

Knight Frank

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Planning and Design Statement

Proposed Single Wind Turbine at Ringstone Hill Farm, Common Road, Brierley

Prepared on behalf of Empirica Investments Ltd

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1 Introduction

1.1 This Planning and Design Statement is prepared by Knight Frank on behalf of Empirica Investments Ltd to be read alongside the submission of a full planning application for the erection of a 67m single wind turbine at Ringstone Hill Farm, Common Road, Brierley (hereafter referred to as 'the site').

1.2 The purpose of this Planning and Design Statement is to appraise the relevant planning policy framework and address the technical considerations in relation to the site and the proposal. This will include an assessment of the weight afforded to the benefits the proposal can make to meeting renewable energy targets.

1.3 Prior to the submission of this planning application, a carefully considered site selection process within this ownership took place which took into consideration all of the potential constraints and found this location to be the most appropriate. In addition, detailed pre-application discussions have taken place with officers at Barnsley Metropolitan Borough Council, in order to agree the scope of works necessary to support the application.

1.4 An Environmental Impact Assessment (EIA) screening opinion under Regulation 5 of Town and Country Planning (EIA) Regulations was submitted to Barnsley Metropolitan Borough Council on 7 March 2011. The Council's response, dated 11 April 2011, considers that:

"The proposal is relatively small scale and is of local importance only; there being no identified cumulative impacts at present. Circular 02/99 categorically states that EIA is more likely to be required for commercial developments of 5 or more turbines, or more than 5MW of new generating capacity. The proposed development falls well short of these thresholds. There are not considered to be any significant environmental effects given the relationship between the turbine and its height and location in relation to the nearest sensitive areas. As a further result of the scale of the development and there being no identified cumulative impacts at present, the project is neither significantly complex nor significantly hazardous."

1.5 A pre-application meeting took place between Knight Frank and Barnsley Metropolitan Borough Council on 1 December 2011, in addition to detailed discussions with the relevant officers, in order to consider and resolve any potential issues and constraints on the site, and to determine the scope of the planning application.

1.6 Following an agreement of the scope, this Planning and Design Statement should be read in conjunction with the submitted plans and other supporting documents which accompany the application. These include:

- Landscape and Vision Impact Assessment (LVIA), prepared by Holman: Davies Design Ltd;

- Ecological Assessment, prepared by BE Brooks Ecological Ltd;
- Noise Impact Assessment, prepared by Enzygo Ltd;
- Site Access Statement, prepared by Enzygo Ltd; and
- Shadow Flicker Assessment, prepared by Enzygo Ltd.

2 Site and Surrounding Area

2.1 The site is situated approximately 1.5km to the south east of Brierley, South Yorkshire. The site lies in an agricultural field which is bordered on two sides by roads, Common Road to the north and Southmoor Road to the east.

2.2 Approximately 300m to the south lies Ringstone Hill Farm. Further residential dwellings are located to the north and east at separate distances of approximately 400m and 275m respectively. Beyond the immediate vicinity of the site lies open agricultural land with isolated residential and commercial buildings. Approximately 1.2km to the east lies the western extent of the village of South Kirkby and to the west, the village of Grimethorpe is approximately 1.4km away.

2.3 Access to the site is gained along Ringstone Hill Farm, which leads onto Southmoor Road. The site lies within the Green Belt.

2.4 The site lies within Barnsley's Local Authority boundary but is close to the borders of both Doncaster Metropolitan Borough Council and Wakefield Council.

2.5 The application site area is approximately 0.34 ha and currently comprises part of an agricultural field.

2.6 A Site Location Plan is attached at **Appendix 1**.

3 The Proposal

3.1 The application seeks planning permission for the erection of a single wind turbine. The turbine will support a blade of up to 22m at a hub height of 45m with a maximum height to the tip of the blade being 67m.

3.2 The turbine comprises a tapered tubular steel tower and three blades attached to a nacelle housing containing the operating equipment. The transformer turbine may either be contained inside the tower base, within the nacelle or in a small external kiosk at the tower base.

3.3 The turbine model for which the various accompanying assessments have used to attain their findings is the Enercon E44, which has a rated power of 900KW. The final choice of turbine would be subject to a competitive tendering process but would have similar specifications to the Enercon E44.

3.4 The turbine would require a reinforced concrete foundation and an area of hardstanding to support the crane for the erection of the turbine. Following construction, the areas of hardstanding would be partially and temporarily reinstated by covering with previously excavated top soil and allowed to naturally regenerate.

3.5 The full specification of this wind turbine model can be found at **Appendix 2**.

4 Renewable Energy

4.1 There are several key Government documents which provide further support for renewable energy. A review of the key documents is set out below.

Review of the generation costs and deployment potential of renewable electricity technologies in the UK, published June 2011

4.2 This Report Study, undertaken by Arup, considers that renewable sources could provide at least 35% of the UK's energy capacity by 2020, suggesting that there is huge potential to expand the use of renewable energy technology across the country.

4.3 The research looks at a range of renewable technologies and at three scenarios for the future operation of renewables, based on the maximum capacity that could be built per year between now and 2030:

- Low scenario – given current constraints,
- Medium scenario - if some constraints are relaxed; and
- High scenario - if additional constraints are relaxed.

4.4 The study highlights that for Onshore Wind technology there is still significant deployment potential of around 17.3GW by 2030 (medium forecast), but that deployment rates are slower than previously modelled. It is predicted that forecast 2020 figures will only be reached on the high ambition scenario, mainly due to planning and grid constraints.

4.5 The report considers that it will be up to Government, industry and the public to decide how to overcome the barriers to greater use of renewable technologies, including planning issues and the costs of connection to the grid.

The Energy White Paper: Our energy future – creating a low carbon economy, published in 2003

4.6 The Energy White Paper sets out the Government's policies in response to future challenges to energy. The first challenge is identified as climate change and the need to put the country on a path towards a reduction in carbon dioxide emissions; the second challenge is the decline of the country's indigenous energy supplies and the problems of security of supply; the third is the need to update much of the country's energy infrastructure over the next two decades.

4.7 The Government aims to cut the UK's carbon dioxide emissions by some 60% by 2050, with real progress by 2020, and to maintain reliable and competitive energy supplies. Having already set a target to generate 10% of UK electricity from renewable energy sources by 2010,

the White Paper sets out the Government's aspiration to double that figure to 20% by 2020, and suggests that still more renewable energy will be needed beyond that date.

The Energy Challenge: Energy Review Report 2006, published in July 2006

4.8 This report gives a renewed commitment to the need for renewable energy.

4.9 Annex D states:

"*A regulatory environment that enables the development of appropriately sited renewable projects, and allows the UK to realise its extensive renewable resources, is vital if we are to make real progress towards our challenging goals*".

