

# **Environmental Appraisal**

PLANNING APPLICATION FOR A GAIA 11kW WIND TURBINE:

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ON BEHALF OF:

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## Preface

This supporting document has been prepared by Universal Green Energy Ltd on behalf of Mr Robert Lomas for the erection of a Gaia 11kW wind turbine at Mosley Hall Farm, Whaley Bridge, SK23 7EW. This application is a resubmission of the previous application, HPK/2010/0231 which was refused in July 2010. With the benefit our technical expertise and our applicant's local knowledge we have prepared an Environmental Appraisal (EA) that incorporates our Design and Access Statement (DAS) to support our planning submission.

This statement has been written to show the efforts that have been made to provide for a development that: will be compatible with the site's surroundings: has regard to the local environment with reference to location and layout, design and scale, and will be accessible and inclusive.



## 1 BACKGROUND

- 1.1 <u>The Site and its Context</u>
- 1.1.1 The application site and the surrounding area comprise of an open agricultural landscape made up of a mosaic of agricultural fields mainly used for grazing purposes. The land forms are separated by a series of hedgerows, occasional clusters of woodland and isolated trees are located at regular intervals along the undulating valley sides.
- 1.1.2 The landscape has a long history of settlement and farmsteads and is described as "settled valley pastures".



1.1.3 Whaley Bridge is located 1km west to the proposed site. Buxworth is 1km north.

Image 1: Proposed site and surrounding area

- 1.13 The proposed turbine shall be located approximately 160m to the south of Mosley Hall Farm farmhouse and will occupy a site area of only 25m<sup>2</sup>. It is more than 366m from the nearest property not occupied by the applicant.
- 1.14 The site has been chosen following an extensive and rigorous site selection process. This is outlined in full in section 4.4 to 4.6.
- 1.2 <u>The Proposed Development</u>
- 1.21 The proposed development comprises the construction and operation of a single Gaia 11kW wind turbine on an 18m monopole mast. The turbine is for commercial



use and is being installed to supply cheap electricity to run the farm and feed electricity into the national grid.

- 1.22 The proposal will involve the construction of a concrete foundation on which to mount the turbine mast and the laying of an underground cable between the turbine and the farmhouse to link it to the farm complex and grid. The turbine mast will be a single monopole type assembled and erected in three sections.
- 1.23 The chosen turbine will be a Gaia 11kW. This is a horizontal axis type with a rotor consisting of 2 blades approximately 6.5m long resulting in a diameter of 13m. The blades will be mounted to a wind turbine hub and nacelle, at a height of 18m above ground an overall maximum height from ground to blade tip of 24.5m. The turbine hub and nacelle will be an off white colour with a matt finish. The mast will be dull grey with a galvanised metal finish reducing their contrast with the background sky and minimising reflection. The mast, hub, nacelle or blades will not be painted.
- 1.24 The Gaia 11kW wind turbine was chosen following a detailed assessment of the energy needs of the farm, a technical assessment looking at turbine viability and performance; and thirdly, an assessment of its potential impact on the local environment. This process is outlined in section 4.5.
- 1.26 With a rotor diameter of up to 13m the Gaia 11kW has the capacity of generating 26,000kWh per year at a worst case scenario of 4.7m/s and 37,000kWh at the predicted 5.5m/s for this site. For the purpose of this application, we are using the 5.5m/s predicted wind speed at the location.

The turbine operates on a standard 3-Phase electricity supply and as such can be connected directly to the grid without the need for a separate sub-station to house transformers and connection equipment.

1.27 Connection shall be via a 150m underground cable laid at a depth of 600mm connecting the turbine to the mains supply located at in the farm building.



## 2 PLANNING POLICY BACKGROUND

- 2.1 Introduction
- 2.1.1 The statutory development plan is indicated to be of paramount importance under the Town and Country Planning Act 1990. In terms of this proposal it comprises Saved Policies of the High Peak Local Plan adopted March 2005 and saved for a period of 3 years from 31 March 2008. This will be replaced by the Local Development Framework as new documents emerge and are adopted. Relevant policies are described in section 2.3 of this report. The East Midlands Regional Plan (adopted March 2009) is no longer part of the statutory development plan following its revocation on 6<sup>th</sup> July by Rt Hon Eric Pickles MP, Secretary of State for Communities and Local Government. However, material used in the preparation of Regional Spatial Strategies can be used as a material planning consideration by Local Planning Authorities when considering planning applications.
- 2.1.2 The most relevant national planning policy and guidance is PPS22 "Renewable Energy" and its companion guide, "Planning for Renewable Energy". However, consideration has also been given to other policy and guidance that is relevant to certain aspects of this proposal. This includes:
  - PPS1 Delivering Sustainable Development
  - PPS1 Supplement Planning and Climate Change
  - PPG2 Green Belts
  - PPS4 Planning for Sustainable Economic Growth
  - PPS7 Sustainable Development in Rural Areas
  - PPS9 Biodiversity and Geological Conservation
  - PPS23 Planning and Pollution Control
  - PPG24 Planning and Noise
- 2.2 Energy Policy
- 2.2.1 It is also important to stress that there are also other material policy considerations relevant to this application found in various national energy policy documents. These indicate a strong positive policy favouring wind power and other forms of renewable energy in the UK. This is largely motivated by the Government's international agreements on the reduction in the emissions of greenhouse gases, and the national and local targets that have been identified for achievement by 2010 and 2020.
- 2.2.2 The Energy White Paper (2007) confirms the requirement for 10% of UK electricity to come from renewable energy by 2010 with an aspiration to double this by 2020. The new PPS 1 supplement on Climate Change builds on this and challenges Regional Spatial Strategies to set targets for renewable energy capacity in line with national targets (see paragraph 2.3.3 below).



