

320120954P



DESIGN AND ACCESS STATEMENT FOR:

1 NO 20KW WIND TURBINE WITH A HUB HEIGHT OF 20.58M AT:

LOWER GAZEGILL FARM

DANCER LANE

RIMINGTON

LANCASHIRE, BB7 4EE

For

Mr Robinson

By

ENTRUST PLANNING CONSULTANTS

DARESBUY INNOVATION CENTRE

KECKWICK LANE

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WA4 4FS

Abstract

This document outlines how the proposed development meets various requirements as set out by National Planning Policy and other Supplementary Guidance. Ribble Valley Borough Council is hereby presented with an opportunity for a development of grounded environmental, social and economic viability that greatly supports the production of renewable energy development.

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1. VISION

1.1 Background to the project

The development is sought to enable the applicant to reduce the carbon emissions and energy bills of the property and to increase the self sufficiency of the business in terms of electricity production, as well as allowing the business to become more sustainable.

1.2 Design Details

The proposed development is for a single wind turbine designed and manufactured by C&F Green Energy. The development has a 13.1m rotor diameter on a 20.58m monopole. The maximum RPM is 90 and the maximum power output is 20kw. The estimated carbon savings is between 26-30 tonnes for the single turbine. The turbine will be situated within a site area of approximately 15m x 15m.

Visually the turbine is smooth and sleek with a non-industrial look mitigating many negative visual impacts some of which are associated with larger scale wind farm installations. The hub is comprised of galvanised steel and the turbine blades are made of fibreglass/epoxy.

2. Introduction and Site Location

2.1 Application Description

The proposed development consists of the installation of 1 no. 20kW wind turbine, with a hub height of 20.58m, which will provide power supply to the Applicant's farm buildings and property at Lower Gazegill Farm, Dancer Lane, Rimington, Lancashire, BB7 4EE.

2.2 Pre-planning consultation.

To date a great deal of pre-planning consultation has taken place towards the submission of the full planning application. As the application site is in close proximity to Forest of Bowland AONB the Applicant engaged in pre-application consultation with the Local Authority. The Applicant has had detailed conversations with Louise Blatchford (Technical Planning Assistant), whilst Entrust have carried out further detailed pre-planning consultations with Planning Officer Graeme Thorpe. As a result this consultation the Applicant has decided to apply for a single 20kW turbine to limit the landscape and visual impacts even further.

In an email received by the Applicant from the Local Authority on the 5th September 2012 a full scope of works for this planning application was agreed. All of the information requested has been provided with this application. Site Location

The site for which the turbine is proposed is in a rural location, used mainly by local residents, and volumes of traffic are reasonably low. The proposed wind turbine is located approximately 185m from the nearest public road (Dancer Lane). The site location can be identified on the attached OS Maps. The turbine is proposed to be located at **E: 382266 N: 446480**. Perhaps insert the map in the pdf version.

There are a limited number of residential dwellings in the surrounding area. The nearest neighbour lies approximately 245m to the south-east. The presence of other residential properties has been given serious consideration in choosing the site for the proposed development. It is believed that no property will be affected by noise or shadow flicker output from the turbine. No principal elevations from neighbouring properties directly face the application site.

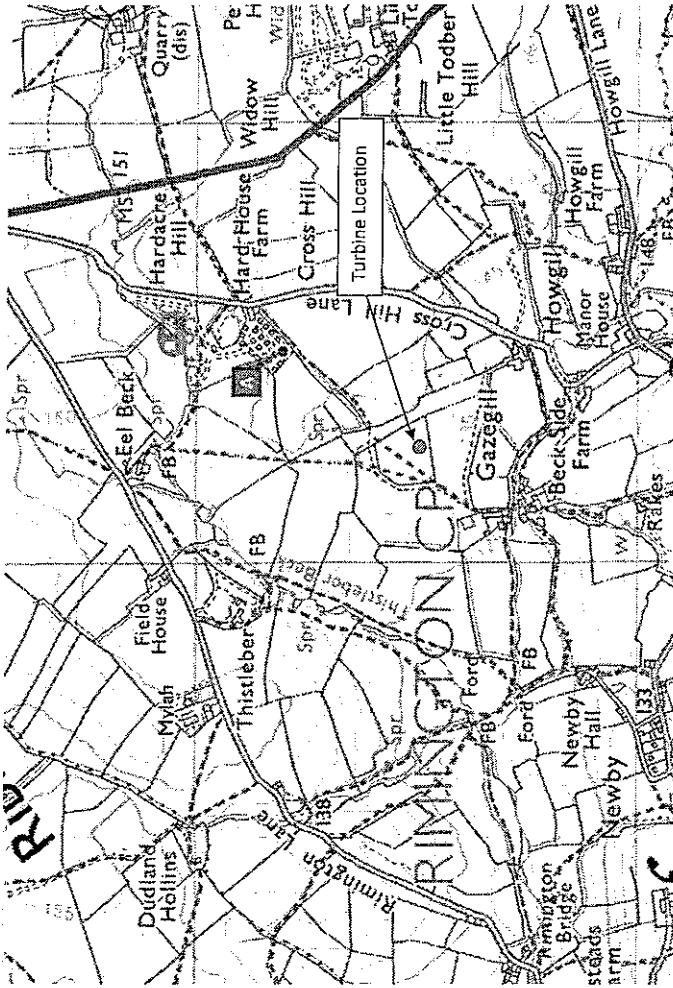
The site does not lie within an AONB, National Park or SSSI. While the proposed turbine is sited in close proximity to the Forest of Bowland AONB (2.33km south-east of it), no significant impact will occur. This is demonstrated in the accompanying Landscape and Visual Impact Assessment (LVIA) through the use of photomontages and wirelines. The small scale nature of the development means that it is incredibly unlikely to have any wider or significant detrimental impacts on the area.

2.3 Land Use

The farm at present uses substantial quantities of imported electricity to run the farm business activities which is a financial burden on the owner.

The installation of a wind turbine would see this business problem resolved and support the continuation of agriculture in the area.

2.4 OS Map and Aerial Photo Locations



2.5 Renewable Energy Background

There is worldwide recognition of the environmental and economic threat posed by global warming and climate change associated with the release of green house gases into the atmosphere. This is reflected in the range of international agreements (UN Framework Convention on Climate Change 1992; Kyoto Protocol 1997; Copenhagen Accord 2009) aimed at controlling the emissions of greenhouse gases through the establishment of binding targets. Renewable energy is acknowledged internationally as a cornerstone of policy to meet these exacting targets.

The United Kingdom has until recently enjoyed the benefits of natural resources of coal and off shore natural gas production, which have been supported by nuclear energy to meet its energy demand. However the United Kingdom is currently in transition to become a net energy importer. In the year 2007 the percentage of primary energy derived from major sources was as follows;

- Oil: 38.0%
- Natural gas 37.7%
- Coal : 16.7%
- Nuclear power 5.8%
- **Renewable: 1.8%**

The UK government's goal for renewable energy production is to produce 20% of electricity in the UK from renewable sources by the year 2020. The 2002 Energy Review set a target of 10% to be in place by 2010/2011, which was increased to 15% by 2015 and most recently the 2006 Energy review reaffirmed the target of 20% by 2020. Subsequently the Low Carbon Transition Plan of 2009 made clear that by 2020 the UK would need to produce 30% of its electricity from renewable energy.

In October 2008, the Government created the Department of Energy and Climate Change (DECC) to bring together energy policy and climate mitigation policy. The DECC has confirmed that wind energy will be a key component in meeting the UK's 2020 target for energy from renewable sources, and onshore wind could deliver around 15% of the total. The wind industry is also recognised as a key player in

creating the investment, exports and jobs needed for a return to economic prosperity. While no individual technology will provide the solution to the UK target, onshore wind will have an important role to play as one of the most cost-effective and proven renewable energy technologies.

Following an extensive public consultation process by both the new and previous governments, the Government in June 2011 published its finalised Energy National Policy Statements (NPSs). The Energy NPSs provide a clear framework for decision making and set out the need for a surge of investment in new energy sources, including 33GW of new renewable energy capacity. NPS EN-3 specifically relates to renewable energy infrastructure. In July 2011 the six NPSs were approved by parliament.

2.6 Screening

The proposed development falls within the categories of development specified in Environmental Impact Assessment (EIA) under the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, Schedule 2, Part 3 (ii) in that the proposed new turbine hub would exceed 15 metres in height. In total the proposed wind turbine would measure 27.131 metres in height to the tip and 20.584 metres to the hub height. Therefore it is a requirement to provide a screening opinion as to whether an EIA is required or not. Please find attached a cover letter that accompanies this application and is a formal request for a screening opinion. It is noted, that this is typically done at a pre-application stage, however due to time constraints it has not been possible to submit this. In consideration of the development, we have however considered the potential impacts of the proposed development in terms of its location, principle and scale and believe the effects will not be significant. The main impacts of the development will be visual and a detailed LVIA is attached. This is sufficient to assess the application, outside the context of Environmental impact Assessment.

Characteristics of Development:

Due to the modest nature of the proposed turbine and given the lack of other applications of this nature in the area, no significant cumulative effect will occur as a result of the proposed development. The proposal would enable renewable energy resources to be made available to the existing farm at Lower Gazegill Farm, whilst any additional electricity could be fed back into the grid, not only providing income for the applicant but also providing electricity from a renewable source to wider energy needs.

The main considerations with wind turbines exists with the potential noise they can generate from the rotating blades, the landscape/visual impact and the impact on local ecology such as migrating bat and bird populations. Many of these factors can be dealt with through assessment within the planning application process and would not justify the need for a full EIA. Careful siting has also been adopted to ensure that recommended distances from trees, hedgerows, buildings and other linear features are adhered to.

The nature of a wind turbine is such that there is a minimal risk of accidents as a result of the turbines operation other than the potential moving parts malfunctioning and impacting users of nearby public spaces, pathways or carriageways. There are no nearby residential properties or public rights of way which would be at a distance that would require the assessment of such risks.

Location of the Development

Any potential impacts on particular locations can be assessed within any planning application. Due to the proposed size of and its location it would be unlikely that any adverse effects would result upon natural heritage features and there it is believed that EIA is not required.

Characteristics of Potential Impact

Given the small number of residential properties within close proximity to the proposed wind turbine it is deemed that any potential impacts on any population's

amenities, including any potential visual or noise impact can be adequately assessed within the planning application process.

2.7 Planning Policy

2.7.1 Policies

When considering this planning application, the Local Planning Authority should take into account all material planning considerations including those arising from the comments of any statutory and other consultees, public representations about the application and Government Guidance and Policy. This consists of the National Planning Policy Framework (NPPF), the content and policies within Supplementary Planning Guidance (SPG), and the Hyndburn Local Plan (Adopted 1996).

The National Planning policy Framework;

The Government's National Planning Policy Framework (NPPF) was adopted on the 27th of March 2012 and represents the principal national guidance document and material consideration which must be taken into account, where relevant, in determining planning applications.

At the heart of the NPPF is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking. Sustainable Development encompasses concepts of sustainable economic, social and environmental development which run concurrent with the spatial approach to planning.

The following excerpts are applicable to this proposal:

Pre-application engagement and front loading

The NPPF considers pre-application engagement and front loading of applications as an important part of decision-taking;

'Local planning authorities should publish a list of their information requirements for applications, which should be proportionate to the nature and scale of development proposals and reviewed on a frequent basis. Local planning authorities should only request supporting information that is relevant, necessary and material to the application process.' (Paragraph 193).

This planning application is accompanied by a suite of relevant documents. The scope of which was pre-agreed with Planning Officers and which should aid the Local Planning Authority in making a determination. Should any further information be required the Applicant will provide any necessary information.