4.10 The report continues:

"*New renewable projects may not always appear to convey any particular local benefit, but they provide crucial national benefits. Individual renewable projects are part of a growing proportion of low-carbon generation that provides benefits shared by all communities both through reduced emissions and more diverse supplies of energy, which helps the reliability of our supplies. This factor is a material consideration to which all participants in the planning system should give significant weight when considering renewable proposals*".

Meeting the Energy Challenge: A White Paper on Energy, published in May 2007

4.11 The Energy White Paper, May 2007 confirms the requirement for 10% of UK electricity to come from renewable energy by 2010 and 20% by 2020. It also underlines that applicants do not have to demonstrate either the overall need for renewable energy or for their particular proposal to be sited in a particular location, and gives a clear steer to planners and local authority decision makers, that in considering applications they should look favourably on renewable energy developments.

Climate Change Act 2008

4.12 In March 2007, the Government announced a climate change bill, which proposed, amongst other matters, to put into statute the UK's targets to reduce carbon dioxide emissions, to at least 26% below 1990 levels by 2020 and to at least 60% by 2050.

4.13 In February 2008, the Government announced a review of the target to reduce the UK's carbon dioxide emissions by at least 60% by 2050. The review considered a higher target of 80% for greenhouse gas emission reductions. This has now been accepted and the Bill setting the legally binding targets was enacted on the 26 November 2008.

4.14 Two key aims underpin the Act:

- to improve carbon management and help the transition towards a low carbon economy in the UK; and
- to demonstrate strong UK leadership internationally, signalling that the UK is committed to taking its share of responsibility for reducing global emissions.

The UK Renewable Energy Strategy (July 2009)

4.15 The UK has signed up to the EU Renewable Energy Directive, which requires that 20% of EU energy consumption is to come from renewable sources by 2020. In response to the Directive, the Government issued the Renewable Energy Strategy (RES).

4.16 The Strategy sets out the path for the UK to meet its now legally-binding target to ensure that 15% of our energy comes from renewable resources by 2020, almost a seven-fold increase in scarcely more than a decade, with much of it coming from wind power.

4.17 Under RES, there is a target that the UK produces over 30GW of wind energy by 2020. 14GW of this target is to be produced by on-shore wind farms.

Feed-in Tariffs (FITs)

4.18 The FITs scheme was introduced in April 2010, to work alongside the Renewables Obligation (RO) and the Renewable Heat Incentive (RHI). It provides financial support for the generation of electricity wind generation up to 5 megawatts capacity.

4.19 A Phase 2 consultation is currently underway, covering all aspects of the FIT scheme, apart from Solar PV (which is subject to a separate Phase 1 consultation). This consultation has been separated into two parts. The present consultation (2B), published alongside the Solar PV Cost Control consultation (2A), but with a later closing date, proposes tariffs for wind energy schemes and looks at various scheme administration issues.

4.20 The proposed tariff reflects the Department of Energy and Climate Change's conclusions on the costs and characteristics of the technology and takes into account the need for fiscal restraint and cost-effectiveness. The cost control mechanism proposed for non-PV technologies is

consistent with that proposed for solar PV in the parallel consultation, but is designed to take into account the differences between technologies in terms of take-up and timescales.

4.21 Tariffs for wind have been re-based as a result of the updated analysis of costs and performance. Information on the capital costs has been updated to reflect recent price data. Other adjustments have been made including changes to load factors and export fractions compared to the assumptions underpinning the 2010 tariffs.

4.22 This review reaffirms the Government's commitment to promoting renewable energy proposals.

Summary

4.23 There is significant policy support at a national level for renewable energy proposals. The Government has set targets which must be achieved and there is a demonstrated need for such proposals to come forward.

5 Planning Policy Appraisal

5.1 This section of the Planning and Design Statement outlines the relevant planning policy framework for which an application for planning permission for a single wind turbine will be considered. A review of other energy related documents at a regional and local level is also provided.

5.2 Under the provisions of Section 38 of the Planning & Compulsory Purchase Act 2004, local planning authorities are required to determine planning applications in accordance with policies contained within the Statutory Development Plan unless material planning considerations indicate otherwise.

5.3 The Statutory Development Plan that covers this area is the saved policies for the Barnsley Unitary Development Plan (December 2000) and the Core Strategy (September 2011).

5.4 National planning policy provides guidance and advice which is of material consideration.

National Planning Policy

5.5 At a national level, Planning Policy Guidance Notes (PPGs) and Planning Policy Statements (PPSs) set out Central Government policies on different aspects of land use planning. The content of PPGs and PPSs is of material importance in the consideration for applications for planning permission and provides guidance to local authorities in preparing Statutory Development Plans.

5.6 In this case, the key national Planning Policy Guidance Notes/Statements of relevance are:

- Planning Policy Statement 1 (**PPS1**): Delivering Sustainable Development (2005);
- Planning Policy Statement 5 (**PPS5**): Planning for the Historic Environment (2010);
- Planning Policy Statement 7 (**PPS7**): Sustainable Development in Rural Areas (2004);
- Planning Policy Statement 9 (**PPS9**): Biodiversity and Geological Conservation (2005);
- Planning Policy Statement 22 (**PPS22**): Renewable Energy (2004);
- Planning Policy Guidance Note 24 (**PPG24**) Planning and Noise (1994); and
- Planning Policy Statement 25 (**PPS25**): Development and Flood Risk (2006).

Planning Policy Statement 1 – Delivering Sustainable Development (2005)

5.7 Planning Policy Statement 1 (**PPS1**) sets out the Government's over arching planning policies in relation to the delivery of sustainable development throughout the planning system.

5.8 Paragraph 5 of **PPS1** advises:

"*Planning should facilitate and promote sustainable and inclusive patterns of urban and rural development by:*

- making suitable land available for development in line with the economic, social and environmental objectives to improve people's quality of life;
- contributing to sustainable economic development;
- protecting and enhancing the natural and historic environment, the quality and character of the countryside, and existing communities;
- ensuring a high quality development through good and inclusive design, and the efficient use of resources; and
- ensuring that development supports existing communities and contributes to the creation of safe, sustainable, livable and mixed communities with good access to jobs and key services for all members of the community".

5.9 The prudent use of natural resources is a key aim identified in "A Better Quality of Life, A Strategy for Sustainable Development in the UK" (1999) and this objective is again identified in **PPS1**. Paragraph 21 of **PPS1** advises that the prudent use of resources means ensuring:

"*we use them wisely and efficiently, in a way that respects the needs of future generations*".

5.10 This means using non-renewable resources in ways that do not endanger the resource or cause damage or pollution. Paragraph 22 of **PPS1** states:

"*Development Plan policies should seek to minimise the need to consume new resources over the lifetime of the development by making more efficient use or re-use of existing resources, rather than making new demands on the environment; and should seek to promote and encourage, rather than restrict, the use of renewable resources (for example, by the development of renewable energy)*".

