



RIBBLE VALLEY
BOROUGH COUNCIL

For office use only

Application No.

Date received

Fee paid £

Receipt No:

320111069P

Council Offices, Church Walk, Clitheroe, Lancashire. BB7 2RA Tel: 01200 425111 www.ribblevalley.gov.uk

Application for Planning Permission.
Town and Country Planning Act 1990

Publication of applications on planning authority websites

Please note that the information provided on this application form and in supporting documents may be published on the Authority's website.

If you require any further clarification, please contact the Authority's planning department

1. Applicant Name, Address and Contact Details

Title:	Mr	First name:	Robert	Surname:	Procter
Company name:					
Street address:	Stonecroft		Telephone number:	Country Code	National Number
	Jeffrey Hill				Extension Number
	Forty Acre Lane		Mobile number:		
Town/City:	Longridge		Fax number:		
County:			Email address:		
Country:					
Postcode:	PR3 2TU				

Are you an agent acting on behalf of the applicant? ☒ Yes ☐ No

2. Agent Name, Address and Contact Details

Title:	Miss	First Name:	Lucy	Surname:	Boulton
Company name:	Sustainable Energy Systems Limited				
Street address:	Brook House Buildings		Telephone number:	Country Code	National Number
	Hall Lane			01772	361010
	Great Eccleston		Mobile number:		
Town/City:			Fax number:		
County:	Lancashire		Email address:		
Country:	England				
Postcode:	PR3 0XN			lucy@sustainableenergysystems.co.uk	

3. Description of the Proposal

Please describe the proposed development including any change of use:

Erection of a 12kW small scale wind turbine

Has the building, work or change of use already started?

☐ Yes ☒ No

4. Site Address Details

Full postal address of the site (including full postcode where available)

House:		Suffix:	
House name:	Stonecroft		
Street address:	Jeffrey Hill		
	Forty Acre Lane		
Town/City:	Longridge		
County:			
Postcode:	PR3 2TU		

Description of location or a grid reference
(must be completed if postcode is not known):

Easting:	362168
Northing:	438775

Description:

Erection of a small scale wind turbine

5. Pre-application Advice

Has assistance or prior advice been sought from the local authority about this application?

☒ Yes ☐ No

If Yes, please complete the following information about the advice you were given (this will help the authority to deal with this application more efficiently):

Officer name:

Title: First name: Surname:

Reference:

Date (DD/MM/YYYY): (Must be pre-application submission)

Details of the pre-application advice received:

Ribble Valley advised to send scale drawings, photomontages and site plans

6. Pedestrian and Vehicle Access, Roads and Rights of Way

Is a new or altered vehicle access proposed to or from the public highway?

☐ Yes ☒ No

Is a new or altered pedestrian access proposed to or from the public highway?

☐ Yes ☒ No

Are there any new public roads to be provided within the site?

☐ Yes ☒ No

Are there any new public rights of way to be provided within or adjacent to the site?

☐ Yes ☒ No

Do the proposals require any diversions/extinguishments and/or creation of rights of way?

☐ Yes ☒ No

7. Waste Storage and Collection

Do the plans incorporate areas to store and aid the collection of waste?

☐ Yes ☒ No

Have arrangements been made for the separate storage and collection of recyclable waste?

☐ Yes ☒ No

8. Authority Employee/Member

With respect to the Authority, I am:

- (a) a member of staff
- (b) an elected member
- (c) related to a member of staff
- (d) related to an elected member

Do any of these statements apply to you?

☐ Yes ☒ No

9. Materials

Please state what materials (including type, colour and name) are to be used externally (if applicable):

Others - description:

Type of other material: Turbine

Description of *existing* materials and finishes:

None

Description of *proposed* materials and finishes:

Galvanised steel mast

9. (Materials continued)

Are you supplying additional information on submitted plan(s)/drawing(s)/design and access statement?

