Appeal by Awel Aman Tawe

ref. APP/Y6390/A/05/1189610

Case for the

Tairgwaith Action Group

produced by

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Summary

Awel Aman Tawe have been refused permission to erect a wind farm on Mynydd y Gwrhyd, near Tairgwaith. The permission was refused on the grounds of visual intrusion and the combined impact on local communities of both opencast mining and a wind farm. We support these grounds for refusal, but wish to highlight a number of issues related to national planning policy, deficiencies within the Environmental Statement, and the validity of the claims made in the Environmental Statement with regards to the level of energy produced and the amounts of carbon dioxide saved.

In our view granting this appeal will set a dangerous precedent in Wales. The Welsh Assembly has attempted to resolve the conflict between the natural landscape and the development of wind power through the allocation of Strategic Search Areas (SSAs). The application site borders an SSA. In our view the scale of the development and the precise location of the site compromise the objectives for drawing the boundaries of the SSA. Allowing this appeal could justify permitting other damaging developments in sensitive landscapes outside of the SSAs.

The claim made in relation to the amounts of carbon saved are erroneous because the figures upon which these savings are based bear no relation to the most recent data. Likewise the capacity of this wind farm is open to question since the capacity of most commercially available wind turbines do not fit the generating capacity and the physical dimensions of the wind turbines cited in the Environmental Statement.

We are very critical of the failure to evaluate the alternative options for this development, either in terms of a different scale or location for the development, or for alternative types of development that could achieve similar outcomes. The study of alternatives is not a matter of proposing alternative projects, but is a mechanism by which the applicant is able to demonstrate that the options they have chosen have the least environmental cost in return for the greatest level of benefit to society as a whole. In our view, given the possible alternatives, this scheme is not necessarily the best way to generate power, avoid the production of carbon dioxide, and generate benefits for the local community.

In this case we believe that national planning policy is quite clear. This development is too large for this location. The visual impact on the Brecon Beacons National Park cannot be avoided because of the location chosen for the development. We are also concerned about the visual intrusion to nearby access land, and the dis-amenity to the local community that this development would represent. For these reasons we request that the appeal is dismissed.

Contents

Introduction

This report outlines our case for the dismissal of the appeal by Awel Aman Tawe against the refusal of permission to erect a wind farm on Mynydd y Gwrhyd – less than two kilometres from Tairgwaith, Gwain-Cae-Gurwen and Cwmgors.

Wind farms, by their nature, have a significant impact on the local environment. In assessing whether or not to permit a wind farm application the local planning authority must consider whether these impacts are materially detrimental to nearby land uses. In most other cases local planning authorities would weigh the positive impacts on the local environment (such as regenerating damaged or brownfield sites) or economy (generating local employment) against the local dis-benefits of the development. However, for wind farms, although the decision is clearly a local matter, the balance that must be weighed is between the local dis-benefits of development and and a perceived, if locally abstract, global benefit to the climate and national energy supply. It is the evaluation of the balance between the local dis-benefits, versus the perceived global benefits, that our case will concentrate upon.

Tairgwaith Action Group was formed in 2000. It has worked to oppose the development of the wind farm, and networks with other community groups in the area as part of this work.

Mobbs Environmental Investigations is an environmental consultancy specialising in the needs of small community groups, and it has been operating for the last fourteen years. After leaving the engineering industry in 1991, Paul Mobbs set up his consultancy business to provide assistance in the fields of planning, pollution, risk assessment and community-based campaigning, and since then he has worked around the UK and abroad. Over the last four years Paul Mobbs has been specifically researching the field of energy, energy futures, and the implications for the public of global energy and environmental trends. This research has generated interest amongst many academic and environmental organisations, and some of his findings have been publishing by organisations such as the Oxford Institute for Energy Studies and the Royal Institute for International Affairs (Chatham House). In 2005, he also published a book, *Energy Beyond Oil*.

1. Local Visual and Environmental Impacts

1.1. Tairgwaith and the surrounding area have had their fair share of "economic pollution" to sustain the UKs energy needs. The deep mining coal in the area has largely gone but an opencast coal quarry is still operation nearby – and fact it has just been given an 8 year extension to operate. Road traffic from the opencast site also goes through Tairgwaith, and so this disturbance will continue for the foreseeable future. Consequently many local residents fear that, just as the disruption of mineral working may be about to wind down, other forms of "sensory disturbance" will enter the area. Also, although wind turbines may bring some benefit globally, there is a feeling that locally the development issue has been handled very badly, to the detriment of those living near the application site. For example, the wind farm proposal that Awel Aman Tawe originally consulted the public upon was smaller than the current proposal – therefore it is incorrect to say that the project has community support via a referendum because what is being developed, and what was consulted upon, are not of the same scale.

1.2. Many of the residents in the communities around the application site will provide their own appraisal of the project, as it applies to them personally, via their objections to this inquiry. Rather than be repetitious I will leave the assessment of the impacts to those living close to the site to the other objectors at the inquiry. The submissions I make below relate primarily to the technical planning policy matters that arise in this case.

1a. The visual impact on the Brecon Beacons National Park

1.3. It might be considered material to the applicant's case that the site of the wind farm, although not within one of the *Strategic Search Areas* (SSAs) listed in Technical Advice Note 8 [TAN-8, 2005], is close to the boundary of the *Pontadawe SSA* [TAN-8E, 2005]. However, the proximity of the site to the SSA does not automatically confer some level of acceptability to this application because the boundaries of the SSA are drawn with reference to the local topography (the process is outlined by Arup in their report on the development of the SSAs [Arup, 2005]).

1.4. *Planning Policy Wales* [PPW, 2002 – para. 5.3.4] states that,

> *"The statutory purposes of National Parks are to conserve and enhance their natural beauty, wildlife and cultural heritage and to promote opportunities for public understanding and enjoyment of their special qualities. Where it*

> *appears that there is a conflict between those purposes, greater weight shall be given to the first."*

1.5. The overriding objective to protect the statutory designations, such as national parks, is highlighted by Arup as part of their research to set the boundaries of the SSAs (published alongside TAN8). The Arup study seeks to predict the visual impact of the SSAs whilst seeking to avoid the use of proscriptive buffer zones. It's also for this reason that Arup make it clear that [Arup, 2005 – section 3.2],

> *"It is not appropriate to set standard distance buffers for the Welsh National Parks/AONBs at the national level. Local terrain factors mean that any such buffers would have to be variable and site-specific, and thus defined following considerable study at the local level."*

Therefore, rather than accepting the boundary of the SSA as given on the TAN8 maps, the boundaries must be evaluated as part of the construction of UDP policies or, as in this case, as part of the development control process.

1.6. If we look at the topography of Mynydd y Gwrhyd, the northern boundary of the SSA has been drawn some distance down the southern side of the ridge line to reduce the visual impact of any development on the Brecon Beacons National Park. The use of the ridge line, to mask any development within the SSA, largely determines the northern boundary of the Pontadawe SSA. In contrast, the appeal site is that it is on the ridge line, and so it does not afforded the same level of screening from a comparable development within the area of the SSA. The fact that the development is on the ridge line means that the hills to the north have a clear view of the site, which would not be the case if the site were developed to the south of the ridge within the boundaries of the Pontadawe SSA – as demonstrated by the visual impact studies in the Environmental Statement [AAT, 2004 – *Drawings*, figure 17].

1.7. In our view, the location of the site is clearly contrary to the objectives of the Welsh Assembly in setting the boundaries for the Pontadawe SSA. Breaching the protection afforded by the ridge line means that this medium-size wind farm will have a proportionately greater impact on the integrity of the national park than a larger development within the boundary of the Pontadawe SSA. Permitting this development would therefore be both contrary to the protection of the visual landscape of the Brecon Beacons National Park, as well as the objectives of TAN8 in relation to the development of the SSAs.

1b. The impact on nearby "access land"

1.8. The *Countryside and Rights of Way Act 2000* established a process to open-up areas of common land, woodland and upland moors to public access – the so called "right to roam". In Wales this process was administrated by the Countryside Council for Wales, and was completed in 2005.

1.9. Whilst the Environmental Statement briefly acknowledges the process [*Written Statement* section 9.2, page 145], it does not adequately consider the impact of greater countryside access and how the visual impact of this development might detract from the enjoyment of these new rights of access.