5.11 Renewable energy proposals can deliver clear benefits in relation to sustainable development and the prudent use of natural resources. Proposals such as this one, which will create a source of renewable energy, should support this objective of **PPS1**.

Planning Policy Statement 1 – Planning and Climate Change Supplement (December 2007)

5.12 This PPS Supplement on climate change expands on **PPS1** by setting out how planning should contribute to reducing emissions and stabilising climate change. The PPS Supplement states that the Government considers climate change to be the greatest long-term challenge facing the world today. The planning system should help to secure enduring progress against the UK's emissions targets by having a direct influence on energy use and emissions.

5.13 Paragraph 20 sets out the particular approaches that planning authorities should take to promote and not restrict renewable and low carbon energy. In particular, they should:

- not require applicants for energy development to demonstrate either the overall need for renewable energy and its distribution, nor question the justification why a proposal for such development must be sited in a particular location;
- ensure any local approach to protecting landscape and townscape is consistent with **PPS22** and does not preclude the supply of any type of renewable energy other than in the most exceptional circumstances;
- consider identifying suitable areas for renewable and local carbon energy sources and supporting infrastructure, where this would help secure the development of such sources, but in doing so take care to avoid stifling innovation including by rejecting proposals just because they are outside areas identified for energy generation, alongside any criteria based policy developed in line with **PPS22**; and
- expect a proportion of the energy supply of new development to be secured from decentralised and renewable or low carbon energy sources.

5.14 The **PPS1** Supplement encourages renewable energy proposals in a bid to tackle climate change. The guidance provides clear advice to local planning authorities to encourage such proposals, and as such this proposal should, in principle, be supported by the **PPS1** supplement.

Planning Policy Statement 5 – Planning and the Historic Environment (2010)

5.15 **PPS5** sets out the Government's planning policies on the conservation of the historic environment.

5.16 The Statement advises:

"*the policies in this PPS are a material consideration which must be taken into account in development management decisions, where relevant*" (paragraph 3); and

"*the policies and principles set out in this Statement also apply to the consideration of the historic environment in relation to the other heritage-related consent regimes for which planning authorities are responsible under the Planning (Listed Buildings and Conservation Areas) Act*

1990" (paragraph 4).

5.17 The Government's overarching aim is that the historic environment and its heritage assets should be conserved and enjoyed for the quality of life they bring to this and future generations.

5.18 Some of the key objectives of the guidance at paragraph 7 include:

- recognising that heritage assets are a non-renewable resource;
- recognising that intellectually managed change may sometimes be necessary if heritage assets are to be maintained for the long-term; and
- where possible, heritage assets are put to an appropriate and viable use that is consistent with their conservation.

5.19 Policy **HE1** - Heritage Assets and Climate Change is a key policy in relation to this proposal and advises:

"*Where proposals that are promoted for their contribution to mitigating climate change have a potentially negative effect on heritage assets, local planning authorities should, prior to determination, and ideally during pre-application discussions, help the applicant to identify feasible solutions that deliver similar climate change mitigation but with less or no harm to the significance of the heritage asset and its setting.*

Where the conflict between climate change objectives and the conservation of heritage assets is unavoidable, the public benefit of mitigating the effects of climate change should be weighed against any harm to the significance of heritage assets in accordance with the development management principles in this PPS and national planning policy on climate change".

5.20 Policy **HE7** - Policy Principles Guiding the Determination of Applications for Consent Relating to all Heritage Assets, advises that when decision making, Local Planning Authorities (LPAs) should seek to identity and assess the particular significance of any element of the historic environment that may be affected by proposals, including by development affecting the setting of a heritage asset.

5.21 Paragraph **HE7.2** advises:

"*In considering the impact of a proposal on any heritage asset, local planning authorities should take into account the particular nature of the significance of the heritage asset and the value that it holds for this and future generations. This understanding should be used by the local planning authority to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal*".

5.22 Policy **HE9** - Additional Policy Principles Guiding the Consideration of Applications for Consent Relating to Designated Heritage Assets, is also relevant for the consideration of this proposal.

5.23 Paragraph **HE9.4** advises:

"*Where a proposal has a harmful impact in the significance of a designated heritage asset which is less than substantial harm, in all cases the local planning authority should:*

1. *weigh the public benefit of the proposal (for example, that it helps to secure the optimum viable use of the heritage asset in the interests of its long term conservation) against the harm; and*
2. *recognise that the greater harm to the significance of the heritage asset the greater the justification will be needed for any loss".*

5.24 Policy **HE10** - Additional Policy Principles Guiding the Consideration of Applications for Development Affecting the Setting of a Designated Heritage Asset, states:

"*When considering applications for development that affect the setting of a heritage asset, local planning authorities should treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal, the significant of the asset. When considering applications that do not do this, local planning authorities should weigh any such harm against the wider benefits of the application*".

Planning Policy Statement 7 – Sustainable Development in Rural Areas (2004)

5.25 **PPS7** seeks to protect open countryside for the benefit of all with the highest level of protection given to the most valued landscapes. Decisions on development proposals should be based on sustainable development principles and all development should be well designed and inclusive, in keeping with its location, and sensitive to the character of the countryside.

5.26 Paragraph 16 advises that when determining planning applications, local planning authorities should:

- support development that delivers diverse and sustainable farming enterprises;
- support other countryside-based enterprises and activities which contribute to rural economies, and/or promote recreation in and the enjoyment of the countryside;
- take account of the need to protect natural resources;
- provide for the sensitive exploitation of renewable energy sources in accordance with the policies set out in **PPS22**; and
- conserve specific features and sites of landscape, wildlife and historic or architectural value, in accordance with statutory designations.

5.27 Paragraph 21 provides guidance in relation to nationally designated areas such as National Parks and Areas of Outstanding Natural Beauty (AONBs). The conservation of the natural beauty of the landscape and countryside should be given great weight in Development Control decisions.

5.28 Major development should not take place in these designated areas, except in exceptional circumstances:

"*major development proposals should be demonstrated to be in the public interest before being allowed to proceed*" (paragraph 22).

5.29 **PPS7** also recognises the need to promote sustainable, diverse and adaptable agricultural sectors. Paragraph 30 advises that it is vital that the diversification into non-agricultural activities is recognised, as it can contribute to the continuing viability of many farm enterprises.

5.30 **PPS7** advises that diversification into non-agricultural activities can be vital to the continued success of agriculture and that impact on the landscape and countryside are minimised.

Planning Policy Statement 9 – Biodiversity and Geological Conservation (2005)

5.31 **PPS9** sets out planning policies on protection of biodiversity and geological conservation through the planning system. Paragraph 1 advises that the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where significant harm might be caused, adequate mitigation measures or appropriate compensation measures should be sought.