Renewable Energy

The Core Planning principles should underpin decision-taking. This includes:

Supporting the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example by the development of renewable energy)(Paragraph 17).

The proposed scheme is such an example of where there will be considerable wider environmental benefits. The CF 20kW wind turbine would produce an annual yield of 47,500 kWh at low wind speeds of 5m/s. The area, typically would enjoy wind speeds in excess of 5.4m/s (Source: NOABL), which would imply an even greater production of renewable energy than the stated annual yield.

It is proposed as part of the scheme that any surplus energy produced from this scheme would also be directed into the national grid. This would share the energy produced with the rest of the country, and essentially have a valuable contribution to nationwide renewable energy targets, and regional targets.

The Government;

'is committed to securing economic growth in order to create jobs and prosperity, building on the country's inherent strengths, and to meeting the twin challenges of global competition and of a low carbon future'. (Paragraph 18)

The proposed development will provide carbon savings of 26-30 tonnes per annum.

'planning plays a key role in helping 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'. (Paragraph 93)

The NPPF acknowledges the key role planning has to play in helping shape places to secure radical reductions in greenhouse gas emissions, and supporting the delivery of renewable and low carbon energy.

When determining planning applications, local planning authorities should:

- *'Not require applicants 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 acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas'* (Paragraph 98)

Heritage Assets

Chapter 12 of the NPPF considers the importance of conserving and enhancing the historic environment.

'When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to

the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.'* (Paragraph 132)

The proposed development is not in close proximity to any grade I, and grade II* listed heritage assets, scheduled monuments, protected wrecks, battlefields or World Heritage Sites.

There are a small number of grade II listed buildings in the general vicinity, however the impact on these dwellings can be considered insignificant, as is demonstrated in the accompanying landscape and visual impact assessment.

Whilst there may be some minimal impacts on a small number of heritage assets, when weighed against the wider environmental benefits of the proposed development, the impacts can be considered acceptable.

Ribble Valley Borough Council Districtwide Local Plan (1998)

The following policies from the Local Plan are of particular relevance to this planning application.

- ENV3 - Open Countryside
- ENV24 - Renewable Energy
- ENV25 - Assessment for Renewable Energy
- ENV26 - Wind Energy

Policy ENV3: Open Countryside

Policy ENV3 seeks to protect the character of the landscape in areas outside of the AONB as well as conserve statutory designated areas and sites of biological interest and ancient woodland within areas of open countryside.

The proposal site lies within open countryside outside of the AONB. It is part of the Forest of Bowland Natural Area, which in itself is not a designation but nonetheless is an attractive and valued landscape. In terms of statutory designated areas the proposal is over 1km from the nearest Biodiversity Action Plan Priority Habitat. Reference to the local plan and to Defra's MAGIC tool suggests that there are no other environmentally sensitive or designated areas within a 1km radius of the site. In this regard the proposal is consistent with the requirements of Policy ENV3.

Policy ENV24: Renewable Energy

The proposal would see the creation of a diverse, secure and sustainable energy supply capable of delivering significant carbon emissions reductions. As demonstrated within this document the proposal is consistent with the NPPF as well as the relevant policies within the Ribble Valley Borough Council Districtwide Local Plan. In summary the proposed small scale turbine will not cause unacceptable harm to interests of acknowledged importance in the local environment and the proposal is consistent with Policy ENV24.

Policy ENV25: Assessment of Renewable Energy

Policy ENV25 sets out four issues which the council should give particular regard when assessing proposals for renewable energy schemes.

- i. *The immediate and wider impact of the proposed development on the landscape; and AONB in particular the need to protect features and areas of natural, cultural, historic and archaeological interest;*
- ii. *The measures that would be taken, during and after construction, to minimise the impact of the development on local land use and residential amenity;*
- iii. *The local and wider benefits the proposal may bring; and*

- iv. *The fact that certain renewable energy resources can only be harnessed where the resource occurs.*

In relation to (i) the criteria outlined have been fully considered in the accompanying landscape and visual impact assessment and no significant impact will occur. This is also discussed in some detail in section 8 'Planning issues' of this statement.

In relation to (ii) all necessary measures will be taken before, during and after construction in order to minimise any impact on residential amenity. A construction method statement explaining the various stages of construction and precautions which will be taken, accompanies this planning submission.

In relation to (iii) some of the local and wider benefits of the proposed development include;

- Economic benefits in terms of local and national job creation and investment
- Contribution to tackling fuel poverty and stabilising of energy prices
- Contribution to climate change mitigation
- Contribution towards meeting the U.K. and E.U. 2020 renewable energy and carbon reduction targets to avoid major fines
- Community benefit in providing an example of and to promote a low carbon approach to energy production in the area
- Community benefit in providing an example of renewable energy for educational purposes for the wider community and school children.

Finally in relation to (iv) the proposed development has been sited in the most appropriate location taking into account local and national planning policies and also adhering to the need to have a site with viable wind speeds.

Policy ENV26: Wind Energy

"Policy ENV26 states that the Borough Council will approve proposals for wind turbine generators providing;

- i The visual impact of the proposal on the wider landscape is justifiable;*
- ii The proposal does not harm any wildlife habitat or area of historical or architectural importance;*
- iii The degree of nuisance caused by noise and shadow flicker to nearby residential amenities, agricultural operations, recreational areas or the function of the countryside is minimal;*
- iv The proposal does not interfere with electromagnetic signals;*
- v The design, colour, layout and scale of turbines and ancillary structures including access roads must be appropriate to the character of the area;*
- vi Connections to electrical grids and substations etc. must be acceptable in the landscape setting;*
- vii Adequate restoration and after use provision must be made;*
- viii Suitable parking facilities should be provided where appropriate.*

The above criteria have been taken into account during the design process of the proposed development. It has been demonstrated in this document and within the accompanying reports that the proposed development satisfies all of the requirements of Policy ENV26.

2.8 Context Assessment

The site is located in a rural and isolated location. There are few residential properties in the surrounding area. There are no shops within the vicinity of the site. The nearest settlement is approximately 245m south-east of the site.

2.9 Community Safety

The proposed development will not compromise community safety. The site is located in a field within the landownership of the Applicant, and would be installed by MCS accredited installers. The proposal is of such a small scale that community safety would in no way be compromised.

2.10 Environmental Sustainability

The proposed development for 1 no. wind turbine will be making efficient use of its available natural resources. The site is located at a high point within the land ownership in order to maximise the potential wind capture, but will also mitigate any potential noise impact on neighbouring properties. No wind speed measuring has been carried out on site, however the applicant has considered the location together with data from NOABL in order to determine the viability of such a proposal. NOABL assesses the area as having wind speeds of 5.4m/s at 25m height. Based on these wind speeds the proposed wind turbine would be viable in this location.

3. SITE SPECIFIC PLANNING CONSIDERATIONS

3.1 Landscape and Visual Impact

As a small scale wind energy development proposal, there will be limited visual impacts on surrounding dwellings. The number of houses affected by the development is limited. As well as this, every attempt to reduce the visual impact of the development has been introduced by the Applicant. Whilst the proposed turbine is within 2.33km of the Forest of Bowland AONB which lies to the north-west the impact on this landscape can be considered insignificant, as the accompanying LVIA has demonstrates.

The visual impact on the surrounding area will be minimal. The mast aspect of the turbine is 20.58m high with 3no. blades attached. The design of the turbine is such that it can be easily absorbed and assimilated into most landscapes. Since the turbine does not require any additional ground based equipment housing or compound fencing, it is considered that it will have a non-material impact on the character, fabric and quality of the landscape.

Visibility of the site will be intermittent from the surrounding local routes. The blades will mainly face a south westerly direction and will turn 359°. With the structure being positioned amidst the undulating physical landscape, the visual impact is minimised considerably.

A 20.58m mast in this case has been chosen for the turbine after taking into account the existing landscape characteristics, the energy generating capacity and functioning of the turbine as well as the Council's Planning Officer's comments.

A full Landscape and Visual Impact Assessment has been carried out. It concludes that:

- The development will not have a significant impact on the landscape character of the area and the visual impact on the surrounding landscape and AONB can also be considered insignificant.

- Viewpoints 1-8 reveal that the proposed development would have insignificant visual impact.
- A major-moderate magnitude of change only occurs at one viewpoint (VP2), with the rest of the viewpoints ranging from a moderate to negligible magnitude of change. As a result the proposed development would not affect significant numbers of people or landscape and overall the potential impact can be considered insignificant. A copy of the assessment is attached.

3.2 Effects on ecology, flora and fauna and natural heritage

The Royal Society for the protection of birds (RSPB) has stated its support for renewable energy projects, including wind turbines on the basis that the benefit in combating climate change is greater than the impact such projects will have on wildlife.

According to DEFRA's Magic tool the proposed development site is not designated as Site of Special Scientific interest or an Area of Outstanding Natural Beauty. It is evident that the site is not designated under EU directives as a Special Area of Conservation or a Special Protection Area. There are no known protected species currently breeding or nesting in the area.

Bats are protected under UK and European legislation but like birds there is no evidence that small scale wind turbines such as a the proposed development cause harm or increase chances of mortality. Research by Natural England as demonstrated through guidance documents TIN051 and TIN059 indicates that such impacts are not caused by small scale wind turbines. Natural England would welcome the location of the site being located away from field boundary hedgerows, agricultural buildings, ditches/stream and woodland.

The siting of the turbine has taken the above factors into consideration. The Technical Information Note TIN051 recommends measures to be undertaken to protect bat species. The guidance recommends a separation distance of 50m from the nearest hedgerows in order to mitigate any potential effect on bats. The

proposed development has been located 65m from the nearest hedgerow and therefore is fully compliant with Natural England's Guidance.

3.3 Benefits for communities

The presence of renewable energy encourages and promotes environmental improvement good practices in the surrounding locality. The potential effects of which can be far reaching in terms of personal behaviour and attitudes towards green living and being more environmentally conscious in day to day practices.

3.4 Noise

The CF20 installation is a 20kw turbine and produces on average a sound power of 87.5 dBA at 8m/s. This decreases with increasing distance from the source. There are no residential dwellings or work places within 240m of the proposed site. The manufacturer's acoustic data and report for the CF20 is attached. Due to the separation distances involved to the nearest noise sensitive properties no unacceptable impact will occur with regard to noise.

3.5 Air Traffic Safeguarding

Due to time constraints it is not possible to get confirmation from the MOD and CAA prior to the application; however it is our belief that due to the small scale of the development and its location, the development will not be a hazard to air traffic safety.

3.6 Shadow Flicker

In the guidance document (Onshore Wind Energy Planning Conditions Guidance Note, October 2007 for all UK LPA's) Pg 22 relates to Shadow Flicker and the following is the relevant extract.

'Only dwellings within 130 degrees either side of north relative to a turbine can be affected and the shadow can be experienced only within 10 rotor diameters of the wind farm'

It is our opinion that shadow flicker will not affect the dwellings in the area as there are no dwellings within 131m (10 x rotor diameter = 10 x 13.1m) of the proposed development.

4.0 CONCLUSION

Ribble Valley Borough Council is presented with a development opportunity that strongly adheres to the requirement of national and local policy where there is considerable and sustained support for renewable energy developments. Considering the support echoed throughout policy, as well as the adherence to various policy requirements, it is our opinion that the proposed development can be absorbed and assimilated into the landscape relatively easily.

The proposal is sourced on a suitable site that will not impact negatively on the landscape character. The effects of the development in terms of landscape and visual impacts have been assessed in relation to the appropriate guidelines and it has been proven that the overall significance of the effects will be low. Given the small scale nature of the proposal, this development would not contribute to a significant cumulative impact as there are limited similar developments in the general area.