- 2.2.3 In 2009 the British Wind Energy Association (BEWA) compiled a detailed review of the state of progress towards the 2010 renewable energy targets adopted by the English regions and the aggregate 'English' target. It found that with the exception of London all the English regions are very unlikely to meet their onshore wind targets by 2010. In fact at the time the report was completed in April 2009 only half (50.5%) of the aggregate onshore target for had been met. This failure to meet the 2010 target puts extreme pressure on all parties concerned including electricity generating companies, landowners and developers, Central Government and Local Planning Authorities to deliver more renewable capacity more effectively and more efficiently.
- 2.2.4 Wind energy has the potential to be delivered in a shorter timescale than other forms of clean or renewable energy such as biomass, hydroelectric and combined heat and power. Traditionally, these have much longer lead in time and as such are unlikely to have a significant impact on reducing emissions in the short term. Therefore it is of paramount importance that every opportunity is taken to accelerate the development of wind energy projects over the next few years to maximise benefits and help ease the pressure on the delivery of the 2020 targets.
- 2.2.5 Delivery of these targets will lead to wider economic and environmental benefits, reduced greenhouse gas emissions, provision of a secure and diverse energy supply for businesses and residents and reduced instances of fuel poverty.
- 2.2.6 On 1<sup>st</sup> April 2010 the Government introduced new Feed in Tariffs (FITS) to encourage more individuals and small business to invest in small to medium scale renewable technologies such as wind turbines and solar electricity. The aim being to accelerate the delivery of energy from renewable sources and speed up the delivery of national and regional targets.
- 2.3 Former Regional Spatial Strategy, East Midlands (RSS)
- 2.3.1 Currently the regions energy needs are predominantly met by burning fossil fuels. East Midlands region has a commitment to reduce its dependency on fossil fuels and increase its overall proportion of low carbon energy generation (Policy 40).
- 2.3.2 The overall objective for low carbon energy generation set out in the RSS is to ensure that East Midlands contributes to the Government targets of reducing greenhouse gases and maximising energy generation from renewable resources.
- 2.3.3 In March 2010 East Midlands prepared a revised Regional Plan which was submitted to the Secretary of State for Approval. This document recommended a significant revision of renewable energy targets for 2021 including revised targets for on-shore wind generation and micro-generation. It also strengthened Policy 40 in order to increase the development of renewable energy projects and accelerate the delivery of renewable energy targets in an attempt to contribute towards national carbon reduction of 34% by 2020. This document has not been adopted following the revocation of the Regional Spatial Strategies in July; however, material used in the preparation of Regional Strategies may be used as a material planning consideration.



## 2.4 <u>Regional Economic Strategy (RES)</u>

- 2.4.1 The Regional Economic Strategy for East Midlands 2006-2020 provides strong support for the development of renewable energy. One of its strategic priorities is "to transform the way we use resources and use and generate energy to ensure a sustainable economy, a high quality environment and lessen the impact of climate change." It specifically aims to reduce carbon dioxide levels towards the national average, requiring a reduction of over 20% and through its Priority Actions aims to "maximise the economic and environmental benefits of renewable energy technologies by promoting their development and deployment."
- 2.4.2 The RES also aims to "ensure that businesses are well placed to exploit opportunities presented by the growing global marketplace for low carbon products and services.
- 2.5 <u>National Planning Policy and Guidance</u>
- 2.5.1 PPS 22 is the key national policy document to be taken into account in the consideration of this proposed development. Indeed, together with its companion guide, "Planning for Renewable Energy", PPS22 sets out clearly the Government's approach to renewable energy.
- 2.5.2 It represents the Governments most recent guide on renewable energy and provides considerable support to the greater harnessing of renewable energy sources, particularly wind energy, indicating that it is vital to facilitating the delivery of the Government's international commitments on both climate change and renewable energy. Considerable emphasis is placed on the need for renewable energy development and in most cases this national need should take precedence over local factors that may weigh against a proposal.
- 2.5.3 Paragraph 1 of PPS22 identifies the key principles that regional planning bodies and local planning authorities are expected to adhere to in their approach to planning for renewable energy:
  - "Renewable energy development should be capable of being accommodated throughout England in locations where the technology is viable and the environmental, economic and social impacts can be addressed satisfactorily.
  - The wider environmental and economic benefits of all proposals for renewable energy projects, whatever their scale, are material considerations that should be given significant weight in determining whether proposals should be granted planning permission".
  - Regional planning bodies and Local Planning Authorities should not make assumptions about the technical and commercial viability of renewable energy projects. Development proposals should demonstrate that any environmental, economic and social benefits as well as how any environmental, economic or social impacts have been minimised through careful consideration of location, scale, design and other measures".



