Environmental Appraisal

PLANNING APPLICATION FOR TWO WES80 80kW WIND TURBINES:

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Preface

This supporting document has been prepared by Universal Green Energy Ltd on behalf of Mr Martin Noble for the erection of two WES80 80kW wind turbines on land adjacent to Mount Pleasant Farm, S72 0BX. 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 The Site and its Context

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 arable purposes. The land forms are separated by a series of fences with clusters of woodland and isolated trees located along the gently sloping valley side. The turbines have been located below the skyline to help mitigate visual impact.



Image 1: Proposed site and surrounding area. Image courtesy of Google Earth

1.1.2 The proposed turbines shall be located approximately 488m at the nearest point to the east of the B6273. Each turbine will occupy a site area of only 39m². Turbine 2 is more than 290m from the nearest property not occupied by the applicant; turbine 1 is 399m away.

1.1.3 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 The Proposed Development

1.2.1 The proposed development comprises the construction and operation of two WES80 80kW wind turbines on 24.8m monopole mast. The turbines are for commercial use and are being installed to supply electricity into the national grid. The money generated will be sued to support the farming business.

1.2.2 The proposal will involve the construction of concrete foundations on which to mount the turbines masts and the laying of underground cables between the turbine and the meter. The turbines masts will be monopole type assembled and erected in three sections.

1.2.3 The chosen turbines will be WES80 80kW. This is a horizontal axis type with a rotor consisting of 2 blades with a diameter of 18m. The blades will be mounted to a wind turbine hub and nacelle, at a height of above ground an overall maximum height

from ground to blade tip of 35m. The turbine hubs and nacelles will be pale grey in colour with a matt finish. The masts will be dull grey with a galvanised metal finish reducing their contrast with the background sky and minimising reflection.

1.2.4 The WES80 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.

1.2.5 A technical specification for the WES80 is included with this application.

1.2.6 With a rotor diameter of up to 20m the two WES80's have a maximum capacity of 345,200kWh per year at an average wind speed of 6.3m/s at this site.

1.2.7 The turbine operates on a 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.

1.2.8 Connection shall be via a 170m underground cable laid at a depth of 600mm connecting the turbines to the meter point/ transformer.

2 PLANNING POLICY BACKGROUND

2.1 Introduction

2.1.1 In March 2012 the Government published its new National Planning Policy Framework to provide a simplified yet comprehensive framework of policies to guide the planning system and achieve the Government's requirement for sustainable economic growth – making economic, environmental and social progress for this and future generations.

2.1.2 At its very heart it introduces a presumption in favour of Sustainable economic development – requiring local planning authorities when taking decisions to approve applications for sustainable development without delay where they accord with the statutory development plan. Renewable energy projects are by definition sustainable development.

2.1.3 It also requires local planning authorities to update their development plans and where these plans are out of date they will be required to approve applications unless any adverse impacts of doing so would significantly or demonstrably outweigh benefits when assessed against the policies of the Framework, taken as a whole. Local Planning Authorities can continue to give full weight to relevant policies adopted since 2004 even if there is a limited degree of conflict with the Framework but only until 26th March 2013, by which time local authorities are expected to have reviewed their development plans or prepared a new plan in accordance with the new guidance.

2.1.4 Where there is clear conflict between older development plans and the Framework weight will be awarded to local policies depending on their degree of consistency with the Framework and this will apply to development plans adopted post 2004 after the 12 month grace period.

2.1.5 The Framework replaces all previous Planning Policy Statements and Planning Policy Guidance Notes. However, this guidance still has a role to play as the majority of local development plans were prepared, scrutinised and adopted under this policy regime. The annex to PPS22- Planning for Renewable Energy – A Companion Guide is still applicable.

2.1.6 In terms of this proposal Barnsley's current statutory development plan comprises the Core Strategy (adopted 2011) along with other Development Plan Documents (DPDs) both of which form part of the Local Development Framework, the remaining saved policies of the Unitary Development Plan, and the Regional Spatial Strategy for Yorkshire and the Humber to 2026.Relevant regional policies are described in section 2.3 of this report. The YHP will continue in force for the time being until such time that it is legally revoked under new legislation. Material contained in the YHP, in particular policies relating to renewable energy targets and the reduction of greenhouse gas emissions are important material planning considerations and local planning authorities should continue to attach significant weight to these matters when considering planning applications.