1.10. The site itself, as it is predominantly common land, is open to the public. For this reason we would expect that the engineering of any development, especially the quality/speed of the restoration programme, should have regard to those accessing the land. If this appeal is allowed then the speed and quality of restoration programme carried out after the construction phase should be specified in planning conditions in order to provide the minimum of disturbance to the rights of access to the land.

1.11. Of greater significance is the visual impact of the development on the large areas of access land that exist around this area, both inside and outside the Brecon Beacons National Park. The Environmental Statement primarily considers the visual impact of the development upon certain 'fixed' lines of access – roads, footpaths and bridleways. But there is no clear evaluation of the extent to which the visual impact of this development will affect the access land in the area.

1.12. The Countryside Council for Wales provides maps of access land via their *Countryside Access* web site (http://csaw.ccw.gov.uk/). Figure 1 is taken from the CCW's web site, and shows the areas of access land within 5km to 8km of the application site. In the Environmental Statement [*Drawings*, figure 17], much of this land is identified as having the highest level of visual intrusion from the development. Figure 2 shows the access land immediately adjacent to the site. This indicates that not just the common land, but the land stretching down the north side of the hill is also access land. This land forms a valuable, unstructured amenity space for the settlements of Tairgwaith, Gwain-Cae-Gurwen and Cwmgors.

1.13. The effect of this development upon the access land in the area must be assessed in the same manner as the fixed forms of countryside access such as footpaths and national trails.

Figure 1. CCW map of access land in the area around Mynydd y Gwrhyd

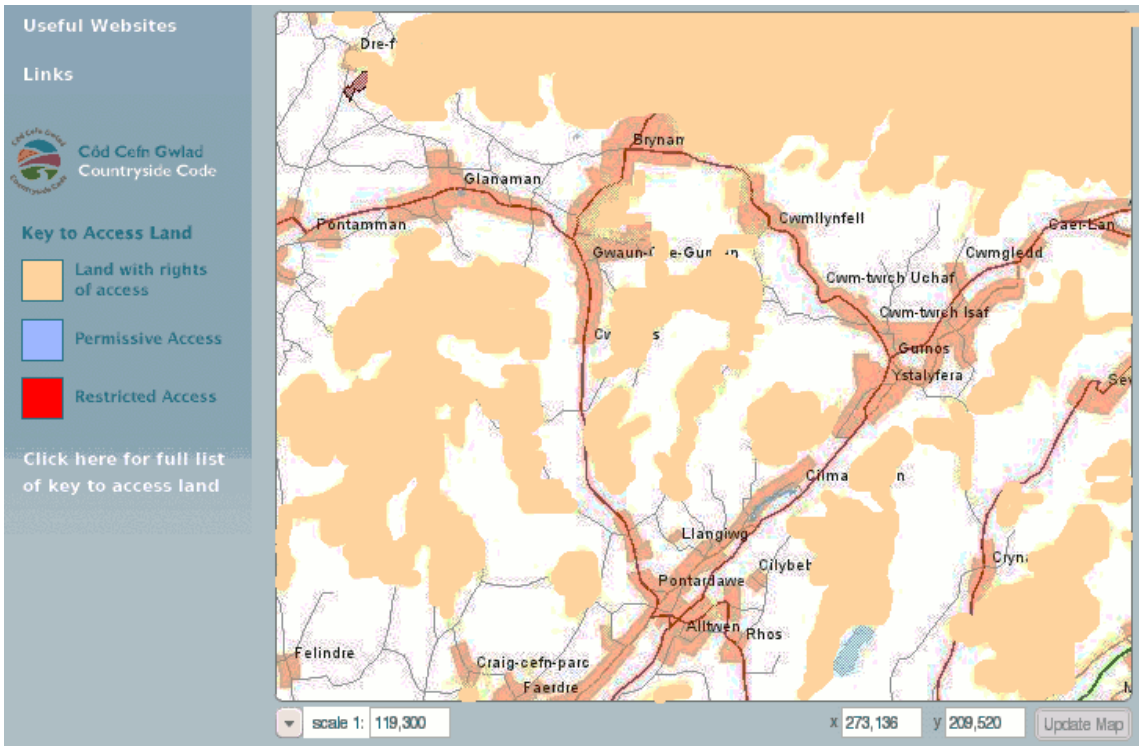
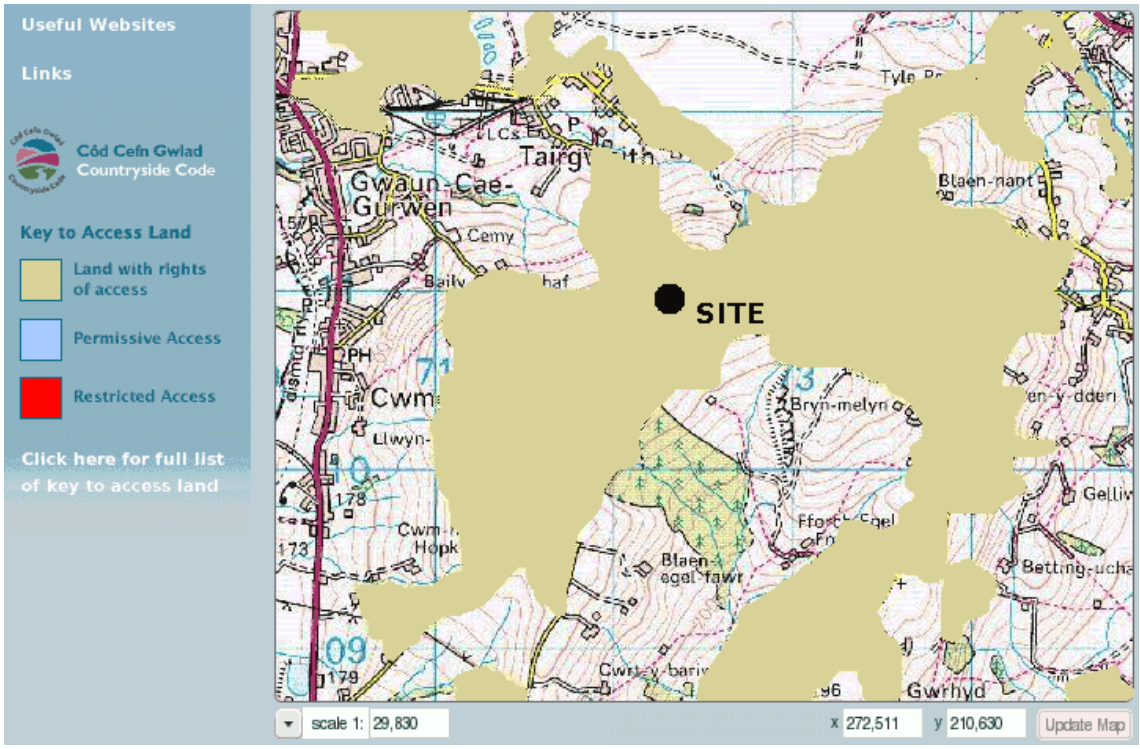


Figure 2. CCW map of access land adjacent to the application site



Source: CCW Countryside Access web site – http://csaw.ccw.gov.uk/ (accessed 10/3/2006)
Note that the access land areas have been shaded to improve the legibility of this reproduction.

The new rights of access under the *Countryside and Rights of Way Act* are, in practice, as significant as those of the *National Parks and Access to the Countryside Act 1949* which introduced the *definitive map* of local rights of way. The fact that the impact on access land has not been coherently assessed is a significant deficiency in the visual assessments presented in the Environmental Statement.

1c. Effects upon wildlife

1.14. Wind turbines are hazardous to birds – a fact that is clearly outlined by groups such as the RSPB [RSPB, 2005] who have challenged the development of a number of wind farms because of the effects these developments have on wild birds [Observer, 2004]. At the moment our knowledge of this effect is limited because there are only a small number of wind farms in the UK. Also, whereas 10 years ago the turbines erected in the UK were predominantly less than one mega-Watt in capacity (with an overall height less than 50 to 60 metres) today's wind turbines have a higher capacity, and so present a physically larger hazard. The problem is not just that the 80 to 100 metre overall height is higher (an increase of 1.5 times over the last decade so). It is that the change in diameter of wind turbines has increase the size of the swept area by a factor of more than three (from 1,963m^2 for a 50m diameter turbine to 6,362m^2 for a 90 meter diameter turbine). The statistical likelihood of a bird striking a wind turbine is not directly a function of the height of the turbine, but of its swept area.

