

Electricity Act 1989

The Electricity Generating Stations and Overhead Lines (Inquiries Procedure)
(England and Wales) Rules 2007

Application by Vattenfall dated 30 November 2007 for consent to construct and operate a 59.5MW Wind Turbine Generating Station in Powys, Mid-Wales (“Llanbadarn Fynydd”)

STATEMENT OF COMMON GROUND ON HYDROLOGY AND
HYDROGEOLOGY BETWEEN:

Vattenfall

And

The Natural Resources Body for Wales (NRW)

1. Introduction

- 1.1.1 This is a statement of common ground between Vattenfall and the Natural Resources Body for Wales (NRW) concerning an application made to the Department of Energy and Climate Change (DECC) for consent under section 36 of the Electricity Act 1989.
- 1.1.2 The Secretary of State for Energy and Climate Change has given notice that a combined inquiry (Inquiry) will be held under Section 62(3) and Schedule 8 of the Electricity Act 1989 into Llanbadarn Fynydd Wind farm, in addition to four other Section 36 wind farm applications and one Section 37 Grid Connection application.
- 1.1.3 This SOCG has been produced and agreed by the parties in connection with session 1 of the Inquiry and is specific to Vattenfall's application for the Llanbadarn Fynydd Wind Farm.
- 1.1.4 This SOCG concerns the topic of hydrology and hydrogeology.
- 1.1.5 NRW are not pursuing an objection based upon the effects arising from the construction, operation or decommissioning of Llanbadarn Fynydd Wind Farm on its own upon receptors associated with the water environment.
- 1.1.6 In addition, NRW have agreed, based on supplementary environmental information previously supplied to DECC by Vattenfall, that the Llanbadarn Fynydd scheme is unlikely to have a significant effects 'alone' on the River Wye SAC (CCW letter to DECC, dated 19 October 2012¹).
- 1.1.7 However, NRW considered that the case for no significant effects 'in combination' with other developments was not made and that further data would be required to assess the 'in combination' effects. These data are currently being provided separately in accordance with the Habitats Regulations Assessment (HRA) scoping advice provided by NRW.
- 1.1.8 Notwithstanding this, planning conditions have been suggested covering:
- The protection of controlled waters (NRW);
 - Land Drainage requirements (PCC Local and Environmental Services).

¹ CCW letter to Amanda King, Environmental Manager, National Infrastructure Consents, DECC; dated 19 October 2012; no reference number or case ID.

2. Baseline

2.1 Introduction

2.1.1 For an assessment of in-site hydrology and immediate environs, up to approximately 3km downstream of the site, relevant policy and legislation, methodologies and baseline results are provided in:

- Chapter 13 of the ES (2007) and accompanying Private Water Supply Risk Assessment in Appendix K;
- Section 4 of the 2008 Supplementary Environmental Information (SEI) and accompanying revised Private Water Supply Risk Assessment in Appendix A;
- Section 9 of the February 2013 SEI and accompanying Private Water Supply Risk Assessment for Lower Foel (Appendix 9.1); and
- Section 4.3 of the June 2013 SEI.

2.2 Methodologies

2.2.1 The scope of the baseline data gathering work was through collection of published data and information, consultation with statutory bodies, principally NRW (formerly Environment Agency Wales), and an initial site visit undertaken in April 2006, as described in Section 13.2 of the ES. A further site visit was undertaken in January 2007 for the purposes of the Private Water Supply (PWS) risk assessment supplemented by a site visit to Lower Foel in February 2012. A site visit in February 2013 was undertaken to reaffirm desk based changes to the baseline in support of the 2013 SEI.