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 1st 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 Regional Spatial Strategy, Yorkshire and the Humber (RSS)

2.3.1 Currently the regions energy needs are predominantly met by burning fossil fuels. However, Yorkshire and the Humber region have some of the most extensive possibilities for renewable energy generation in the UK, including electricity generation from wind power.

2.3.2 The overall objective for wind power set out in the RSS is to ensure that Yorkshire and the Humber contributes to the Government targets of reducing greenhouse gases and maximising energy generation from renewable resources.

2.3.3 The regional and local targets for onshore renewable energy are as follows:

	2010			2021
	Target	Actual*1	%	Target
YH Region	468MW	183MW	39.1%	1232MW
Barnsley Council	15MW	n/a	n/a	34MW

Table 1 : RSS Onshore Renewable Energy Targets

Note 1: Actual figures at are at April 2009 from BEWA's England Regional Renewable Energy Targets: Progress Report.

2.4 Regional Economic Strategy (RES)

2.4.1 The Regional Economic Strategy for Yorkshire and the Humber 2006-2015 provides strong support for the development of renewable energy and has set targets to reduce greenhouse gas emissions. It specifically promotes "energy security and reduced fossil fuel dependency by more energy efficiency and clean and renewable energy generation". It aims to reduce greenhouse gas emissions by 20-25% by 2015 promoting and supporting a wide range of initiatives including increasing the regions capacity for generating electricity from wind and biomass.

2.4.2 The RES also supports the development and diversification of the rural economy and recognises that a strong rural economy can only be achieved through targeted investment and by "helping rural businesses to stay in business and grow". Investment in renewable energy is an important part of this process. The introduction of successful initiatives such as the Low Carbon Building Programme and the Farm Resource Efficiency Programme funded by Yorkshire Forward show the regions commitment in this respect.

2.5 National Planning Policy and Guidance

2.5.1 The National Planning Policy Framework (published March 2012) is the key national policy document to be taken into account in the consideration of this proposal along with the National Policy Statement for Renewable Energy Infrastructure (DECC 2008) and the companion guide to the former PPS22, "Planning for Renewable Energy", that sets out clearly the Government's approach to renewable energy developments.

2.5.2 It represents the Government's commitment and 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 Section 10 of the National Planning Policy Framework aims to meet the challenge of climate change, flooding and coastal change. It states that "planning plays a key role in helping to shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development."

2.5.4 In order to increase the use and supply of renewable and low carbon energy the NPPF requires local authorities to recognise the responsibility on all communities to contribute to its generation. Paragraph 97 requires local authorities to: -

- have a positive strategy to promote energy from renewable and low carbon sources;
- design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts;
- consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources,
- support community-led initiatives for renewable and low carbon energy, including developments outside such areas being taken forward through neighbourhood planning; and
- identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

2.5.5 In paragraph 98 of the NPPF when determining planning applications local planning authorities should: -

- not require applicants to for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
- approve the application if its impacts are (or can be made) acceptable

2.5.6 The benefits of renewable energy projects should be given significant weight by decision-takers and they are a crucial part of the decision-making process that is often over-looked or under-played by local authorities. Social, environmental and economic benefits at both a local and national level are important considerations and can be used to demonstrate special circumstances for developments in Green Belt or to outweigh harm to landscape character and visual amenity or any other harm.

2.5.7 When making decisions any adverse impacts should significantly and demonstrably outweigh benefits, when assessed against the policies of The Framework taken as a whole. Renewable energy developments not only contribute to 'Meeting the Challenge of Climate Change, Flooding and Coastal Change', they will help 'Achieve Sustainable Development', assist towards the 'Creation of Economic Growth and Jobs, help 'Support a Prosperous Rural Economy' and 'Promote Healthy Communities'.

