



**STATEMENT OF COMMON GROUND
PEAT and PEAT HYDROLOGY**

**IN RELATION TO AN APPLICATION BY RES UK & IRELAND LIMITED
DATED
27 MARCH 2009
FOR CONSENT TO CONSTRUCT AND OPERATE A WIND TURBINE
GENERATING STATION
IN
POWYS, MID-WALES**

INTRODUCTION

1. This Statement of Common Ground is prepared jointly by Natural Resources Wales ('NRW') and RES UK & Ireland Limited ('RES') in relation to an application for consent pursuant to section 36 of the Electricity Act 1989 to construct and operate the Llanbrynmair wind turbine generating station in Powys, Mid-Wales.
2. This Statement of Common Ground relates to Peat and Peat Hydrology.
3. The following Reasons for Objection as issued by Powys County Council, ('PCC'), on 27 September 2012 are relevant to peat:

In the absence of a Countryside Council for Wales response, it is not considered possible for an informed assessment to be made of the ecological ... impacts of the proposed development.

In the absence of a Countryside Council for Wales response, it is not considered possible to fully assess the hydrological impacts of the proposed development.

4. Following the PCC objection and prior to the submission of the consolidated Environmental Statement dated August 2013 ('CES'), Countryside Council for Wales (now NRW) had stated their concerns in their January 2013 Statement of Case and in their Opening Submission CON/003/004. Their concerns as stated are reproduced below:

Baseline information on peat distribution and depth across the application site, with no peat depth data for some infrastructure locations, is inadequate so that it cannot be assessed whether infrastructure could be resited to reduce impact.

Insufficient information on the overlap between infrastructure and peatland habitat.

Impacts on peatlands as a result of hydrological changes (including drainage around infrastructure) are not considered.

NRW consider that there are further examples of turbines or tracks being located on deep peat and peatland habitats where resiting would be beneficial

Further information and mitigation is required to demonstrate that the Plan will provide commensurate mitigation for impacts on Peat.

The carbon calculator submitted for the Llanbrynmair windfarm has a number of deficiencies and the current version does not give an accurate assessment of pay back periods and carbon losses from disturbance to peat.

5. However NRW also noted in Opening Submission CON/003/004 that:

Further information on these issues, and any improvement to the proposed Habitat Management Plan will be considered and NRW's position reviewed before the SSA B Inquiry session.

6. This Statement of Common Ground has been prepared following the submission of the CES.

SITE LOCATION

7. The site lies to the northwest of Nant yr Eira Valley between Llanbrynmair and Llanerfyl in Montgomeryshire, Powys, approximately 8km northwest of Carno. The site is centred on grid ref: E294500, N306500. The site covers approximately 1,700 hectares, or 4,200 acres. The site consists of agricultural land (principally for cattle and sheep) and woodland.
8. The application site is located within the Carno North Strategic Search Area B as defined by Technical Advice Note 8: Planning for Renewable Energy (July 2005).

DESCRIPTION OF DEVELOPMENT

9. The proposed development is for the construction and operation of a 30 wind turbine generation station at land between Nant yr Eira Valley and Llyn Gwyddior in Montgomeryshire, Powys, Mid Wales, and for a direction under section 90(2) of the Town and Country Planning Act that planning permission for the development be deemed to be granted ('the Development').
10. In addition to the wind turbines, the Development includes on site tracks, underground cabling and crane hardstandings, a communications mast, a permanent (80m high) free standing lattice wind monitoring mast, electrical transformers, electrical connection works and a substation control building.

APPLICATION HISTORY

11. In March 2009, a section 36 consent application under the Electricity Act 1989 was submitted by RES to the Department of Energy and Climate Change ('DECC') for a wind energy development of up to 43 turbines on land between the villages of Llanbrynmair and Llanerfyl in Powys. An Environmental Statement ('ES') accompanied the Section 36 consent application.
12. Between April 2010 and August 2012, five Supplementary Environmental Information ('SEI') documents were submitted in response to further requests for information made by PCC and Countryside Council for Wales, (now NRW).
13. In August 2013, in line with the Inspector's timetable, RES submitted the CES. The CES provides an updated assessment of all of the potential environmental effects of the Development. A further SEI assessing the cumulative effects of the Development in combination with the four other wind farm applications and the proposed grid connection, will be submitted in advance of Inquiry Session 4 (Cumulative Session).