5.32 The most important sites for biodiversity are those identified through International Conventions and European Directives. Many Sites of Special Scientific Interest (SSSIs) are also designated as sites of international importance and will be protected accordingly.

5.33 Those that are not, or those features of SSSIs that are not covered by an international designation, should be given a high degree of protection under the planning system:

"*where a proposed development on land within or outside an SSSI is likely to have an adverse effect on an SSSI, planning permission should not normally be granted*" (paragraph 8, **PPS9**).

5.34 Exceptions to this should only be made where the benefits of the development clearly outweigh both the impacts on the features that make it an SSSI and on any broader impacts on the national network of SSSIs.

Planning Policy Statement 22 – Renewable Energy (2004)

5.35 **PPS22** and Planning Policy Statement 22 Companion Guide (**PPS22 CG**) set out the Government's policies for renewable energy which local planning authorities should have regard to when preparing Local Development Documents and when making planning decisions.

5.36 **PPS22** refers to the Government's energy policy, including its policy on renewable energy, as set out in the Energy White Paper: "Our Energy Future, Creating Low Carbon Economy" (February 2003). The White Paper aims to cut carbon dioxide emissions by 60% by 2050, with real progress by 2020.

5.37 **PPS22** advises that increased development of renewable energy resources is vital to facilitating the delivery of the Government's commitments. The PPS draws on the advice contained in **PPS7** and acknowledges the role renewable energy projects can play in the diversification of rural economies.

5.38 Of relevance to a proposal of this scale, Paragraph 1 of **PPS22** advises:

"small scale projects can provide a limited but valuable contribution to overall outputs of renewable energy and to meet energy needs, both locally and nationally. Planning authorities should not therefore reject planning applications simply because the level of output is small."

5.39 The wider environmental and economic benefits of all proposals for renewable energy projects are material considerations that should also be given significant weight.

5.40 The Companion Guide to PPS22 (**PPS22 CG**) outlines the environmental, economic and social benefits of renewable energy schemes. Such benefits include:

- reducing carbon emissions and hence the rate of climate change;
- air quality improvements in terms of reduced fossil fuel emissions;
- job creation;
- increased security and reliability of supply;
- potentially cheaper fuel bills;
- tourism and farm diversification;
- educational opportunities; and
- longer term health benefits and improved quality of life.

5.41 Planning applications should demonstrate any environmental, economic and social benefits, as well as how any environmental and social impacts have been minimised through careful consideration of location, scale, design and other measures. This advice is similar to that contained in **PPS7** and **PPS9**.

5.42 **PPS22** provides guidance on locational considerations of renewable energy projects.

5.43 **PPS22** refers to national designations such as Sites of Special Scientific Interest, Natural Nature Reserves, National Parks, Areas of Outstanding Natural Beauty, Heritage Coasts, Scheduled Monuments, Conservation Areas, Listed Buildings, Registered Historic Battlefields and Registered Parks and Gardens. The guidance advises:

"*Planning permission for renewable energy projects should only be granted where it can be demonstrated that the objectives of the designation of the area will not be compromised by the development, and any significant adverse affects on the qualities for which the area has been designated are clearly outweighed by the environmental, social and economic benefits … Small scale developments should be permitted within areas such as National Parks, Areas of Outstanding Natural Beauty and Heritage Coasts, provided that there is no significant environmental detriment to the area concerned*" (paragraphs 11-12).

5.44 Paragraph 14 of **PPS22** relates to buffer zones and states that local planning authorities should not create "buffer zones" around international or nationally designated areas and apply policies to these zones that prevent the development of renewable energy projects. However, the potential impact on nearby designations will be a material consideration in determining applications for planning permission. This policy again emphasises the need for the proposal to not impact of the setting of the sensitive areas but also allow for some flexibility beyond the designations.

5.45 In relation to local designations such as local landscape and nature conservation designations, planning applications should be assessed against any criteria based policies set out in Local Development Documents. Such designations should not be used in themselves to refuse planning permission for renewable energy developments.

5.46 Small scale renewable energy projects (e.g. small scale wind turbines) should, according to paragraph 18 of **PPS22**, be encouraged by local planning authorities. There is clearly national planning policy which supports small scale renewable energy projects.

5.47 **PPS22** provides specific guidance in relation to wind turbines and landscape and visual effects. Paragraph 20 advises:

"... in assessing planning applications, local authorities should 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, and that these impacts may be temporary if conditions are attached to planning permissions which require the future decommissioning of turbines".

5.48 Minimising the visual impact of the turbine is essential. It should however be noted that the proposal is relatively small being a single turbine with a tip height of 67m.

5.49 Local planning authorities should ensure that renewable energy projects have been located and designed to minimise increases in ambient noise levels.

5.50 It is the responsibility of developers to address potential impacts of wind turbine proposals. For example, paragraph 25 of **PPS22** advises that developers should take account of Civil Aviation Authority, Ministry of Defence and Department for Transport guidance in relation to radar and aviation and the legislative requirements on separation distances prior to a planning application being submitted.

5.51 **PPS22** clearly promotes renewable energy projects in a bid to meet the Government's commitments to reducing carbon emissions. The contribution of small scale projects, such as this proposal, is also supported by the guidance.

Planning Policy Guidance Note 24 – Planning and Noise (1994)

5.52 **PPG24** outlines the considerations to be taken into account in determining planning applications, both for noise sensitive developments and for those activities which generate noise.

5.53 It is advised in **PPS22** that the 1997 Report by ETSU for the Department of Trade and Industry, The Assessment and Rating of Noise from Wind Farms, should be used.

5.54 A Noise Assessment, prepared by Enzygo Ltd, has been submitted as an accompanying document to support this planning application, a summary of which is provided at Section 6 (*Technical Considerations*) of this Planning and Design Statement.

Planning Policy Statement 25 – Development and Flood Risk (2006)

5.55 **PPS25** advises that flood risk should be taken into account at all stages during the planning process to avoid inappropriate development in areas at risk of flooding. Where new development is necessary in such areas, the PPS aims to make it safe without increasing flood

risk elsewhere and where possible, reducing flood risk overall.

5.56 Local planning authorities are required by **PPS25** to consult the Environment Agency (EA) on development proposals at risk of flooding.

5.57 The location of the wind turbine is within flood zone area 1, an area considered to have a low likelihood of flooding. Given the siting, small scale and nature of this proposal, a Flood Risk Assessment (FRA) is not required.

Development Plan

5.58 Barnsley Metropolitan Borough Council's statutory Development Plan is made up of the Yorkshire and Humber Plan Regional Spatial Strategy (RSS) (adopted May 2008), the remaining saved policies of the Unitary Development Plan (UDP) (December 2000) and the Core Strategy (September 2011).

