

## ***NUON: ISSUES TO ADDRESS***

### ***Visual Impacts***

#### ***Clarifications in response to first drop-ins:***

- The proposed height to the tip of turbine is up to a maximum of 125 metres, this means towers typically of 80m, and a maximum blade length of 45m. The intention is to use similar sized turbines as the proposed extension and repower of Llandinam to maintain a consistent, cohesive landscape.
- The height of the turbine also reduces the wind turbulence, and allows access to the best wind resource.
- A number of 'views from' will be required by statutory bodies, namely Powys Planning Authority, CCW, CADW, CPAT, these will all be included in the Planning Application.
- It is not possible to make a wind farm invisible but we have worked on the wind farm layout to make sure that the turbines are not placed in locations that are overly dominant.
- All cabling on the site would be underground to reduce the visual impact of any new grid infrastructure.
- New electricity pylons will be needed to export the electricity into the National Grid, Wind Farm Developers are working with the appropriate bodies to ensure the impacts are minimized. New pylons into the area will require a separate planning application, which will be the responsibility of National Grid.
- People hold very varying attitudes (as evidenced by the comments we received at round 1 drop-in events)) about the way turbines look and whether they are attractive or ugly.

#### ***Things Nuon have done:***

- Reduced the number of turbines from 13 to 9 because of landscape/visual impacts, impact on specific communities, and known environmental and technical constraints.
- Considered where possible, specific views and locations of concern highlighted at the drop-ins from local communities.
- Moved turbines as far east as possible, to increase the distance between the turbines and the closest community.

#### ***Things Nuon are working on:***

- Continuing work on energy yield assessments (to understand exactly how much electricity this development might be reasonably expected to produce per annum).
- Wind speed data collection – this is still ongoing to further understand the wind patterns/resource in the area.
- Working with other developers to reduce the cumulative visual impacts.
- Making sure that the relevant bodies and organizations that we work with are aware of the comments we receive on issues such as grid and transport.

#### ***Things Nuon cannot influence:***

- The development area that was an earlier policy decision made by the Welsh Assembly Government.
- Welsh Assembly Government Policy regarding TAN 8, what consultation was undertaken regarding this, and current renewable energy targets.
- The number of Developers TAN 8 areas have attracted, which has been as a direct result of the agreed policy.
- The consultation and decision-making process on any new grid infrastructure will be the responsibility of National Grid (although Nuon will make every effort to feedback comments brought to them by local people).

## ***NUON: ISSUES TO ADDRESS***

### ***Ecology and Wildlife***

#### ***Clarifications in response to first drop-ins:***

- The planning application must be accompanied with a very lengthy Environmental Statement to cover all issues, including ecology.
- The principles of how certain surveys are conducted are reviewed with the particular consultee, to make sure they are appropriate and meet future expectations. If the development were to go ahead, ecological monitoring would continue throughout the lifetime of the project.
- A habitat management plan must accompany the Environmental Statement to explain how any disturbance and impacts caused by the wind farm can be reduced and mitigated.
- Tracks and foundations will be designed and built to minimise impact on the ecological features of the area.
- The Environmental Statement will cover the impact on any areas of peat affected by the wind farm, including its hydrology and potential carbon release.
- Turbine foundations depend on the exact nature of the site/location, but are usually about 3-4 metres deep and will be covered with around 1m of soil that will be restored to vegetation to ensure ecological restoration.
- Through the decommissioning of a wind farm after 25 years, the aim is to reinstate the land to its former conditions. This won't be achieved overnight, but after the turbines have been taken down, in adhering to the planning obligations, and through consultations with the appropriate bodies, the land will be restored appropriately.
- The Environmental Statement will address the impacts of the turbines and their infrastructure on the area.

#### ***Things Nuon have done:***

- Mapped the key habitats and ecological issues and moved and removed turbines as a result of the key issues, including areas of peat.
- A comprehensive geological report has been commissioned, to deliver to the project the benefit of a clear understanding of the ground conditions of to this area of upland Wales.
- A comprehensive survey of peat depths.
- Extensive bat surveys to identify any presence and understand how to minimise any impact.

#### ***Things Nuon are working on:***

- Developing habitat restoration plans for the development.
- Nuon is consulting with CCW, county ecologists and RSPB on birds and other wildlife in the area to make sure that the development is acceptable from their point of view.

#### ***Things Nuon cannot influence:***

- CCW, RSPB and other consultee guidance related to the development of wind farms.