1.15. If we take the example of the Red Kite, it is protected under Schedule 1 of the *Wildlife and Countryside Act 1981*. Killing a Red Kite is therefore an offence. However, subsection 4(2)(c) provides a defence that,

> *"(2) Not withstanding anything in the provisions of section 1 or any order made under section 3, a person shall not be guilty of an offence by reason of –*
>
> *....*
>
> *(c) any act made unlawful by those provisions if he shows that the act was the incidental result of a lawful operation and could not reasonably have been avoided."*

1.16. The operation of a wind farm is such a "lawful operation" under subsection 4(2)(c) (or the comparable provisions under Part 3 of the *Conservation (Natural Habitats etc.) Regulations 1994* in relation to other types of protected plants and animals), but in this case we would argue that the defence that such damage could "not have reasonably been avoided" is not

made in the Environmental Statement. Under Part 1 of Schedule 4 of the *Environmental Impact Assessment Regulations* there is a duty to provide,

> *"An outline of the main alternatives studies by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects."*

In our view no such evaluation of the alternative development options, and how they might affect the level of the hazard to wild birds, has been provided. It would appear from the Environmental Statement that the killing of birds is blindly accepted as a consequence of the operation of wind turbines [*Written Statement*, section 16.9, page 117]. However, without any assessment of the alternative sites, or other development options that could achieve similar outcomes outcomes in terms of the community and global benefits (which we consider in section 2 below), we would question whether or the injury to wild birds has been demonstrated to be "unavoidable".

1.17. Under existing practice, the assessment of alternatives as part of an environmental assessment is not appropriate in all cases. However, unlike a pig farm or a road, a wind farm is an irregular, highly specialised and intrusive form of development that should be subject to the requirement to consider the alternative options for development. This is clearly true in relation to the visual impact, particularly upon the Brecon Beacons National Park. But in terms of the impacts upon wildlife, we would submit that, in terms of the protection afforded to birds under the *Wildlife and Countryside Act*, there is no *de minimis* level of impact set in law which can be applied to the operation of a wind farm. Consequently there is no lower threshold below which the assessment of alternatives is not required. The point is that with the assessment of alternatives the "lowest" impact form of development might be identified. The central issue is whether the operation of this wind farm, and any incidental damage to wildlife, is "reasonably avoidable". Or, whether the erection of a wind farm <u>without any proper assessment of the alternatives that might reduce this hazard</u> constitutes "intent" to harm birds by virtue of neglect.

1.18. In determining this appeal we request that consideration is given to the lack of the assessment of alternative development sites or options, as a means of reducing the risk to wildlife, as material grounds to dismiss the appeal.

2. National/Global Impacts

2.1. In order to balance the negative impacts of this development Awel Aman Tawe cite various benefits that the development will produce. Most of these relate to the positive benefits of generating renewable energy. However, we would raise doubts as to the validity of these claims because:

(a) There are doubts that the scale of the development fits with the type of wind turbine selected, if we look at the wind turbines that are available today;

(b) Looking at the data which the UK government uses to report our carbon emissions, there is evidence that the British Wind Energy Association's carbon emission factors are seriously in error;

(c) If we look at the alternative options for developing a wind farm, a larger number of significantly smaller wind turbines could produce a similar amount of power on a slightly larger area of land;

(d) There are other energy production options which could save carbon emissions but these alternatives – and their benefits to the local community – have not been subjected to a comparative evaluation in the Environmental Statement;

(e) As an alternative option it is also valid to consider how existing power plants might be modified in order to reduce carbon emissions whilst maintaining their existing power output; and

(f) It is also valid to consider how other options might reduce demand and so produce the same outcomes in terms of reducing carbon dioxide emissions.

2a. Problems with the type of wind turbine identified for this development

2.2. The Environmental Statement notes that [*Written Statement*, page 1],

> *"This Environmental Statement is based upon one of these qualifying turbines, the Neg Micon (now Vestas) 2.75MW machine."*

2.3. When the Environmental Statement was compiled in late 2004, Vestas did not manufacture a 2.75MW machine. In fact their new 2.75MW machine, the V100, will not be available until the Spring of this year.

2.4. The fact is that the commercially available wind turbines with a capacity of around 2.75MW have very different dimensions to those used as the basis for the visual modelling of the Environmental Statement (see Table 1). This has two outcomes. Either:

- the installed turbines will be larger (or will perform badly because the large turbines will be mounted on exceptionally short towers); or
- the use of turbines with the dimensions as given would reduce the capacity of the wind farm – which will, in turn, lower the amount of carbon saved and the revenue generated for "community projects".

Table 1. Characteristics of Commercial Wind Turbines (sorted by minimum height)

	Turbine							
Characteristic	*GE 2.7*	*Nordic N80*	*Vestas V80*	*Bonus 2.3*	*Vestas V90*	*Nordic N90*	*GE 2.5*	*Vestas V100*	*GE 2.3*
Capacity, mega-Watts (MW)	2.5	2.5	2.0	2.3	3.0	2.3	2.5	2.75	2.3
Turbine diameter, m	84	80	80	82.4	90	90	88	100	94
Minimum height to hub, m	58	60	60	60	65	80	85	80	100
Maximum height to hub, m	70	105	78	80	105	105	85	100	120
Minimum overall height, m	100	100	100	101.2	110	125	129	130	147

Source: Compiled from various wind turbine manufacturers' product data

2.5. The closest wind turbine to the dimensions specified in the Environmental Statement is the *Nordic N80*, which has a generating capacity of 2.5MW. The *Vestas V80* also has similar dimensions, but it's generating capacity is only 2.0MW. The *Vestas V90* has a 3MW generating capacity, but its minimum tower height is five metres higher, and the turbine diameter is ten metres greater.

2.6. The Environmental Statement [*Written Statement*, page 1] indicates that the a precise model of wind turbine cannot be specified because it will be subject to "competitive tendering". In reality there are such a limited range of turbines, every one of which comes in standardised sizes, that such an approach is unrealistic. As shown in Table 1, there are only a few turbines available from four major turbine manufacturers of the appropriate size. Given the difficulties in identifying a turbine that fits the criteria of size and generating capacity it is essential that, if this appeal is allowed, either:

- a specific turbine is chosen for the site – allowing certainty over the dimensions; or
- the dimensions of the turbine are fixed as a matter of planning conditions in order to prevent larger turbine being erected.

2.7. The selection of turbine also has a significant effect on the power generated, and the amount of carbon emissions saved. This will be dealt with over the next two sub-sections.

2b. Irregularities in the British Wind Energy Association's carbon emissions data

2.8. The carbon dioxide savings created by a wind farm are based upon its generating capacity. This is calculated at the annual generating capacity of the wind farm multiplied by the "load factor" (this can be back-calculated, and is set at 0.3, which is not unreasonable), multiplied by a figure that represents the output of carbon dioxide per unit of power generated from fossil fuel-based generating plants.

2.9. The figures used in the Environmental Statement [*Written Statement*, page 159] are sourced from the British Wind Energy Association (BWEA). If we evaluate these figures against comparable data available from the Department of Trade and Industry we see that the BWEA's emission figures are significantly larger than the figures used by the UK government to assess the UK's carbon emissions. This means that either:

- The BWEA figures are in error; or
- The UK government is misleading the international community about the level of the UK's carbon emissions.

2.10. Most emission factors are expressed in terms of the mass of carbon, not the mass of carbon dioxide (this is because the "basket" of different gases which make up our greenhouse gas emissions have to be converted to a common value – usually the equivalent mass of carbon released). Table 2 below shows the BWEA "carbon dioxide" figure alongside the figures available from the Department of Trade and Industry [DUKES, 2005a], and some much older figures from the Energy Technology Support Unit [ETSU, 1990] based on the releases from the power sector in 1987. Note that for the sake of convenience the relevant figures have been converted to either carbon or carbon dioxide to allow comparison (converted figures are in *italics* – both the ETSU figures are in italics because these were converted from the mass of carbon per giga-Joule of power to the mass of carbon/carbon dioxide per mega-Watt-hour of power).