The development of 1no. 20kW wind turbine is a relatively diminutive proposal, that will not only provide economic benefits in the day to day running of the farm business, but the estimated carbon savings would be between 26-30 tonnes per annum. This will contribute to a reduction in the use of fossil fuels and grid electricity. All the energy produced from the turbine will be used to provide power to the farm activities and any surplus power may be redirected to the national grid. The power requirements for the Applicant's farm per annum are substantial and the proposed turbine will allow for a sustainable supply of power to the farm all year round.

This application should not be mistaken for a large wind farm but that of an application of a minor scale that will contribute to the areas overall plan to promote more sustainable forms of energy generation from a bottom up approach. We do not believe that there is a better location in the vicinity for this site. There shall be no negative impact on the residential amenity of the area, there shall be no significant impact on the visual amenity of the area and the site is not located within any nationally designated or protected area.

The Applicant requests that the Planning Authority look favourably on the proposed development and if any further information or clarification is required the applicant will forward this immediately.

APPENDICES

APPENDIX 1	LOCATION PLAN
APPENDIX 2	SITE PLAN
APPENDIX 3	CF20 ELEVATION DRAWING
APPENDIX 4	MANUFACTURERS SPECIFICATION NOISE DATA
APPENDIX 5	MANUFACTURERS BROCHURE
APPENDIX 6	LANDSCAPE AND VISUAL IMPACT ASSESSMENT
APPENDIX 7	CONSTRUCTION METHOD STATEMENT
APPENDIX 8	TURBINE INSTALLATION IN PICTURES

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Acoustic Report

Fire enclosure testing
Envelope design review
Acoustics

Air sealing
Thermographic surveying
Equipment supply

Summary of Acoustic Measurements

CF20-20m mast

C&F Facility, Co. Galway

23rd Sept 2010

Report Version 1.0

Prepared for:
C&F Green Energy

Assessed by:
Martyn Bailey MSc MIOA



Introduction

The following report is based upon measurements taken by C&F Green Energy. The measurements have been assessed by Stroma technology Ltd and comply with the requirements of BS EN 61400 – 11: 2003.

Test Details

Wind Turbine Model: CF20
Max Output: 20KW
Rotor Diameter: 12.8m
Mast Height: 20m
Location: C&F Facility, Athenry, Co. Galway
Date of tests: 9th August - 13th Sept
SLM: Larson Davis 824 with narrow band module

Test Setup

All acoustic measurements were conducted in accordance with IEC 61400-11:2002. The BWEA have also published a standard that addresses wind turbine noise assessment and the acoustic measurement technique is largely based on the IEC standard. The output data are presented in the format requested by the BWEA standard since this is typically most appropriate for planning purposes in the UK.

The microphone is located downwind at ground level facing the turbine at a distance of 26.4m which is the mast height plus the rotor radius. The microphone is placed on a piece of plywood and covered with a hemispherical wind shield. Acoustic and wind data are recorded while the wind turbine is active and also when shut down so that background noise can be assessed.

Acoustic measurements were taken as 1 minute Leq A-weighted readings. All measurements were recorded with 1/3 octave definition.

Wind velocity was measured using an anemometer on a 15m pole. Presented data are scaled to the height of the rotor axis.

Results

As specified in the BWEA standard, the 1/3 octave acoustic levels for all measurements were analysed to identify any tonal contribution. In this respect, no tonal content was present.

Several key metrics are required by the BWEA standard.

These are:

Key BWEA Metrics	
Sound Power at 8m/s	87.5 dBA
Sound Power vs Velocity slope	3.1 dBA / (m/s)
Sound Pressure at 8m/s	
Distance 25m	51.5 dBA
Distance 60m	44.0 dBA

In Figure 1, the acoustic data is presented as a function of nacelle height wind speed. Data are presented for both the background noise and the combined turbine & background noise cases. A linear regression is performed on both sets of data.

In Figure 2, the A-weighted sound pressure level of the wind turbine is adjusted to account for background noise and presented as a function of velocity.

In Figure 3, the A-weighted sound power level is presented as a function of wind speed.

In Figure 4, a contour plot shows the relationship of sound pressure to wind speed and distance. The distance here is measured from the centre of the mast. The data for this plot is derived from an interpolation where spherical propagation is assumed.

Finally, on the last page of the report, the above data are presented in the recommended BWEA format. The stated power level and field plot have been adjusted to account for an uncertainty penalty of 1.5dBA.

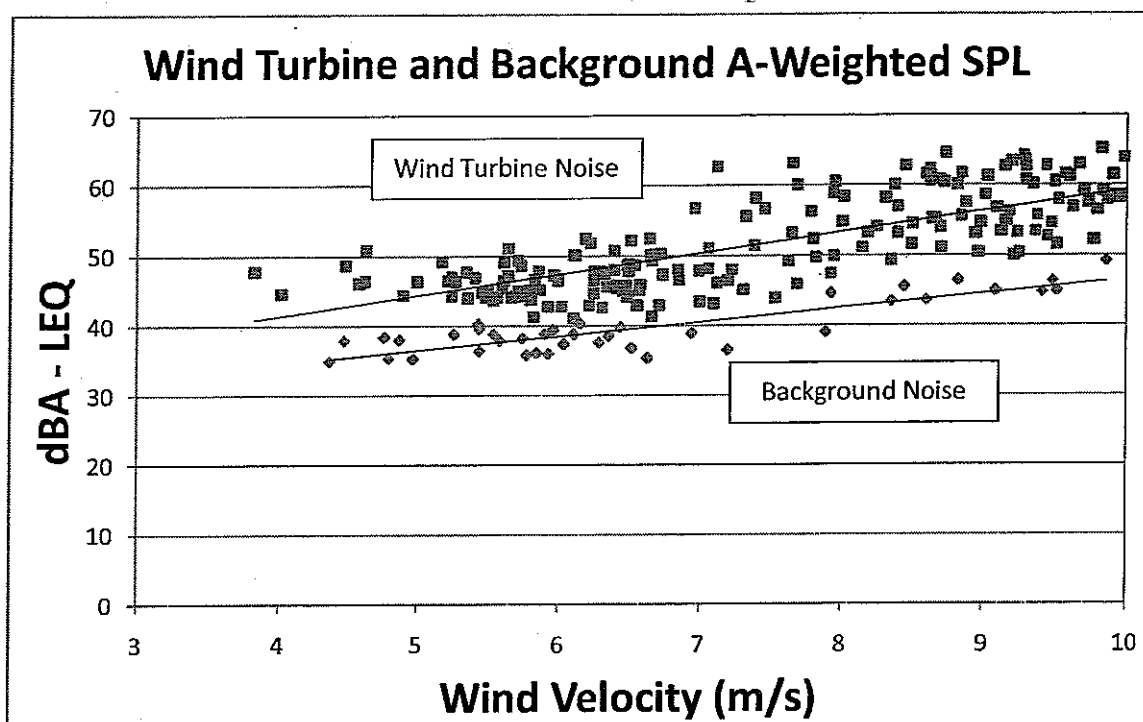


Figure 1: Wind turbine and background noise data as a function of nacelle height wind velocity.

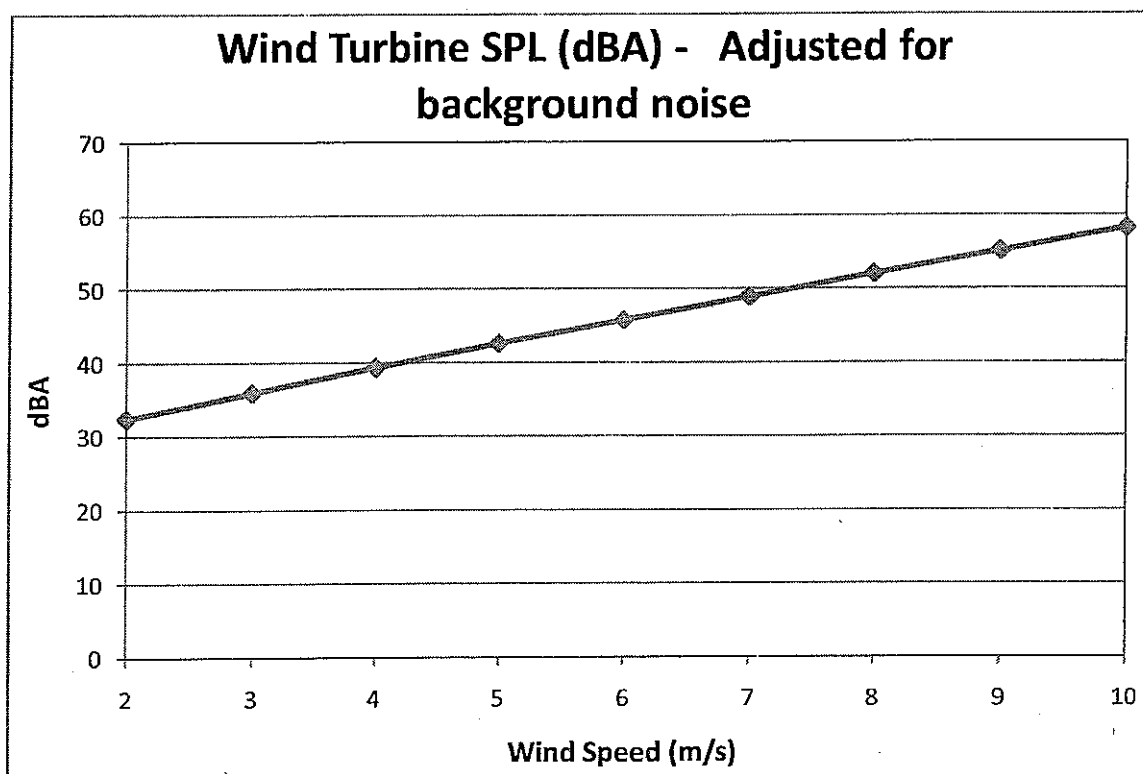


Figure 2: A-Weighted Sound Pressure Level as a function of nacelle height wind velocity.

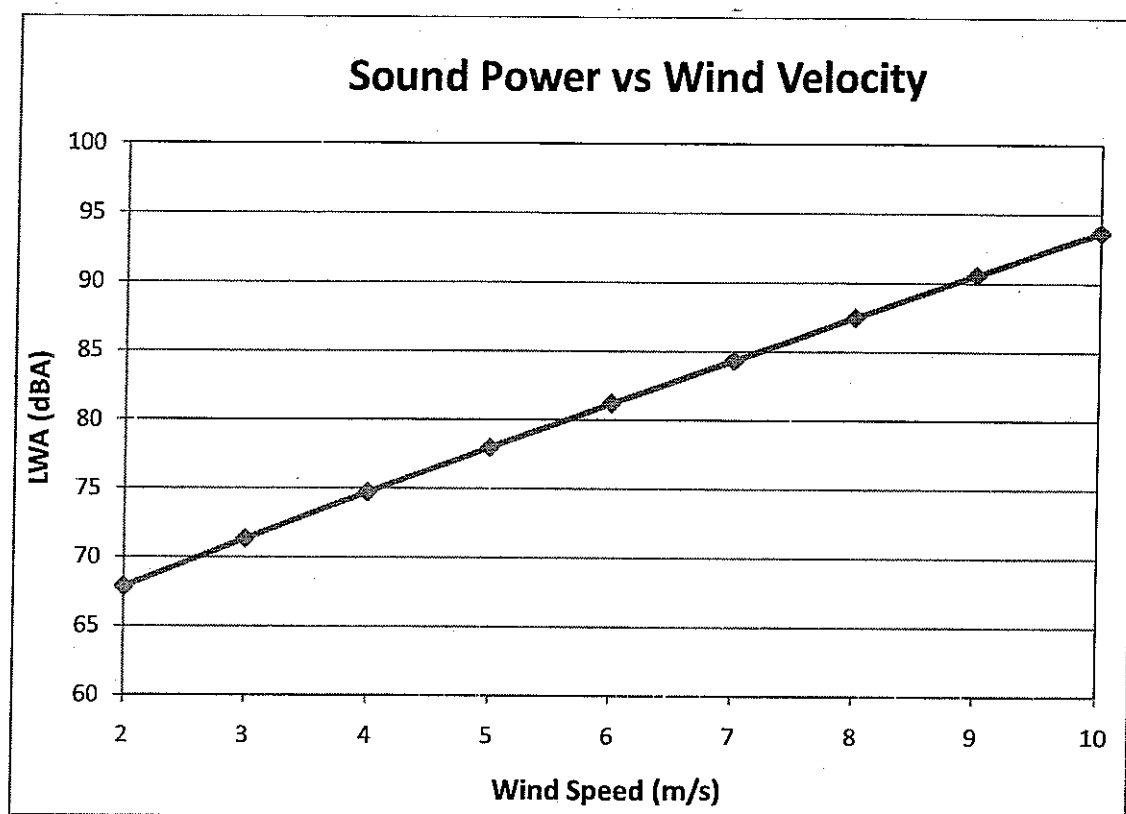


Figure 3: A-Weighted Sound Power Level as a function of nacelle height wind velocity.

