

Evidence for Scout Moor Windpower Station Inquiry
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DAMAGE CAUSED BY WIND DEVELOPMENT
INFRASTRUCTURE.

INTRODUCTION:

This report is based on the Cefn Croes experience. In 2002, Patricia Hewitt, Secretary of State at the Department of Trade and Industry gave approval, under Sections 36&37 of the 1989 Electricity Act, for the construction of the UK's largest on-shore wind power station to date : 39 turbines rated 1.5mW, total installed capacity 58.5mW, in the heart of mid-Wales.

During 2004, construction has taken place. The whole development has been closely monitored and recorded by Cefn Croes campaigners. There have been numerous violations of the planning conditions, laid down in the 106 consent document, and these have been reported to Ceredigion County Council (the LPA), the Countryside Council for Wales, the Environment Agency, the Welsh Assembly, and archaeological trusts. It has become clear that these agencies do not have the resources to monitor day to day damage resulting from construction , departures from planning conditions, nor the staff to enforce the conditions.

OBJECTIONS ON LANDSCAPE GROUNDS:

One of the main reasons for the increasing opposition to large land-based wind developments is the 'loss of visual amenity' (to use a chilling developers phrase) i.e. the effects of highly visible vertical man-made structures, with rotating blades in predominantly horizontal, static, natural hillscares. Loss of beautiful scenery, favourite views, inspiring landscapes—these objections are dismissed by developers as 'emotional' and 'subjective'. Wind turbines however in open countryside are inappropriate. Put simply, they are wrong for the place. This is neither an emotional nor subjective assessment.

INFRASTRUCTURE DAMAGE:

Whilst much attention is given to the aesthetics of the superstructures of wind turbines within the landscape, little consideration is given to the damaging effects caused by the infrastructure . This report seeks to fill that gap.

1) Roads:

- new access roads onto the site.
- kilometres of new tracks and access roads between turbines.

2) Trenches:

- kilometres of trenches between the turbines.
- connection to the on - site sub-station.

3) Foundations and Land-take:

- huge concrete filled foundations for the turbines.
- land take.

4) Peat:

- disturbance, drainage, drying out.

5)Hydrology:

- water courses damaged, diverted, polluted.

6)Habitat loss:

- loss or irreversible changes.
- clear felling of trees(especially if Forestry Commission land.)

7) Rights of Way:

- blocked, disrupted, degraded.

8) Sub-station:

- construction, industrial appearance, light pollution.

9) Grid connection:

- kilometres of overhead cabling and pylons linking to the National Grid.

10) Collateral:

- damage to the surrounding road network and impact on adjacent villages.

11) Concrete production:

- the pollution issues.

Wind power station construction can have profound and irreversible effects, not just on the site itself but for miles around. Each of the above points will be considered in more detail.

1) ROADS (photographs 1 and 2).

Given the size and weight of the turbine tower sections and nacelles (hubs), these need to be substantial - not less than 10m wide on straight stretches, and much wider on bends and passing places. Blades 35m long are delivered on low loaders of 42m, so bends need a diameter of 45m. Maximum 10% gradients require huge amounts of 'cut and fill' and opportunistic quarrying from 'borrow pits' to gain roadstone to obtain these levels, or alternatively thousands of HGV deliveries of aggregates and roadstone from adjacent quarries. Usually, a combination of both methods.

Construction of new roads is a major civil engineering project, comparable to building a new by-pass or motorway section. Machinery on the same scale is required. If the pre-existing tracks, or farm dirt tracks are to be widened, fences, gates, cattlegrids, and hedges will go. Bridges will be widened, strengthened or replaced. Streams will be conduited or diverted. **Severe landscape scarring results.**

Once a road network is opened up on previously wild areas, it remains open to all comers - a Mecca for the macho 4x4s, ATVs, scramble bikes, rallying brigades. The wilderness is lost forever and with it the increasingly rare tranquillity of unpopulated areas.

2) CABLE TRENCHES; (photographs 3 and 4).

These generally run alongside the roads, but sometimes a short cut is taken across open moorland to cut costs. Kilometres of these trenches, about 1m deep and 1m wide are needed, resulting in significant ground excavation and disturbance.

3) FOUNDATIONS and Land-take; (photographs 5,6 and7).

These are huge pits, average area 400sq.m. excavated down into the bedrock, at depths of between 6-15m depending upon the geology of the subsoils. Because the hydrology is disturbed, they frequently fill with water, and require drainage, via pipes leading directly onto open moor, or into the nearest valley and water course.

Once satisfactorily excavated, a concrete skim is poured. The base tower section- nearly 5m wide and 4m high is positioned centrally by a huge crane, then reinforced steel with shuttering constructed around it. The concrete pour, between 600—900 tonnes, is done in one day.

THIS CONCRETE REMAINS IN THE GROUND FOREVER.

