

## **Applications for Repowering of Llandinam wind farm, Construction and Operation of Llaithddu and Llandadarn Fynydd wind generating stations in SSA C**

Public Inquiry Proof of Evidence

Michael Brennan

My name is Michael Brennan. My wife and I have owned and run a small-holding in -----since 1985. I ride and walk in the hills joining Mochdre, Llandinam, Dolfor and Llaithddu, largely the area of SSA C. I am a member of the British Horse Society, and of Conservation of Upland Powys. I am not opposed to wind energy per se, but I object totally to these proposals..

I am a graduate engineer, and have worked in hazardous industries (gas-making and pyrotechnics) where operational safety was a major concern, and in safety research relating to highways and transport where scrupulousness in the collection analysis and interpretation of information was fundamental.

I have reviewed the Supplementary Environmental Information relating to these planning applications.

I make three observations.

- The proposals for replacement and for new turbines as presented are unacceptable, as they grossly exceed the TAN 8 limit for the SSA. TAN 8 suggests that the “best” location for turbines should be identified in the SSA, not that the SSA and surrounding area should be saturated with turbines.
- The Supplementary Environmental Information (SEI) submitted is biased and inadequate, particularly in relation to landscape and visual impact.
- The applicant Celtpower has been unsatisfactory in its approach to the operation of the existing Llandinam windfarm with regard to public safety. All applicants disregard safety issues in the siting of turbines near dwellings and rights of way.

These observations are based on the following considerations.

### **Generating Capacity**

The Welsh Government has fixed an upper limit for the Newtown South Strategic Search Area (SSA C) of 98MW capacity. The modified application for Llandinam is for 102MW of capacity, Llaithddu for 67MW, and Llanbadarn Fynydd for 60MW, far exceeding the capacity limit.

These applications should be refused on the grounds that they exceed the limit for the SSA.

### **Size of turbines**

The existing Llandinam 45m high turbines are due to be decommissioned in 2017 after a 25-year operation period. The turbines proposed to replace them are approximately 122m high, almost three times (2.7) the height of existing turbines, and the diameter of the rotors is similarly approximately 3 times as great. The area of the turbines, force on the rotor and power output are approximately 8 times as great. The capacity of these structures to dominate the existing landscape is thus far greater than that of the present turbines, in terms of visual impact, noise and capacity to project ice. Nowhere in the SEIs is this adequately addressed. The turbines proposed for Llanbadarn Fynydd and Llaithddu are of a similar scale.

## **Landscape and Visual Impact**

### ***Literary celebration of the Mid-Wales landscape***

“At the Bright Hem of God, Radnorshire Pastoral”, Peter J Conradi, Seren Books

“Here were sublime views over the ancient hills, the shock of silence, and then the surprise of a new feeling compounded of exhilaration, trust, and peace-of-mind. Anxiety and restlessness had slipped away. Much later, I recognised a description of Rousseau’s:

*‘There is something magical and supernatural in hill landscape, which entrances the mind and the senses. One forgets everything, one forgets one’s own being, one ceases to know where one stands.’*

“It took some days to recognise this condition as happiness: I had fallen unreasonably and ignorantly in love.”

In her book “Prehistoric Sites of Montgomeryshire” (Logaston Press), Beth McCormack repeatedly makes the point that ancient burial chambers and monuments were located on high ground so as to be intervisible, and that landscape was a major factor in selecting the sites. In relation to Glog Hill, Kerry, a site of bronze age burial chambers close to all three proposed generating stations, she writes as follows.

“From Glog Hill, Kerry Two Tumps to the east and Caebetin to the north-east are intervisible as dominant features of the skyline. All three monuments are located at significant Mid-Wales points lying between sources of important waterways. The view from Glog Hill is spectacular, overlooking the valley and distant mountains on three sides. This location once again gives the impression that the monument is on a dome rising out of the valley and stands at the centre of an immense natural circle.”

### ***My personal reliance on local landscape***

The landscape of the upland Mochdre – Llandinam – Llaithddu area is of great importance to me personally as well as to many of my neighbours. As it is for Conradi, it is for me a place of spiritual solace. When a neighbour asked me where I usually worship, I replied that it was “in nature’s cathedral. “ On my highest field I spread my father’s ashes, and planted field trees similar to those in his garden. He died at harvest time in 1999, and each year I cut the grass between the trees, make hay by hand, and incorporate it into my hay crop. From his memorial bench I look across Mochdre to Glog Hill, and his resting place connects visually with the bronze age burial chambers of our local forbears there. I have two other deceased friends who independently asked for their remains to be placed on high ground in this area. There must be many more.