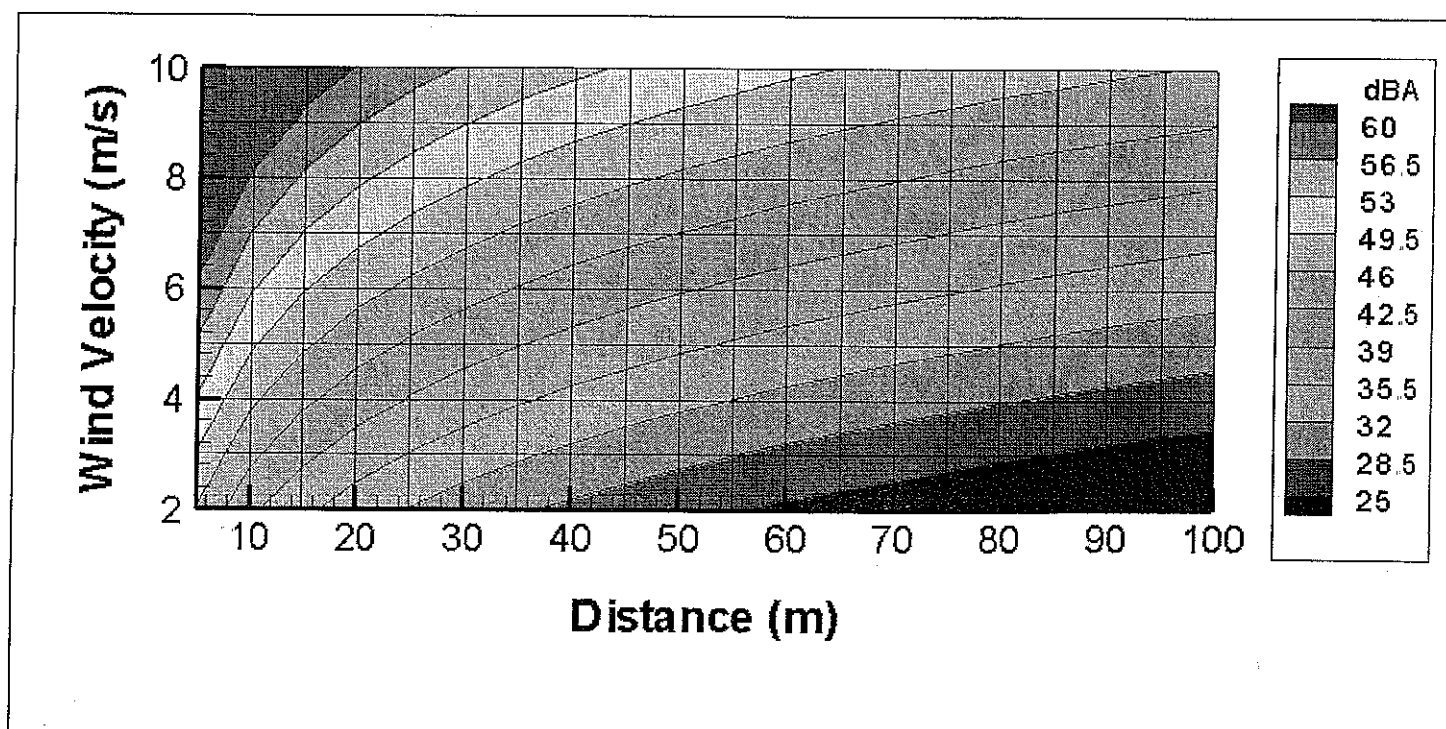
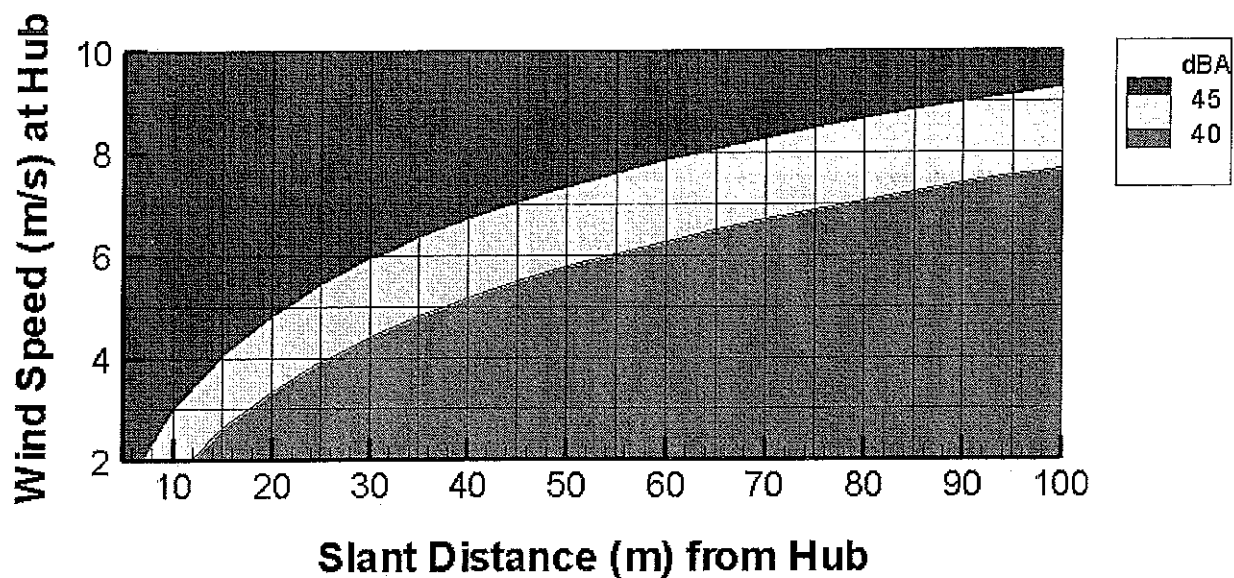


Figure 4: A-Weighted Sound Pressure Level as a function of wind velocity and distance from turbine.

Acoustic Noise Levels

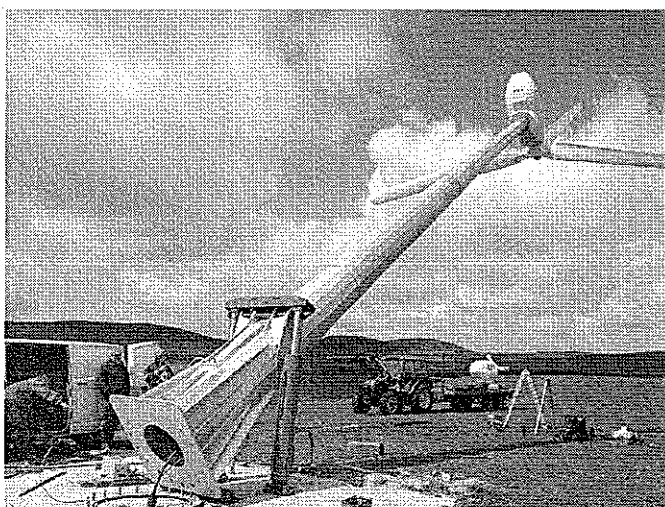
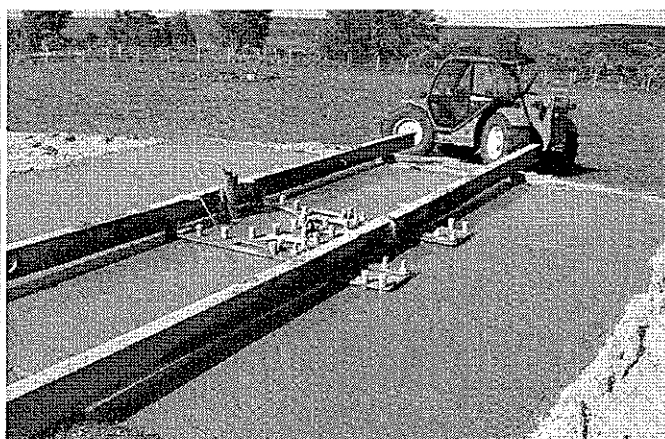
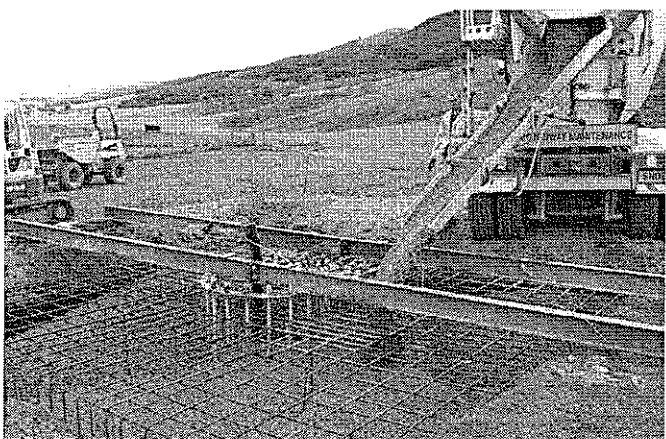
Turbine Make:	C&F Green Energy	Model	CF20
NOISE EMISSION LEVEL			
Sound Power $L_{Wd,8m/s}$	88.95 dB(A)	Noise Slope (dB/m/s)	3.09
NOISE PENALTY			
NO			