- 2.6 Local Development Plan
- 2.6.1 The High Peak Local Plan was adopted in March 2005. Certain policies have been saved by the Secretary of State and these came into effect on 31 March 2008. In time these policies will be replaced by the emerging Local Development Framework.
- 2.6.2 Policy 76 (CF10) of High Peak Local Plan encourages the development of wind turbines as part of its overall commitment towards energy generation from renewable sources. It states "planning permission will be granted for renewable energy development provided that: the benefits of renewable development outweigh any adverse impacts; and the proposals demonstrate that any harm to the environment or local amenity either individually or cumulatively can be kept to an acceptable level." This policy was written and adopted before the identification and future revision of regional targets.
- 2.6.2 In the preparation of this proposal careful consideration has been given to design and site selection in order to minimise any impact upon the landscape, local amenity and nature conservation interests. Particular attention has been paid to policies GD4 (Character, Form and Design), GD5 (Amenity), OC4 (Landscape Character and Design), OC5 (Development Conspicuous from the Peak District National Park), OC8 (Sites of Importance for Nature Conservation), OC10 (Trees and Woodlands), BC1 (External Materials), BC5 (Conservation Areas), BC8 (Setting of Listed Buildings) and BC10 (Archaeological or other Heritage Features).
- 2.6.3 Special consideration has also been given to advice and guidance contained in the Council's Landscape Character SPD adopted March 2006.
- 2.6.4 Policy 9 (OC1 Countryside Development) outlines the Council's position on development beyond Built-up Area Boundaries (as defined in The Plan), including Green Belt and Special Landscape Areas. It states" within the countryside, planning permission will be granted for development which is an integral part of the rural economy and which can be only carried out in the countryside provided that individually or cumulatively:
  - the development will not detract from an area where the open character of the countryside is particularly vulnerable because of its prominence or the existence of a narrow gap settlements; and
  - the development will not generate significant numbers of people or traffic to the detriment of residential amenity, highway safety, landscape or air quality or otherwise have an unacceptable urbanising influence; and
  - the development will not have a significant adverse impact on the character and distinctiveness of the countryside."
- 2.6.5 This policy is supported by Policy 10 (OC2 Green Belt Development) which permits development for agriculture and forestry purposes, sport and recreation and limited extension to existing buildings or limited infilling. It provides added protection to maintain the openness of Green Belt, restrict urban sprawl and safeguard the



countryside from encroachment. In addition Policy 11 (OC3 Special Landscape Area Development) permits development provided that it will not detract from the special qualities and character of the Special Landscape Area. Developers are required to have special regard to the landscape quality of the area in relation to siting, design and landscaping.

- 2.6.6 In accordance with PPS22 the social, environmental and economic benefits that wind development will bring to the wider community shall weigh against the potential impact of developments in Green Belt and any harm that may be caused to the local environment.
- 2.6.7 High Peak Local Plan Policy 59 (EMP7 Industry and Business in the Countryside) supports the diversification of the rural economy. The Plan recommends that "small scale business development should involve the expansion or diversification of an existing business. " It acknowledges that "farming has a key role to play in maintaining the quality of the countryside, and diversification is becoming increasingly important to maintaining farm incomes. The Borough Council supports diversification projects, particularly those which are intended to contribute to the farm business rather than become enterprises in the countryside in their own right. The development of wind turbines clearly falls into this category.



## **3 PLANNING SUPPORT STATEMENT**

- 3.1 This application is a resubmission of HPK/2010/0231 which was refused in July 2010 because of the lack of information about site selection, a failure to examine potential impacts upon landscape quality and character, and a failure to demonstrate the social environmental and economic benefits of the scheme.
- 3.2.1 Our re-submission has re-examined site selection and design. In total 5 potential sites with the applicants land ownership were appraised for their suitability. A preferred location was chosen and alternatives discounted on performance, amenity and environmental grounds. The options are outlined in detail in section 4.6.
- 3.3 It is proposed to erect a single wind turbine, relatively small in scale standing 24.5m in height from the ground to blade tip. It will be mounted on a single, slender column and carry a 2-bladed rotor. The proposed site of the turbine has been chosen carefully following an in-depth site selection process examining both technical and environmental constraints, including an assessment to minimise visual impact upon the local landscape through careful consideration of location, scale, design and other measures. The proposed turbine will not have a significantly harmful affect on the character and appearance of the locality.
- 3.4 As part of this process consideration has been given to Saved Local Plan Policies OC3, OC4 and CF10, along with the Landscape Character SPD adopted March 2006 and National Planning Guidance outlined in section 2. The preferred site will have a slight impact upon the Special Landscape Area but this impact will not significantly affect the overall character and appearance of the landscape or impact on the quality of environmental features or habitats within it. Care has been taken to choose the most appropriate site that mitigates against visual impact whilst providing adequate measures to protect flora and fauna; and minimising any affect on field boundaries, footpaths, trees, hedgerows or heritage assets. Given its modest scale, its careful design and location we deem it to be "an appropriate development" and one where any harm is significantly outweighed by environmental and economic benefits.
- 3.5 Planning Policy Statement 22 Renewable Energy (PPS22) states that "Renewable energy development projects should be capable of being accommodated throughout England in locations where the technology is viable and environmental, economic and social impacts can be addressed satisfactorily." It asks local planning authorities when assessing planning applications to "recognise that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved." It also asks Local planning authorities to consider that "the wider environmental an economic benefits of all proposals for renewable energy projects, whatever their scale, are material considerations that should be given significant weight in determining whether proposals should be granted planning permission."



3.6 We strongly advocate that the proposed development will bring positive benefits to the wider community, helping to reduce carbon emissions and contribute towards the Governments renewable energy targets; and by helping to support the rural economy by enabling farming communities to become more sustainable and financially viable so that they can continue in their stewardship role to protect and maintain the quality of the rural landscape. These benefits are detailed in section 6.