☒ Yes ☐ No

If Yes, please state references for the plan(s)/drawing(s)/design and access statement:

Design & Access Statement

10. Vehicle Parking

Please provide information on the existing and proposed number of on-site parking spaces:

Type of vehicle	Existing number of spaces	Total proposed (including spaces retained)	Difference in spaces
Cars	0	0	0
Light goods vehicles/public carrier vehicles	0	0	0
Motorcycles	0	0	0
Disability spaces	0	0	0
Cycle spaces	0	0	0
Other (e.g. Bus)	0	0	0
Short description of Other			

11. Foul Sewage

Please state how foul sewage is to be disposed of:

Mains sewer ☐ Package treatment plant ☐ Unknown ☐
 Septic tank ☐ Cess pit ☐

Other

N/A

Are you proposing to connect to the existing drainage system?

☐ Yes ☒ No ☐ Unknown

12. Assessment of Flood Risk

Is the site within an area at risk of flooding? (Refer to the Environment Agency's Flood Map showing flood zones 2 and 3 and consult Environment Agency standing advice and your local planning authority requirements for information as necessary.)

☐ Yes ☒ No

If Yes, you will need to submit an appropriate flood risk assessment to consider the risk to the proposed site

Is your proposal within 20 metres of a watercourse (e.g. river, stream or beck)?

☐ Yes ☒ No

Will the proposal increase the flood risk elsewhere?

☐ Yes ☒ No

How will surface water be disposed of?

☐ Sustainable drainage system ☐ Main sewer ☐ Pond/lake
☐ Soakaway ☒ Existing watercourse

13. Biodiversity and Geological Conservation

To assist in answering the following questions refer to the guidance notes for further information on when there is a reasonable likelihood that any important biodiversity or geological conservation features may be present or nearby and whether they are likely to be affected by your proposals

Having referred to the guidance notes, is there a reasonable likelihood of the following being affected adversely or conserved and enhanced within the application site OR on land adjacent to or near the application site:

a) Protected and priority species

☐ Yes, on the development site ☐ Yes, on land adjacent to or near the proposed development ☒ No

b) Designated sites, important habitats or other biodiversity features

☐ Yes, on the development site ☐ Yes, on land adjacent to or near the proposed development ☒ No

c) Features of geological conservation importance

☐ Yes, on the development site ☐ Yes, on land adjacent to or near the proposed development ☒ No

Are you supplying additional information on submitted plan(s)/drawing(s)/design and access statement?

Yes, please state references for the plan(s)/drawing(s)/design and access statement:

Design & Access Statement

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Please provide information on the existing and proposed number of on-site parking spaces:

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Cycle spaces	0	0	0
Other (e.g. Bus)	0	0	0
Short description of Other			

11. Foul Sewage

Please state how foul sewage is to be disposed of:

Mains sewer ☐ Package treatment plant ☐ Unknown ☐

Septic tank ☐ Cess pit ☐

Other

N/A

Are you proposing to connect to the existing drainage system? ☐ Yes ☒ No ☐ Unknown

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Is the site within an area at risk of flooding? (Refer to the Environment Agency's Flood Map showing flood zones 2 and 3 and consult Environment Agency standing advice and your local planning authority requirements for information as necessary) ☐ Yes ☒ No

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Is your proposal within 20 metres of a watercourse (e.g. river, stream or beck)? ☐ Yes ☒ No

Will the proposal increase the flood risk elsewhere? ☐ Yes ☒ No

How will surface water be disposed of?

- ☐ Sustainable drainage system ☐ Main sewer ☐ Pond/lake
☐ Soakaway ☐ Existing watercourse

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Having referred to the guidance notes, is there a reasonable likelihood of the following being affected adversely or conserved and enhanced within the application site, OR on land adjacent to or near the application site:

a) Protected and priority species

☐ Yes, on the development site ☐ Yes, on land adjacent to or near the proposed development ☒ No

b) Designated sites, important habitats or other biodiversity features

☐ Yes, on the development site ☐ Yes, on land adjacent to or near the proposed development ☒ No

c) Features of geological conservation importance

☐ Yes, on the development site ☐ Yes, on land adjacent to or near the proposed development ☒ No

14. Existing Use

Please describe the current use of the site:

Pastureland

Is the site currently vacant? ☒ Yes ☐ No

If Yes, please describe the last use of the site:

Pastureland

When did this use end (if known) (DD/MM/YYYY)?