C&F Test Site, Galway

Issued by Stroma Technology
September 2010

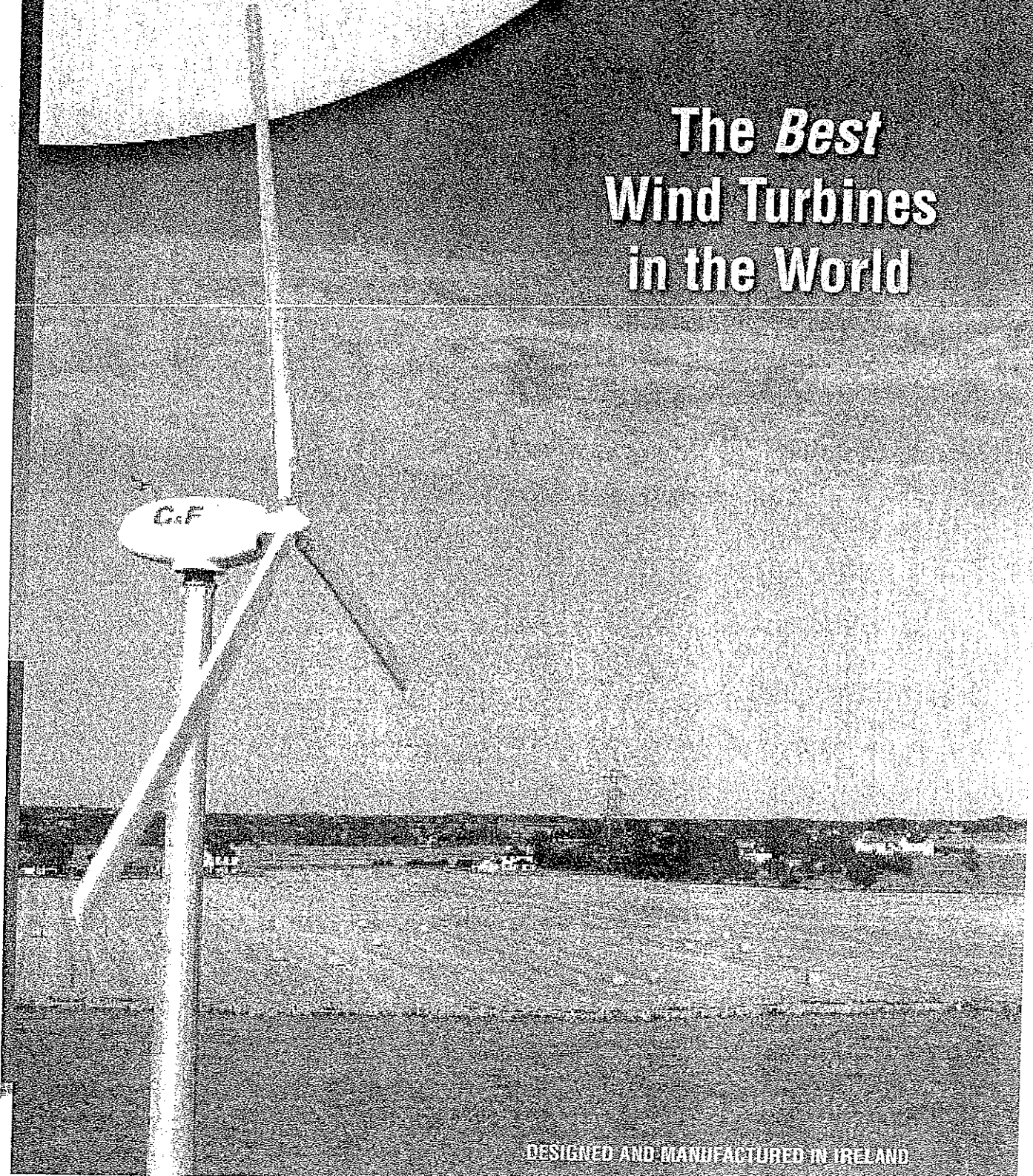
C&F Wind Turbine Installation Process



320120954P

C&F 
Green Energy

The Best
Wind Turbines
in the World



DESIGNED AND MANUFACTURED IN IRELAND

C&F

Green Energy

Cashla, Athenry, Co. Galway, Ireland.
Tel: +353 91 790 868
Email: info@cfgreenenergy.com
Web: www.cfgreenenergy.com

C&F GROUP

Global Contract Manufacturers

C&F Green Energy is part of the globally renowned Irish owned C&F Group. C&F was first established in 1989 in Galway, Ireland and now employs over 1,500 people in 7 sites worldwide. With manufacturing locations in Ireland, Germany, the UK, The Czech Republic, the Philippines and China, C&F is a global company with a local face.

The proof of our engineering capabilities can be seen from our customer list which includes IBM, EMC, BMW, Mercedes, Ford, VW, Thermo King to name but a few, all of which have awarded us multiple global contracts.

C&F Green Energy was officially established by the C&F Group in 2006. The group recognised the need to provide a more powerful and safer wind energy solution for the home, farm and business owner. With its experience in the manufacturing area, C&F set about designing an innovative wind turbine that would combine unrivalled performance and power with clean aesthetics and reliability.

With this in mind the company has assembled a world class team of industrial design experts in this field to deliver solutions based on innovation and engineering excellence. The group's success is attributed to its unrivalled levels of workmanship quality, streamlined manufacturing processes and un-surpassed levels of customer care and retention. This team has developed an innovative range of small to medium-sized turbines that incorporate the same advanced technologies that are used in Mega-Watt sized machines. Leveraging off the company's expertise in manufacturing and design and its global reach, has enabled C&F Green Energy to offer this advanced technology at very competitive prices.

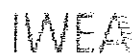
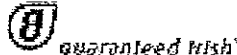
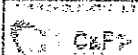
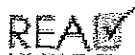
Our commitment to customer service and our confidence in our products are evident in the fact that all customer contracts will be directly with C&F Green Energy and all warranties will be earned by C&F Green Energy. This includes the market leading warranty that is available for 10 years. As founder and CEO of the C&F Group, I am determined to make C&F Green Energy the world leader in small and medium sized generation. We build the best turbines in the world.



USA IRELAND UK GERMANY CZECH REP CHINA PHILIPPINES

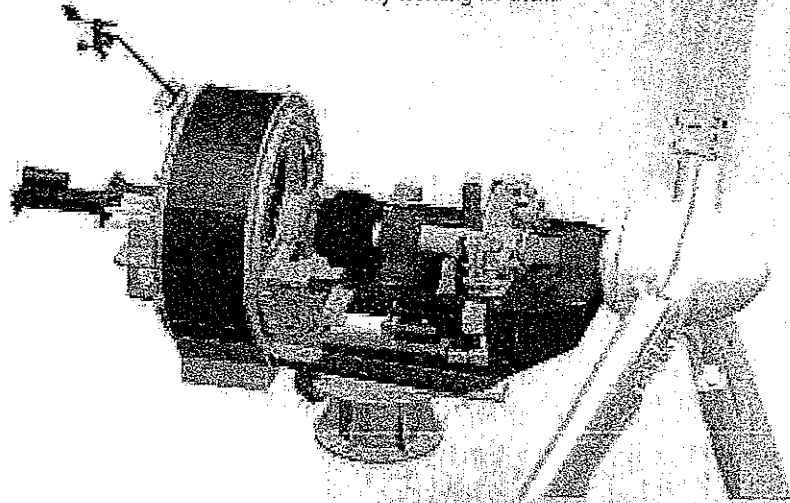
Tooling Ltd, Ireland
Green Energy Ireland
Automotive Trading as Italco, Ireland
Manufacturing (UK) Ltd
Automotive Germany GmbH
Manufacturing CR, S.R.O.
Czech Republic
Manufacturing Philippines
Corporation, Philippines
Manufacturing China
Manufacturing USA Inc

IT Industry
Automotive Industry
Refrigeration Industry
Air Conditioning Industry
Wind Energy Industry
Delivering world class manufacturing
processes all over the world
ESTABLISHED IN 1989 IRISH OWNED



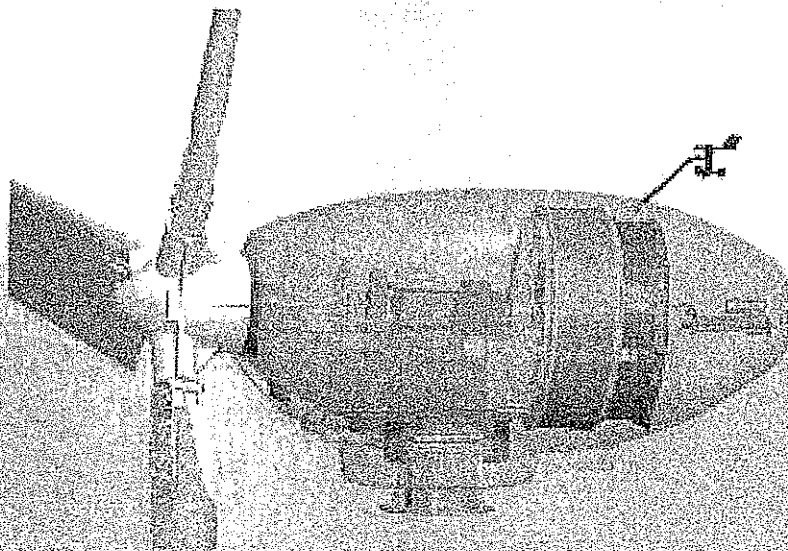
Controller/GSM

C&F have developed their own microprocessor to control their range of turbines. The microprocessor is GSM enabled, allowing the machine to be remotely monitored and controlled over the internet or even by mobile phone. This facility allows us to monitor your turbine 24 x 7 at our monitoring / data centre, ensuring that your turbine is operating to its full potential at all times. This provides the customer with peace of mind that their investment is continuously working for them.



Connection Options (Grid Tie or Off Grid Connections)

We offer a complete hybrid solution including backup DC power, battery storage and control systems.

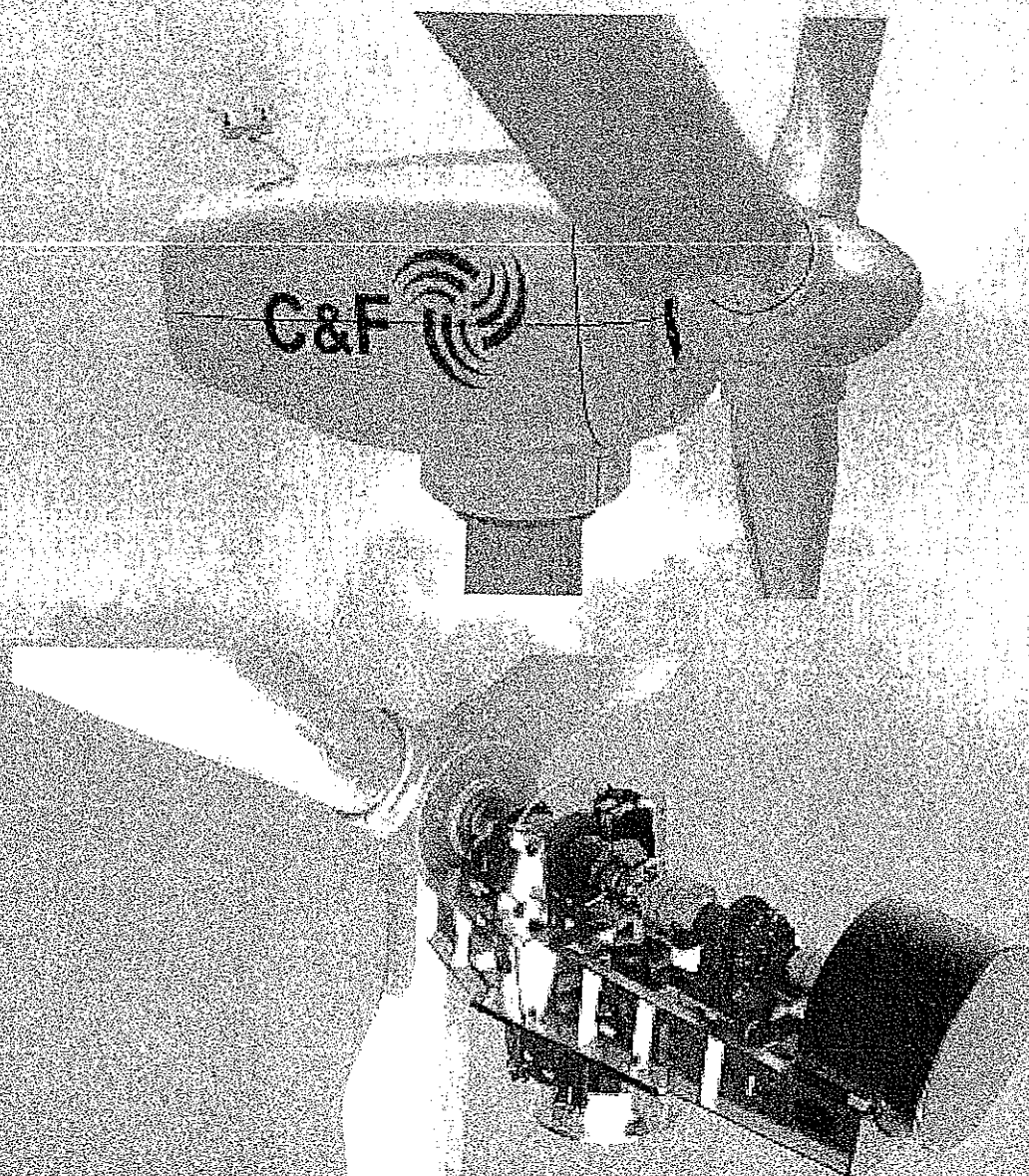


Carbon Credits

Leading the way in the renewables field, C&F Green Energy is currently establishing a carbon credits system for its customers. Once your turbine has been installed, the generated power is monitored on an ongoing basis. C&F will then issue the customer with an accredited certificate detailing the carbon credits produced each year. This could, in turn, be offset against a carbon tax.

