problem addressed by government, urgently, through the commissioning of further research into the multiple health and environmental effects caused by wind turbines and the amendment of ETSU-R-97 regulations.

While the Society commends generation of renewable energy through natural resources, this must not come at the price of extreme disturbance and health risks to residents. To this end, we intend to help motivate government to review its current regulations.

#### **References**

1. D. M. J. P. Manley. P. Styles and J. Scott 'Perception of the Public of Low Frequency Noise'. Journal of Low Frequency Noise, Vibration and Active Control, Vol. 21 No1 2002
2. R. A. Lindsay and O. M. Bragg, Wind farms and Blanket peat. University of East London 2004
3. G.P. Van Den Berg 'Effects of the wind profile at night on wind turbine sound' Journal of Sound and Vibration Vol. 244 2004"

Yours sincerely,



Peter Seaman MBE

Chair, Brecon & Radnor Branch, Campaign for the Protection of Rural Wales, Registered charity number 239899