Table 2. A Comparison of Carbon Dioxide Emission Factors for UK Power Generation

	DTI [DUKES, 2005a]	*BWEA* [Written Statement]	*ETSU* [ETSU, 1990]
Carbon dioxide, kg CO_2/MW-h	*607.2*	860	*842.2*
Carbon, kg C/MW-h	165.6	*234.5*	*229.7*

To convert the mass of carbon dioxide to the equivalent mass of carbon multiply the figure by 0.273 (equivalent to the mass of a carbon atom, 12, divided by the mass of a carbon dioxide molecule, 44). To convert the mass of carbon to the equivalent mass of carbon dioxide multiply the figure by 3.67 (the reciprocal value of 0.273).

2.11. The fact that the BWEA's carbon emission factors are just over 40% higher than the values representative of the UK's fossil-fuel generation system means that the carbon reductions claimed in the Environmental Statement are also significantly in error. Even if we look at the ETSU figures, which are based on the UK's fuel mix in 1987, when we burnt proportionately more coal and generated less nuclear power, they are even higher. Although I would accept that the BWEA would wish to put a positive spin on the benefits of wind turbines, these figures are clearly outside the bounds of statistical reality. Even ignoring the DTI's stated figure, if we divide the declared carbon emissions from the UK's fossil fuel generating plant in 2004 (47Mte C [DTI, 2005a]) by the quantity of power produced in 2004 (270,287GW-h [DUKES, 2005b]) we get a figure of 174kg C/MW-h (or 638kg CO_2/MW-h).

2.12. The figures in the Environmental Statement are based on five 2.75MW wind turbines. Not only are we now dealing with four turbines, but, as explained in the previous section, there is also some doubt about precisely how big those turbines may be. For this reason Table 3 recalculates the carbon savings based upon the capacity of the four wind turbines that most closely resemble the dimensions or capacity of the figures used in the Environmental Statement (note that the scenario in the Environmental Statement has also been included in order to validate the method of calculation).

2.13. Based upon the Department of Trade and Industry's carbon emission factor, the carbon emissions saved by this development are only between 40% and 70% of those stated in the Environmental Statement (the precise amount would ultimately depend upon the number/capacity of the wind turbines used). This large fall in the amount of carbon dioxide saved is due not just to the reduction from five to four turbines, but also the fact that the BWEA's carbon emission factor is 42% higher than the data currently used by the Department of Trade and Industry when calculating carbon emissions from the UK's fossil fuel-fired generating plant. In determining this appeal we urge that caution is exercised in the use of the BWEA's carbon dioxide statistics as they have little credibility when viewed alongside the figures used nationally to assess the UK's carbon emissions.

2.14. As shown in Table 3, under different scenarios the money raised for the “community” falls by between 60% and 90% of the £200,000 figure given in the Environmental Statement because of the use of fewer/smaller wind turbines. Also, if we look at the references to job creation quoted in the Environmental Statement, the money used to support paid employment must reduce the level of resources for “real” energy efficiency work that Awel

Table 3. Re-calculated Carbon Emissions/Community Earnings

Turbine model	*Written Statement*	*Vestas V90*	*Nordic N80*	*Bonus 2.3*	*Vestas V80*
Number of turbines	5	4	4	4	4
Capacity of turbine, MW	2.75	3.0	2.5	2.3	2.0
Total capacity, MW	13.75	12.0	10.0	9.2	8.0
Annual output, MW-h	36,135	31,536	26,280	24,178	21,024
Carbon saved, te CO_2/yr (DTI)	21,941	19,149	15,957	14,681	12,766
Carbon saved, te CO_2/yr (BWEA)	31,076	27,121	22,601	20,793	18,081
"Community income" per year	£200,000	£174,545	£145,455	£133,818	£116,364

The *annual output* figure is calculated by multiplying the *total capacity* figure by 365 days, then by 24 hours, and then by the load factor, 0.3. The *carbon dioxide saved* figure is calculated by multiplying the relevant emission factor by the *annual output* figure and dividing by 1,000 to convert it to metric tonnes. The *community income* figure is calculated by taking £5.5348/MW-h (derived by taking the £200,000 figure from the Written Statement and dividing it by the Written Statement's annual output figure of 36,135MW-h) and multiplying it by the annual output for the wind farm.

Aman Tawe can perform. The more jobs Awel Aman Tawe create, the less of the wind farm earnings could be spent on the materials required to operate community projects. In any case, unlike a factory or office development, it doesn't necessarily follow that the money earned would go to community projects. Unlike conventional developments, the benefits of job creation do not automatically follow from the occupation of the land, and are based largely upon the future viability/altruism of the Awel Aman Tawe organisation.

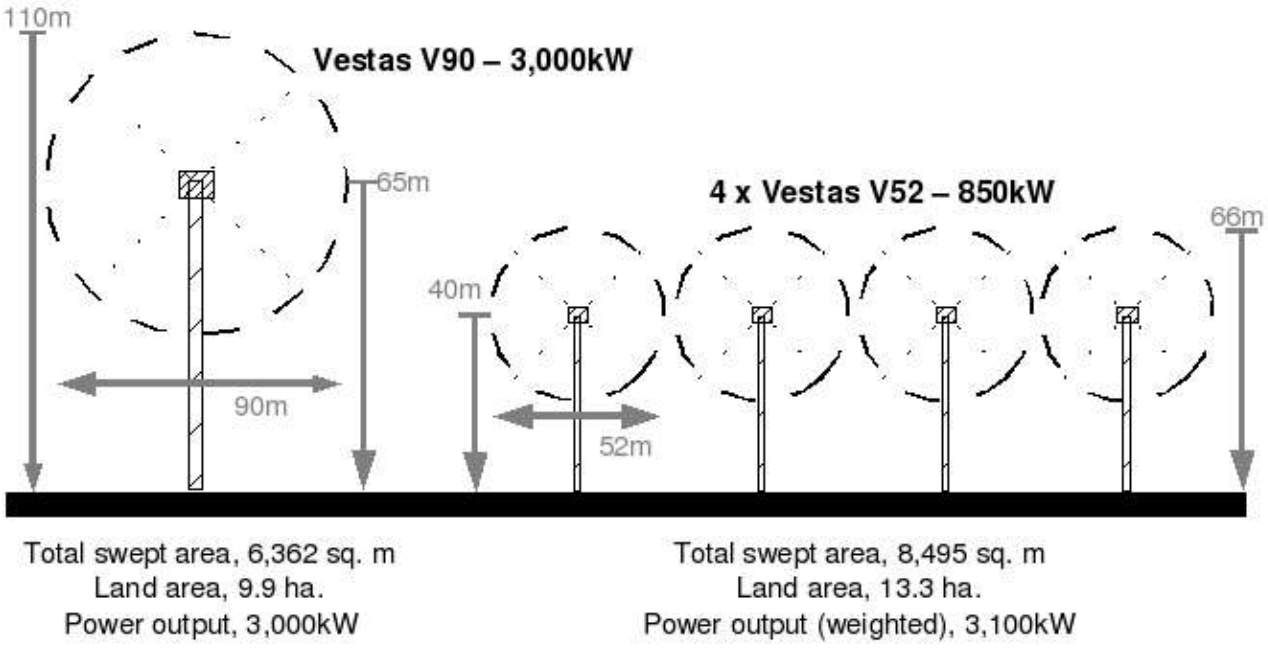
2c. Wind turbines, energy production and land area

2.15. Firstly, please note that the argument in relation to the number and size of wind turbines is used here in order to highlight the lack of any formal investigation into the "alternative" development options within the Environmental Statement. It is not in any way intended to be an alternative scheme for the development of the Mynydd y Gwrhyd wind farm.

2.16. All renewable energy sources are available at a level that is independent of the apparatus we trap that energy with. It is not primarily the wind turbine that determines the total amount of wind energy available, it is the area of land over which the wind passes. Consequently it is not the height of the turbine which matters, it is the total "swept area" that the turbines in the wind farm are able to present to the wind at any time.