## **NUON: ISSUES TO ADDRESS**

### **Noise and Flicker**

#### **Clarifications in response to first drop-ins:**

- There will be controls on noise levels and hours of working during construction as part of the conditions attached to any planning consent for the wind farm.
- Nuon have to comply with national guidelines on noise levels from the development, which limit the number of decibels that should be audible at surrounding properties from Hirddywel and the other proposed surrounding wind farms.
- The Environmental Health Officer for the area will review the predicted noise levels of Hirddywel and the proposed surrounding wind farms.
- The evolution of wind farm technology over the past decade has rendered mechanical noise from turbines almost undetectable. The main sound these days is the aerodynamic swoosh of the blades passing the tower.
- There are a number of modern operational Wind Farms in Wales, which have public footpaths running through them. If you are interested in visiting a site to understand and experience noise from wind farms or if you would like more information, please ask one of our team.
- A modern wind turbine produces electricity 70-85% of the time. It generates different amounts of electricity as the wind speed increases and decreases. A modern 2.5MW wind turbine will generate enough to meet the electricity demands of more than a thousand homes over the course of a year. (Typically on average 1.8MW generates enough electricity for around a 1000 homes per year). (1)
- The turbines proposed at Hirddywel will be between 2 and 3 MW. For Nuon to commit to buying a turbine, they must first be granted planning permission, so for the time being Nuon can only give a theoretical turbine generation.

#### **Things Nuon have done:**

- Reduced the number of turbines and moved them as far east as the project area will allow, away from properties to the west.

#### **Things Nuon are working on:**

- Reviewing available turbines on the market to ensure that we consider and select the most suitable turbine for this site. One of the main criteria in turbine selection is noise.

(1 ) [www.bwea.com/ref/faq.html](http://www.bwea.com/ref/faq.html)

## ***NUON: ISSUES TO ADDRESS***

### ***Society, Economy and Tourism***

#### ***Clarifications in response to first drop-ins:***

- Turbine blades and specialist parts will almost certainly be built outside the UK.
- Apart from the construction period and decommissioning, normal access will not be affected.
- The construction process would be done in consultation with key stakeholders who use the area to minimise impact, and, if there are impacts offer alternatives.
- Turbines will not be erected on any existing paths, mountain bike trails, bridlepaths, and we will maintain a distance equivalent to the height of the turbine from these features.
- Employment opportunities associated with wind farms are long term, they start at the point of development, through planning, pre construction, constructions, operation and decommissioning.
- A MORI poll in Scotland showed that 80% of tourists would be interested in visiting a wind farm. Wind farm developers are often asked to provide viewing platforms and rights of way to their sites.

#### ***Things Nuon are working on:***

- Work on the socio-economic potential of the project as part of the environmental statement.
- They are examining whether it might be possible to bring manufacturing opportunities to Wales.
- How skills and training opportunities might be created locally, both towards this project, but also to create skills locally to work on other low carbon developments/projects to maximize the local economic potential through this development and for the future.
- Exploring the potential for enhancing PROW is the area, clear waymarks, and providing information boards about local habitats and the wind farm.
- Consulted with key stakeholders on tourism issues.

#### ***Things Nuon cannot influence:***

- Local companies winning the competitive tendering process. They must be the appropriate size, have appropriate workforce, have appropriate legal structure and insurances in place.
- General opinions on wind farms and tourism, and, again, personal views on the attractiveness or otherwise of turbines.
- How in the past other community benefit funds have been managed. Nuon will work with all the respective parties to ensure that the community benefit fund fulfils local needs.

## ***NUON: ISSUES TO ADDRESS***

### **Ground Conditions and Archaeology**

#### ***Clarifications in response to first drop-ins:***

- Hydrological features will be assessed within the Environmental Statement, with guidance and consultation from the Environment Agency. Tracks and foundations will be designed and built to minimise impact on the hydrology of the area. If our research revealed any impact on hydrology, the planning process would require us to show how we would mitigate against any impact.
- Ancient cultural heritage sites will not be disturbed and stand off distances from the features have been agreed with CADW and CPAT (Clwyd-Powys Archaeological Trust).
- Best practice construction methods will be employed to ensure that construction impact is kept to the lowest possible levels.

#### ***Things Nuon have done:***

- Hydrological disturbance has been minimalised. Impacts where access tracks cross water courses will be resolved by typical and robust engineering solutions.

## ***NUON: ISSUES TO ADDRESS***

### ***Transport and Construction***

#### ***Clarifications in response to first drop-ins:***

- Developers in this area have been working with the Welsh Assembly Government's Transport Agency, Powys Highways, and other consultees to agree a strategic solution to deliver the wind farm components to the respective sites.
- The strategic solution has not yet been agreed, but aims to minimise disruption to the local transport network through cooperation, thorough research, proper planning and information to road users.
- A Traffic Management Plan will be submitted with the Environmental Statement.
- Improvements will be made to the quality of the roads in certain sections before the vehicles transport the wind turbine components
- On site power cables connecting the wind turbines will be buried underground alongside the access tracks.
- There will be controls on noise levels and hours of working during construction as part of the conditions attached to any planning consent for the wind farm.
- The way that a local authority wishes to have a wind farm decommissioned is normally covered by clauses in its planning permission. These clauses typically require all visible traces of the wind farm to be removed, including the turbines. Service tracks could be removed, although it may be best to leave them. Obviously each case is different, depending upon the size and geography of the development. Developers will then comply with these clauses.
- The concrete bases could be removed, but it may be better to leave them under the ground, causing less disturbance. If so, they would be covered with peat, stone or other indigenous material, and the site returned as closely as practicable to its original state.