## 4 DESIGN & ACCESS STATEMENT (DAS)

- 4.1 <u>Introduction</u>
- 4.1.1 This statement has been prepared in accordance with the recommendations of circular 01/06 Communities and Local Government: Guidance on Changes to the Development Control System; which provides specific advice and guidance on the purpose and content of Design and Access Statements.
- 4.1.2 It outlines the process of site selection, choice and design of the proposed turbine, method of construction, connection to the grid, operation and its proposal for decommissioning or replacement.
- 4.1.3 The proposed turbine is to be erected at Mosley Hall Farm and located in a field 160m from the farmhouse. The location is 53°19'41N, 1°58'15W.
- 4.1.4 There are no pylons located at the site. There are areas of woodland surrounding the proposed site. The turbine has been located a minimum of 50m from such areas to avoid conflict to wildlife.
- 4.1.5 National planning policy requires developers to consider whether a proposed turbine is appropriately designed and sited. PPS22 requires applicants to demonstrate how environmental and social impacts have been minimised through careful consideration of location, scale, design and other measures, and also requires that wind turbine developments are proposed in such a way that their effects, and in particular their landscape and visual effects and their noise impacts, are minimised.
- 4.1.6 This implies that alternatives should be considered i.e. alternative locations, different designs and different types of turbine.
- 4.2 <u>Use</u> The proposed use is that of a single turbine to generate electricity to support the energy needs of a commercial farm. Surplus power generated will be fed back into the national grid.
- 4.3 <u>Scale</u>
- 4.3.1 It is proposed to erect a single Gaia 11kW wind turbine with an overall maximum height from base to blade tip of 24.5m. The turbine blades, each 6.5m long, will be mounted onto the turbine hub and nacelle at a height of 18m. The swept path of the blades (i.e. the diameter) measures 133m<sup>2</sup>.
- 4.3.2 This is a relatively small turbine, minute in height and scale compared to those installed at large utility wind farms that can exceed a height of 140m from ground to blade tip.



4.3.3 At 18m the turbine is taller than the average house, barn or a factory. However, it is much smaller in scale to other common features in both the rural and urban landscape such as electricity pylons, commonly 65m, church spires, commonly 35m, mill chimneys, commonly 40 to 50m and mobile phone masts, commonly 25m.

Included within this application is a diagram, 'Gaia-Wind 11kW Footprint' showing the proposed turbine in comparison to the other features found within the landscape.

- 4.4 <u>Turbine Design & Selection</u>
- 4.4.1 The design and selection of the proposed turbine has been influenced by:
  - The energy needs of the applicant
  - Wind speed
  - Site location and topography
  - Maintenance and reliability
  - Energy performance and efficiency
  - Noise
  - Aesthetics
  - Cost
- 4.4.2 As part of the initial feasibility study outlined in section 4.6.7 a complete assessment is made of potential turbine products (i.e. those with comparable outputs, performance standards, height and availability) taking into consideration all of the factors outlined above.
- 4.4.3 In the case of small to medium scale developments, turbines are selected from a range of internationally certified products rather than being specifically designed and manufactured for individual sites or purposes. Nevertheless, design, scale and appearance are very important considerations that influence our selection process.

The Gaia 11kW wind turbine was chosen as the most appropriate turbine for this applicant in this location.

- 4.5 <u>Chosen Turbine -Form and Appearance</u>
- 4.5.1 The turbine is a horizontal axis type, the most common for wind turbines and the most efficient in terms of power generation. The rotor will consist of two blades mounted on the wind turbine hub and nacelle at a height of 18m. The proposed blades are made from glass fibre and are 6.5m in length resulting in a rotor diameter of 13m. The total height from base to blade tip is 24.5m
- 4.5.2 The turbine is expected to generate an estimated 37,000kWh of electricity each year at an average wind speed of 5.5m/s.
- 4.5.3 The Gaia 11kW has been specifically designed to have low visual impact, with slender blades and minimal visual bulk at tower height.



- 4.5.4 The mast is partly weathered when delivered to site. Once erected it completes the weathering process, oxidizing to a dull grey finish in approximately 3-4 months. As this is a permanent all weather finish, the mast will not rust and become unsightly requiring re-painting. It will remain a dull grey colour for the full 20 year lifetime of the turbine.
- 4.5.5 It should be noted that grey colours blend in better than green, brown and black against a rural background (trees, hedges, leaves) and also against the skyline (generally grey in this country). It is for this reason that structures such as lampposts, pylons, aerials, masts and signage posts are painted or treated this way.
- 4.5.6 It is proposed to use dull, matt colours and finishes for the mast and turbine head so as not to create a stark contrast between the turbine and the background sky and landscape. The turbine hub and nacelle will be painted a light grey colour with a matt finish. The mast will be finished in galvanised steel.
- 4.5.7 The proposed hub height and rotor diameter have been arrived at following consideration of the energy needs of the client, the background wind regime and represent a compromise of optimising the efficiency of the turbine having taken into account the environmental constraints identified in our site selection process outline in section 4.6. In this regard, it is worthwhile pointing out that the power output from a wind turbine increases exponentially as the swept path (the diameter) of the rotor blades increases. Thus small reductions in the size of the rotor blades and the height at which they are set above ground level can significantly reduce the operating efficiency of the turbine, thus reducing its ability to generate sufficient renewable power and seriously reducing its environmental and economic benefit.
- 4.5.8 There is no compulsory standard for wind turbine design, Gaia 11kW wind turbine has been installed throughout Europe and complies with all Microgeneration Certification Scheme (MCS) certifications and standards.
- 4.6 <u>Site Selection Process</u>
- 4.6.1 Turbine design and selection is an iterative process and influenced by potential environmental effects identified through the EIA process as defined in the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.
- 4.6.2 PPS2 requires developers to demonstrate how environmental and social impacts have been minimised through careful consideration of location, scale, design and other measures, and also requires that wind energy developments are proposed in a way such that their effects, and in particular their landscape and visual effects and their noise impacts have been minimised.
- 4.6.3 Furthermore Schedule 4 of the EIA Regulations 1999 requires "an outline of the main alternatives studied by the applicant and an indication of the main reasons for the choice, taking into account the environmental effects".