CF50e, CF75 and CF100

- Common Platform
- Active Pitch with Constant Speed Regulator
- Active Yaw
- Enhanced Generator Technology
- Independently Powered Blade Pitch Motors
- Superior Quality, Longevity and Performance



Blade Pitch Control (Pitch Actuator)

The blades are automatically controlled to optimise aerodynamic performance under different operating conditions. Bigger blades give more power but demand a more sophisticated control mechanism. C&F have developed mega watt turbine control technology, giving us optimal control over each model. This enables power production at the lowest wind speed, as well as at the highest wind speeds. The overall result is the most efficient small and medium turbines available in the world today.

Yaw Actuator, Wind Vane Cup Anemometer

A wind direction vane and cup anemometer are monitored by the turbine microprocessor, which then activates the yaw motor to align the turbine into the wind. This feature usually employed on large turbines, optimises performance and energy yield.

Mechanical Brake

All C&F turbines employ a hydraulic rotor brake system. Multiple calipers are used on the CF15 to CF100 range. The braking system is designed to gently bring the turbine to a halt. Critically, the braking system is based on a failsafe operation principle, such that if grid power is lost, the brake automatically engages.

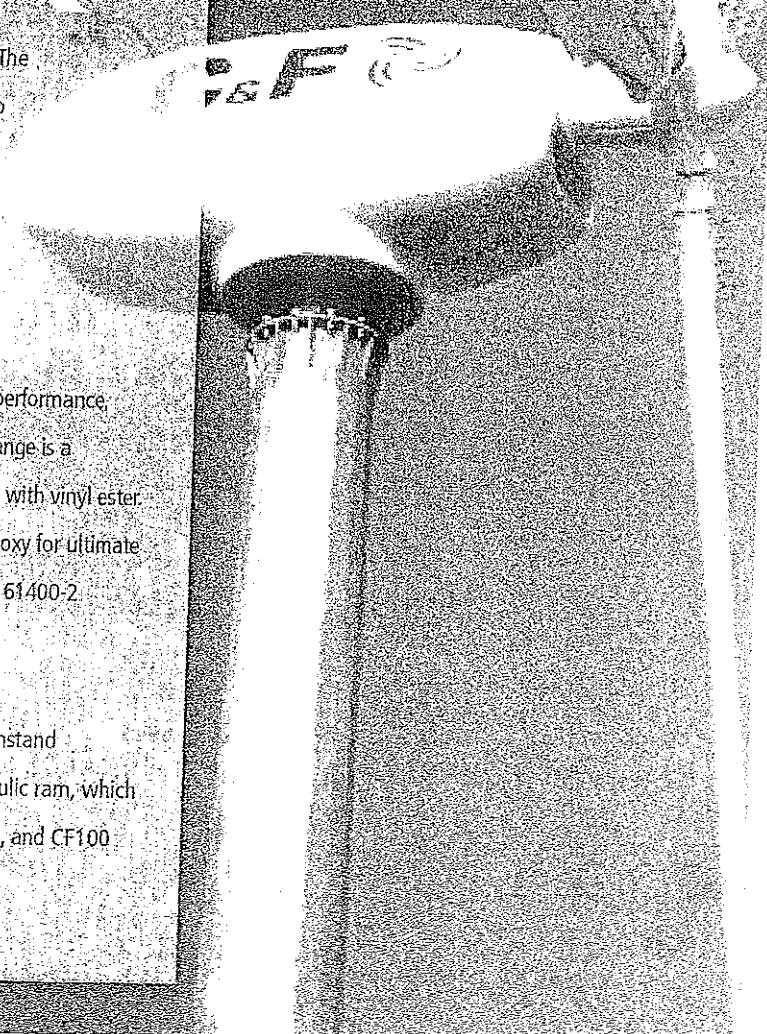
Blades

The structural design of the blades has been optimised for performance, strength and durability. Blade construction of the 6-20kW range is a polyurethane foam core, wrapped in glass fibre, and infused with vinyl ester. Blades in the 50e-100kW range are glass fibre reinforced epoxy for ultimate fatigue strength and performance. All blades conform to IEC 61400-2.

Mast

All C&F turbines employ a monopole tower which can withstand hurricane force winds. The turbine is erected using a hydraulic ram, which facilitates ease of installation and service. The CF50e, CF75, and CF100 turbines are erected by a crane.

C&F
Green Energy



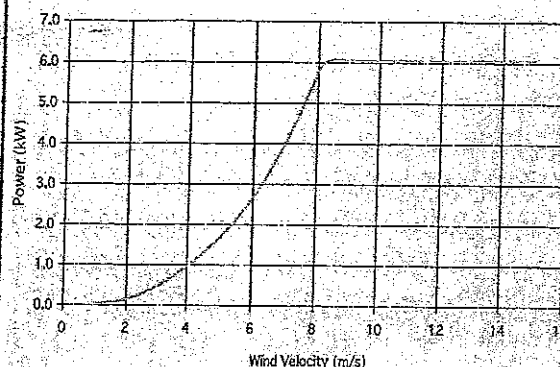
SPECIFICATION SHEET

Rotor Diameter	8 m
Hub Height	15m / 20 m
Max. Power	6 kW
An. Yield @ 5 m/s	17,000 kWh
Rated Wind Speed	8.0 m/s
Min active wind speed	1.2 m/s
Cut out wind speed	30m/s
Annual Carbon Saving	8 - 14 Tonnes
Noise @ 5 m/s at 60m	42 dBA
Max RPM	220 rpm
Method of Installation	Hydraulic Tilt Installation

GSM Controlled as Standard

Single Phase / Three Phase

CF 6e



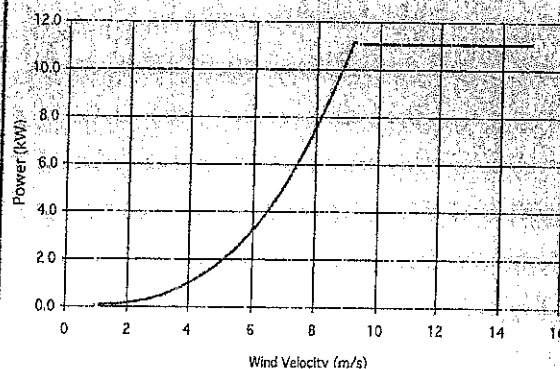
SPECIFICATION SHEET

Rotor Diameter	9 m
Hub Height	15m / 20m
Max. Power	11 kW
An. Yield @ 5 m/s	24,000 kWh
Rated Wind Speed	9.0 m/s
Min active wind speed	1.2 m/s
Cut out wind speed	30m/s
Annual Carbon Saving	14 - 19 Tonnes
Noise @ 5 m/s at 60m	42 dBA
Max RPM	220 rpm
Method of Installation	Hydraulic Tilt Installation

GSM Controlled as Standard

Single Phase / Three Phase

CF 11



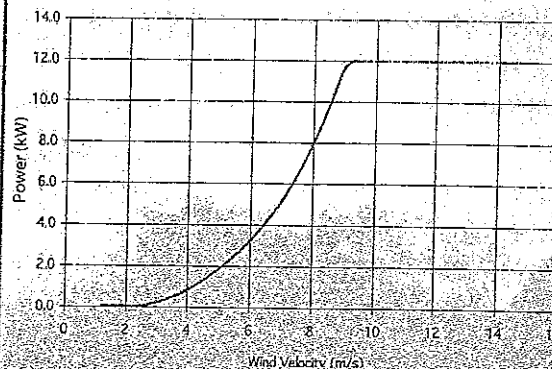
SPECIFICATION SHEET

Rotor Diameter	9 m
Hub Height	15m / 20m
Max. Power	12kW or 2 x 6kW
An. Yield @ 5 m/s	24,500 kWh
Rated Wind Speed	9.5 m/s
Min active wind speed	1.2 m/s
Cut out wind speed	30m/s
Annual Carbon Saving	14 - 19 Tonnes
Noise @ 5 m/s at 60m	43 dBA
Max RPM	220 rpm
Method of Installation	Hydraulic Tilt Installation

GSM Controlled as Standard

Single Phase / Three Phase

CF 12 (Twin6)



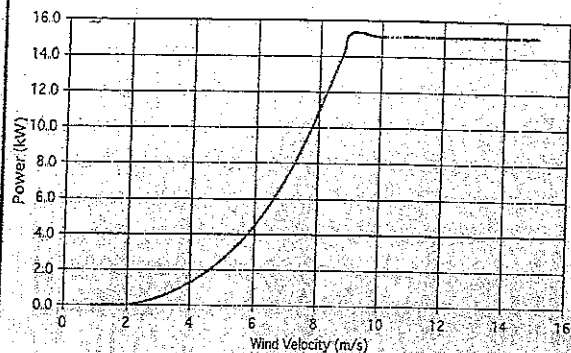
SPECIFICATION SHEET

Rotor Diameter	11.1 m
Hub Height	15m / 20m
Max. Power	15 kW
An. Yield @ 5 m/s	34,000 kWh
Rated Wind Speed	9.0 m/s
Min active wind speed	1.5 m/s
Cut out wind speed	30m/s
Annual Carbon Saving	19 - 23 Tonnes
Noise @ 5 m/s at 60m	34 dBA
Max RPM	90 rpm
Method of Installation	Hydraulic Tilt Installation

GSM Controlled as Standard

Single Phase / Three Phase

CF 15



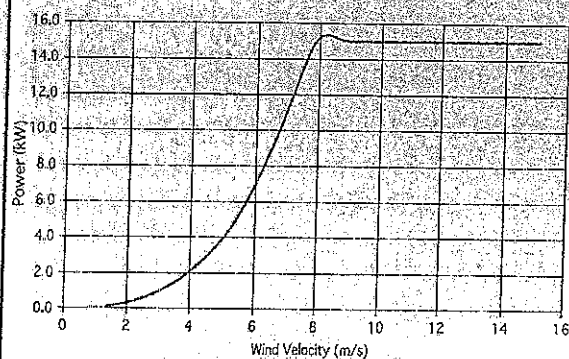
SPECIFICATION SHEET

Rotor Diameter	13.1 m
Hub Height	20 m
Max. Power	15 kW
An. Yield @ 5 m/s	43,400 kWh
Rated Wind Speed	8.0 m/s
Min active wind speed	1.5 m/s
Cut out wind speed	30m/s
Annual Carbon Saving	24 - 28 Tonnes
Noise @ 5 m/s at 60m	35 dBA
Max RPM	90 rpm
Method of Installation	Hydraulic Tilt Installation