2.6 Local Development Plan

2.6.1 The Core Strategy (adopted September 2011) forms part of The Local Development Plan. This sets out the council's vision for the future development of Barnsley over the next 15 to 20 years and is the principal, overarching document in the LDF with particularly relevance to renewable energy. CSP 1(Cimate Change) states that development will be expected to reduce and mitigate the impact of

growth on the environment and carbon emissions through sustainable construction techniiques and the use of renewable energy.

2.6.2 CSP6 (Development that Produces Renewable Energy) states that the council will allow development that produces renewable energy as long as there is no significantly harmful effect on biodiversity,geodiversity and water quality;historical and cultural features and areas; infrastructure including radar; highway safety and the character of the landscape and appearance of the area. Undulating landscapes,such as those in the West of the Borough, can increase the prominence of turbines.Careful consideration will need to be given to the capacity of the landscape to accommodate turbines,the ability to mitigate visual intrusion and the cumulative impacts of individual sites when they are grouped rather than dispersed.

2.6.3 CSP21 (Rural Economy) will encourage a viable rural economy by allowing development in rural areas if this supports the sustainable diversification and development of the rural economy; or results in the growth and support of existing businesses.Development in these rural areas will be expected to be of a scale proportionate to the size and role of the settlement and not have a harmful impact on the countryside, biodiversity, green belt, landscape or local character of the area.

2.6.4 CSP29 (Design) states that high quality development will be expected that respects topography,Green infrastructure network,important habitats and other natural features such as views and vistas to key buildings,landmarks,skylines and gateways into Barnsley town centre development.This policy sets design principles to ensure that development is appropriate to its context and that good design can play a vital role in supporting economic and physical regeneration.

2.6.5 CSP34 (Protection of Green Belt) adheres to national policy guidance PPG2 that requires very special circumstances to justify setting aside local and national policy

2.6.6 CSP36 (Biodiversity and Geodiversity) expects developments to conserve and enhance the biodiversity and geological features of the Borough by protecting habitats,species,sites of ecological value and geological value with particular regard to designated wildlife and sites of international and national and local significance , ancient woodland and species and habitats of principal importance . Development that may harm a biodiversity or geological feature will not be permitted unless effective mitigation measures can be ensured.

2.6.7 CSP37.(Landscape Character). Development will be expected to retain the character and distinctiveness of the individual landscape character area in which it is located (as set out in the Landscape Character Assessment of Barnsley Borough 2002) All new development should be in keeping with the surrounding landscape and reflect the character,materials and details of the local area.Particular attention will be paid to development in prominent positions, for example, by waterside locations,within Conservation Areas and on the edge of towns and villages where it is important to maintain a clear distinction between urban area and the countryside and to ensure that development is not obtrusive in the skyline.

2.6.8 Supplementary Planning Documents (SPDs) are currently being prepared to supplement some of the Core strategy policies and provide guidance for planning applications.

3 PLANNING SUPPORT STATEMENT

3.1 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.

3.2 The NPPF published on Tuesday 27th March 2012 contains new policy guidance which is an important and material planning consideration that should be given significant weight when taking decisions. It replaces all previous Planning Policy Guidance notes and Planning Policy Statements and requires Local Planning Authorities to produce up to date development plans incorporating the new guidance.

3.3 The NPFF introduces a presumption in favour of sustainable development, indicating that such development should proceed without delay. The proposed wind turbines are by definition sustainable development that will benefit the national and local economy and enhance the natural environment.

3.4 The transition to a low carbon future is a core principle of the NPPF and it positively encourages the use and development of renewable energy. It sees this as central to the economic, social and environmental dimensions of sustainable development.

3.5 NPPF also states that "when determining planning applications local planning authorities should recognise that even small-scale development provide a valuable contribution to cutting greenhouse gas emissions; and approve the application if impacts are (or can be made) acceptable".

3.6 In making decisions Local Planning Authorities are required, where the development plan is out of date to grant planning permission unless any adverse impacts of doing so would significantly and demonstrably outweigh benefits, when assessed against the policies in the Framework taken as a whole.

3.7 In preparing our application we have given due consideration to the following:

- The potential impact of the proposed turbines upon the local environment and in particular impact upon the Green Belt, visual amenity, local ecology, the historic environment, landscape character and the amenity of local residents.
- The direct and in-direct social, economic and environmental benefits the proposed development will bring.