- 4.6.4 For this reason we have examined various locations and design options to determine their suitability for generating wind power and their potential impact upon the surrounding landscape.
- 4.6.5 Our chosen site and design has resulted from intensive consideration of a range of competing factors. It has evolved in response to a number of environmental and technical constraints, landscape and design considerations; and as a result of indepth consultation with turbine suppliers, the land owner, utility companies, aviation authorities, specialist advisors and individuals.
- 4.6.6 Initially, the design and siting of the proposed turbine was optimised in terms of technical and economic considerations in order to design a proposal that maximises the generation of wind power. This was then balanced against the overall environmental impact of the development. Consequently, the final design and siting of the turbine represents a compromise having considered a range of technical, economic, environmental criteria including:
  - i) Ground conditions must be suitable for the installation of turbines and cables e.g. avoiding areas of unstable ground, relatively level ground with suitable access.
  - Local topography can affect wind flow across the site and therefore can detrimentally affect turbine performance. Site topography must be carefully considered in the layout design process to ensure any detrimental effects are minimised.
  - iii) Tall trees, buildings and other obstructions can create turbulence in the air flow and reduce performance.
  - Wind turbines have to be located at a distance sufficiently far from houses to protect local noise amenity and ensure any potential shadow flicker impacts are minimised;
  - v) The implications of locating turbines near environmentally sensitive features and areas (archaeology, ecology, hydrology, ancient monuments, listed buildings) need to be considered carefully;
  - vi) Landscape and visual design considerations need to be fully assessed and taken into account;
  - vii) Connection to the national grid with regard to capacity and the equipment required to do this.
  - viii) Discussions with statutory and non-statutory consultees, the local community and the landowner.
  - ix) Consideration of national, regional and local planning policy and guidance and any other relevant strategy and documentation.
- 4.6.7 Our study was carried out in 2 separate stages. These are outlined below.

### Stage 1 Feasibility

- An appraisal of our clients energy needs
- An examination of potential wind speeds



- Identification and examination of suitable wind turbine products to assess performance and suitability
- A desk top study to determine key characteristics and the status of the locality. For example whether the site is situated within a National Park, Green Belt or AONB - and a baseline landscape character assessment.
- Identification of the applicants land ownership
- An initial site survey to assess local site conditions
- A brief assessment of landscape character and potential impact of a turbine
- Visual Impact and mitigation
- 4.6.8 As part of this process we identified the most appropriate turbine in terms of size, performance, appearance and output. We also discounted potential locations because of ownership constraints, unsuitable wind speeds, poor site access, and those sites that had a more significant impact upon the landscape and identified a preferred geographical location for further investigation as shown in the map 1 above.

## 4.6.9 <u>Stage 2 Identifying the Proposed Site</u>

This involved a full field survey and a detailed assessment of local site constraints and characteristics. It also involved consultation with statutory bodies and commissioning support of specialist consultants to advise on specific issues. Consideration was given to the following:

- Minimum distances to neighbouring properties
- Proximity to local wildlife habitats
- Obstructions that may affect turbine performance
- Localised flooding
- Maximum distances for grid connection
- Suitable access for turbine erection and maintenance
- Potential site contamination
- Proximity to sites of historical or archaeological interest
- Proximity to public footpaths, roads and bridleways
- Effects on transport routes and communications
- Special landscape features, character and condition
- Visual effects





Image 2: Potential locations. Image courtesy of Google Earth

Before choosing the location for the proposed turbine the following areas were considered:

- A. Preferred location excellent position allowing a clean wind from the South West. The treeline to the North East is far enough away to ensure that wind turbulence is minimised. The environmental impact on wildlife is also low as there are no continuous hedgerows or trees nearby. Visual impact is kept to a minimum as most views are hidden by trees and the contours of the land. Noise is not an issue due to large distances to neighbouring properties. The location is not is direct view of neighbours.
- B. This area is sheltered by farm buildings which would create turbulent air. This reduces the turbines performance and will in time weaken the blade.
- C. This location is sheltered from the prevailing wind and is close to the hedgerow.
- D. This is a good location for wind speed but the visual impact on the skyline will be very high.
- E. This location is too close to trees with turbulent air an issue and does not comply with environmental guidelines.





Image 3: Chosen site. Image courtesy of Google Earth

- 4.7 <u>Pre-application Consultations</u>
- 4.7.1 Pre-application discussions have been held with the Local Planning Authority following the refusal of the previous application.