### ***Landscape considerations and visual impact of the proposals***

The maps of Zones of Theoretical Visibility in Llandinam Appendix 3 (S6-6, S6-7, and S6-8) deceptively compare areas where turbines would be visible for the existing and the proposed turbines, falsely equating the visual impact of the existing turbines with visibility of the relative giants proposed. Nevertheless it is apparent from the maps (S6-6) that two considerable inhabited areas adjacent to the proposed development would be considerably affected by the proposed development: Llandinam and Mochdre. In Llandinam a new Viewpoint (No.27 – Plas Dinam, a Grade 2 listed building) has been included. In Mochdre no Viewpoint has been considered, the

nearest being Dolfor (No 4) and Newtown (No 2). This is despite the fact that turbines proposed have been positioned approximately 500m further north and 700m further east, and hence nearer by approximately 850m to the dwellings there, some of which would be only 1km to 2km distant.

Considerations in the 2011 proposals of the potential Landscape Impact from Viewpoint 27 in Llandinam resulted in the assessment that 8 turbines being visible constituted a “**major adverse**” impact, and as a result 3 northerly turbines were removed from the 2008 proposal and others repositioned to reduce the number visible at that site to 4. This adjustment appears admirable. However, by comparison, Broneirion in Llandinam (also Grade 2 listed) would have approximately 15 turbines visible (band 13-18), and Esgair Geiliog Hall in Mochdre (Grade 2 listed) approximately 28 (band 25-30), and yet the impact at these sites is estimated as “**minor**” (App 1 Table 10-5). The visual impact of the proposed turbines at Broneirion and Esgair Geiliog must be regarded as unacceptable, and the visual impact assessments as “**minor**” arbitrary and inconsistent.

Many turbines of all three proposals will be visible in Mochdre, particularly the Pentre and Seven Wells-Blue Lins areas. The effect on landscape is exacerbated both by the height of the turbines and their proximity to residential areas. They would be unacceptably dominant and overbearing, and no attempt has been made in the SEIs to assess or acknowledge this. The Llanbadarn Fynydd proposal refers to “a few isolated dwellings”.

The Llandinam SEI also makes much of the fact that the number of turbines would be greatly reduced when compared to the existing windfarm (34 turbines instead of 103). However, at almost 3 times the height (2.7, based on 122m vs 45m), the turbines will subtend a much greater angle vertically from any viewpoint. Also the cumulative span of the proposed 34 turbines is similar to that of the existing 103. This again illustrates the biased manner in which information is presented in the SEI.

There are several Scheduled Ancient Monuments on the Llandinam site, and these are listed in App 1, Table 10-5 of the SEI. Their situation is almost impossible to appreciate among the clutter of existing wind turbines. It will be even more difficult under the proposal, where the scale and extent of the wind farm would be extended vertically and in area.

## **Noise**

Our stone cottage is approximately 4km north of the existing windfarm, and we are frequently troubled by noise, both outside and inside the cottage. It seems inevitable that a windfarm with three times the potential power output, and comprising individual turbines of almost ten times the power and three times the height, and situated 700m nearer to our home, will produce a great deal more noise and vibration at that location, and be projected over a much greater distance.

## **Rights of Way, Public Access and Public Safety**

In the Llandinam proposal there are public rights of way through the proposed development site, both footpaths and bridleways. Most of the development site is on open access land.

There are guidelines issued by the British Horse Society, for separation distances of 3 x height to blade tip, with an absolute clearance of 200m. For this development that would amount to a clearance of approx. 375m. These have not been adhered to in the proposals.

<http://www.bhs.org.uk/~media/BHS/Files/PDF%20Documents/Access%20leaflets/Wind%20Farms%20Leaflet.ashx>

The BHS guidelines are not unreasonable. In the SEI, consideration of safety issues is confined to ice throw, and refers to one recorded incident where ice fell vertically from a blade. Ice could be thrown much further than this. For example, an 84m diameter rotor rotating at 15rpm would have a blade tip velocity of approximately 65m/sec. Using 2-dimensional Newtonian physics, and without allowance for aerodynamic effects, I calculate that a piece of ice projected obliquely upwards at this speed from the tip of a turbine might travel a horizontal distance of up to 600m before hitting the ground at a velocity of up to 200mph. The turbines may be designed to stop in icy conditions, and to thaw accumulating ice, but all systems malfunction sometimes, as illustrated by events.