2.17. For example, Figure 3 shows that four 850kW wind turbines can used produce as much

Figure 3. Wind Turbine Versus Wind Farm Capacity



The swept area is calculated as π x (turbine diameter x 0.5)^2. The land area is based upon a turbine spacing of 3.5, and is calculated as (turbine spacing x turbine diameter)^2 / 10,000m^2/ha. The capacity of the smaller turbines are weighted with respect to the larger turbine using the power law, calculated as power output$_{V52}$ x [(height$_{V52}$ / 10)$^{0.19}$ / (height$_{V90}$ / 10)$^{0.19}$].

power a single 3,000kW turbine, even though the overall height of the 850kW turbines is 40% smaller than the height of the larger turbine (for comparison, the turbines described in the Environmental Statement are, overall, only 10 metres shorter than the V90). Of course, shorter turbines capture the wind at lower wind speeds, but this fact has been addressed by using the *Power Law* formula (which can be used to predict the wind speed at a certain height) to weight the value of the smaller turbines with respect to the larger turbine. This means that the power output figures given in Figure 3 are a direct comparison, taking account of the differences in wind speed due to height. Also, building a greater number of turbines does not use significantly more materials. Although doubling the size of a turbine increases the power output by a factor of four, the volume of the turbine will increase by a factor of eight. Therefore using more turbines does not excessively increase the use of materials. For example the weight of a single *Vestas V90* is 233 tonnes, whilst four *Vestas V52's* weigh 288 tonnes – about 25% more. Smaller wind turbines also require proportionately smaller foundation slabs, reducing their footprint in the landscape.

2.18. The current trend for larger turbines is driven not by the need to cut carbon emissions, but to maximise the return on capital of wind farms. However, if we are to sensitively develop

wind farms within highly valued landscapes, such as upland Wales, then the form of the development – in particular, minimising the visual intrusion by restricting the height of the turbines – is as important as the power produced. With regard to the requirement to assess the alternative options for development as part of the environmental assessment process (see paragraph 1.17 above) we would argue that the appellant has not considered a range of development options that might address the visual impact upon the landscape. We are presented with one development option. Four large turbines of a fixed size and a fixed position. For this reason we request that, in determining this appeal, regard is given to the lack of an assessment of alternative development sites or options, as a means of reducing the visual impact upon the adjacent upland areas and the Brecon Beacons National Park, as material grounds for dismissing the appeal.

2d. Other energy production options

2.19. In our reading of the benefits outlined in the Environmental Statement, the three primary outcomes of this project are:

- a reduction in the need to produce energy from fossil fuel sources;
- a consequent reduction in the UK's carbon emissions; and
- as part of the operation of the wind farm, the generation of an income to support local regeneration projects.

2.20. There are a number of different renewable energy technologies, many of which could produce all of the three outcomes outlined above. The main difference between these technologies is the level of energy output, and the level of impact that they would have upon the natural environment. For the sake of this examination we will pick just one – “solar thermal” powered domestic hot water (DHW) systems.

2.21. Electricity, for the purposes that absolutely require electricity, is only a small part of domestic energy demand – only around one-fifth of the total energy consumed in an average house [DTI, 2002/DUKES, 2005c]. The other four-fifths of energy demand, whether supplied as coal, gas or oil, is as heat. For this reason we can displace the use of fossil fuels in the home by the use of solar thermal DHW systems. This will avoid the production of carbon dioxide emissions in the same manner as a wind farm. It could also save the house occupier money, but the savings generated by solar DHW would pass directly to the members of the community not an intermediary body such as Awel Aman Tawe.

2.22. If we take the proportion of household energy consumption used for water heating as 22%, the average amount of energy consumed each year will be around 5,782kW-h per house (based upon an annual average consumption of 26,800kW-h/house). Assuming that about half of this energy could be provided by solar DHW (a *solar fraction* of 0.5 – the general design factor for cost and energy efficient solar thermal DHW systems), that's equivalent to 2,891kW-h/year of useful solar energy.

2.23. Wind farms produce electricity only, and so for the purposes of this evaluation we will compare the use of solar thermal DHW to heat half of the annual hot water demand against heating the water with electricity produced by a wind farm. This of course is heavily reliant upon the variables we use for costs and carbon emission factors, so we will use two scenarios – one using the current wind farm proposal data (4 x 2.75MW wind turbines, 28,908MW-h/year generation and the BWEA figures for carbon emissions) and one which recognises the criticisms highlighted in section 2a and 2b above (4 x 2.5MW Nordic N80 wind turbines, 26,280MW-h/year generation and the DTI figures for carbon emissions). The results of this analysis are shown in Table 4.

2.24. Table 4 shows indicates that the energy produced by the wind farm proposal is equivalent to 10,000 homes getting half their domestic hot water from solar thermal systems. What is more interesting is the “community income” figure. Even though the wind farm produces power locally, ordinary domestic customers will still pay the same amount for their power. If we divide the “community income” generated from the wind farm by the number of households served, the community would receive the equivalent of £32 per household per year (the figures are the same because based on the same variable, the annual DHW energy demand). In contrast, those households producing half their DHW energy demand from a solar hot water system will save £78 per year, almost two-and-a-half times more, because they are displacing the high cost of electrical water heating with cheaper solar energy. As gas-fired water heating is much cheaper than electricity, installing a solar DHW system will usually cost more per unit of energy than gas-fired DHW (unless gas prices continue to rise in the future). For this reason electricity-only homes should be prioritised if we wish to reduce the costs and carbon emissions from domestic water heating.

2.25. In our view, if Awel Aman Tawe wanted to reduce carbon emissions and help the local community financially they would arrange cheap finance and easy access to installation services for solar thermal domestic hot water systems. In fact, because the BWEA carbon

Table 4. Comparison of Wind Farm and Solar DHW Systems for Water Heating

	Proposed wind farm proposals with BWEA data	Amended wind farm proposal with DTI data (*Nordic N80*)	Solar DHW system – per 10,000 installations	
			BWEA data	DTI data
Annual energy prod., MW-h	28,908	26,280	28,910	28,910
Annual income generated	£160,000	£145,455	£780,570	£780,570
No. houses total DHW supplied	5,000	4,545	5,000	5,000
Annual income per household	£32.00	£32.00	£78.06	£78.06
Carbon saved, te CO_2/year	24,861	15,957	24,863	17,554

Figures are based upon an annual DHW energy demand of 5,782kW-h/house.
Annual energy production is based on either the wind farm output (wind) or the half (solar fraction 0.5) the DHW energy demand for 10,000 houses (solar DHW). The *annual income* is calculated as either £5.5348/MW-h (wind) or as the net cost of the solar DHW (£0.085/kWh for mains electricity, less the installation cost of the solar DHW system, £0.058/kWh – equivalent to £2,500 installation providing half the DHW energy demand for 15 years, or 43,365kW-h). The *number of houses DHW supplied* is calculated as the annual energy production divided by the annual DHW energy demand per house. The carbon saved is calculated as the annual energy production multiplied by 860kg CO_2/MW-h (BWEA data) or 607.2kg CO_2/MW-h (DTI data).

emission factors are erroneously high, installing 10,000 solar DHW systems in houses currently using electricity-only to heat their water would (on the DTI's figures) save more carbon than the proposed wind farm project. The area of Neath Port Talbot County Borough Council has around 10,000 “houses rented from local authorities” [DWLAS, 2004]. Consequently there is scope to provide significant renewable energy production, and carbon emission savings, by working with local housing agencies in the Neath Port Talbot area. Co-incidentally, this would help to reduce the fuel bills of the poorest groups in society, and so would contribute to the Department of Trade and Industry's priority of reducing the scale of fuel poverty [HMSO, 2003/DTI, 2005c].

2.26. Given the wider, community-based objectives that underlay this project, we would argue that a local programme of installing solar hot water systems could provide as much energy and save even more carbon than the proposed development. Although this would lead to some changes to the urban environment, it would not generate the same level of visual intrusion, and impacts upon wildlife, when compared to the proposed wind farm development.

2e. Controlling carbon dioxide emissions without new development

2.27. In terms of the national policy approach, we must balance the need to reduce carbon

emissions with the impact that developing renewable energy facilities will have. We must also seek to reduce carbon emissions as speedily as possible, so we must deliver the mechanisms to reduce our use of fossil fuels as speedily as possible. In our view it is valid to assess what other options exist for reducing carbon emissions in the area because it would obviate the need to damage the natural environment in the first place.

2.28. As an example lets look at Aberthaw B power station near Barry. This is a 1,455MW coal-fired power station. Based on the average calorific value of power station coal (26 gig-Joules per tonne, or GJ/te) and the UK average *load factor* and *thermal efficiency* for coal-fired plants (0.62 & 0.36 respectively [DUKES, 2005d]), Aberthaw B will be burning around 3 million tonnes of coal per year, and emitting more than 7 million tonnes of carbon dioxide, to provide around 2% of the electricity generated in the UK.