2.2.2 The hydrology and hydrogeology desk study for the proposal was completed in 2006 and updated in 2008 and 2013.

2.2.3 The methodologies undertaken to derive the assessment are considered to be appropriate.

2.3 Baseline Conditions

- 2.3.1 The site is located on high elevation ground, varying from 380m AOD at the very north western edge to 485m AOD just east of Carn Bryn-llwyd. High annual rainfall and steep topography form the principal controls on the hydrological regime of the site, where a large percentage of effective rainfall forms runoff into small watercourses and is transmitted downstream. This topography therefore has the potential to transmit silt-laden water and therefore measures to control this, in order to prevent impact on the River Wye SAC, are agreed by both parties to be required. Appropriate environmental measures are set out within the sections of appropriate documents listed in section 3.1 below.
- 2.3.2 Hydrologically the site drainage is split. The southern part of the site drains to the Gwenlas Brook to the south east by way of the Cwm Nant-ddu. Drainage from the northern part of the site feeds the River Ithon, to the north west via two relatively small tributaries. The Gwenlas Brook 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.
- 2.3.3 The baseline information gathered indicates that the underlying geology consists predominantly of the Bailey Hill Formation and the Nantglyn Flags Formation. These two strata are separated by a narrow band of Gyfenni Wood Shales. Characteristics of these are largely fine sandstone and argillaceous siltstones and mudstones. Drift cover is largely Till, though there are numerous areas where the bedrock is at outcrop. The Till in this region consists of brown, yellow and grey, silty clay and silts with a variable content of other sandstones, siltstone, mudstone and vein quartz. The Till forms ill-drained, uneven ground. The 2013 SEI document classifies the soils in the northern part and south-eastern part of the site as slowly permeable wet very acid upland soils with a peaty surface. The soils in the south-western part are shown as freely draining acid loamy soils over rock.
- 2.3.4 In 2006 the majority of the site was classified as a Non-Aquifer, related to the low permeability of the underlying geology, usually regarded as containing insignificant quantities of groundwater. This designation has since been updated and within the 2013 SEI the classification was changed to a Secondary B Aquifer, in line with the re-classification of groundwater bodies under the Water Framework Directive. These are predominantly low permeability layers which may store and yield limited

amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering, as evidenced by the number of private water supplies in the vicinity of the site. In addition in the 2006 ES there was a small patch of Minor Aquifer (now classified as Secondary undifferentiated, SEI 2013) to the east of Cefn Pool, these deposits have an increased permeability.

- 2.3.5 There are 32 private water supplies within a 3km radius of the centre of the site, five of which were identified in the 2013 SEI.

2.4 Hydrological Receptors

- 2.4.1 The key hydrological receptors are considered to be:

- Tributaries of the Gwenlas Brook and River Ithon and other surface water bodies that receive runoff directly from the site, together with those water courses in proximity to off-site highway works;
- The slowly draining soils with peaty horizons;
- Local private water supplies, including springs and other sources if near surface groundwater supply;
- Secondary aquifers in the southern part of and to the south of the site;
- Downstream sites of ecological importance, namely the River Ithon SSSI and River Wye SAC.

3. Assessment of Effects

3.1 Mitigation

- 3.1.1 Environmental measures have been incorporated into the planning, construction and operation phases of the development to mitigate potential effects on hydrological features within the site.

- 3.1.2 The environmental measures are described in detail in section 13.5 and 13.8 in the ES, section 4.5 of the SEI 2008, section 9.4.7 of the SEI February 2013 and in section 2.4 of the Supplementary Information for

Habitats Regulations Assessment document August 2010. These are considered to be appropriate. In summary, the following broad measures would be implemented:

- Construction
 - Before any construction commences on site an assessment will be undertaken to identify potential ways to reduce the rate of surface water run off into adjacent watercourses to levels that are below the existing peak rates. Where possible these measures will be incorporated into the development.
 - Access tracks will utilise existing roads where possible to minimise ground disturbance, and are located so as to minimise the number of watercourse crossings as far as possible;
 - Construction is avoided in PWS catchments wherever possible;
 - To minimise disturbance impacts cables will be laid in small trenches along the side of access tracks as far as possible;
 - Turbine and crane pad construction avoids locating any such facilities within 20 m of a surface watercourse or known abstraction;
 - Throughout the construction phase best working practices will be adopted, and measures to protect the water environment and downstream designations will be taken by adopting recommendations set out in the Environment Agency/NRWs PPG notes.
- Operation
 - Methods incorporated into the scheme are designed to be sustainable and features such as the access tracks will cope with storm events.
 - Periodic inspection of the crossings, crane pads etc will be undertaken and modification will be implemented if required.
 - Throughout the site operation best working practices will continue to be adopted, and measures to protect the water

environment will be taken by properly briefing all site workers of the precautions required when working near watercourses and by adopting recommendations set out in the Environment Agency/NRWs PPG notes.