Adjacent to the turbine foundations are landing pads – up to 30m square (much larger than the developers estimate of 19m). These have to be levelled and compacted in order to take the weight of the huge cranes and tower components. There is massive earth disturbance and movements of spoil and aggregates. During the post construction ‘restoration’ phase, this may be levelled off and covered over, but the damage has already been done.

Developers claim that ‘permanent’ land-take is only 1.2% i.e. the area of the turbine bases, their immediate vicinity, and roads of 4.5m. width. However, the initial land take, as graphically demonstrated by the aerial photographs is much greater. The quarrying activities, erosion and destruction of hillsides and habitats, and damage below the newly seeded grassed over spoil remains.

4) PEAT DAMAGE; (8,9 and 10).

Upland peat bogs and mire are rare habitats, of world wide importance. Deemed worthy of protection elsewhere, it appears that wind developers can carve them up, drain them and dessicate them with impunity. It is a shocking sight to see glistening, moist black surfaces ripped into, exposed to drying winds which oxidise the peat, resulting in the release of CO₂. Left undisturbed, the sphagnum mosses covering the peat, and the peat itself act like a giant sponge, absorbing the heavy upland rainfall and slowly releasing the purified water in a controlled way into the streams, underground watercourses, and rivers. Disrupting the peat hydrology results in fetid pools of ‘peat soup’, and stinking swamps. Once dried out, exposed peat cannot satisfactorily be rewetted, and it takes thousands of years to reform.

Having lost its absorptive capacity, and purification abilities, the result will be increased rain run off from the hills, with swiftly rising river levels after storms, affecting river eco-systems, and more flash flooding.

5) HYDROLOGY DISTURBANCE; (photographs 10 and 11).

In addition to that caused by peat disturbance, the foundations also displace water courses. As a result of road construction, stream culverts are widened, and streams conduited through great drainage pipes, which

are covered with considerable depths of stone. Some are interrupted, some diverted, some are newly bridged. Silt traps for road run - off (often polluted with liquid concrete or oil spillages) are ineffective. Straw bales become dislodged. What effects will this polluted run - off have on springs and streams downstream from which local people draw their water supplies? The Environment Agency are not on site daily and cannot monitor every pollution incident.

6) HABITAT LOSS:

Anything in the route of roads, cable trenches, foundations, landing and pylon pads, is ripped up, removed and dumped to one side over a wide adjacent area. Virtually no habitat is sacred. Pockets of SSSIs, excavated up to their boundaries, will remain isolated by the development - their integrity for wildlife and their landscape context under threat.

Along the forestry tracks banks of lichens, mosses, ferns, bilberry, gorse, self sown saplings- all are bulldozed into oblivion. Moorland vegetation supporting populations of rare plants, insects, and birds is dug up, turned over, pushed aside.

Developers claim that wind factories offer the opportunity to 'improve' habitats and 'increase bio-diversity', by setting aside derisory sums of money for Land Management Plans. This amount may cover a couple of ecology student surveys per annum. Having witnessed the extent of the initial total destruction, this beggars belief. It is a cynical justification to excuse the enormous damage.

In order to improve the habitat, one does not first annihilate it!

Meanwhile, underground in the giant concrete graves, the alkaline concrete will be reacting with the surrounding backfill of acid soils resulting in a toxic leachate which will run off into the surrounding water courses and catchment area. Nothing on this scale has been attempted before on our moorlands. It is a gigantic experiment, but the ecological effects could be disastrous. Why take the risk?

Effects on wildlife- flora and fauna have not yet been studied. The RSPB did not object to Cefn Croes, and has not subsequently monitored the effects of the development, citing staff shortages. This indifference to the UK's largest consented on-shore wind power station is surprising. However, the RSPB is likely to have a place on the Land Management Board, once construction is complete, by which time it will be too late.

7) PUBLIC RIGHTS OF WAY:

Developers are not keen to have their activities observed during the construction, and they fear vandalism, and vehicle sabotage. However, keeping public rights of way open should be a condition of any planning

consent, and site working hours should be restricted, and so that it is safe to enter after hours or on Sundays. Anticipate however warning signs of ‘24 hour surveillance’ and ‘keep out – construction site’. Footpaths, bridleways and other rights of way may be closed off (new padlocked gates, without adjacent stiles), damaged (stiles broken, new barbed wire fences) diverted, improperly marked, or rendered impassible by piles of spoil, trenches, mountains of peat. Diggers can be deliberately parked across tracks. There are attempts to intimidate:

‘YOU ARE BEING WATCHED’

Once operational the turbines are very intimidating to many walkers and horses get ‘spooked’. Wind factory sites in effect become ‘no go’ areas during construction because of site security, and dangers from machinery and deep excavations, and post construction are not pleasant places to visit. The sensation is akin to walking under a Jumbo Jet about to take off.