2.29. Some power stations burn a very small amount of biomass in order to reduce the level of carbon emissions (and can earn revenue, in the form of Renewable Obligation Certificates, for doing so). We would argue that burning forestry wastes in Aberthaw B could be used as a means of reducing carbon dioxide emissions without the need for new development. The question is, compared to the proposed wind farm, how much forestry waste would be needed to produce the same level of carbon reduction, and would this scale of fuel substitution be a feasible option for Aberthaw B?

2.30. For the purposes of this exercise we will use a source of biomass that is relatively abundant in South Wales – *forestry waste*. Forestry waste has a much lower calorific value than coal, so a greater mass of material must be burnt to produce the same power output. If we take the calorific value of forestry waste at around 6GJ/te (which assumes that the waste is quite damp/not dried) then for every tonne of coal (value, 26GJ/te) we displace 4.3 tonnes of forestry waste is required.

2.31. Based on the national average load factor and thermal efficiency, Aberthaw B burns around 3,023,000 tonnes of coal to produce 7,902,000MW-h of electricity each year – so each tonne of coal generates 2.61MW-h of power. Using the DTI's emission data for coal-fired plant each MW-h of power generates 890.5 kilos of carbon dioxide, so each tonne of coal burnt will produce (2.61MW-h/te multiplied by 890.5kg CO_2/MW-h) 2.32 tonnes of carbon dioxide per tonne of coal. The proposed 4 x 2.75MW turbine wind farm will save, on the basis of the BWEA's emission figures, about 25,000 tonnes of CO_2 per year. Dividing this figure by 2.32te CO_2/te coal, the proposed wind farm's annual carbon saving is equivalent to

the carbon dioxide emitted by 10,776 tonnes of coal. As 4.3 times the mass of coal displaced must be burnt, 46,337 tonnes of forestry waste is required to avoid the same level of carbon dioxide as the wind farm. Using the DTI's more realistic figures for carbon emissions, the proposed 4 x 2.75MW wind farm would save 17,600 tonnes of carbon dioxide. This is equivalent to the burning of 7,586 tonnes of coal, and the emissions from this mass of coal could be avoided by burning 32,600 tonnes of forestry waste.

2.32. Although we need to undertake a far more wide-ranging restructuring of our energy industry in order to achieve the 60% cut in carbon emissions demanded by government policy, in the short-term we could use “minimum development” measures, such as fuel switching, that can achieve the necessary short-term target without a rush to employ one technology or another. More importantly, such a policy would allow us time to develop the most important measure required – a reduction in the amount of energy that the UK consumes.

2.33. As shown above, the Mynydd y Gwrhyd wind farm will only offset (depending on whose carbon figure you use) the use of between 8,000 and 11,000 tonnes of coal. To produced the same effect,we would only have to offset between 0.3% and 0.4% of Aberthaw B power station's calculated annual coal consumption to avoid producing the carbon dioxide that this wind farm aims to avoid. Theoretically coal-fired plants can burn a mix of 10% to 20% biomass, and the Drax plant in Yorkshire has been burning a mix of 2.5% biomass (unfortunately their use of biomass is restricted by government policy on the operation of the Renewables Obligation scheme [Independent, 2006]).

2.34. In terms of the carbon emissions from the UK's power generation sector – 47,000,000 tonnes of carbon [DTI, 2005a] (equivalent to about 172 million tonnes of carbon dioxide) – the carbon saved by the proposed Mynydd y Gwrhyd wind farm is negligible. We could easily save a far greater amount of emissions by substituting a few tens of thousands of tonnes of the coal burnt at Aberthaw B power station with forestry waste produced in the South Wales area. For this reason we believe that the damage to the natural environment created by this development is unwarranted when very simple measures could be employed at existing plants to save a far greater amount of carbon dioxide.

2f. Options for demand reduction

2.35. In the longer-term we will have to cut our consumption of energy. Not just because of the problem of carbon emissions, but because the UK's supplies of natural gas (and also coal)

are limited. Natural gas production in the British sector of the North Sea peaked in 2003/4, and is now in decline, which is one of the driving forces behind the recent rise in natural gas prices. But, as has been identified by organisations such as the Parliamentary Office of Science and Technology [POST, 2004], natural gas consumption cannot continue for more than a few decades as a global peak in supply is perhaps only 15 to 25 years away.

2.36. If Awel Aman Tawe want to help the local community, and protect the local and global environment, we believe that the same outcomes as building a wind farm could be achieved through the distribution of low energy (or "compact fluorescent") light bulbs. These use about 20% of the energy of a conventional incandescent bulb, and reduce the emission of carbon, and the amount of money spent on lighting, by the same amount.

2.37. If we assume that the average house has six 100-Watt bulbs operating for, on average, six hours per day, that is equivalent to a power demand of 1,314kW-h/year. Switching the light to compact fluorescent bulbs would save 1,051kW-h of power, and £89 per house, each year. Every 1.6 houses that change their bulbs would also save (on the DTI's carbon statistics) one tonne of carbon dioxide each year. If 27,500 homes switched their lighting it would save the same amount of power, and carbon, as the proposed Mynydd y Gwrhyd wind farm. But rather than creating £160,000/year for community regeneration projects, it would collectively save these households £2,457,000/year.

2.38. Although Awel Aman Tawe want to develop a wind farm to produce "green power" and save carbon dioxide emissions there are other options that require "no new build", and which would achieve the similar outcomes to the project that is the subject of this appeal. In our view, they should have looked at these options in the Environmental Statement as a means of demonstrating that their approach was the best available. However, looking at the options we have outlined in this section, it is clear that there are many other ways in which we could save carbon emission, and bring financial benefits to the local community, that do not require such visually intrusive development options.

3. National Energy Policy and Energy Trends

3.1 The problem with the development of energy facilities in Wales is that whilst planning is a matter delegated to Cardiff, energy is not. More fundamentally, whilst the Welsh Assembly has an over-riding legal obligation to act according to the principles of sustainable development (under section 121 of the *Government of Wales Act 1998* [PPW, 2002 – paragraph 2.12]), the Department of Trade and Industry does not have the same imperatives.

3.2 The problem in the UK is that, because to date the emphasis in energy and environmental policy has been to "build our way" out of the problem (for example, with new clean power plants, or through buying new "green" products) we have consistently failed to significantly cut carbon emissions or curb our ever increasing consumption of energy. For example, although in 2004 we were emitting 31% less carbon per pound of GDP generated than in 1990, the fact that the economy had grown 39% between 1990 and 2004 meant that the actual reduction in carbon emission was only about 4% overall [DTI, 2005d] (and in fact we may soon exceed our Kyoto Protocol carbon limit because of the rapid growth in energy consumption, particularly in the transport sector).

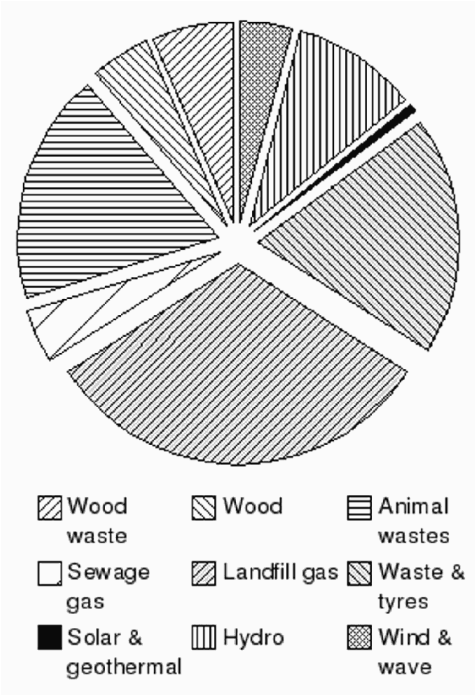
3.3 It is against this background that the development of wind farms takes place. It is also the reason why no objective analysis of the government's current energy and environment policy in general could reach a positive conclusion about progress to date. This is, in part, the reason for the current re-examination of the UK Energy White Paper, *Our Energy Future* [HMSO, 2003] as part of the DTI's current consultation on developing new nuclear power stations [DTI, 2006]. It's also for this reason that there is a clear split emerging within the environmental movement on issues such as wind farms, because whilst some groups point to the new policies or developments enacted by government, others point to the lack of actual change in real-world outcomes in relation to energy consumption or pollution. For example, despite the talk about tackling climate change recent data suggests that not only is government policy is having little effect in cutting carbon emissions, but we are not even able to arrest the inexorable increase in fossil fuel consumption that drives our emissions of carbon dioxide.