Does the proposal involve any of the following?

If yes, you will need to submit an appropriate contamination assessment with your application.

Land which is known to be contaminated? ☐ Yes ☒ No

Land where contamination is suspected for all or part of the site? ☐ Yes ☒ No

A proposed use that would be particularly vulnerable to the presence of contamination? ☐ Yes ☒ No

15. Trees and Hedges

Are there trees or hedges on the proposed development site? ☐ Yes ☒ No

And/or: Are there trees or hedges on land adjacent to the proposed development site that could influence the development or might be important as part of the local landscape character?

☐ Yes ☒ No

If Yes to either or both of the above, you may need to provide a full Tree Survey, at the discretion of your local planning authority. If a Tree Survey is required, this and the accompanying plan should be submitted alongside your application. Your local planning authority should make clear on its website what the survey should contain, in accordance with the current 'BS5837: Trees in relation to construction - Recommendations'.

16. Trade Effluent

Does the proposal involve the need to dispose of trade effluents or waste? ☐ Yes ☒ No

17. Residential Units

Does your proposal include the gain or loss of residential units? ☐ Yes ☒ No

18. All Types of Development: Non-residential Floorspace

Does your proposal involve the loss, gain or change of use of non-residential floorspace? ☐ Yes ☒ No

19. Employment

If known, please complete the following information regarding employees:

	Full-time	Part-time	Equivalent number of full-time
Existing employees	0	0	0
Proposed employees	0	0	0

20. Hours of Opening

If known, please state the hours of opening for each non-residential use proposed:

Use	Monday to Friday		Saturday		Sunday and Bank Holidays		Not Known
	Start Time	End Time	Start Time	End Time	Start Time	End Time	

21. Site Area

What is the site area?

18.00

sq.metres

22. Industrial or Commercial Processes and Machinery

Please describe the activities and processes which would be carried out on the site and the end products including plant, ventilation or air conditioning. Please include the type of machinery which may be installed on site:

Generation of electricity

Is the proposal for a waste management development? ☐ Yes ☒ No

23. Hazardous Substances

Is any hazardous waste involved in the proposal? ☐ Yes ☒ No

24. Site Visit

Can the site be seen from a public road, public footpath, bridleway or other public land?

☐ Yes

☒ No

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If the planning authority needs to make an appointment to carry out a site visit, whom should they contact? (Please select only one)

☒ The agent

☐ The applicant

☐ Other person

25. Certificates (Certificate A)

Certificate of Ownership - Certificate A

Town and Country Planning (Development Management Procedure) (England) Order 2010 Certificate under Article 12

I certify/The applicant certifies that on the day 21 days before the date of this application nobody except myself/ the applicant was the owner (owner is a person with a freehold interest or leasehold interest with at least 7 years left to run) of any part of the land or building to which the application relates.

Title: Miss

First name: Lucy

Surname: Boulton

Person role: Agent

Declaration date: 16/12/2011

☒ Declaration made

25. Certificates (Agricultural Land Declaration)

Agricultural Land Declaration

Town and Country Planning (Development Management Procedure) (England) Order 2010 Certificate under Article 12

Agricultural Land Declaration - You Must Complete Either A or B

(A) None of the land to which the application relates is, or is part of an agricultural holding ☐

(B) I have/The applicant has given the requisite notice to every person other than myself/the applicant who, on the day 21 days before the date of this application, was a tenant of an agricultural holding on all or part of the land to which this application relates, as listed below: ☒

If any part of the land is an agricultural holding, of which the applicant is the sole tenant, the applicant should complete part (B) of the form by writing 'sole tenant - not applicable' in the first column of the table below