POLICY AND LEGISLATIVE CONTEXT

14. The Statement of Common Ground identifies the relevant national, regional and local policy and legislation relating to Peat and Hydrology as are applicable to the Development. They are:
 - i. The Conservation (Natural Habitats, &c.) Regulations 2010;
 - ii. The Wildlife and Countryside Act 1981 (as amended);
 - iii. Powys County Council Unitary Development Plan Policy ENV3 – Safeguarding Biodiversity and Natural Habitats;
 - iv. EC Freshwater Fish Directive (2006/44/EC) (to be repealed in 2013 by EC Water Framework Directive);
 - v. Water Framework Directive 2000/60/EC;
 - vi. Groundwater Directive 80/68/EEC;
 - vii. Groundwater Daughter Directive 2006/118/EC;

- viii. Water Act 2003;
- ix. The Environment Act 1995;
- x. Land Drainage Act 1991 and 1994 Amendment;
- xi. Pollution Prevention and Control Act 1999;
- xii. The Pollution Prevention and Control (England and Wales) Regulations 2010;
- xiii. Private Water Supplies (Wales) Regulations 2010;
- xiv. The Water Supply (Water Quality) Regulations 2010 (Wales);
- xv. Groundwater (England and Wales) Regulations 2009;
- xvi. Water Environment (Water Framework Directive) (England and Wales) Regulations 2003;
- xvii. Welsh Assembly Government - Technical Advice Note 5: Nature Conservation and Planning, 2009 (TAN5) (2009);
- xviii. Welsh Assembly Government - Technical Advice Note 8: Planning for Renewable Energy, 2005 (TAN8);
- xix. Countryside Council for Wales (2010) - CCW Guidance Note: Assessing the impact of windfarm developments on peatland in Wales; and
- xx. Countryside Council for Wales (2010) - A Position Statement on Peat Conservation in Wales.

PEAT AND HYDROLOGY

- 15. An assessment of the potential effects of the Development on Peat and Hydrology is set out in the CES Chapters 5 - Ecology (non Avian) and 8 - Hydrology and Hydrogeology, and in Appendix 2.2 – Carbon Balance Assessment.

BASELINE AND ASSESSMENT METHODOLOGY

16. Details of the baseline and methodologies for the Development are set out in the CES. The parties to this Statement of Common Ground are in agreement that:
- i. The mapping and characterisation of peat depth across the site is fit for the purpose of informing the infrastructure development on areas of deep peat because:
 - a. Peat probing has been undertaken in all areas of the windfarm site out with other constraints that already precluded infrastructure development using an acceptable (100m) grid. The other constraints included slopes over 14%, areas with ecological, ornithological, noise, visual, landscape, watercourse buffer and steep slopes close to sensitive watercourse constraints, areas with insufficient wind speed for development, areas set aside for habitat management and restoration and areas eliminated from consideration for ownership reasons;
 - b. Where track infrastructure was considered, a probe was located at the centre and 10m either side;
 - c. There were 9 probes per turbine location - at centre and in a radius of 25 and 50m
 - d. Altogether almost 5000 peat probes were carried out to assess maximum potential peat depth and 117 peat cores.
 - ii. The information available to assess peat habitat is sufficient and adequate to allow determination of the overlap between peatland habitat and infrastructure. In addition to surveys since 2007 carrying out vegetation surveys, there have been numerous visits and additional peat habitat survey, these are reported in Figures 5.a to 5.c and described in Chapter 5 of CES.
 - iii. The assessments of peat hydrology are based on reasonable and appropriate parameters as obtained from site investigations and literature review. These include acrotelm thickness, existing groundwater levels, permeability of acrotelm and catotelm, the low permeability of underlying clay or bedrock, recharge rates and excavation depths.

- iv. Coring has demonstrated that depth penetration probing substantially overestimates the peat on site due to the particular geological conditions of clay of similar penetration resistance of peat underlying the majority of the site.
- v. The baseline environment regarding peat as presented in the CES is conservative, sufficiently detailed, accurate and fit for purpose.
- vi. The input parameters to the carbon calculator have been chosen as most representative of the actual site conditions, with a range of minimum and maximum to cover uncertainty.
- vii. The methodology applied in the assessment of peat and hydrology effects draw upon the appropriate legislation and guidelines and are fit for purpose.

POTENTIAL EFFECTS

- 17. An assessment of the potential effects of the Development on Peat and Hydrology, are set out in Chapters 5 and 8 and in the carbon balance set out at Appendix 2.2 of the CES.
- 18. The parties to this Statement of Common Ground are in agreement that:
 - i. All areas of peat land on the application site have been considered within the CES as valued natural resources and as sensitive to the Development, both from direct loss from construction and, especially in the wetter habitats, to changes in hydrology caused by construction and operation.
 - ii. 1,138 ha or 67% of the total area of the Development site is covered in peatland habitat. There will be a permanent loss of 14.8 ha of peatland vegetation due to the wind farm development (10.2 ha of semi natural vegetation and 4.6 ha currently under forestry). This represents 1.3% of the total peat land resource.
 - iii. A maximum potential volume of 120,000m³ of peat will be excavated due to the development of infrastructure, comprising 50,000m³ of acrotelm and 70,000 m³ of catotelm. The volumes do not take account of the likely

overestimate of peat depths nor to micro siting of track and turbines away from peat >0.5m.