#### 4.8 <u>Access & Construction</u>

- 4.8.1 Access is required during construction and for routine maintenance once the turbine is operational.
- 4.8.2 Access to the proposed site is via Eccles Road, which leads to Mosley Hall Farm.
- 4.8.3 Once inside the farm complex localised access is required along farms tracks and/or designated routes across the farmer's field to the site. These routes are identified in conjunction with the farmer/ landowner and having regard to the proposed transport and construction vehicles required and giving due regard to health and safety regulations. The proposed access route is identified below.





Image 4: Proposed access. Image courtesy of Google Earth

- 4.8.4 The construction period for a single small turbine such as the Gaia 11kW is short, normally 7 working days, spread over a period of 4-5 weeks. On day 1 a trench is dug using a standard excavator to carry the cable to connect the turbine to the Grid. In the case of this proposal the trench will be 150m long and dug to a minimum depth of 600mm. Once the cable is laid the trench is back-filled with sub soil and reinstated with top soil.
- 4.8.5 On the following week (days 2-4) the concrete foundation will be constructed. In week 3 (day 5) the turbine mast, hub, nacelle and rotor will be delivered to site in a 15m container on the back of a low loader. In week 4 (day 6) the mast sections will be fitted together and the blades and rotor fixed to it. The mast will then be lifted into position and bolted firmly to its concrete base. The foundations will then be backfilled with subsoil and topsoil. On day 7 the final electrical installations will be completed and the turbine connected to the grid. These levels of vehicle movement are typical for a commercial farm.

Day	LGV/ Plant	Light Commercial	Total Movements
One	2	2	4
Two	2	2	4
Three	4	2	6
Four	2	2	4
Five	2	2	4
Six	0	2	2
Seven	2	2	4
Total	14	14	28

4.8.6 Total vehicle movements to site can be summarised as follows:



#### **Table 1: Construction Vehicle Movements**

#### Note:

- 1. Access and Egress is equal to two vehicle movements
- 2. LGV/plant represents large goods vehicles and plant over 3.5 tonnes
- 3. Light commercial vehicles represents vans, trailers and pickups less than 3.5 tonnes
- 4.8.7 It is not proposed to construct any new access roads or tracks for use in either the construction or maintenance of the turbine or its associated equipment.

#### 4.9 <u>Extreme weather conditions</u>

- 4.9.1 The turbine is designed to survive wind speeds of 50 meters per second which is considerably more than those experienced in the UK. Indeed, if such winds were experienced inland in the UK there would be widespread damage to buildings and power lines. The maximum recorded wind speed during the notorious 1987 gales was 47.8 meters per second.
- 4.9.2 There is no risk of the glass fibre blades icing up in this particular location.

#### 4.10 Transport & Communications

The nearest railway line will be in the Whaley Bridge vicinity 0.9km away from the proposed site. The nearest airport is Manchester Airport 20km away. This scale of turbine will not have any impact on air traffic at this distance. NATS have confirmed they have no objection to the development.

There are no masts in the vicinity of the turbine.

- 4.11 Landscaping
- 4.11.1 There are no specific landscaping proposals, i.e. tree planting or screening proposed as this is not deemed necessary on this occasion given the turbines proposed location, its design, scale and appearance, and its position in the landscape.
- 4.11.2 The turbine is sited away from the existing farm complex, it does not interfere with important townscape of Whaley Bridge. The EIV Report discussed further in section 5.2.2 concludes that the turbine will not be seen from Whaley Bridge.
- 4.12 <u>Maintenance</u>

The Gaia 11kW wind turbine is very reliable. It is designed to be relatively maintenance free throughout its 20 years life. Occasional visits are required for annual servicing and general repairs. On average there will be one annual maintenance visit per year carried out by a team of two engineers. No heavy plant will be required.

#### 4.13 Decommissioning

The Gaia 11kW wind turbine has an expected life of 20 years. After this time the turbine head will need replacing with a new or re-conditioned unit. The monopole



mast and foundation have a much longer shelf life and are likely to last 60 years before needing to be replaced. The monopole mast will need to be re-galvanised, treated or painted at 20 year intervals.



## 5 ENVIRONMENTAL & ECONOMIC IMPACTS

- 5.1 Introduction
- 5.1.1 PPS22 states that "renewable energy developments should be capable of being accommodated throughout England in locations where the technology is viable and environmental, economic and social impacts can be addressed satisfactorily." It requires developers to give careful consideration to the visual impact of projects and acknowledges that the landscape and visual effects of certain developments will vary according to the type of development, its location and landscape setting. It also stresses that such effects "may be minimised through appropriate siting, design and landscape schemes, depending on the size and type of development proposed" and it requires local authorities, when assessing planning applications, to recognise that the impact of turbines will vary according to the size and number of turbines and the type of landscape involved.
- 5.1.2 The development proposed at Mosley Hall Farm is modest in scale. It is not located within the Green Belt; however it is located within a Special Landscape Area. Therefore careful consideration has been given to the turbine design and site selection in order to minimise potential impacts upon landscape character, local ecology, the historic environment and the amenity of local residents. This process has been carried out in compliance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 and in accordance with the Guidelines for Landscape and Visual Impact Assessment published by the Landscape Institute and Institute of Environmental Management and Assessment 2002.

The below image taken from magic.gov.uk show the land classification for the surrounding area. The site lies within a Special Landscape Area.



- 5.2 Environmental Impact
- 5.2.1 Site selection and turbine design is covered in Section 4 which explains how environmental impacts have been minimised through an in-depth assessment of

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alternative products, sites and locations. Specialist environmental consultants 3DVS were involved in this process.