Title: Miss

First Name: Lucy

Surname: Boulton

Person role: Agent

Declaration date: 16/12/2011

☒ Declaration Made

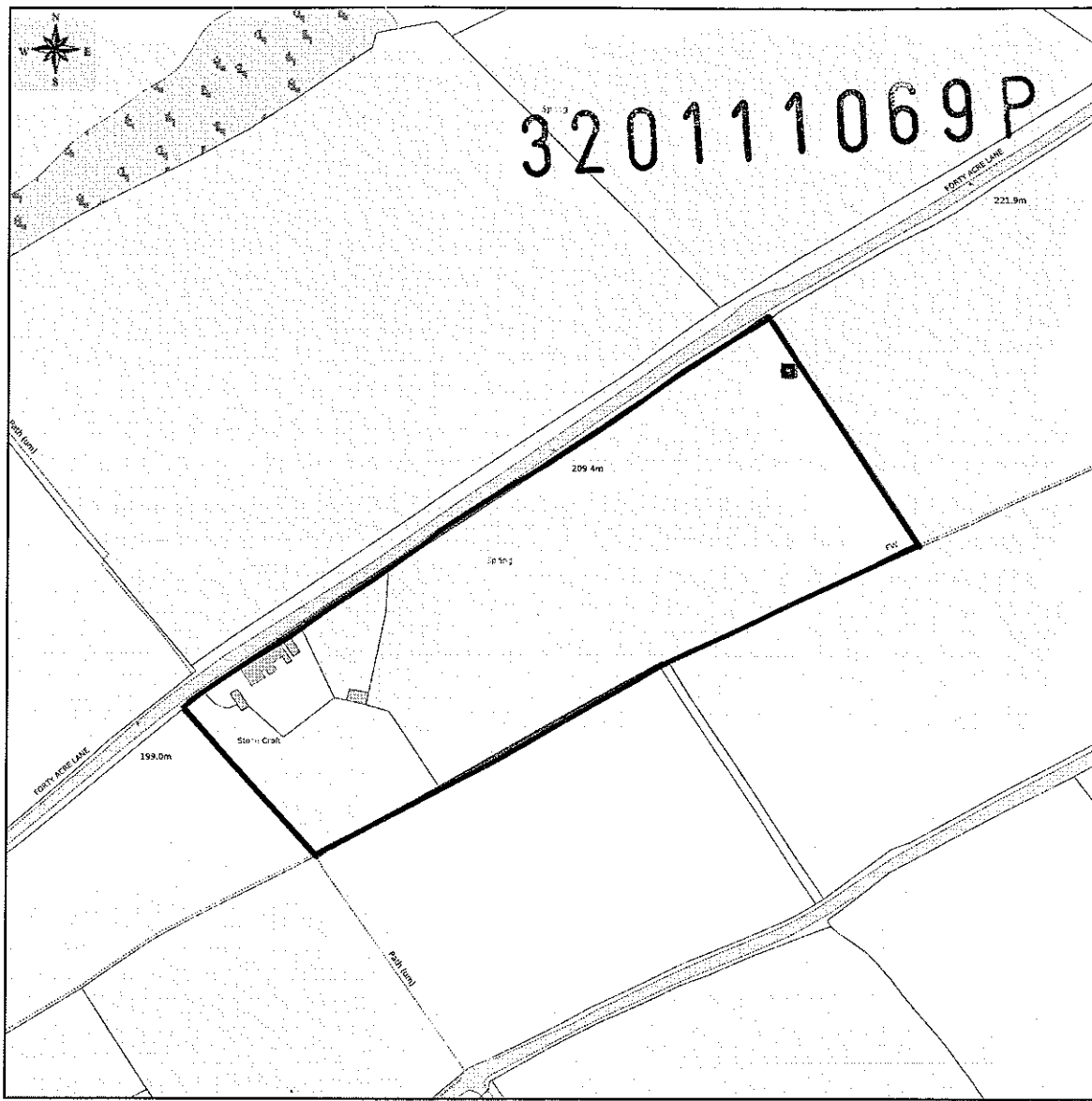
26. Declaration

I/we hereby apply for planning permission/consent as described in this form and the accompanying plans/drawings and additional information.