GSM Controlled as Standard

Single Phase / Three Phase

CF 15e



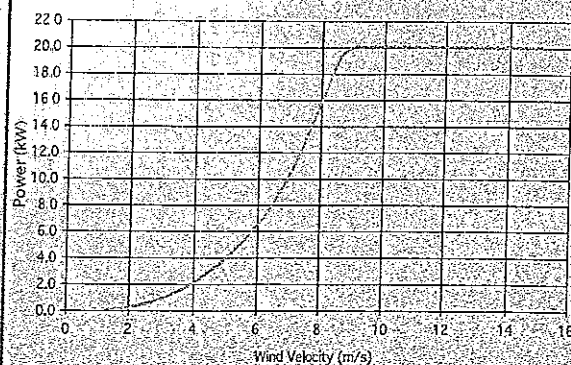
SPECIFICATION SHEET

Rotor Diameter	13.1 m
Hub Height	20 m
Max. Power	20 kW
An. Yield @ 5 m/s	47,500 kWh
Rated Wind Speed	9.0 m/s
Min active wind speed	1.5 m/s
Cut out wind speed	30m/s
Annual Carbon Saving	26 - 30 Tonnes
Noise @ 5 m/s at 60m	35 dBA
Max RPM	90 rpm
Method of Installation	Hydraulic Tilt Installation

GSM Controlled as Standard

Single Phase / Three Phase

CF 20



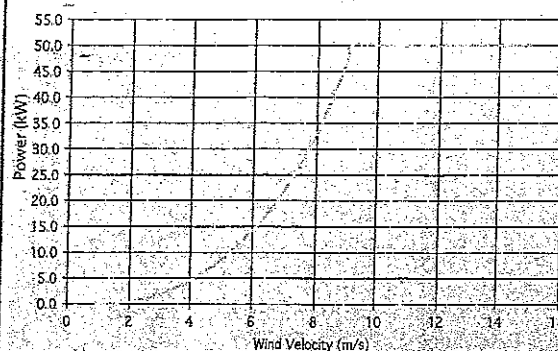
SPECIFICATION SHEET

Rotor Diameter	20m
Hub Height	25m / 30m / 35m
Max. Power	50kW
An. Yield @ 5 m/s	117,250 kWh
Rated Wind Speed	9m/s
Min active wind speed	2.2m/s
Cut out wind speed	30m/s
Annual Carbon Saving	70-80 Tonnes
Noise @ 5 m/s at 60m	37dBA
Max RPM	50rpm
Method of Installation	Crane

GSM Controlled as Standard

Three Phase

CF 50e



Speed Control: Blade Pitch Control, Electromagnetic Braking, Failsafe Hydraulic Braking.

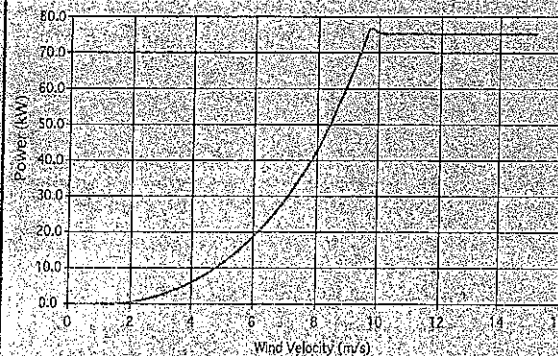
SPECIFICATION SHEET

Rotor Diameter	22m
Hub Height	30m / 35m
Max. Power	75kW
An. Yield @ 5 m/s	149,000 kWh
Rated Wind Speed	9.5m/s
Min active wind speed	2.5m/s
Cut out wind speed	30m/s
Annual Carbon Saving	90-100 Tonnes
Noise @ 5 m/s at 60m	37dBA
Max RPM	50rpm
Method of Installation	Crane

GSM Controlled as Standard

Three Phase

CF 75



Speed Control: Blade Pitch Control, Electromagnetic Braking, Failsafe Hydraulic Braking.

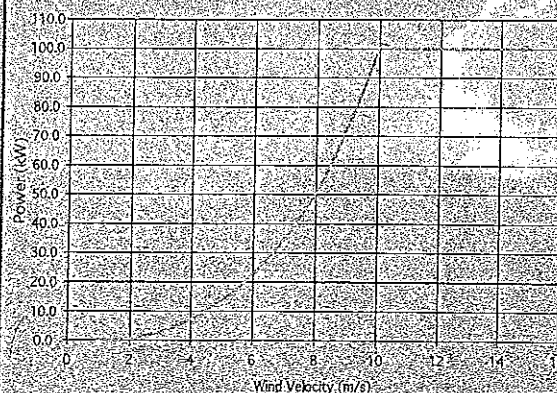
SPECIFICATION SHEET

Rotor Diameter	24m
Hub Height	30m / 35m
Max. Power	100kW
An. Yield @ 5 m/s	182,000 kWh
Rated Wind Speed	10m/s
Min active wind speed	3m/s
Cut out wind speed	30m/s
Annual Carbon Saving	105-120 Tonnes
Noise @ 5 m/s at 60m	36dBA
Max RPM	45rpm
Method of Installation	Crane

GSM Controlled as Standard

Three Phase

CF 100



Speed Control: Blade Pitch Control, Electromagnetic Braking, Failsafe Hydraulic Braking.

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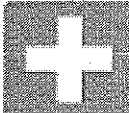
Method Statement

Contractor	Name: C&F Green Energy	Address: Coshla, Athenry, County Galway, Ireland.		Tel: 0035391-790868
Project Name (Site Specific)				
Site Address/Location:				
Description of the Task/Activity for which this method statement covers	CF Turbine installation	Start Date/Time:		
		Finish Date/Time		
Personnel Involved	Name	Role/Trade		
	Patrick Lardner	Installation Supervisor		
	William Fitzgerald	Installation Engineer		
	John Burke	Installation Engineer		
	Peter Murphy	Machine operator		
Site Supervisor:	Pat Lardner	Tel:	0035387-6146717	
Safety Officer	Aidan Kelly	Tel:	0035387-6730070	
Key Plant & Tools (Attach Certification)	360 Excavator, Telehandler, pneumatic impact gun, Hydraulic rams, Petrol generator. Mobile Elevated Work Platform (MEWP) & Mobile crane where required			
Key Materials				
Other Essential Equipment:	(i.e. access platforms/winches/ladders, etc) Access ladders, nylon lifting straps and lifting chains.			
Specific Identified Residual Hazards: (or refer to the task specific risk assessment(s))	General hazards: Falls from height, falls of materials from height, electric shock, moving & reversing site plant & equipment, manual handling injuries, slips/trips/falls, cuts/puncture wounds. Site specific i.e. buried services, overhead cables			
Specific Staff Training	Site specific induction talk including site installation rules and procedures. Manual Handling training. Electrical Hazards training.			

Method Statement

Sequence of Operations: (include sketches if required)	1. Site will be secured with fencing to prevent unauthorized access of third parties. 2. Review drawings including services drawings to identify all underground services, gullies, service pipes or cables and any overhead power-lines etc. 3. Install any exclusion zones as required i.e. lifting areas 4. Remove all materials & parts from delivery trailer with forklift and store them in a neat and safe manner until use. 5. Inspect concrete base/foundation for defects, bolt spacing and levels. 6. Insert steel spacers where necessary so as to ensure base ring and hinge plate are level 7. Secure hinge plate bracket to concrete base with specified nuts. 8. Secure hydraulic ram holding brackets to concrete base with specified nuts. 9. Lift base section of mast into position with forklift, telehandler or other lifting plant using lifting slings/straps/chains that are in good working order. 10. Connect the base section of the mast to the hinge plate bracket with the steel connecting pin. 11. Connect the hydraulic rams to the ram holding brackets on the concrete base and on the base section of the mast with appropriate steel pins. 12. Remove the lifting slings/straps/chains from the mast base section via secure ladder (A-frame type). 13. Lift the next section of the mast into position with the forklift/telehandler and align the two sections together so that the bottom of the 2nd mast section fits into the top of the base section. 14. Push the next section of mast into the previous section by using the forklift/telehandler until the pre marked inter-connection depth has been reached. 15. Connect all sections of mast together using the same method until the required mast length has been achieved i.e. 10kw = 3 sections, 15kw = 5 sections, 20kw = 6 sections etc. 16. The top section of the mast will be supported with a specially designed tri-pod stand to take the weight of the mast and to hold the mast securely in position for the turbine head connection process. 17. The electrical cables will be threaded through the mast using fish tape and will be left in position for the electrical engineer to connect. 18. The turbine head will be moved into position on its specially designed transporting frame with a forklift/telehandler. 19. The turbine head will be lifted into position via lifting chains attached to lifting eyes on the turbine head with an appropriate lifting device i.e forklift/telehandler or similar. 20. The turbine head will be unbolted from the transporting frame. 21. The turbine head will be securely bolted to the mast top ring plate. 22. The electrical cables will be connected to the turbine head assembly. 23. The lifting chains will be removed from the turbine head using a secure ladder (A-frame type) to access the top of the turbine. 24. All covers will be replaced on the turbine head and secured in position. 25. The 3 turbine blades will then be choked with nylon lifting straps and will be lifted into position using a forklift/telehandler. 26. The 3 turbine blades will be bolted securely in position onto the blade roots using the specified bolts and will be torqued accordingly. 27. The hydraulic rams will be connected to the generator and the rams will be activated in order to raise the mast upright 28. When the mast has been erected into the vertical position the mast base plate will be bolted securely onto the concrete base pad with a pneumatic impact gun. 29. Following final inspections & checks of the installed turbine the installation area will be cleared and left in a neat & tidy manner.
Temporary Supports and Props needed to facilitate the works:	(if none state none) Specially designed & tested steel tri-pod stand used to support the top end of the mast during turbine head installation process.

Method Statement

Method of Access and Egress to the work area:	An all terrain vehicle (quad) with trailer will be used to access all remote sites and carry equipment and tools to the point of installation 4 wheel drive telehandler will be used to transport all heavy items of plant and materials to the installation site						
Fall Protection Measures: (Where work at height cannot be eliminated – consider both Personnel & Materials)	(i.e. Guard Rails/Toe Boards/Brick Guard/Safety Harnesses/Exclusion Zones, etc.) All work will be carried out at ground level where reasonably practicable. The use hydraulic rams to erect the turbine mast will eliminate the need to work at height. Secure ladders will be used for short duration work only. An exclusion zone will be erected using ropes and signs as a cordon.						
Hazardous Substances: (Attach MSDS if required)	 Very Toxic	 Harmful/ Irritant	 Corrosive	 Dangerous For the environment	 Oxidising	 Highly flammable	 Explosives
Applicable:	No	Yes	No	No	No	No	No
Identification of Hazardous Substances & Storage Arrangements:	Possibility of contact with hydraulic oil, used in lifting rams process. Protective Gloves must be worn by operatives, wash all oil from skin immediately.						
Details of Permits to Work:	None There may be on occasion the requirement for a permit to dig if installation is taking place in an urban area where there is the possibility of buried underground services in the area.						
SWL's:	(Detail any limits on the loadings applicable to temporary plant/equipment or fixed elements of the structure where the work is taking place) Turbine head assembly SWL 1200kg, Lifting straps SWL 2000kg, 3 leg lifting chains 4250kg.						
Required Personnel Protective Equipment: (Tick required items of PPE)	☐  Safety Boots	☐  Hard Hats	☐  Safety Gloves	☐  Hearing Protection	☐  Eye Protection	☐  Respiratory Protection	☐  Hi-Viz Vest
Emergency Procedures:	In case of emergency on site i.e. fire, explosion, gas leak, electrical fault etc. all personnel will assemble inside the first access gate to the site which is adjacent to the road where the site supervisor Pat Lardner will carry out a roll call.						
 First Aid Facilities:	Name of On-Site First Aider:	Pat Lardner					
	First Aid Box Location:	First Aid box located in Green Energy Van.					
	Location of Nearest Hospital:						
Welfare Requirements	The client will make their existing welfare facilities available to onsite workers.						
Services to be supplied by Others	N/A						
Other information &							

C&F Green Energy

Method Statement

Comments	
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All work will be undertaken by qualified competent persons with experience of the type of work described above, and in all cases in full accordance with safety procedures specified in the companies' health and safety Policy.