3.8 Given the modest scale of the proposed turbines and the presence of other buildings and structures in the landscape any such harm will be significantly outweighed by environmental and economic benefits, in particular:

- The turbines will generate an estimated 345,200kW annually.
- The development will enable the farm to diversify in order to strengthen the business. "Helping rural businesses to stay in business and grow" is a key target of the RES.
- Producing electricity will generate an additional income which can be re-invested and used to strengthen the business,

- Not only would the farm be providing their own electricity, excess energy would be supplied back into the national grid, providing benefits for the community as a whole.
- The development will contribute to the renewable energy target for Barnsley Council to achieve the 34MW of renewable energy generation in the area by 2021.
- By helping to sustain rural enterprise, it will enable the farm to continue to maintain and manage the landscape, thus helping to protect the character and appearance of the area.

3.9 An Environmental Impact Visualisation Report (EIV) prepared by 3DVS examined the potential impact of the turbine design on the character and appearance of the landscape and on visual amenity at the location. The study was conducted using the national guidelines – 'The Landscape Institute and Institution of Environmental Management and Assessment Guidelines for Landscape and Visual Impact Assessment 2002'. The report concluded that overall the visual impact will range from significant to slight depending on the location.

3.10 Our proposed site has been chosen following an in-depth site selection process examining and balancing both technical factors and environmental constraints. We have considered the sensitivity of the landscape when determining the design and scale of the development. We have also to considered turbine performance to ensure our preferred location has good wind speed, that there are no obstacles (buildings or trees) that may cause turbulence, reduce output or increase maintenance liability; and that the site is viable ensuring the turbines can be connected at a reasonable cost to the national grid.

3.11 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

3.12 Our proposal demonstrates that any potential harm on the Green Belt has been minimised and that any harm is significantly outweighed by economic and environmental benefits of the development. These benefits provide the justification for the very special circumstances of the development and are detailed in section 6.

4 DESIGN & ACCESS STATEMENT (DAS)

4.1 Introduction

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 turbines are to be erected on land adjacent to Mount Pleasant Farm. The location for turbine 1 is 53°33'36.25"N, 1°20'39.68"W. Turbine 2 is 53°33'32.47"N1°20'37.88"W.

4.1.4 There is a national grid power line which traverses the area approximately 1.15km to the east of the site and is a prominent established feature in the landscape.

4.1.5 National planning policy requires developers to consider whether a proposed turbine is appropriately designed and sited. Applicants are required 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 Use

The proposed use is that of two turbines to generate which will be fed into the national grid.

4.3 Scale

4.3.1 It is proposed to erect two WES80 turbines with an overall maximum height from base to blade tip of 35m. The turbine blades, each 8.8m long, will be mounted onto the turbine hub and nacelle at a height of 25.8m. The swept path of the blades (i.e. the diameter) measures 254m².

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 With a tower height of 24.8m the turbines are 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.

4.4 Turbine Design & Selection

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.

4.4.4 The two WES80 turbines were chosen as the most appropriate turbines for this applicant in this location.

4.5 Chosen Turbine - Form and Appearance

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 rotors will consist of two blades mounted on the wind turbine hubs and nacelles at a height of 25.8m. The proposed blades are made from glass fibre and are 8.8m in length resulting in a rotor diameter of 20m. The total height from base to blade tip is 35m.

4.5.2 The turbines are expected to generate 345,200kWh of electricity each year at an average wind speed of 6.3m/s.

4.5.3 The WES80 has been specifically designed to have low visual impact, with slender blades and minimal visual bulk at tower height.

4.5.4 The masts are 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 etc) 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 masts and turbine heads so as not to create a stark contrast between the turbine and the background sky and

landscape. The turbines hubs and nacelles will be painted a light grey colour with a matt finish. The masts will be finished in galvanised steel.

4.5.7 The proposed hub heights and rotor diameters 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 rises 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.