3.4 Around 3% of the UK's energy supply is classed as "renewable, but what the general public might consider to be "renewable" energy and what the Department of Trade and Industry consider to be "renewable" energy are not the same thing. If we look at the data for 2004

Figure 4. UK Renewable Energy Sources, 2004

Source	Energy, GW-h
Wood waste	3,094
Wood	2,373
Animal waste	8,862
Sewage gas	2,059
Landfill gas	15,433
Waste & tyres	9,211
Solar & geothermal	291
Hydro	4,931
Wind and wave	1,942
Total	48,195

Source: Digest of UK Energy Statistics, 2005 [DUKES, 2005e]



(see Figure 4), only 4% of the UK's "renewable" energy came from wind power. Solar power produced less than 0.6%. In contrast, landfill gas provided 32%, burning waste and car tyres provided 19%, and animal wastes provided 18%. In terms of the "real world outcomes", the UK's continued financial support for renewable energy depends mainly upon the burning or dumping of recyclable materials which took significantly more energy to manufacture than is produced as part of their "recycling" as energy.

3.5 Nationally energy consumption has been increasing fairly steadily since the mid-1980s, and the growth in consumption roughly mirrors the growth in the economy as a whole. The problem is that there is too much emphasis in government policy, especially in relation to renewable energy, on the generation of electricity. Electricity represents just 18% of the UK's final energy consumption [DTI, 2005b], and so by concentrating on less than one-fifth of the problem we ignore the other four-fifths. Likewise, if we look at carbon dioxide emissions, the electricity generation sector only accounts for about 30% of the annual total [DTI, 2005a].

3.6 St the moment the direction of national energy policy is doubt as a result of the recent consultation on revisions to the Energy White Paper [DTI, 2006]. This is popularly perceived as an exercise to regularise the development of new nuclear power plants in order to reduce

the level of carbon emissions and increase the security of the UKs electricity supply. But, as nuclear electricity only made up 8% of the UK's total energy supply in 2004 (or 19% of the electricity supply [DUKES, 2005c]), our nuclear power capacity would have to be increased may times in order to produce significant savings. For example, if we double our nuclear capacity it would only save 6% of the UK's carbon emissions. In any case, as noted in research from the OECD, although there are 60 years of proven uranium reserves, if all developed states used nuclear power to reduce emissions from the nuclear fuel cycle the uranium resource may only last one or two decades [OECD, 1999].

3.7 Clearly then, the UK's energy policy is not fit for the purpose of controlling carbon emissions, or reducing the demand for energy as we become more reliant on imported energy sources. Driven on by the decline in our indigenous energy sources, as we pass first the global peak in oil production and then natural gas, we will be entering a new era of "energy depletion" within one to two decades [Mobbs, 2005]. For example, in terms of renewable energy, the increase in renewable sources in not even keeping pace with the increase in energy supply overall. Between 1998 and 2004, renewable energy sources increase their level of supply from 2.59 *million tonnes of oil equivalent* (mtoe) to 4.14mtoe – an increase of 1.55mtoe [DUKES, 2005e]. Over the same period the UK's primary energy supply grew from 243.5mtoe to 247.5mtoe – an increase of 4.0mtoe [DUKES, 2005c]. So our total energy consumption is increasing at a rate of two-and-a-half-times the rate of increase in all renewable energy sources.

3.8 Irrespective of the intentions of government policy – as uncertain as that may in light of the current review – the energy statistics do not bear out any significant change in the operation of the UK's energy economy in recent years. Renewable energy sources are not being developed at a rate sufficient to keep pace with the increase in energy consumption overall. We would argue that the current approach of national policy, which concentrates on supply-side changes to our system of energy provision, is insufficient to deal with the problems of climate change or energy depletion. The proposed wind farm is an adjunct to this failing supply-side policy. Instead we must look at the options for demand-side changes, such as those outlined in the previous section of this report, that can achieve both reductions in carbon emissions, as well as real-terms reductions in energy consumption.

4. Planning Policy Evaluation

4.1 Neath Port Talbot County Borough Council refused planning permission for the amended, 4-turbine, wind farm proposal on the grounds of visual impact and the cumulative impact of the opencast and wind farm developments upon the local community. We support these grounds for refusal. However, we would also highlight that should this appeal be granted it would set a dangerous precedent that would detract from the national policy, as expressed in Technical Advice Note (TAN) 8 [TAN-8, 2005] and revised *Planning Policy Wales* [PPW, 2002], to manage the conflict between the development of wind farms and the natural landscape.

4.2 Under the new guidelines introduced in TAN-8 the development of wind farms is encouraged but the emphasis is on the development of larger capacity wind farms within identified *Strategic Search Areas* (SSAs) [*TAN-8*, paras. 2.4–2.10]. Rather than a widespread network of wind farm sites, the policy adopted by the Welsh Assembly is that [*PPW*, para. 12.8.6],

> *"In order to meet the 2010 renewable energy target, the Assembly Government's energy policy is that 800MW of renewables capacity should be provided from strategic onshore wind energy development mostly in the form of a small number of large wind farms."*

In this context, since this is not a "large" wind farm, it is arguable that the capacity of the appeal site is not an essential component of the Wales onshore wind target of 800MW. The SSAs policy identifies an area large enough to accommodate 1,120MW of development (the 40% excess has been allocated as parts of the SSAs may not be suitable for development when subject to a detailed ground/landscape assessment), and since the SSA policy is the main vehicle to deliver the 800MW target any development outside the SSAs should be considered as additional to this target, not an essential part of it.

4.3 The SSAs were drawn up after extensive studies by Arup [Arup, 2005] of the potential for developing, and the impacts of, wind power in Wales. As explained in section 1 earlier, the drafting of the boundaries for the *Pontadawe SSA* [TAN-8E, 2005] takes account of the effects of the ridge line, formed by Mynydd y Gwrhyd, to provide natural screening of the SSA from the Brecon Beacons National Park. But the wind farm site sits not just outside of the SSA (and so must therefore subject to the consideration of applications outside of the SSAs, which is discussed in the next paragraph), but it is on the ridge line and so is visible

from the Brecon Beacons National Park. Permitting a wind farm in this location would be contrary to objectives that underlie the development of the SSAs, and would set a precedent for the areas around other SSAs that are visible from sensitive landscape areas.

4.4 For wind farm developments outside the SSAs, TAN-8 puts the emphasis on the need to permit mainly small scale schemes that do not conflict with the overall environmental and landscape protection objectives of the national wind farms policy. The specification in TAN-8 [*TAN-8*, para. 2.2] is that any "large" wind farm, which is defined as 25 mega-Watts (MW) or greater, should be developed within the SSAs. For developments outside the SSAs there is a suggested threshold for "smaller community based wind farm schemes" of "generally less than 5MW" [*TAN-8*, para. 2.12]. The amended *Planning Policy Wales* also puts emphasis on the encouragement of predominantly small-scale of wind farms outside the SSAs [*PPW*, para. 12.8.11] –

> *Smaller (less than 5MW), domestic or community-based wind turbine developments may be suitable within and without SSAs, subject to material planning considerations."*

4.5 The (revised) capacity of this proposal is 11MW, and therefore we must carefully assess its acceptability as its scale is well in excess of the 5MW threshold for small applications outside of the SSAs. As noted earlier in section 1, in relation to highly sensitive landscapes such as national parks, *Planning Policy Wales* states that [*PPW*, para. 5.3.4],

> *The statutory purposes of National Parks are to conserve and enhance their natural beauty, wildlife and cultural heritage and to promote opportunities for public understanding and enjoyment of their special qualities. Where it appears that there is a conflict between those purposes, greater weight shall be given to the first.*

Additionally, *Planning Policy Wales* states that [*PPW*, para. 12.8.8],

> *"The Assembly Government accepts that the introduction of new, often very large, structures into the open countryside needs careful consideration to minimise the impact on the environment and landscape"*

and [*PPW*, para. 12.8.13],

> *"At the same time local planning authorities should:*
> 1. *ensure that international and national statutory obligations to protect designated areas, species and habitats and the historic environment are protected from inappropriate development; and*
> 2. *ensure that any potential detrimental effects on local communities are minimised."*

4.6 In our view this puts the emphasis on the protection of the natural environment over the permitting of wind farms larger than 5MW, unless they are located within an SSA. Also, since the proposal is not a "large" wind farm, the issue of meeting the onshore wind power target for Wales does not apply. For this reason the primary considerations are the local factors relating to the impact upon the visual landscape, nature conservation, and nearby land uses.