Regional Planning Policy

The Regional Spatial Strategy (RSS)

5.59 The RSS for the Yorkshire and Humber was approved by Government in May 2008. The Plan sets out policies for the sustainable development of the region's economy, infrastructure, transport, housing and other land uses over the period to 2026.

5.60 Following the publication of the Yorkshire and Humber Plan, RSSs were revoked on 6 July 2010. On 10 November 2010, the revocation of RSSs was subject to legal challenge and found to be unlawful. As a result, a letter was sent to Chief Planning Officers to inform them that RSSs (including the Yorkshire and Humber Plan) would once again constitute part of the development plan. The Government's intention to abolish the Regional Strategy was announced on 27 May 2010 and this remains a material consideration. This intention is expected to be given statutory effect in due course through the Decentralisation and Localism Bill, which was given Royal Assent on 15 November 2011.

5.61 Set out below are the Regional policies which are seen to be of relevance to the proposal.

Policy YH 9 - Green Belts

5.62 The Green Belts in North, South and West Yorkshire have a valuable role in supporting urban renaissance, transformation and concentration, as well as conserving countryside.

Policy ENV 5 - Energy

5.63 The Region will maximise improvements to energy efficiency and increases in renewable energy capacity. Plans, strategies, investment decisions and programmes should reduce greenhouse gas emissions, improve energy efficiency, maximise the efficient use of power sources and maximise renewable energy capacity. The Regional Spatial Strategy sets local targets for installed grid-connected renewable energy and the figures for Barnsley were 15MW by 2010 and 34MW by 2021, to meet the Regional target to 2021 of 1,862MW.

Policy ENV 9 - Historic environment

5.64 The Region will safeguard and enhance the historic environment, and ensure that historical context informs decisions about development and regeneration.

Plans, strategies, investment decisions and programmes should conserve regionally distinctive elements of the historic environment, enhance their character and reinforce their distinctiveness.

Policy ENV10 - Landscape

5.65 The Region will safeguard and enhance landscapes that contribute to the distinctive character of Yorkshire and the Humber. Plans, strategies, investment decisions and programmes should safeguard and enhance landscapes and related assets of regional, sub-regional and local importance.

Summary

5.66 Whilst the **RSS** may not be carried forward, a number of Local Authorities are using the same methodology in preparing their Local Development Framework (LDF). The **RSS** provides an evidence base to support renewable energy proposals. The policies provide a similar framework to those contained within **PPS22**, identifying likely issues of landscape and visual impact and advising that sensitive locations are avoided.

Local Planning Policy

5.67 The Barnsley Unitary Development Plan (UDP) was adopted in December 2000. The site falls within the Green Belt on the Proposals Map.

5.68 Set out below are the saved UDP policies which are considered to be of relevance to the proposal.

Policy GS6 - Extent of the Green Belt

5.69 The Green Belt broadly covers the land around and between the built-up areas within the Borough. Associated development control policies will apply to development proposals in the Green Belt.

Policy GS18 - Local Nature Reserves, Natural Heritage Sites, Ancient Woodland, RIGS, Nature Conservation Sites

5.70 Any development which may adversely affect a local nature reserve, a natural heritage site, ancient woodland, a regionally important geological site or other nature conservation sites will not be approved unless it can be clearly demonstrated that there is a case for the development which outweighs the case for safeguarding the conservation interest of the site after available measures to avoid, mitigate or compensate for any adverse affects have been taken into account, in which case the council will seek to minimise the adverse impact and/or secure compensatory provision including, where appropriate, through planning conditions or obligations.

5.71 All other UDP polices which are seen to be of relevance have not been saved and/or have been superseded by the Local Development Framework (LDF).

Local Development Framework

5.72 In accordance with the provisions of the Planning & Compulsory Purchase Act 2004, Councils are required to prepare a new style Local Planning Framework, entitled the Local Development Framework (LDF), which will replace the UDP. The LDF will comprise of a number of Development Plan Documents (DPDs), of which the adopted Core Strategy DPD is of key relevance to this proposal.

5.73 Barnsley's Core Strategy DPD was adopted in September 2011. Set out below are the key Core Strategy policies of relevance to the proposal.

Policy CSP 6 - Development that Produces Renewable Energy

5.74 The Council will allow development that produces renewable energy as long as there is no significantly harmful effect on:

- the character of the landscape and appearance of the area;
- living conditions;
- biodiversity, geodiversity and water quality;
- heritage assets, their settings and cultural features and areas;

- highway safety; and
- infrastructure including radar.

Proposals must be accompanied by information that shows how the local environment will be protected, and that the site will be restored when production ends.

5.75 Each of these issues has been dealt with in detail in the accompanying submission documents and have been summarised in Section 6 (Technical Issues) of this Planning and Design Statement.

5.76 The RSS set local targets for installed grid-connected renewable energy at 15 MW by 2010 and 34 MW by 2021 for Barnsley. The Core Strategy states that some progress has been made towards meeting this target. At the time of adoption there was an existing wind farm with a capacity of 6.5 MW that has planning permission until 2018 and a further three extant wind farm permissions totalling a potential capacity of 20.1 MW.

Policy CSP 21 - Rural Economy

5.77 The Council will encourage a viable rural economy by allowing development in rural areas if it supports the sustainable diversification and development of the rural economy.

Development in rural areas will be expected not to have a harmful impact on the countryside, biodiversity, Green Belt, landscape or local character of the area.

5.78 Farming in the UK is in decline and in rural communities in particular there is a great deal more hardship than many people realise. According to the latest government figures, the average annual farm income is £18,000. The development of a wind turbine will help towards safeguarding the future viability of Ringstone Hill Farm.

Policy CSP 30 - The Historic Environment

5.79 Development which affects the historic environment and Barnsley's heritage assets and their settings will be expected to protect or improve the character and/or appearance of Conservation Areas, Scheduled Ancient Monuments, Listed Buildings (including any locally listed buildings or buildings of archaeological significance), archaeological remains of local or national importance, historic parks and gardens and other historic landscapes including key views from and within these landscapes.

5.80 Brierley Conservation Area, Brierley Manor (a Grade II listed farmhouse) and Hallsteads Moated Site (a scheduled ancient monument) have all been considered in detail within the accompanying Landscape and Visual Assessment. The assessment concludes that the

significance of the proposal on these areas is not considered to be significant.

Policy CSP 34 - Protection of Green Belt

5.81 In order to protect the countryside and open land around built up areas the extent of the Green Belt will be safeguarded and remain unchanged.

5.82 The proposal site lies within the Green Belt and due to the nature of the development is seen to be inappropriate development, therefore it is necessary to demonstrate that special circumstances exist for the proposal to be approved.