4.6 Site Selection Process

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 Developers are required 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 in-depth 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 turbines 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.

ii) 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.

iv) Turbines must be separated by specific distances both perpendicular to an, and in line with, the prevailing wind direction to minimise turbulent interaction between the wind turbine (i.e. the wake effect) which can reduce turbine performance;

v) 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;

vi) The implications of locating turbines near environmentally sensitive features and areas (archaeology, ecology, hydrology, ancient monuments, listed buildings) need to be considered carefully;

vii) Landscape and visual design considerations need to be fully assessed and taken into account;

viii) Connection to the national grid with regard to capacity and the equipment required to do this.

ix) Discussions with statutory and non-statutory consultees, the local community and the landowner.

x) 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.

<u>Stage 1 Feasibility</u>

- 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 turbines 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 image below.



Image 2: Alternative locations considered. Image courtesy of Google Earth.

The above sites were discounted for the following reasons:

A. Visual impact - siting here would have put the turbine on the skyline
B. Neighbouring properties are within 200m
C. Bridle path requires a safe distance of over 110m

4.6.9 <u>Stage 2 Identifying the Proposed Sites</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 3: Chosen Site. Image courtesy of Google Earth

This location is believed to be the most suitable for the following reasons:

- By siting the turbines in the above locations we are able minimise visual impact due to the complete turbine to the tip being lower than the top of the hill
- We are over 300m away from the nearest domestic property
- We are a safe distance of 264m from the bridle way
- We are fall distance from both the footpath and the power cables
- The site offers a clean wind resource from all directions
- The hedgerow showing at turbine 2 has been removed
- The nearest mature tree is 150m away

4.7 Pre-application Consultations

4.7.1 Pre-application discussions have been held with specialist consultants to ensure the most suitable locations have been chosen.

4.8 Access & Construction

4.8.1 Access is required during construction and for routine maintenance once the turbines are operational.

4.8.2 Access to the proposed site is via the B6411, which leads directly to Great Houghton turning into Stonebridge Lane.

4.8.3 Once inside the farm complex localised access is required along designated routes across the field to the site. These routes are identified in conjunction with the 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 route from the main road. Image courtesy of Google Earth

4.8.4 The construction period for these turbines 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 170m long and dug to a minimum depth of 600mm. Once the cable is laid the trench is back-filled with sub soil and re-instated 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.

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

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

Table 2: 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 Extreme weather conditions

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 Yorkshire and Humber region. 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 airport is Doncaster Robin Hood Airport 25km away. The nearest railway line is in the Thurnsco vicinity 2.5km away. The proposed turbines will not create any impact on either.

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.

4.12 Maintenance

The WES80 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 WES80 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.