8) SUB-STATION; (photograph 12)

This compound on the wind factory site is surrounded by metallic pallisade security fences, with a permanent control centre the size of a large bungalow. There are transformers, security lights and cameras. Light pollution is therefore introduced into previously dark areas. (Ref. CPRE’s maps to show diminishing ‘dark skies’ unaffected by light pollution in the UK). Substations emphasize the industrial nature of the development, and are substantial developments in their own right.

9) THE GRID CONNECTION; (photograph 12)

The length of this route, leading from site substation to connect with the National Grid depends upon proximity to the latter, which will need enlargement (more gantries, transformers). The pylons with their 133,000volt cables will further disfigure and despoil landscapes, adding to the clutter of industrialization. There are health worries about the effects of these high voltage power lines.

Developers do not underground cables- it is time consuming, costly and cuts down the profits. If the power lines cross Forestry Commission land, a swathe of parallel lined unsightly clear felling will take place before erection.

10) COLLATERAL DAMAGE; (photograph 13)

Convoys of abnormally wide, heavy, long loads cause damage to rural road networks of narrow, twisty roads, old bridges, historic and vulnerable buildings. In advance of planning permission, it is common for

the approach roads to suddenly be widened, straightened, and for bridges to be strengthened or replaced, raising suspicions that, behind the scenes, decisions have already been made. Drains can collapse under the weight of repeated HGV movements of concrete and aggregates. Bits of masonry can be knocked off old buildings as the 42m low loaders negotiate bends and narrow streets designed for a gentler age. Road surfaces are eroded and scarred, kerbstones dislodged or crushed.

Who picks up the bill for the repairs? Will the developers and their various sub contractors and delivery companies make reparation or be held accountable? Or will the financially hard pressed Highways departments of the local councils end up paying? - yet another burden on the tax payer for this costly electricity.

The thousands of extra vehicle movements for delivery of turbine towers, nacelles, transformers, nose cones, blades, cranes, site huts, offices, skips, containers, pipes, cabling, condensers, workers caravans, substation components, grid connection cables, concrete, and aggregates will daily ply to and fro causing pollution from diesel emissions, noise, dust and vibrations. Traffic chaos frequently results. Journey times for normal commercial traffic are increased, with knock - on effects on the local economy. Visitors are frustrated by the delays, which can adversely affect local tourism.

11) CONCRETE PRODUCTION; (photographs 14 and 15)

The thousands of tonnes of concrete poured into the turbine base foundations are a vital component of wind power station development. If concrete is to be made on site, a full blown factory will be needed with bays for the aggregates and sand, hoppers for cement, mixers, chutes, parking for lorries, and the washing out of tanks. **The latter is a most important environmental consideration.**

Concrete manufacture requires water. From where will this be obtained and what quantities? If the water is to be abstracted from a nearby river or other source, will other users, farmers, anglers, conservationists, local residents be affected?

It should not be forgotten that manufacture of cement, the critical ingredient of concrete, is one of the most toxic of all manufacturing processes, releasing large amounts of CO₂ due to the intense heat required in its production.

THE ENVIROMENTAL AUDIT:

Developers profoundly underestimate in their EIAs the amounts of CO₂ and other greenhouse gases emitted during the manufacture and construction of wind power stations.

“ It is generally acknowledged and accepted that the energy pay back for a wind turbine is about six months”. (Ref., Geraint Jewson, BWEA’s Developer of the Year 2002, from RDC and sister companies i.e. West Coast Energy and Cambrian Wind Energy) i.e. the amount of CO2 and other GHG emissions which will be produced during manufacture and construction is the same as that ‘saved’ by six months operation of the wind turbine. This is unbelievable! A figure plucked from the wind, and it needs challenging. The calculations used for this audit need to be scrutinized and questioned.

- Does it take into account the carbon audit for mining the metal ores used to manufacture the steel turbine towers?
- Does it analyse the chemicals used in blade manufacture: fibre glass, polyester, epoxy resin?
- Manufacture of gigantic spools of electrical cables?
- Diesel emissions from transporting over thousands of kilometres of sea and land the *‘convoi exceptional’* for the turbines ?
- How much fuel is used from start to finish?
- On site emissions from gas guzzling machines, quarrying, excavating shifting earth and roadstone?
- The loss of CO2 absorptive capacity by clear felling trees and destroying habitat vegetation?
- The release of CO2 from peat drainage?

A FULLY COMPREHENSIVE DETAILED CARBON AUDIT SHOULD BE MANDATORY AND ACCOMPANY EVERY ENVIRONMENTAL IMPACT ASSESSMENT. IT IS MORE LIKELY TO BE 60 YEARS RATHER THAN 6 MONTHS.

CONCLUSION;

Taking into account the infrastructure damage resulting from the development of large, commercial wind power stations, and the results of a genuine environmental audit, it becomes clear that wind generated electricity is far removed from the 'clean and green' image beloved of developers.

Infrastructure damage and carbon audits should therefore be afforded close attention by decision makers in wind power applications.

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