



Nant Mithil Energy Park, Powys.
PEDW DNS Application Ref: DNS CAS-01907-D7Q6Z1.

CPRW-RE-think Chapter 10 on

Shadow Flicker

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Evidence by CPRW-RE-think on:
Shadow Flicker

Application for Planning Permission under the
TOWN & COUNTRY PLANNING ACT 1990 and PLANNING (WALES) ACT 2015

OBJECTION on behalf of **Re-Think**, a Third-Party Objector Groups of affected local residents, and **CPRW** the countryside charity, in relation to an application for a ‘Development of National Significance’ (reference number: CAS-01907-DZQ6Z1), under the Town and Country Planning Act 1990 as amended by the Planning (Wales) Act 2015 and the Developments of National Significance (Wales) 2016 (as amended) and subsequent Regulations, for ‘the construction and operation of an energy park including wind energy developments and associated infrastructure and habitat management areas’ on land ‘approximately 9km east of Llandrindod Wells’, Powys.

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1. INTRODUCTION

- 1.1. This submission relates to the Application for a ‘Development of National Significance’ (reference number: CAS-01907-DZQ6Z1) (Application), under the Town and Country Planning Act 1990 as amended by the Planning (Wales) Act 2015 and the Developments of National Significance (Wales) 2016 (as amended) and subsequent Regulations, for ‘the construction and operation of an energy park including wind energy developments and associated infrastructure and habitat management areas’ consisting of 30 wind turbines with a tip height of up to 220m and associated access tracks (Proposal) on land ‘approximately 9km east of Llandrindod Wells’, Powys (Site). The Application is made by Nant Mithil Energy Park Ltd, a subsidiary of Bute Energy (Applicant) (ES 1.10).
- 1.2. The Objection is submitted jointly by **RE-think**, a Third-Party Objector Groups of affected local residents, and **CPRW**¹, a charity, established in 1928, which seeks protection and enhancement to the countryside and environment in Wales.
- 1.3. This submission relates to the potential shadow flicker effect arising from the Proposal and respond to the Applicant’s **ES chapter 13**.

2. SHADOW FLICKER ARISING FROM THE PROPOSAL

- 2.1. The Applicant states that they have used computer modelling to arrive at their estimate of the shadow flicker effects arising from the Proposal. However, the methodology and calculations used by this software is not available. It is not clear that this modelling has been independently verified. It is therefore not possible to verify the computation applied by the Applicant to this case.
- 2.2. The Applicant states they assume *“that effects will not be experienced by properties which are a greater distance than 10 times the rotor diameter and outside 130 degrees either side of north relative to the proposed wind turbines”* (ES 13.23).
- 2.3. Consequently, the Applicant has used a threshold limit of ten times the turbine rotor of 1.63km and 1.55km (ES 13.13). However, at the Scoping stage the Welsh Government stated that *“there is a lack of evidence to support the use of ten rotor diameters as a cut off, and this is entirely down to misinterpretation of the original reference to this distance”*. The Applicant has not offered an adequate explanation as to why, for their shadow flicker analysis, they have sustained their assessment using the ten-rotor distance.
- 2.4. Furthermore, the Applicant states that they limit their measure of significance to 30 minutes per day and 30 hours per year. The Applicant’s calculations are based on a presumption of the quantum of sunshine hour in a year (ES 13.29). However, that is

¹ Campaign for the Protection of Rural Wales.
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not an appropriate way to assess shadow flicker. The Applicant is intentionally trying to understate the potential impact.

- 2.5. There are several flaws in the process the Applicant has applied to their assessment of shadow flicker. The key basis of their shadow flicker assessment is to use a ten times the rotor diameter. However, this notional ten rotor diameter measure does not take account of the particular circumstances of the location of each turbine. This Proposal is located on a hill top with many dwellings and settlements close to and just below it. In such a situation the shadow from wind turbines would go much further than ten rotors distance.
- 2.6. Thus turbines of 205m height, located on a hill some 200m above dwellings will cast shadows much further than 1.63km. Applying the 163m rotor, adding the 200m hill height difference mean the shadow would be cast over 3.6km. Within this 3.6km distance there are 469 dwellings. Of these, 432 lie within the 130 degrees either side of north of a turbine and are therefore liable to potential shadow flicker effects. In practice shadows from wind turbines can be cast further than this. The extent of turbine shadows depends on the azimuth of the sun, the height of the turbines and the topography.
- 2.7. The Applicant calculates the period of potential shadow flicker only by the sunlight hours each year. This is a false approach. It does not take account of topography and the direct effect of shadow flicker.
- 2.8. Even applying their limited and selective methodology the Applicant still says that shadow flicker will affect dwellings from 19 turbines at the Site. This is an extremely high number of turbines to be causing shadow flicker. They suggest that these effects could be mitigated by shutting down the turbines and proposed introducing modules to do this. However, these modules are notoriously ineffective, even when working. Once consented the Applicant has a strong commercial self-interest to not shut down turbines, planning enforcement of shadow flicker is problematic and the resources of the local planning authority are known to be limited resulting in weak planning enforcement here. In practice there would be no viable controls which would enable affected local residents to seek redress and ensure enforcement.
- 2.9. In summary therefore, the methodology and findings by the Applicant are not transparent and cannot therefore be relied upon. The Applicant relies on the discredited notion of only measuring shadow flicker effects up to ten times rotor diameter. Aside from the scoping direction doubting this, such an assessment does not take account of the circumstance at this Proposal's Site. They have used software and calculation which are not transparent and therefore cannot be verified. The Applicant uses a misleading adjustment by applying only estimates of the hours of sunshine each year. Even by their own self-limited assessment the Applicant identifies nineteen turbines which will create shadow flicker. That is extremely high for any wind energy

development anywhere in the UK. Even then the Applicant fails to accurately count the number of dwellings that will be affected by shadow flicker. The Applicant also ignores the potential use by residents of their gardens. In mitigation the Applicant offers shadow flicker modules to control turbine rotation, despite the fact that experience shows these modules are ineffective. Once consented the Applicant has a strong commercial self-interest to not shut down turbines, whilst planning enforcement is weak.

3. CONCLUSIONS

- 3.1. Overall, it is clear that a substantial number of turbines will create shadow flicker and a substantial number of dwelling will be adversely affected. The actual number of dwellings which will be affected by shadow flicker is unclear but appears to be considerable.
- 3.2. Accordingly, the Applicant's judgement that shadow flicker effects are "*not significant*" (ES 13.57) is unsound and cannot be relied on. Due to the close proximity of a high number of dwellings the shadow flicker effect of the Proposal would be considerable.

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for RE-think & CPRW
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