4.7 In our view, the impacts of this development are unacceptable locally because if its proximity to Tairgwaith, Gwain-Cae-Gurwen and Cwmgors. It would also intrude visually on the areas of access land around these settlements to which the public have only recently gained access. In terms of national policy, we consider the visual impact upon the Brecon Beacons National Park to be unacceptable as it detracts from views that can be enjoyed from the A4069 and the Black Mountain. We consider that on the basis of the visual impact, in particular the impact upon the national park, there are sufficient grounds to dismiss the appeal.

4.8 As noted earlier in section 2, as part of the environmental impact assessment procedure there is a requirement to consider alternatives to the proposed development (paragraph 1, Schedule 4, *Town and Country Planning (Environmental Impact Assessment)(England and Wales) Regulations 1999*). The Environmental Statement [*Written Statement*, section 1.5, page 4] states that the document includes the information required under Schedule 4 of the Regulations, but as there is no clear discussion of the alternative development options we would argue that the minimum requirements for the preparation of an environmental statement have not been met. This in itself creates reasonable grounds for dismissing the appeal since the legal tests for the preparation of an environmental statement have not been met.

4.9 If we consider the "bare minimum" in terms of alternatives, the most relevant "alternative" in this case would be an alternative site, or a different scale of development. Had this development been on the southern side of the ridge, within the Pontadawe SSA, the material planning considerations would have been entirely different. Likewise if the scale of development had been less than 5 mega-Watts, different criteria would have applied. As it is, we are presented with a highly inflexible development proposal that does not provide a coherent examination of the alternative development options that might minimise the visual impact whilst still attaining the required objectives of the development (saving carbon

dioxide emissions, generating a local income for community regeneration, etc.).

4.10 The applicant offers various other justifications for the development of this site, related to the production of energy, avoiding the production of carbon dioxide from energy generation, and as part of this process developing an income for local regeneration projects. As outlined earlier in section 2, many of these claims can be tested against alternative development options that have a lesser impact that the proposed wind farm, and we find that equally beneficial options could be developed locally instead of the wind farm. Many of these options relate to improving energy efficiency, or developing micro-generation schemes (such as solar thermal DHW) within existing buildings. Increasing energy efficiency and energy use within buildings is a stated aim of both *Planning Policy Wales* [para. 12.8.12] and TAN-8 [para. 1.6], and in this context discussing the alternatives would have provided a balance of options for the local planning authority to consider.

4.11 In terms of the benefits to the community, and in particular the income that may generated for "regeneration projects", we do not believe that this in itself should form a justification, or mitigating factor, for approving this development. TAN-8 makes it clear that [*TAB-8*, Annex B, para. 1.3],

> *"The developer might wish to volunteer gains outside obligations that could be legitimately described as necessary for the development to proceed... the important point here is that, as such offers are not necessary for the development to proceed, they must not impact upon the decision-making process."*

4.12 Whilst the aims of Awel Aman Tawe are laudable, their promises of regeneration project in local communities the should not held as reason enough for approving this development. As identified earlier in section 2, there are other options that Awel Aman Tawe could pursue locally to achieve these same outcomes should this appeal be refused.

4.13 To summarise our positions, it is our view that the development of a wind farm of this scale, in this location, is unacceptable on the grounds of its visual intrusion in to the local landscape. There is no alternative set of development options that we might consider to permit a scheme that might have a lower visual impact – such as moving the location of the development to another location. For this reason we believe that there is no other option but to dismiss the appeal.

5. Conclusion

5.1 However worthwhile to the local community, or urgent due to the environmental imperative to reduce carbon emissions, the development of a wind farm in a rural area with high landscape value is not a matter that is to be allowed under any and all circumstances. The Welsh Assembly, through the revised *Planning Policy Wales* and TAN-8, have provided a mechanism to resolve the differences between protection of the natural landscape, and the need to produce renewable energy, through the mechanism of the SSAs. Permitting such a visually intrusive development of this scale (in terms of generating capacity, neither a “large” nor a “small” application) outside an SSA would set a dangerous precedent for development around the other SSAs. We would request that, in order to avoid compromising the Welsh Assembly's framework for the development of wind power, the appeal is dismissed.

5.2 Given the intrusive nature of the development proposed, we would have hoped for the flexibility of having other development options assessed as part of the Environmental Statement. The study of alternatives is not a matter of proposing alternative projects, but is a mechanism by which the applicant is able to demonstrate that the option they have chosen has the least environmental cost, in return for the greatest level of benefit to society generally, by contrasting the features of the proposed development alongside other viable options. However, no such assessment of alternatives exists, and on this basis we believe that there are sufficient grounds to dismiss the appeal.

5.3 Due to the location of the wind farm there will be an unavoidably high visual impact on the Brecon Beacons National Park. This in our view, quite separately from the issue of the effect on the SSAs policy, creates grounds for dismissing the appeal. In addition there has been next to no consideration of the effects on the access land in the area, and we consider this a serious omission from the visual impact studies presented in the environmental statement.

5.4 There is evidence that wind farms kill protected bird species. In practice, the more relevant issue we must address is, *how many*. As there has been no proper assessment of the level of bird kills, or more specifically, how alternative development options and their impact on birds might change the level of impact. We question whether the applicants have done enough work to discharge the obligation to prove that the damage that will result from the operation of the wind farm, “could not have been reasonably be avoided”.

5.5 Whilst the benefits of this development to the local community, should it be permitted, may

be realised, it is important to understand that the wind farm project is only one possible means of achieving the goals set. As we have explored in section 2, there are various mechanisms we could employ to produce renewable energy, to reduce carbon emissions, and to restructure our use of energy in order to create financial benefits for the local community. In terms of these other development options, we believe that they are realistic, and could be implemented locally. For this reason there is no over-riding imperative to permit this development because it is the only means to reduce carbon dioxide emissions.

5.6 Despite the fact that the Welsh Assembly identify climate change as a critical issue for the future of Wales, we urge caution when considering the claims of how much carbon dioxide is development will save. The British Wind Energy Association's data, upon which the carbon savings quoted in the Environmental Statement are based, are clearly in error if we compare them to the data used by the Department of Trade and Industry to assess the UK's carbon emissions. We would recommend that the figures on carbon dioxide emissions quoted in the Environmental Statement are ignored due to their unreliability.

5.7 The UK's energy policy is in a state of flux as the measures identified, by successive governments, to reduce carbon emissions are not having the required effect. At the moment the focus may have shifted to nuclear power but this option is equally limited and does not have the scope to significantly reduce carbon emissions or guarantee security of supply in the long-term. For this reason the role of different forms of renewable energy, such as wind power, or the more short-term options for reducing carbon emissions such as the co-firing of coal-fired power stations with biomass, is uncertain. In practice, national energy policy may have to shift radically over the next decade or so to deal with the inability of our energy policy to deal with our ever increasing carbon emissions, or in the longer-term, for our growth-oriented economy to deal with the shock of energy depletion.

5.8 Amongst this sea of uncertainty what remains is the natural beauty of the local uplands. We believe that the maintenance of the quality of the visual environment, and the quality of life of the residents of nearby communities, takes priority. This is because, given the uncertainty over the value of different options to produce energy or save carbon, in policy terms the requirement to protect these two critical assets is very clear. The development of a wind farm in this location will harm the local landscape, detract from the character of the Brecon Beacons National Park, and affect the amenity of local residents. For this reason we request that the appeal is dismissed.

Sources

Most of the sources listed below have been provided in electronic format on the CD that accompanies this report (for 'clickable' access to the CD's contents open the file *index.html* with a web browser). Copies of the printed material not included on the CD can be provided to the parties in the inquiry upon request.

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