## 5.2.2 Visual Impact

A comprehensive Environmental Impact Visualisation Report has been prepared by 3DVS to assess the potential impact of the chosen site on the local environment. A copy of this report is included within the application. The study examines existing baseline landscape conditions, location of visual receptors and geographical context to establish the area over which the turbine development may have a visual impact.

The study found that the aggregated visual impact for the visual amenity assessment of near distance views (within 1km) for the construction phase and operation is *slight;* the middle distance aggregation (1km to 2.5km) is *slight,* and the distant view aggregation (2km to 5km) is *neutral.* Despite the nature and classification of the landscape the visual envelope is small. The combined assessment of the visual impact is *slight.* 

The conclusion from the assessment is as follows:

"The visual envelope is small due to the distance of recognised visual receptors. The turbine will not be seen from Whaley Bridge and has only a slight impact on visual amenity in other areas where there is a possibility that it could be seen".

## 5.2.4 Listed Buildings, Conservation and Archaeology

Kieron Huston, Senior Local Wildlife Officer from Derbyshire Wildlife Trust confirmed there are no specialist conservation areas in the vicinity of the proposed development:

"The Trust is not aware of any nature conservation interest on or adjacent to the site".

There are no areas of archaeology in the vicinity or listed buildings.

5.2.5 Ecology

There are no protected species in the vicinity of the proposed turbine. This is confirmed by Mr Huston:

"We do not have any records for any species that could be especially affected by a turbine of this type. The turbine is sited at least 50 metres away from any boundaries or structures that could be used by bats for breeding, commuting and/or foraging".

Mr Huston had no objections to the proposal.



## 5.2.6 <u>Noise Disturbance</u>

The turbine has been sited at distances from properties so that noise will not be an issue.

## 5.2.7 <u>Footpaths</u>

Two public footpaths are in the vicinity of the site, 41 and 40/39. The turbine is not situated within fall distance from either footpath.

The below image taken from streetmap.co.uk shows the location of the turbines in the vicinity of the proposed development.



- Turbine location
- 5.3 <u>Economic and Social Impact</u>
- 5.3.1 As the proposed turbine is modest in scale potential socio-economic impacts will be relatively small. Positive impacts i.e. the benefits resulting from the development are dealt with in section 6 below. This section looks at the potential negative impacts and how these can be mitigated.
- 5.3.2 In land use terms the proposed turbine will occupy a very small footprint of 25m<sup>2</sup>. This land take will have virtually no effect on the economy or the function of the farm. Furthermore, the construction of the turbine and its connection to the grid will not interfere or disrupt any neighbouring residences, businesses or farms.
- 5.3.3. There is no evidence to suggest that wind turbines adversely affect tourism. In fact, one could argue quite the opposite. The UK's first commercial wind farm at Delabole received 350,000 visitors in its first year of operation. This is one of the reasons why



wind farm developers are often asked to provide visitor centres, viewing platforms and rights of way to their sites.

- 5.3.4 A number of studies have been undertaken over the last few years to evaluate the public's perceptions and attitudes towards wind turbines. The latest Wind Tracker Survey by Gfk NOP IN July 2006 conducted a telephone survey of 973 adults 16+
  - 76% of people in Great Britain agreed that wind farms are necessary so that we can produce renewable energy to help us meet the current and future energy needs of the UK.
  - 52% of people disagreed that wind farms are ugly or would be a blot on the landscape with 21% having no strong views.
  - 60% of people think that what they look like is unimportant, because wind farms are necessary.
  - 56% said they would be happy to have a wind farm in their local area, with 21% having no strong views.



## 6 ENVIRONMENTAL & ECONOMIC BENEFITS

- 6.1 <u>Introduction</u>
- 6.1.1 PPS22 asks Local planning authorities to consider that "the wider environmental and economic benefits of all proposals for renewable energy projects, whatever their scale are material considerations that should be given significant weight in determining whether proposals should be granted planning permission".
- 6.1.2 These wider environmental and economic benefits (which include the increased production of energy from renewable sources) can also be used to demonstrate very special circumstances to clearly outweigh any harm by reason of inappropriate development which may impact on the openness of the Green Belt or have an adverse effect on a nationally designated areas such as a National Park, Area of Outstanding Beauty, Sites of Special Scientific Interest, National Nature Reserves, Heritage Coasts, Scheduled Monuments, Listed Buildings, Registered Historic Battlefields and Registered Parks and Gardens.
- 6.1.3 A summary of environmental and economic benefits generated by this proposal are shown in table 3 in section 6.4.
- 6.2 <u>Environmental Benefits</u>
- 6.2.1 Wind energy is an abundant natural resource. It is non-polluting, clean and sustainable. The UK has one of Europe's windiest climates and therefore wind energy is an important element in achieving the Government's international commitment to reduce greenhouse gas emissions. The UK has a commitment underpinned by the Climate Change Act 2008 to reduce carbon dioxide levels by 42% less than 1990 levels by 2020 and by 80% by 2050.
- 6.2.2 The UK Government also made a commitment under The Energy White Paper (2007) that 10% of UK electricity should come from renewable energy by 2010 and 20% by 2020.
- 6.2.3 PPS22 states that "increased development of renewable energy resources is vital to facilitating the delivery of the Government's commitments on both climate change and renewable energy." Furthermore it advocates that "positive planning that facilitates renewable energy developments can contribute to all four elements of the Government's sustainable development strategy:
  - Social progress which recognises the needs of everyone by contributing to the nation's energy needs, ensuring all homes are adequately and affordably heated; and providing new sources of energy in remote areas;
  - Effective protection of the environment by reductions in emissions of greenhouse gases and thereby reducing the potential for the environment to be affected by climate change;