As do many other local people, I ride a horse on the bridleways through the existing Llandinam windfarm in order to reach areas to the south (such as Llidiartywaun, Llanbadarn Fynydd, Llaithddu). Some of the existing turbines were placed too close to the bridlepaths. My horse has never been bothered by the existing turbines, but my daughter's horse became unrideable there, and I have two neighbours who have had similar experiences. The only solution for them then is not to take their horses there. The BHS guidelines on wind turbines state that some horses cannot learn to accommodate turbines. This seems a contravention of the right to safe and enjoyable use of rights of way (Highways Act 1980).

In the Llaithddu proposal, 20 of 29 turbines are positioned within 200m of existing bridleways. From maps in the SEI I estimate that 9 are within approximately 50m. This proximity of turbines to bridleways is unsafe and intimidating to both rider and horse, and the effect will be to render these bridleways unuseable. Alternative routes are proposed, but unless these offer a range alternatives to allow for the different sensitivities of horses and riders under various weather conditions they will be impassable to some or all users some or all of the time, amounting to a virtual obstruction of the bridleway.

Malfunctions and accidents do occur with wind turbines. In their Summary of Wind Turbine Accident Data, Caithness Windfarm Information Forum has collated information about turbine accidents. Their figures show approximately 140 accidents per year and 10 fatal accidents world-wide. They acknowledge probable under-reporting, and quote Renewables UK as confirming 1500 accidents and incidents over a 5 year period in the UK.

<http://www.caithnesswindfarms.co.uk/accidents.pdf>

The British Horse Society details a few wind turbine incidents in its guidance on wind turbines, one of which was in Llandinam. On 27<sup>th</sup> December 2011, while walking in the area of the Llandinam windfarm, I discovered a damaged turbine. This appeared to have been the result of a recent failure and collapse of the upper section of the tower. The incident occurred on open access land. The damaged section of the turbine concerned had been dismantled, and was fenced off with modular fencing, which had itself been blown down by wind at the time of my inspection. Fist-sized fragments of blade material were scattered over an area several hundred yards across.



After the holiday period I telephoned Scottish Power in Warrington to find out what had happened and what was being done. My call was passed between members of staff for about 20 minutes, until one person informed me that Scottish Power did not operate a wind farm in Llandinam. At that stage I gave up and contacted the local newspaper.

In February 2012, after two months of total silence on the subject, Celtpower issued a public statement about the incident, to the effect that an investigation was under way, and that there had been no danger to the public. These events were recorded in the Montgomeryshire County Times on Jan 13 (p 7) and February 3 (p 2) 2012, and on the BBC website.

<http://www.bbc.co.uk/news/uk-wales-mid-wales-16546250>

I believe this conduct reveals a refusal to acknowledge the presence of risks to pedestrians and riders, and a blatant disregard for public safety. These failures can and do occur, and proper allowance must be made to protect the public from them.

Part of the appraisal of these wind turbine applications (or any others) must be a rigorous risk assessment of the dangers involved to members of the public using rights of way and open access land in the area of the proposed development. Because of the disregard for public safety shown by the developer, this needs to be conducted by an independent body.

### **Geology, Ecology and Hydrology**

I have further concerns on these subjects. In particular, I am concerned about the effect on water run-off from the site. There are many streams and brooks rising from this ridge, flowing in all directions. Local dwellings and farms rely on these streams directly or indirectly for water for domestic and livestock consumption. There is also a local history of many mills along the streams, sites which have renewable energy potential in the form of small hydro-electric plants. The amount of drainage and run-off from the development will create extremes of water flows in these brooks, worsening floods and droughts, and reducing the value of these water courses for all those purposes.

## Summary

I regard the proposals as presented unacceptable, and I recommend that permission for the developments is refused. If approved, there would be a continuous swathe of turbines from Mochdre to Bwlch y Sarnau, a distance of 9km, overlooking bridleways throughout its length. Given that there is a precedent for wind farm operation on the Llandinam site, I suggest that proposals commensurate in scale and extent with the existing operating wind farm would be more appropriate for consideration, provided that the TAN 8 limits are adhered to and the “best” (best performance with least intrusion) locations are chosen.

I would like to reserve the right to elaborate on this submission.

Michael Brennan

28<sup>th</sup> July 2013