- iv. The volume of peat predicted to be impacted by dewatering from all wind farm infrastructure will be 35,000m³ which will have implications in those affected areas for continued peat development, carbon stocks and peat habitats. However, almost all of this dewatering will be within the acrotelm which is periodically seasonally depleted and will not be linearly related to loss of habitat. There is no clear consensus from authorities as to how to assess the impact of this dewatering on peat habitat. A conservative approach has therefore been adopted following consultation on site and by correspondence with NRW and its hydrology advisor.
- v. Based on the assumption that minor micro siting (less than 50m) of turbine bases will be undertaken, probing and coring has demonstrated that of the 30 turbine bases only 4 are actually located on peat >0.5m depth and these are in forested areas where the peat habitat will be restored post felling.
- vi. The percentage of the total probed area (i.e. the coloured area on figures 8.2 a, b and c and the potential development area which is not already blocked by other constraints) with peat soils >0.5m depth of peat is 41 %. The percentage of site infrastructure on peat >0.5m is only 9%.
- vii. Recommendations to alter the proposed site layout made in response to site surveys for peat depth and habitat with the purpose of avoiding where possible the most sensitive habitats and to minimise the infrastructure overlap with peat, resulted in the deletion of a number of turbines and relocation of tracks to avoid peat habitats and deep peat. This can be clearly seen on Figures 8.2 a, b and c. Given the nature of the complex integrated NVC mosaics across the site it was considered impossible to completely avoid mire habitat. Therefore within the limits of the other constraints, (listed at 16 (i) (a) above), there has been significant avoidance and minimisation of development on deep (i.e.>0.5m) peat consistent with the economic development of the wind farm, resulting in only an estimated 9% of the infrastructure located on peat >0.5m depth.

- viii. There are no significant hydrological impacts predicted other than those that relate to peat.
- ix. The carbon calculator estimates the expected payback period to be 1.1 years, with a minimum of -0.1 years and a maximum of 3.8 years. Under the expected scenario, nearly 55% of the total site losses come from the lifecycle carbon emissions of the turbine and infrastructure and potential losses due to backup required in the electricity grid. The remaining 45% of losses come from on-site ecological carbon stores. Within these ecological carbon losses, the majority of the losses come from soil organic matter, in particular CO₂ losses from excavated peat soils (48%) and from felling existing forestry (46%).

CUMULATIVE EFFECTS

- 19. An assessment of the cumulative effects of the Development on Peat and Hydrology, are set out in Chapter 8 of the CES.
- 20. It is agreed that the only potential cumulative effects are related to the Carnedd Wen windfarm and these are not significant.

ON-SITE/OFF-SITE MITIGATION MEASURES

- 21. The Habitat Management ('HMP') and Peat Management Plans appended to Chapter 5 and 8 of the CES propose mitigation measures that will further minimise any impacts from loss of peat habitat, peat excavation and dewatering. They also outline long term habitat restoration and management compensation measures designed to enhance the site. The parties to this Statement of Common Ground are in agreement that:
 - i. The area of peat restoration to compensate for the volume of peat dewatered through the installation of windfarm infrastructure is 200 ha for blanket bog and mire restoration and 149 ha of forest on previous peat habitats which will be removed and habitats of conservation importance restored. The consequent peat habitat restoration is substantially greater than the area of peat habitat that will be lost. The residual predicted effect is a net gain.

- ii. The blocking of open ditches and furrows that are currently draining peatland with excavated peat will be a key part of the restoration and will raise the groundwater level in degraded peat areas to improve the peat habitat.
- iii. Excavated peat not used in ditch or furrow blocking will be re-used in other areas of the site where it will not deteriorate. These valid re-uses will include access track shoulders for re-vegetation of berms, batter reinstatement and screening bunds at vantage points; borrow pit restoration to wetland, and infill of turbine excavations.
- iv. The HMP is consistent with Welsh Assembly Technical Advice Note 5: Nature Conservation and Planning – 2009 and the CCW Position Statement on Peat conservation in Wales.

22. The carbon balance presented in Appendix 2.2 of the CES examines the balance between losses of carbon through peat loss and degradation, and gains as a result of compensation restoration and management. The parties to this Statement of Common Ground are in agreement that:

- i. Overall, the ecological carbon balance for this proposed Development is close to neutral – the estimated 49,500 tCO₂eq in losses against gains of 38,600 tCO₂eq.
- ii. There is evidence that the ecological carbon losses are likely to be overestimated within the Carbon Calculator, while the gains are likely to be underestimated. It is considered probable that at this site, the Development is likely to have an overall net soil carbon benefit due to the existing degraded nature of the habitat and soils and the large area of proposed restoration of felled forestry and degraded bog.

This Statement has been agreed by:

Signed.....

On behalf of [PARTY]

Date.....

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Signed.....

On behalf of [PARTY]

Date.....

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Signed.....

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