#### ***Things Nuon have done:***

- We have commissioned studies of traffic levels on the access route and surveys to establish any need for special arrangements such as temporary removal of road signs to allow long vehicles to pass during the delivery phase.
- Set up partnerships with other developers to make plans that minimise the impacts locally.

#### ***Things Nuon are working on:***

- We are assessing the number of vehicle movements, abnormal loads, quantities of materials etc that will need to be brought to the site. This will allow us to formulate an effective traffic management plan.
- Including within the Environmental Statement the relevant information associated with the lifespan of the project and decommissioning phase.
- Nuon and other developers are working with the relevant Police authorities to ensure a dedicated Police response unit for turbine deliveries is place.

#### ***Things Nuon cannot influence:***

- Anything to do with main road transport roads (including noise, vibration etc.) will be determined mainly by the Highways Agency or the local Councils.

## **NUON: ISSUES TO ADDRESS**

### **Existing Infrastructure**

#### **Clarifications in response to first drop-ins:**

- Wind energy is a clean source of energy. While there will obviously be carbon impacts from construction, in the long term, this will be offset by the clean energy produced by the wind farm.
- All electricity generation technologies emit CO<sub>2</sub> at some point during their lifecycle, whether from extraction and refining of raw materials, or during manufacture, transport and construction, and fossil-fired power plants will also emit CO<sub>2</sub> during combustion of their fuel.
- The Parliamentary Office of Science and Technology has published a report on the carbon footprint of electricity, which compares the lifecycle CO<sub>2</sub> emissions of different electricity generation systems currently used in the UK, including fossil-fuelled and 'low carbon' technologies. The note concludes that while all electricity generation technologies emit CO<sub>2</sub> at some point during their lifecycle, CO<sub>2</sub> from renewables is mainly non-operational. (2)
- Wind power therefore ranks with one of the lowest carbon footprints at 4.64-5.25g CO<sub>2</sub>eq/kWh for onshore and offshore development respectively.
- The comparison of energy used in manufacture with the energy produced by a power station is known as the 'energy balance'. It can be expressed in terms of energy 'pay back' time, i.e. as the time needed to generate the equivalent amount of energy used in manufacturing the wind turbine or power station.
- Construction impacts are a part of the calculations we make for the Environmental Statement on the carbon balance of the project.
- Typically, a wind farm will pay back its carbon debt from construction (including transporting the turbines, building foundations etc) in around 8-12 months.
- Rural roads prior to construction, where required and appropriate, will be improved to allow for the types of vehicles used to build a wind farm. The local transport agency will over see any improvements, which will also include inspections following the commissioning of the wind farm.

#### **Things Nuon have done:**

- Completed the necessary geological surveys to be confident the existing topography and underlying strata has the capability to support a wind farm development.

(2) [www.bwea.com/edu/calcs.html](http://www.bwea.com/edu/calcs.html)

## **NUON: ISSUES TO ADDRESS**

### **Community Benefits**

#### **Clarifications in response to first drop-ins:**

- Community benefits have to be discussed with local Councils but not the planners, to make sure this does not play any part in their decision on the proposal. The planning process considers planning issues only.
- Benefits are most commonly spent on energy-related ideas (for example, insulating a community hall), but can be for any other community idea such as improved bus services, community facilities or environmental schemes. They cannot normally be paid to individuals.
- Local stakeholders will be involved in an exploration of the best ways to manage and administer the funds.
- The community fund can be used for whatever purpose is agreed, It is up to the local stakeholders as to how the money should be spent and managed.

#### **Things Nuon have done:**

- Shared your ideas and thoughts on community benefit with key stakeholders.

#### **Things Nuon are working on:**

- Started discussions with community groups and others on community benefit and the key early issues to be aware of and to consider.
- Holding local drop in sessions to discuss, among other things, community benefits and how they might be best managed.
- Looking at forms of local 'Trust' that ensure genuine community control.

#### **Things Nuon cannot influence:**

- The price of electricity locally, this is defined by those companies which supply it.

## ***NUON: ISSUES TO ADDRESS***

### ***Clarifications in response to first drop ins***

- Will this wind farm make a difference? A 20MW wind farm in this area of Wales, known for its high wind speeds could generate enough clean, sustainable energy to power the equivalent of 11000 homes per year. (3)

(3) [www.bwea.com/ref/faq.html](http://www.bwea.com/ref/faq.html) [1.8MW generates enough electricity for around 1000 homes; 20MW is the equivalent to 11000 homes per year)

***Please add any of your own comments below:***