5.83 The Green Belt extends across the entire 5km radius study area assessed within the accompanying Landscape and Visual Assessment and has been adopted by the three Local Planning Authorities (LPAs) of Barnsley Council, Doncaster Council and Wakefield Council, however the Zones of Theoretical Visibility (ZTV) indicate very limited potential for views from within the Green Belt and in reality intervening vegetation and the like would screen most views, therefore the proposal is unlikely to give rise to any significant impacts.

5.84 Barnsley Metropolitan Borough Council are currently some way off meeting their 2021 target for installed grid-connected renewable energy of 34MW and the proposal will help to contribute towards meeting this local target.

5.85 For these reasons it is considered that very special circumstances can be demonstrated, which clearly outweigh any potential harm of the proposal by reason of inappropriateness.

Policy CSP 36 - Biodiversity and Geodiversity

5.86 Development will be expected to conserve and enhance the biodiversity and geological features of the Borough by protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance, and by maximising biodiversity and geodiversity opportunities in and around new developments.

Development which may harm a biodiversity or geological feature will not be permitted unless effective mitigation and/or compensatory measures can be ensured.

5.87 The accompanying Ecology Scoping Assessment takes into account each of the issues set out in **CSP 36** and concludes that the proposal is not expected to impact significantly on these areas.

Policy CPS 37 - Landscape Character

5.88 Development will be expected to retain and enhance 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).

5.89 Section 4 of the Landscape and Visual Assessment provides a review of various Landscape Character Areas and references the Barnsley Borough Landscape Character Assessment. The assessment considers in turn each of the landscape character areas and concludes that the impact of the proposals on these areas is not considered to be significant.

Policy CSP 40 - Pollution Control and Protection

5.90 Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air, surface water and groundwater, noise, smell, dust, vibration, light or other pollution which would unacceptably affect or cause a nuisance to the natural and built environment or to people.

Developers will be expected to minimise the effects of any possible pollution and provide mitigation measures where appropriate.

5.91 A Noise Impact Assessment and a Shadow Flicker Assessment have been submitted as part of the accompanying documents. A summary of the findings is provided at Section 6 (Technical Issues) of this Statement.

Planning Policy Summary

5.92 The Core Strategy provides key policy guidance which support renewable energy proposals. It is considered the proposal should, in policy terms, be acceptable in principle.

5.93 Given that the site lies within the Green Belt, it is necessary to demonstrate that the very special circumstances clearly outweigh any potential harm by reason of inappropriateness.

5.94 The local targets for installed grid-connected renewable energy, which are set out in the RSS for the Yorkshire and Humber have been carried forward into the Barnsley Core Strategy DPD. These figures set Barnsley's target at 34MW by 2021.

5.95 Barnsley are currently a way off meeting their 2021 target for installed grid-connected renewable energy and the proposal will help to contribute towards meeting this local target.

5.96 The proposal is seen to meet the aims and aspirations of the Council's renewable energy targets and therefore it is considered that very special circumstances can be demonstrated, which clearly outweigh any potential harm of the proposal by reason of inappropriateness.

6 Technical Considerations

6.1 The development proposals are strongly supported in principle by planning policy guidance at a national level. **PPS1** and **PPS22** support the growth of renewable energy while taking account of environmental constraints locally.

6.2 This section of the Planning and Design Statement provides a summary of the key technical reports and details all of the technical considerations associated with the proposal, explaining how these have been addressed.

Landscape and Visual Impact Assessment (LVIA)

6.3 During pre-application discussions, Holman: Davies Design Ltd submitted a LVIA scoping methodology and assessment criteria to Barnsley Metropolitan Borough Council in order to agree the viewpoints from which the Landscape and Visual Assessment should be conducted. The viewpoints used to undertake the accompanying LVIA were agreed with Barnsley Metropolitan Borough Council as acceptable.

6.4 The accompanying LVIA, prepared by Holman: Davies Design Ltd, considers the potential effects of the single turbine for a period of 25 years upon individual landscape features and elements, landscape character, visual amenity and the people who view the landscape.

6.5 The Assessment concludes that the size of the proposed single turbine, within a landscape with *numerous comparable* size industrial features, together with the limited size of the visual envelope and further fragmentation of the view within the area, results in a proposed scheme without many significant visual impacts. The proposed mitigation for those which have been assessed would reduce the already low levels of significance down to even more acceptable levels.

6.6 The Assessment considers that, having given careful consideration to the potential landscape and visual impacts/effects throughout the study area, it is considered on balance that the proposed Ringstone Hill Wind Turbine Development is acceptable.

6.7 Full details of the assessment can be found in the accompanying LVIA.

Noise

6.8 The Noise Impact Assessment was undertaken by Enzygo Ltd. Within the construction of the noise model, certain information was assumed. The assessment was modelled on the Ennercon E-44 wind turbine and has been based upon test data corrected for an appropriate level of uncertainty, which

assumes that no tonal component is present associated with the operation of the E-44 turbine.

6.9 A Simplified ETSU R97 assessment was undertaken to the 14 of the closest sensitive residential receptors to the proposed turbine location based upon a candidate turbine specification. Of these, only six demonstrated predicted noise levels in excess of the 35dB(A) ETSU R97 Simplified Assessment criteria. Predicted noise levels at the remaining eight locations were demonstrated to be below this limit and are therefore considered to be acceptable.

6.10 In accordance with the agreements made with Barnsley and Wakefield LPA's an abridged ETSU R97 assessment was undertaken at these six locations based upon 7 - 14 days of background noise monitoring undertaken at the site. The results of this assessment demonstrated that the predicted noise levels from the turbine would not be in excess of the derived ETSU R97 criteria.

6.11 The study concludes that, based upon the information supplied and the methodologies employed, the proposed turbine would not result in any adverse effects relating to noise at sensitive residential receptors within the immediate vicinity. Therefore, subject to the implementation of an appropriate planning condition relating to operational noise criteria, noise should not be considered a material factor for the refusal of planning permission to develop the site for a single turbine wind development.

6.12 Full details of these findings can be found in the accompanying Noise Impact Assessment.

Ecology

6.13 The Ecological Assessment, prepared by BE Brooks Ecological Ltd, was undertaken by an experienced field ecologist who is a full member of the Institute of Ecology and Environmental Management (IEEM). The survey comprises a desk study, extended phase 1 habitat survey, bat remote recording visit and an ornithological scoping assessment.

6.14 The survey found that one statutory designated area, West Haigh Wood, an ancient birch/sessile oak woodland, is located c.1.2km south of the site. The proposal site does not hold similar habitats, or have any good habitat links to this designation, the proposals would not be expected to have any significant negative effect on it.

6.15 The survey concludes that the proposed turbine location is well sited and its operation is not expected to impact significantly on wildlife.