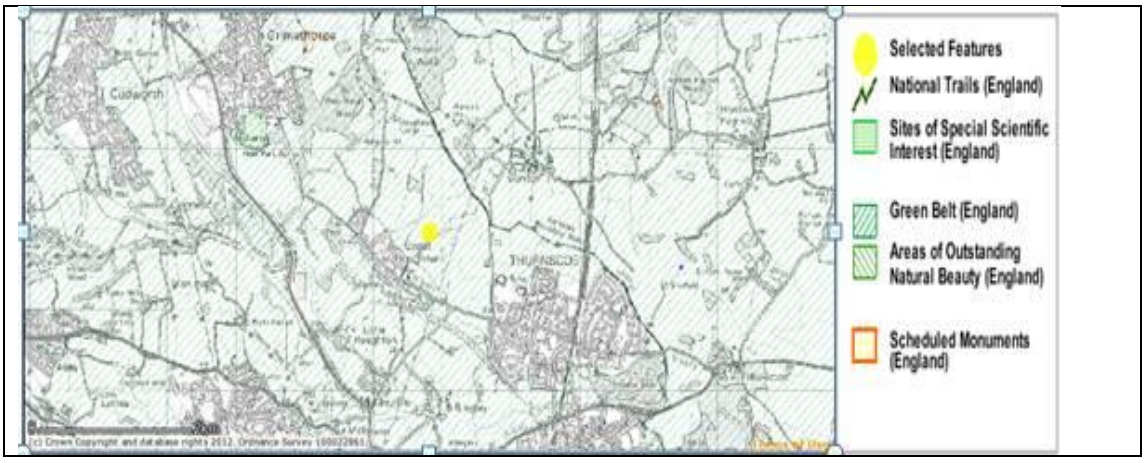
5 ENVIRONMENTAL & ECONOMIC IMPACTS

5.1 Introduction

5.1.1 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. Developers should 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. Such effects may be minimised through appropriate siting, design and landscape schemes, depending on the size and type of development proposed. 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 is modest in scale. It is not located in an area with a nationally recognised designation but it is proposed to be sited in open countryside on land designated as Green Belt. 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 is taken from magic.defra.gov.uk and shows the surrounding land classification.



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 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 'visual impact is classed as significant to Great Houghton, and the two footpaths which pass near the site, and moderate/slight elsewhere in the study area….There is no visual impact to Grimethorpe, Darfield, Goldthorpe, Cudworth, Little Houghton or Billingley'.

Cumulative impact is in combination with the national grid power line which runs in a north easterly direction east of the site.

5.2.3 Listed Buildings and Archaeology

There are no listed buildings or areas of archaeological significance in the near vicinity of the proposed site.

5.2.4 Ecology

The turbines have been sited so that there is not an impact on wildlife.

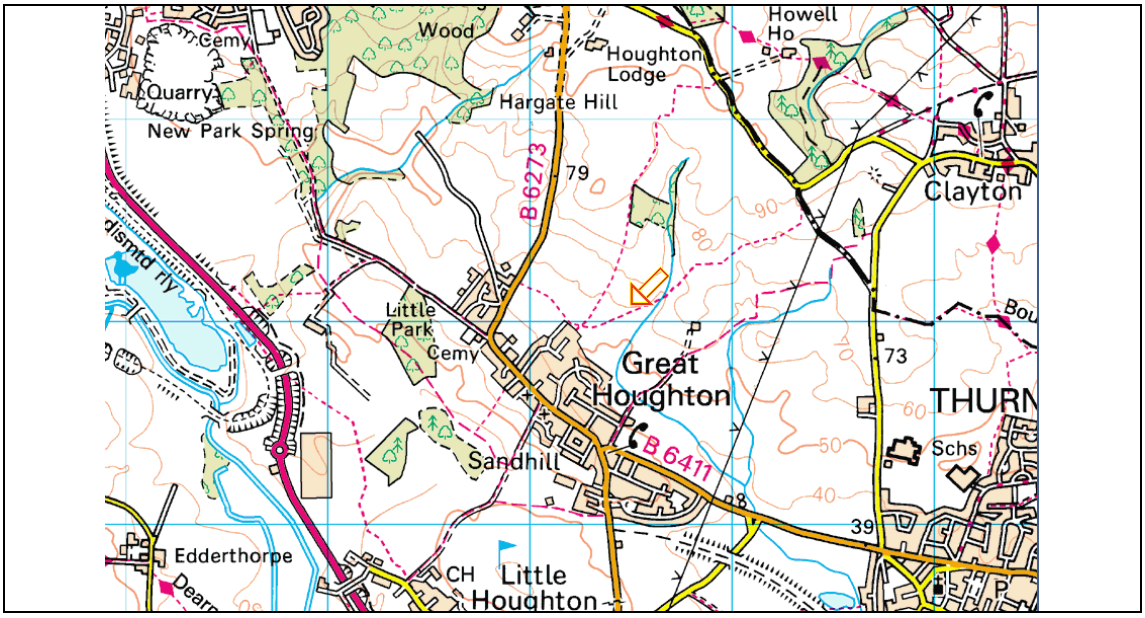
5.2.5 Noise Disturbance

The turbines have been located so that they are a minimum distance of 292m away from the nearest residential neighbouring property for turbine 1 and 394m from turbine 1. This exceeds the minimum recommended distance of 200m. Noise will therefore not be a concern at this site. A manufacturer's noise report is included within this application.

5.2.6 Footpaths

There is a footpath which runs near the proposed sites. Turbine B is located 50m at a minimum from the footpath. This ensures that safe distance is achieved at all times.

The image below is taken from streetmap.co.uk and shows the locations of all footpaths and public rights of way (PRoW) in the surrounding area.