- 3.1.3 The proposed mitigation has been accepted by NRW and is considered sufficient to help ensure that the scheme will have no significant effects on the River Wye SAC 'alone'.
- 3.1.4 Any additional mitigation required to avoid potentially significant 'in combination' effects on the River Wye SAC will be addressed by HRA.

3.2 Predicted effects

Llanbadarn Fynydd Wind Farm

- 3.2.1 The predicted effects of the construction, operation and decommissioning of the development on hydrology and hydrogeology was assessed within the ES. This assessment was subsequently updated within the 2008 SEI to take account of an altered scheme with further updates resulting from additional amendments to the scheme design in 2010 and 2013.
- 3.2.2 The assessment of predicted effects within the ES concluded that significant effects on hydrological receptors within the site were unlikely to occur. The amended scheme as assessed and reported within the SEIs dated 2008, 2010 and 2013 also concluded that significant effects on hydrological receptors within the site were unlikely to occur, with the exception of the revised track layout in the vicinity of Springfield during the construction phase (Table 4.1 SEI 2008).
- 3.2.3 With the mitigation measures provided via a Private Water Supply Mitigation Plan there should be no significant effects upon private water supplies. This plan will be based on the Private Water Supply Risk Assessments undertaken to date and will include details for the protection of individual supplies, a monitoring programme for supplies which have been judged to sensitive and a framework for the integration of a dynamic and reactive approach to mitigation during the construction, which could include micro-siting of site infrastructure or cessation of activities in the vicinity of supplies during wet periods. Therefore all effects, with the possible exception of Springfield, will be 'Not Significant'.

Cumulative

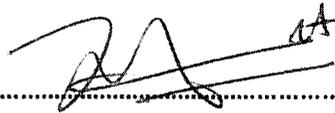
- 3.2.4 Cumulative effects were not considered in the 2006 ES since the Llanbadarn Wind Farm was the first wind farm submitted within SSA C. However the 2013 SEI document includes an assessment of cumulative effects on the water environment from other wind farm developments proposed in SSA C. The receptors which could be recipients of cumulative effects are:
- the two private water supplies of Fiddlers Green; and
 - the receiving watercourses Gwenlas Brook and the River Ithon SSSI and River Wye SAC.
- 3.2.5 The combination of the careful siting of infrastructure and mitigation measures results in the cumulative effect at the two supplies at Fiddlers Green being not significant.
- 3.2.6 The potential for in-combination effects will be assessed and presented separately, in line with the shadow HRA scope received from NRW (via the Programme Officer for the Inquiry) on the 26th June 2013.

4. Conclusions

- 4.1.1 Baseline data gathering has identified a number of valued hydrological receptors. Potential effects on the receptors have been minimised or avoided by the environmental mitigation measures that have been incorporated into the proposal or which can be implemented via the inclusion of planning conditions in a decision notice. These measures will also ensure compliance with the legislation listed in the documents referenced in Section 2.1.1.
- 4.1.2 Subject to the above NRW do not object to the scheme with respect to hydrological receptors within the site boundary nor the adjoining Private Water Supplies and with respect of the development alone.
- 4.1.3 NRW do not object to the scheme on the basis of potential effects on the River Wye SAC 'alone'.
- 4.1.4 NRW consider that the case for no significant effects 'in combination' with other developments has not been made and that further data would be required to assess the 'in combination' effects. These data are being

provided separately in accordance with the Habitats Regulations Assessment (HRA) scoping advice provided by NRW.

For and on behalf of Vattenfall


..... Signature

Jonny Hewitt
..... Name

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For and on behalf of Natural Resources Body for Wales


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