6.16 Full details of these findings can be found in the accompanying Ecological Assessment.

Access

6.17 An Access Statement has been undertaken by Enzygo Ltd. The Assessment states that the proposed access point would utilise the existing Ringstone Hill Farm access point which is accessed from Southmoor Road (B6273), which passes along the eastern boundary of the farm. Southmoor Road (B6273), which is a single carriageway road, with one traffic lane for each direction.

6.18 Full details of these findings can be found in the accompanying Access Statement.

Shadow Flicker

6.19 A Shadow Flicker Assessment prepared by Enzygo Ltd has been undertaken for three buildings which lie within the 440m cut-off distance from the proposed turbine location. The turbine modelled in this assessment is a 44m blade diameter turbine, which provides the worst case scenario in terms of the potential area susceptible to shadow flicker.

6.20 The assessment shows that under worst case conditions the maximum occurrence of shadow flicker amounts to 34.5 hours per year at the Robin Hood Public House and 29.3 hours per year at The Lodge.

6.21 It is important to note that these indications are the theoretical maximum number of shadow hour figures per year and do not take into account the weather conditions, local visual obstructions or the turbine orientation. In reality, the length of time when shadow flicker occurs will be far less than has been predicted.

6.22 If shadow flicker is found to be a nuisance, mitigation measures will be implemented in order to reduce and where possible remove the occurrence of shadow flicker.

6.23 Full details of these findings can be found in the accompanying Shadow Flicker Assessment.

Flood Zone

6.24 A review of the Environment Agency's flood map, which indicates that the site has a 'low probability' of flooding due to the site being located within the Environment Agency's Flood Zone 1 with less than 1 in 1000 annual probability of river flooding in any year (<0.1%).

Heritage

6.25 *The LVIA has carefully considered the visual impact of the proposal on the surrounding areas.*

6.26 The accompanying Landscape and Visual Assessment indicates that there are no landscape designations (World Heritage Sites, Areas of Outstanding Natural Beauty, Heritage Coast, Listed Parks and Gardens) within or adjacent to the site.

There are two Conservation Areas within the 5km radius study area, Brierley, 1.2km to the north-west and Clayton, 3.5km to the south-east of the site. The Zones of Theoretical Visibility (ZTVs) indicate that there would be visibility of the turbine from both areas, however in reality whilst some views would be obtained most would be screened by intervening landform, vegetation, trees and hedgerows and individual buildings.

The significance of the impact on the Conservation Areas is assessed as 'no significant effect' as they are sufficiently separated from the site and screened by intervening vegetation and buildings.

Farm Diversification

6.27 The proposal occupies a relatively small area of agricultural land and results in no major loss of usable land. The proposal assists the diversification of the farm, in accordance with **PPS7**, as the farmer will receive an annual income from the turbine rental.

7 Summary and Conclusions

7.1 This Planning and Design Statement is prepared by Knight Frank on behalf of Empirica Investments Ltd to be read alongside the submission of a full planning application for a 67m single wind turbine at Ringstone Hill Farm, Common Road, Brierley.

7.2 The proposal comprises a single wind turbine, with a hub height of 45 metres and a tip height of 67 metres.

7.3 Prior to undertaking pre-application discussions with officers at Barnsley, a detailed site selection process took place, which identified the various constraints on the land within the ownership boundary. These constraints included aspects such as proximity to residential properties and public highways. The conclusion of this process found the proposed location to be the most appropriate.

7.4 There is significant Government backing for renewable energy projects as set out in **PPS1**, **PPS7**, **PPS22**, the various White Papers, the Climate Change Act 2008 and the UK Renewable Energy Strategy. The Government has set a target of 20% of energy to be generated from renewable sources by 2020. Due to the demands of this target, Local Planning Authorities are encouraged to promote renewable energy proposals, whilst considering the impacts they might have on the landscape, countryside and residential amenity, as identified in the Eco-Island Sustainable Community Strategy.

7.5 Wind turbines have numerous requirements which often dictate the areas within which they can be located. Principally, they require a suitable wind speed of at least 5m/s at 50 metres hub height, which is free from obstruction, a large amount of available land, a suitable ground network for the delivery of components, suitable ground conditions, availability of grid connection and suitable separation from residential property to particularly avoid noise impacts. In finding a suitable location for the wind turbine, all of these factors have been considered and addressed.

7.6 **PPS22** identifies the need for proposals to not adversely impact on the character, appearance, setting and amenity of the countryside, in particular sensitive designations. As such the proposed location of the wind turbine is sited so as to avoid any sensitive designations. Consideration to nearby residential properties has also informed the site selection process, with a minimum separation distance of approximately 500 metres.

7.7 In conclusion, the proposal is consistent with national and local planning policy, as well as assisting the Government's renewable energy strategy. All potential impacts (Landscape and

Visual, Noise, Ecology, Access, Shadow Flicker, Aviation, Flood Risk, Heritage and Farm Diversification) have been assessed in detail, both as part of the siting of the proposal and as part of this application.

Appendix 1 - Site Location Plan



KEY

Site Boundary

Empirica Investments

enzygo
environmental consultants

STEP Business Centre, Wortley Rd, Sheffield, S36 2UH

CLIENT: Empirica Investments

SCALE: 1:1,250@A3

PROJECT NO: SHF.309.001.D.011

DRAWN: JM

CHECKED: PT

DATE: Jan 2012

PROJECT: Ringstone

TITLE: Site Boundary Plan

FIGURE REF: 3

Appendix 2 - Turbine Specification

ENERCON Wind energy converters

Product overview



Sales
ENERCON GmbH
Dreekamp 5 · D-26605 Aurich, Germany
Phone +49 4941 9270 · Fax +49 4941 927109
vertrieb@enercon.de

ENERCON GmbH · Dreekamp 5 · D-26605 Aurich, Germany
Phone +49 4941 9270 · Fax +49 4941 927109 · www.enercon.de
Technical information is subject to change. Version: July 2010.

