

**Electricity Act 1989 (Sections 36, 37, 62(3) and
Schedule 8) Town and Country Planning Act 1990
(Section 90) and The Electricity Generating Stations
and Overhead Lines (Inquiries Procedure) (England
and Wales) Rules 2007**

**Application by Vattenfall, dated 30 November 2007
for Consent Under Section 36 of the Electricity Act
1989 to Construct and Operate a 59.5MW Wind
Turbine Generating Station in Powys, Mid Wales
(‘Llanbadarn Fynydd’)**

Hydrology and Hydrogeology Proof of Evidence

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1. Introduction

- 1.1.1 This Written Statement of Evidence has been prepared on behalf of Vattenfall in relation to its proposed 17 turbine Llanbadarn Fynydd wind farm ("the Proposed Development"). It has been prepared by Dr Shaun Salmon, an AMEC Technical Director with 30 years experience as a professional hydrogeologist and environmental consultant, a member of the Chartered Institute of Water and Environmental Management with considerable Wind Farm EIA and public inquiry experience.
- 1.1.2 The purpose of this Statement of Evidence is to address matters outstanding in relation to the hydrological and hydrogeological environment pursuant to Vattenfall's intention to construct and operate the wind farm.
- 1.1.3 A Statement of Common Ground (SOCG) has been signed between Vattenfall, and Natural Resources Wales (NRW) (VATT/HYDROL/SOCG/SSA-C). This confirms the parties agreement that there are no significant hydrological/hydrogeological effects with the potential to arise as a result of the development on its own, subject to mitigation being put into place prior to and during construction. This mitigation is set out within the environmental documents prepared by Vattenfall during the course of the application's consideration and the individual sections are identified within the SOCG (VATT/HYDROL/SOCG/SSA-C). The mitigation can be delivered via a condition issued with consent.
- 1.1.4 The SOCG (VATT/HYDROL/SOCG/SSA-C) also records that in-combination effects arising from the construction/operation of the Llanbadarn Fynydd Wind farm in conjunction with the other wind farms proposed for Strategic Search Area (SSA) C are unlikely to be potentially significant for local watercourses other than for potential effects to arise downstream upon the River Wye. Watercourses on site drain into the Gwenlas Brook which itself drains to the River Ithon, which is a major tributary of the River Wye. The Wye is designated as a Special Area of Conservation (SAC) under the Habitats Directive and the River Ithon itself is designated a Site of Special Scientific Interest (SSSI) and forms part of the River Wye SAC. The potential for in-combination effects upon the SAC is the subject of the Habitat Regulation Assessment

(HRA), information for which is being provided to NRW and may be the subject of discussion in Session 4.

2. Outstanding Objections Concerning the Hydrological/Hydrogeological Environment

2.1.1 Two objections have been raised with regard to the potential for significant effects to arise as a result of the development. These objections have been made by Mr Halsey (OBJ/288/SOC/SSA-C) and Miss Flanders (OBJ/225/OSOC/SSA-C). The objections concern the following:

- (a) Mr Halsey: massive excavation of turbine pads etc near to us which could affect both our stream to the Ithon and our private well (which has not been evaluated) this could also bring an increased flood risk.
- (b) Miss Flanders: that there has been no proper investigation to ensure that the site works will not disrupt or pollute the private water supply which comes from the hill above the property and which is close to the Llanbadarn Fynydd wind farm site.

2.1.2 Each objection is addressed in turn.

3. OBJ/288/SOC/SSA-C

3.1.1 A risk assessment of the private water supply to Mr Halsey's property was carried out by AMEC and a Senior Environmental (Water) consultant visited the property and met with Mr Halsey. The private water supply was inspected on 9 March 2012. Details of the baseline conditions and the results of the risk assessment were communicated to Mr Halsey on 19 March 2012 and reported within the SEI of February 2013 (ADD/VATT/018B Appendix 9.1). The Private Water Supply Assessment concluded:

- (a) The spring catchment does not incorporate any areas of proposed construction working;
- (b) The physical separation of the proposed wind farm from the supply (approximately 850 m) would ensure that any over-ground run-off would infiltrate into the site prior to reaching the supply, and;
- (c) The small watercourse which runs off the application site northwards and alongside Lower Foel would intercept any over-ground and the watercourse itself is hydrologically unrelated to the private water supply.
- (d) Whilst the above factors demonstrate that the risk posed to the supply should be classified as 'none', following the methodology set out within the 2008 PWS Assessment (ADD/VATT/010) mitigation measures set out within the Environmental Statement, section 13.5 (ADD/VATT/003) and in subsequent SEI (ADD/VATT/010, 012 and 018) would also be in place via a suitably worded planning condition.

3.1.2 With reference to the point raised concerning flood risk, increased run-off from the site has the potential to occur as a result of an increase in non and semi-permeable surfaces provided as part of the construction works (turbine bases, access tracks etc). Increased run-off from the site can however be prevented through the use of attenuation measures whilst the amount of run-off can be reduced post-construction by dressing back construction areas with soil. A detailed site drainage management plan will be produced for agreement with Powys County Council prior to the commencement of development and these will detail the measures to be taken to

contain run-off within the site. The SOCG (VATT/HYDROL/SOCG/SSA-C) between the appellant, Powys CC and NRW contains an agreement to identify ways to reduce the rate of surface water run-off into adjacent watercourses to levels that are below the existing peak rates, if peak rates have been currently exacerbated beyond natural levels by historic land drainage. This may lead to reductions in the current rates of flow off the site and consequently reduce the current level of flood risk. The management plan will be required by condition.

4. OBJ/225/OSOC

- 4.1.1 The private water supply to Miss Flanders property is known as Fiddlers Green Pond. The pond is separated from the turbine locations to the west and south-west by the C1057 and the Cwm Nant-ddu valley and by distance (approximately 450 m) and topography to turbine 17 to the south, (the pond is situated on ground which is higher than the site for turbine 17 and there is intervening, higher topography). Run-off as a result of construction activities during the construction and operation of the site tracks and construction of the turbine bases and associated hardstandings cannot therefore enter into the pond and as such the risk to the PWS from these activities is assessed as 'none'.
- 4.1.2 In response to requests from Powys CC to provide additional passing places for HGV construction traffic along the C1057 a suitable highway location has been identified (Passing Place A, Figure 4.3 SEI June 2013 (ADD/VATT/019)). This passing place would be located on the opposite side of the C1057 to the Fiddlers Green Pond on an area of grassed highway verge alongside a field gate. There is a potential for run-off from the passing place to enter into the pond. However the passing place will be constructed with a cross-slope to the west so as to direct surface water into the adjoining field. Furthermore the verge on the opposite carriageway (adjoining the pond) is slightly elevated from the road thereby acting as a potential bund to contain any run-off. As highway land it would be possible to increase the height of this verge to improve further its potential to function as a barrier to ingress into the pond. Such works can be agreed with Powys CC and delivered prior to construction of the passing place via a condition with the consent.
- 4.1.3 Construction vehicles passing along the C1057 could potentially mobilise dust particles (wheels running over mud deposits on the highway) or, depending upon their purpose, from the loads themselves. Particle deposition could occur in the pond. Mitigation in the form of dust suppression measures including the regular sweeping/wetting of the C1057 during certain conditions and the screening of the pond from the highway with solid boards erected on the highway verge will minimise deposition into the pond. With such mitigation in place the potential for particle deposition will be reduced to a level that is not significant effect. Notwithstanding

these measures regular monitoring of the pond will occur in accordance with a monitoring plan to be agreed prior to the commencement of construction with Powys CC. This monitoring plan will be delivered via a condition of the consent.

5. Conclusion

- 5.1.1 No objections to the Llanbadarn Fynydd Wind Farm either alone or in-combination have been received from statutory consultees on hydrological and hydrogeological grounds (the potential for in-combination HRA effects being the subject of a separate study). Those objections that have been received come from local residents with private water supplies to the north and east of the site. Mitigation measures set out within the application documents and agreed via a condition with consent will ensure that no significant effects upon these supplies occur.