- Prudent use of natural resources by reducing the nation's reliance on ever diminishing supplies of fossil fuels; and,
- Maintenance of high and stable levels of economic growth and employment through the creation of jobs directly related to renewable energy developments, but also in the development of new technologies. In rural areas renewable energy projects have the potential to play an increasingly important role in the diversification in rural economies.
- 6.2.4 The proposed turbine at Mosley Hall Farm will deliver significant benefits towards all four elements of the sustainable development strategy and as such adds significant weight to our planning application.
- 6.2.5 At the estimated 5.5m/s wind speed at this location, the turbine will contribute towards the reduction of greenhouse gases by saving approximately 18 tonnes of carbon dioxide per year (at least 360 tonnes over its lifetime) and generating an average of 37,000kWh of electricity per annum from renewable sources reducing our reliance on fossil fuels.
- 6.2.6 It will also supply affordable energy to power Mosley Hall Farm, saving up to 100% on energy costs each year. Surplus electricity will be fed back into the national grid.
- 6.2.7 Farming has shaped the landscape for thousands of years and farmers provide an important stewardship role helping to protect and manage the environment. This may be at risk if farms are not allowed to adapt and diversify. This includes investment in new technology, new plant and processes and new business opportunities. Investment in cheaper, cleaner energy is an important part of this process. If agricultural businesses are allowed to fail then the character and appearance of the countryside as we know it will change irrevocably forever. Viable farms are essential if the rural landscape is to continue to be managed; thereby protecting its distinctive character, and maintaining its condition and environmental quality. Without cattle and sheep grazing the fields, farmers managing its woodland or maintaining footpaths, walls and fences its character, appearance and local vernacular will be eroded and eventually disappear forever.

## 6.3 <u>Economic & Social Benefits</u>

- 6.3.1 High Peak Borough Council acknowledge that farming has a key role to play in maintaining the quality of the countryside, and diversification is becoming increasingly important to maintaining farm incomes. It supports diversification projects, particularly those which are intended to contribute to the farm business rather than become enterprises in the countryside in their own right and it is supported by Local Plan Policy 59 (EMP7). The development of wind turbines clearly falls into this category.
- 6.3.2 The erection of the proposed turbine is an essential part of the Mosley Hall Farm business development plan to modernise and diversify the farm to ensure that it



remains viable in a very competitive industry. The supply of clean and affordable electricity is essential to the economy of the farm. Reducing energy costs will enable the farm to keep its margins low and allow it to supply produce at prices that are attractive to supermarkets and ultimately consumers.

- 6.3.3 Mosley Hall farm is a full time commercial farm and uses a considerable amount of electricity. The installation of a wind turbine will enable it to reduce its energy costs, provide clean/ renewable electricity, generate an income by feeding electricity into the grid and reduce its carbon footprint. These factors are critically important for the farm.
- 6.3.4 The design, construction and project management of the proposed turbine will create an equivalent of 1.5 full time jobs. It will also help test the development of new technologies assisting the future process of research and development in the growth industry of wind turbine manufacture. A further 0.5 full time jobs will be created over the expected 20 year lifetime of the turbine through regular maintenance and servicing contracts.

## 6.4 <u>Summary of Benefits</u>

Benefit	
Reduce greenhouse gases (CO <sub>2</sub> )	18 tonnes p.a
Renewable energy generated	37,000kWh p.a
Reduced energy bills	By up to 100%
Help sustain countryside management	Yes
Full time equivalent jobs created	2
Help protect & diversify a rural business	Yes
Help develop and test renewable technologies	Yes

Table 3: Summary of Environmental & Economic Benefits



## 7 SUMMARY & CONCLUSIONS

	Description	Comment
Turbine design &	Gaia 11kW on an 18m	Most suited to the environment
selection	monopole mast	& energy needs
Site selection	As discussed in section 4.6	Most suited to the environment
Public consultation	Neighbours informed of the	No responses received to
	proposal	original application
Statutory	Whaley Bridge Town Council	No comment
consultation	NATS	No objection
	Derbyshire Wildlife Trust	No objection
	MOD	No objection
	Highways Agency	No objection
	Police Crime Prevention	No comment
Pre-application	Re-submission of application	Planning permission refused
discussions	HPK/2010/0231	July 2010
Landscape effects	Assessed at site survey	Siting & landscape reduce the
		impact
Visual effect	EIV Report conducted	Concluded there will be a slight
		change to the landscape
Impact on historic	Assessed at site survey	No impact
environment		
Ecology	Assessed at site survey	There are no protected species
		in the area. No impact on bats,
		birds or fauna.
Economic and social	Help achieve Government	Benefits for all
impact	targets. Reduce energy	
	costs, provide clean/	
	renewable electricity,	
	generate an income	
Noise impact	Distance of 366m to the	Noise will not be a concern at
	neighbouring property	this distance
Access	Site access from Eccles Road	Good
Construction	Assessed at site survey	No concerns over ability to
		construct a turbine at this
		location
Environmental	Renewable energy	37,000 kWh
Benefits	generated	18 tonnes
	Reduce greenhouse gases	
Economic Benefits	Jobs created	2
	Businesses supported	1

Table 4: Proposed Development Summary