ENERCON
ENERGY FOR THE WORLD

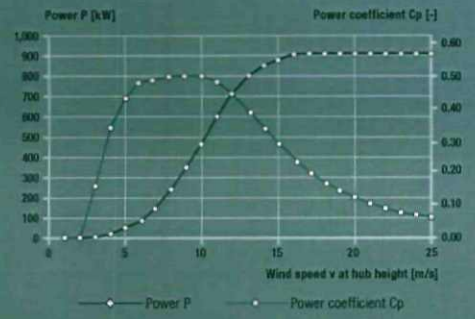
ENERCON
ENERGY FOR THE WORLD

E44

900 kW



Calculated power curve



Wind [m/s]	Power P [kW]	Power coefficient Cp [-]
1	0.0	0.00
2	0.0	0.00
3	4.0	0.16
4	20.0	0.34
5	50.0	0.43
6	96.0	0.48
7	156.0	0.49
8	238.0	0.50
9	340.0	0.50
10	466.0	0.50
11	600.0	0.48
12	710.0	0.44
13	790.0	0.39
14	850.0	0.33
15	880.0	0.28
16	905.0	0.24
17	910.0	0.20
18	910.0	0.17
19	910.0	0.14
20	910.0	0.12
21	910.0	0.11
22	910.0	0.09
23	910.0	0.08
24	910.0	0.07
25	910.0	0.06

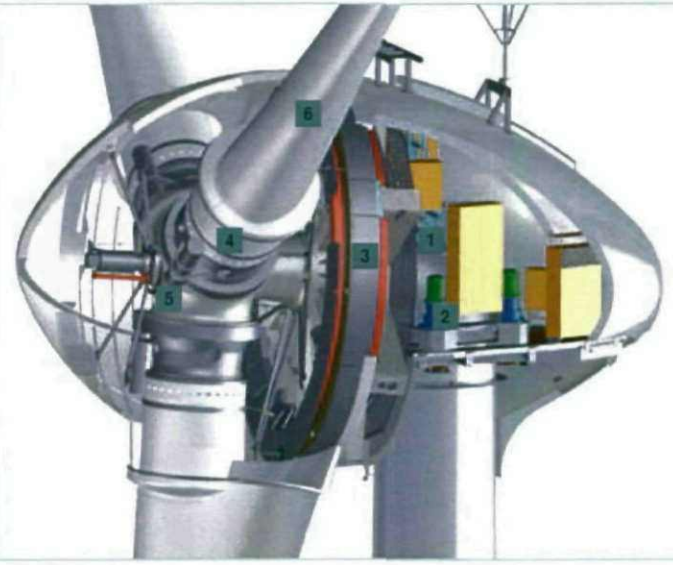
ρ = 1.225 kg/m³

For more information on the ENERCON power curve, please see the last page.

Technical specifications E-44

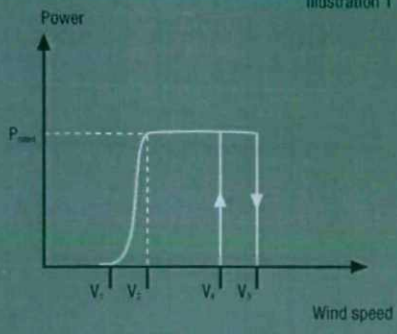
Rated power:	900 kW
Rotor diameter:	44 m
Hub height:	45 m / 55 m / 65 m
Wind class (IEC):	IEC/NVN IA
WEC concept:	Gearless, variable speed Single blade adjustment
Rotor	
Type:	Upwind rotor with active pitch control
Rotational direction:	Clockwise
No. of blades:	3
Swept area:	1,521 m²
Blade material:	GRP (epoxy resin); Built-in lightning protection
Rotational speed:	Variable, 12–34 rpm
Pitch control:	ENERCON single blade pitch system; one independent pitch system per rotor blade with allocated emergency supply
Drive train with generator	
Hub:	Rigid
Main bearing:	Tapered roller bearing pair
Generator:	ENERCON direct-drive annular generator
Grid feed:	ENERCON inverter
Brake systems:	– 3 independent pitch control systems with emergency power supply – Rotor brake – Rotor lock
Yaw system:	Active via yaw gear, load-dependent damping
Cut-out wind speed:	28–34 m/s (with ENERCON storm control*)
Remote monitoring:	ENERCON SCADA

* For more information on the ENERCON storm control feature, please see the last page.



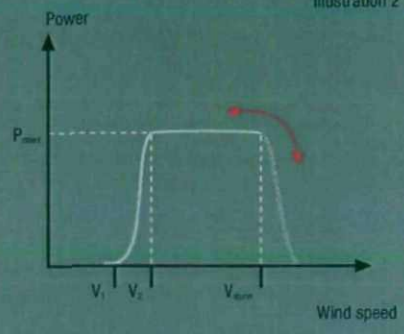
1 Main carrier
2 Yaw drive
3 Annular generator
4 Blade adapter
5 Rotor hub
6 Rotor blade

Illustration 1



Power curve without ENERCON storm control

Illustration 2



Power curve with ENERCON storm control

ENERCON power curves
According to current standards, power curve measurement parameters such as turbulence intensity are not taken into consideration. The results are deviating measurements on the same type of wind turbine at different locations. Again, when comparing yield using power curve measurements from different types of wind turbines, a clear picture cannot be obtained unless all measurement parameters are taken into consideration.

So in order to calculate power yield forecasts for its wind turbines, ENERCON does not use power curve measurements but calculated power curves.

These are based on the following:
- several different power curve measurements for the respective wind turbine type taken by accredited institutes with documented evidence of these measurements on the respective power curve certificates; or results from other turbine types if measurements have not yet begun or are still in progress
- average turbulence intensity of 12 %
- standard air density of 1.225 kg/m³
- realistic assumptions concerning anemometer behaviour
- wind turbine operation with ENERCON's patented storm control feature which enables operation without shutdown at high wind speeds.

Thus the power curves for ENERCON wind turbines provide highly reliable and realistic calculations for expected energy yield according to the wind conditions at the respective site.

Description of wind classes
IEC I V_{av} = 10 m/s
V_{ext} = 70 m/s

IEC II V_{av} = 8.5 m/s
V_{ext} = 59.5 m/s

IEC S V_{av} and V_{ext} are to be determined by the manufacturer

ENERCON storm control
ENERCON wind turbines run with a special storm control feature. Storm control enables reduced wind turbine operation in the event of extremely high wind speeds, and prevents typical shutdowns which cause considerable yield losses.

Power curve without ENERCON storm control
Illustration 1 shows that the wind turbine stops at a defined cut-out wind speed V_3. The reason is that a specified maximum wind speed has been exceeded. In wind turbines without storm control, this occurs, for example, at a wind speed of 25 m/s within a 20-second mean. The wind turbine only starts up again when the average wind speed drops below the cut-out wind speed or an even lower restart speed (V_4 in the illustration; so-called strong wind hysteresis). In gusty wind conditions there may be a longer delay, which means that considerable yield losses are incurred.

Power curve with ENERCON storm control
The power curve diagram showing operation with ENERCON storm control (illustration 2) demonstrates clearly that the wind turbine does not shut down automatically when a certain wind speed V_{storm} is exceeded, but merely reduces power output by slowing down the rotational speed. This is achieved by slightly pitching the rotor blades out of the wind. Once the wind speed drops, the blades turn back into the wind and the turbine immediately resumes operation at full power. This prevents yield-reducing shutdown and start-up procedures.

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