Prepared by:	Aidan Kelly	
Position:	Health & Safety Officer	Date: 21/03/2010
 Reviewed by:	 Mark Flaherty	
Position:	Quality Manager	Date: 21/03/2010

Items Attached:	Yes	No
Sketches	☐	☐
Certification of Plant etc	☐	☐
Programme of Work	☐	☐
Risk Assessments	☐	☐

C&F Green Energy
Method Statement

Method Statement Briefing Record

Briefing delivered by:

Position:

Date:

We (the undersigned) have read and understood the attached method statement and will comply with the specified requirements and control measures. If the work activity changes or deviates from that originally envisaged, we will seek further advice and request an amended method statement.

Name (Print)	Signature	Date

320120954P

Appendix 6

Lower Gazegill – Landscape and Visual Impact Assessment



Contents

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1 Introduction

The purpose of this document is to assess the significance of the landscape and visual effects arising from the construction, operation and decommissioning of the proposed 1no. wind turbine on land at Lower Gazegill, Dancer Lane, Rimington, Lancashire BB7 4EE.

The assessment considers the scale, layout and extent of the landscape and visual effects which may arise as a result of the proposed development. This is achieved by assessing the sensitivity of the receptor in combination with the magnitude of predicted impact.

Landscape and Visual Sensitivity	Magnitude of Change				
		Large	Medium	Small	Negligible
	High	Major	Major/ Moderate	Moderate	Moderate/Minor
	Medium	Major/ Moderate	Moderate	Moderate/ Minor	Minor
	Low	Moderate	Moderate/ Minor	Minor	Minor/negligible

Where the landscape or visual effect has been classified as Major or Major/Moderate this is considered to be equivalent to likely significant effects. Effects identified as Major/Moderate – Moderate or less are not considered to be significant. As with many aspects of landscape and visual assessment, significance of effect also needs to be qualified with respect to the scale over which it is felt. An effect may be locally significant, or significant with respect to a small number of receptors, but not significant when judged in a wider context.

1.1 The Development

The proposed development consists of the erection of 1no. CF20 wind turbine. The turbine is a modern quiet design with a tapered tubular tower and three blades attached to a nacelle containing the generator and gearbox.

The wind turbine will have a 20.6 metre hub with a 13.1 metre blade, giving an overall ground to blade tip height of 27.1 metres. The turbine blades will be finished in a white matt colour with a galvanised steel monopole. Connection cables to the local grid will be via underground ducting laid along the proposed and existing access roads.

2 Photomontages and Wirelines Viewpoints Map



3 Viewpoints

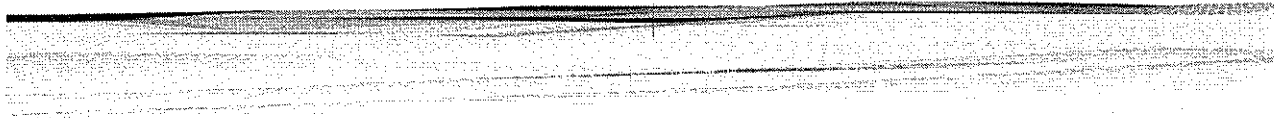
VP	NGR	Distance from Proposal	Comment
1	382497 446796	390m	Rimington Caravan Park and Public Footpath - This viewpoint was taken along the public footpath on the south-western edge of Rimington Caravan Park. The turbine will be located approximately 390m to the south-west of this visual receptor. The Wireline below demonstrates that the turbine will theoretically be fully visible, however when taking a closer look at the photomontage it is clear that only the blades of the turbine will be visible above the tree line in reality. The natural screening available and natural backdrop allow the turbine to be integrated into the landscape more easily. The high sensitivity of the visual receptor combined with the small impact as demonstrated by the photomontage translates to moderate magnitude of change. As a result no significant visual impact will occur.



VP	NGR	Distance from Proposal	Comment
2	382430, 446232	295m	Higher Gazegill Farmhouse and adjoining barn to west - grade II listed buildings - The turbine will be fully visible on the brow of the hill from this visual receptor as the wireline and photomontage below demonstrate. The sensitivity of the receptor is high due to its grade II listed status. However, the farmhouse does not face directly onto the application site, therefore limiting the visual impact. In addition due to the large number of dotted mature trees and pocket woodlands it will be difficult to see the proposed development in conjunction with the grade II listed buildings. The impact can be considered medium, whilst the overall magnitude of change can be considered major-moderate. As a result no significant impact will occur on the character and setting of this heritage asset.



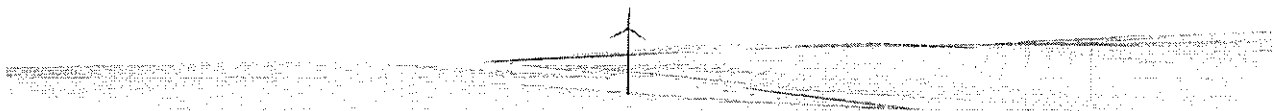
VP	NGR	Distance from Proposal	Comment
3	382057, 445756	750m	Salem Congregational Chapel and attached Manse - grade II listed buildings on public right of way (PROW) - Similar to the previous viewpoint the sensitivity of this receptor is high due to its grade II listed status. However as the wireline and photomontage below demonstrate the turbine will not appear as a prominent feature in the landscape. Whilst the turbine is theoretically fully visible, the photomontage demonstrates that only parts of the turbine blades will be visible above the tree line. The likely impact will be small and the overall magnitude of change can be considered moderate. Therefore no significant visual impact will occur on the character and setting of this heritage asset.



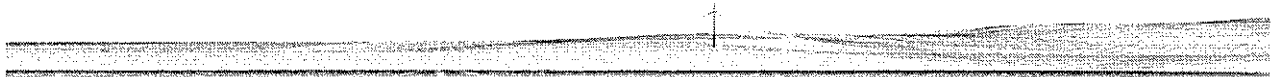
VP	NGR	Distance from Proposal	Comment
4	380226, 447275	2.18km	Edge of Forest of Bowland AONB, A59 Road and Railway Line - This viewpoint is taken from edge of the AONB approximately 2.18km north-west of the proposed site. The sensitivity of this visual receptor is high due to its designated status. The wireline and photomontage below demonstrate that the turbine will not be theoretically visible or visible in reality. This is due to the undulating topography of the land in between the visual receptor and the application site. As such the impact can be considered negligible and the overall magnitude of change can also be considered negligible. As a result no significant impact will occur on this viewpoint.



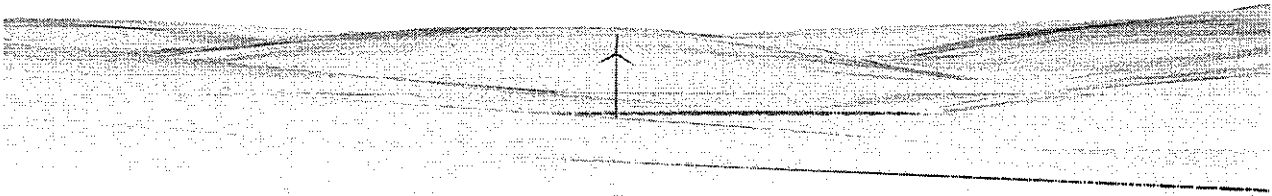
VP	NGR	Distance from Proposal	Comment
5	381184, 446337	1.09km	Rimington Bridge on Rimington Lane and Public Footpath - The sensitivity of this visual receptor can be considered medium due to the momentary views that will be possible for car users and walkers. The wireline below demonstrates that the turbine will be theoretically fully visible, however upon closer inspection of the photomontages it is clear that only partial views of the turbine blades will be afforded above the tree line. The turbine will be approximately the same height as the taller trees visible in this viewpoint and therefore will not be disproportionate in scale to other features in the landscape. Due to the small scale nature of the turbine and the natural screening available only a small impact will occur. This combined with the medium sensitivity of the receptor will result in a moderate-minor magnitude of change occurring. As a result no significant impact will occur.



VP	NGR	Distance from Proposal	Comment
6	381759 446190	580m	Newby Hall and Public Right of Way - This viewpoint is taken from a public right of way approximately 580m south-west of the application site near the boundary of Newby Hall dwelling. The sensitivity of this receptor can be considered high and as the wireline below demonstrates the turbine will be theoretically visible. However, the photomontage demonstrates that in reality the majority of the turbine will be completely screened by lines of mature trees. There will be small sections of the turbine hub visible through the trees from certain positions, however it will be extremely difficult to make out. The impact can therefore be considered small-negligible and as a result the overall magnitude of change can be considered moderate-minor. Therefore no significant visual impact will occur.



VP	NGR	Distance from Proposal	Comment
7	381798, 446979	685m	Rimington Lane by Mylah dwelling and Thistleber dwelling - This viewpoint was taken from Rimington Lane in between the aforementioned dwellings. The sensitivity of this receptor can be considered high, as a result of the potential to impact on the residential amenity of nearby residents. The wireline demonstrates that the full turbine is theoretically visible, however in reality only intermittent views of the top of the turbine will be afforded. This is due to the large amount of natural screening available from mature trees in the landscape. The turbine integrates well into the landscape from this viewpoint due to the natural backdrop available and rising gradient of the land. As a result the impact can be considered small-negligible and when combined with the high sensitivity of this receptor the overall magnitude of change can be considered moderate-minor in nature. Therefore no significant impact will occur.



VP	NGR	Distance from Proposal	Comment
8	383162 446545	900m	Todber Caravan Park on A682 at entrance to Public Footpath - This viewpoint was taken from the public right of way at the entrance to Todber Caravan Park approximately 900m east of the application site. The sensitivity of this receptor can be considered high due to the large volumes of recreational users in the vicinity. The wireline below demonstrates that the turbine will be theoretically visible as a small feature in the landscape within the wider view. However, in reality when taking a closer look at the photomontage below the turbine will be fully out of site and screened by large mature trees, which are scattered across the landscape. Therefore the impact can be considered negligible and the overall magnitude of change can also be considered negligible. As a result no significant impact will occur on this visual receptor.



4. Conclusion

The above basic landscape and visual impact assessment has shown the minimal impact that the proposed development will have on the surrounding landscape. The wirelines and photomontages have demonstrated the limited visual impact that will result from the development. Of the eight sensitive receptors chosen, many of which were pre agreed with the Planning Authority the turbine will only be visible from six of these viewpoints, with their visibility being extremely limited in most cases. This is largely due to the undulating topography of the landscape and the extensive screening available from pocket woodlands and mature trees. The above report has demonstrated that no significant landscape and visual impacts will occur.