5.3 Economic and Social Impact

5.3.1 As the proposed turbines are 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 turbines will occupy a very small footprint of 39m² each. This land take will have virtually no effect on the economy or the function of the farm. Furthermore, the construction of the turbines and their 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 The nearest visitor attraction to the proposed turbine site is Brodsworth Hall. This is located 7km away and will have no adverse impact on the economy of this attraction.

5.3.5 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 Introduction

6.1.1 Local planning authorities are asked 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 Environmental Benefits

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 The increased development of renewable energy resources is vital to facilitating the delivery of the Government's commitments on both climate change and renewable energy. The NPPF advocates positive planning to facilitate renewable energy developments which will contribute to the tree dimensions of sustainable development: -

- **An economic role** – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and co-ordinating development requirements, including the provision of infrastructure;
- **A social role** – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the communities needs and support its health, social and cultural well-being; and
- **An environmental role** – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and

pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

6.2.4 The proposed turbines 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 They will contribute towards the reduction of greenhouse gases by saving approximately 186 tonnes of carbon dioxide per year (at least 3,720 tonnes over its lifetime) and generating an average of 345,200kWh of electricity per annum from renewable sources reducing our reliance on fossil fuels.

6.2.6 They will also feed electricity 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 Economic & Social Benefits

6.3.1 Sustainable economic development is at the heart of the NPPF. It is about positive growth – making economic, environmental and social progress for this and future generations and developments that are sustainable should go ahead, without delay. A core principle of The Framework is to "proactively drive and support the sustainable economic development" and it stresses "that every effort should be made objectively to identify and then meet housing, business and other development needs of an area." There is an emphasis on supporting the rural economy and it requires that planning policies should support economic development in rural areas in order to create jobs and prosperity by taking a positive approach to sustainable new development. To promote a strong rural economy, local neighbourhood plans should, among other things, promote the development and diversification of agricultural and land based industries. Investment in renewable energy provides an excellent opportunity to attract new industries, develop local enterprises and create jobs. The investment will also support cash strapped farms and enable land-based industries to diversify and generate new income streams to invest for the long term.

6.3.2 Objective 6c (ii) in the Regional Economic Strategy for Yorkshire and the Humber aims to secure a strong and diverse rural economy by "promoting sustainable economic development in remote rural areas and drive change to support farming and land based industries, including in National Parks".

6.3.3 The erection of the proposed turbines are an essential part of Beacon Hill Farm's business development plan to modernise and diversify to ensure that it remains viable in a very competitive industry.

6.3.5 The installation of the wind turbines will generate an income by feeding electricity into the grid. It will also reduce the carbon footprint of the farm.

6.3.6 The design, construction and project management of the proposed turbines will create an equivalent of 10 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.

6.4 Summary of Benefits

Benefit	
Reduce greenhouse gases (CO_2)	186 tonnes p.a
Renewable energy generated	345,200kWh p.a
Electricity generated for the grid	44,250 kWh p.a
Help sustain countryside management	Yes
Full time equivalent jobs created	10
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 & selection	2No WES80 wind turbines on 24.8m monopole masts	Most suited to the environment & energy needs
Site selection	Situated away from buildings, PROW & neighbours	Chosen locations are the most suitable
Visual effect	EIV has been conducted by 3DVS to analyse the visual impact the turbine would have on the area.	Conclusion was that the overall visual impact ranges from significant to slight
Impact on historic environment	Assessed at site survey	No impact
Ecology	Assessed at site survey	The proposal will have minimal impact on wildlife
Economic and social impact	Help achieve Government targets. Reduce energy costs, provide clean/ renewable electricity, generate an income for the farm	Benefits for all
Noise impact	Situated away from buildings & 292m to nearest neighbour, away from roads/ PROW	Noise will not be an issue at this site
Access	Site access from B6411	Good
Construction	Assessed at site survey	No concerns over ability to construct a turbine at this location
Environmental Benefits	Renewable energy generated Reduce greenhouse gases	345,200 kWh 186 tonnes
Economic Benefits	Jobs created	10

Table 4: Proposed Development Summary