Date 16/12/2011

Stonecroft



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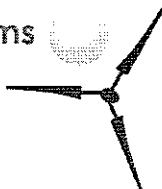
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Scale: 1:2500, paper size: A4

Proposed Wind Turbine

Turbine Grid Reference:
362168, 438775

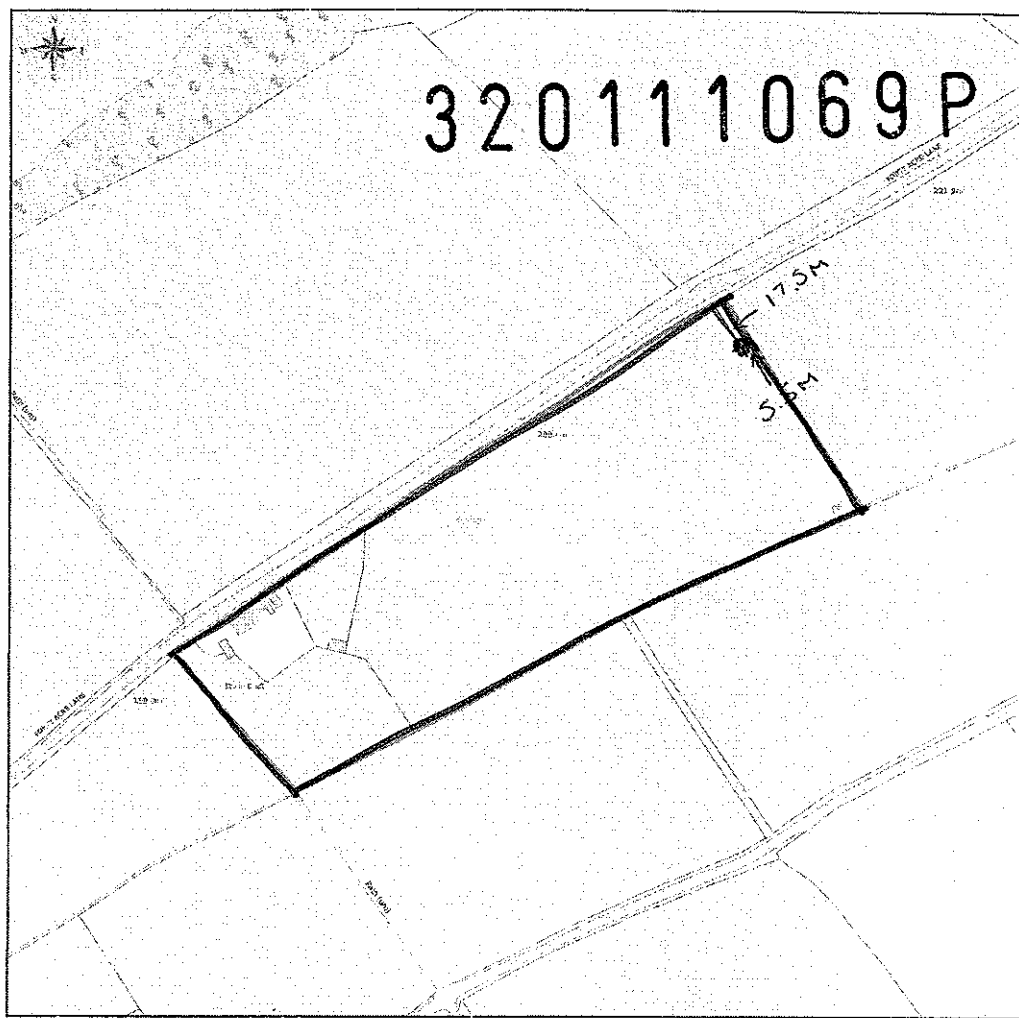
Sustainable Energy Systems



plans ahead by emapsite

Prepared by: Lucy Boulton 11-01-2012

Stonecroft



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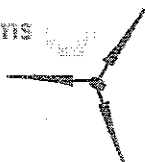
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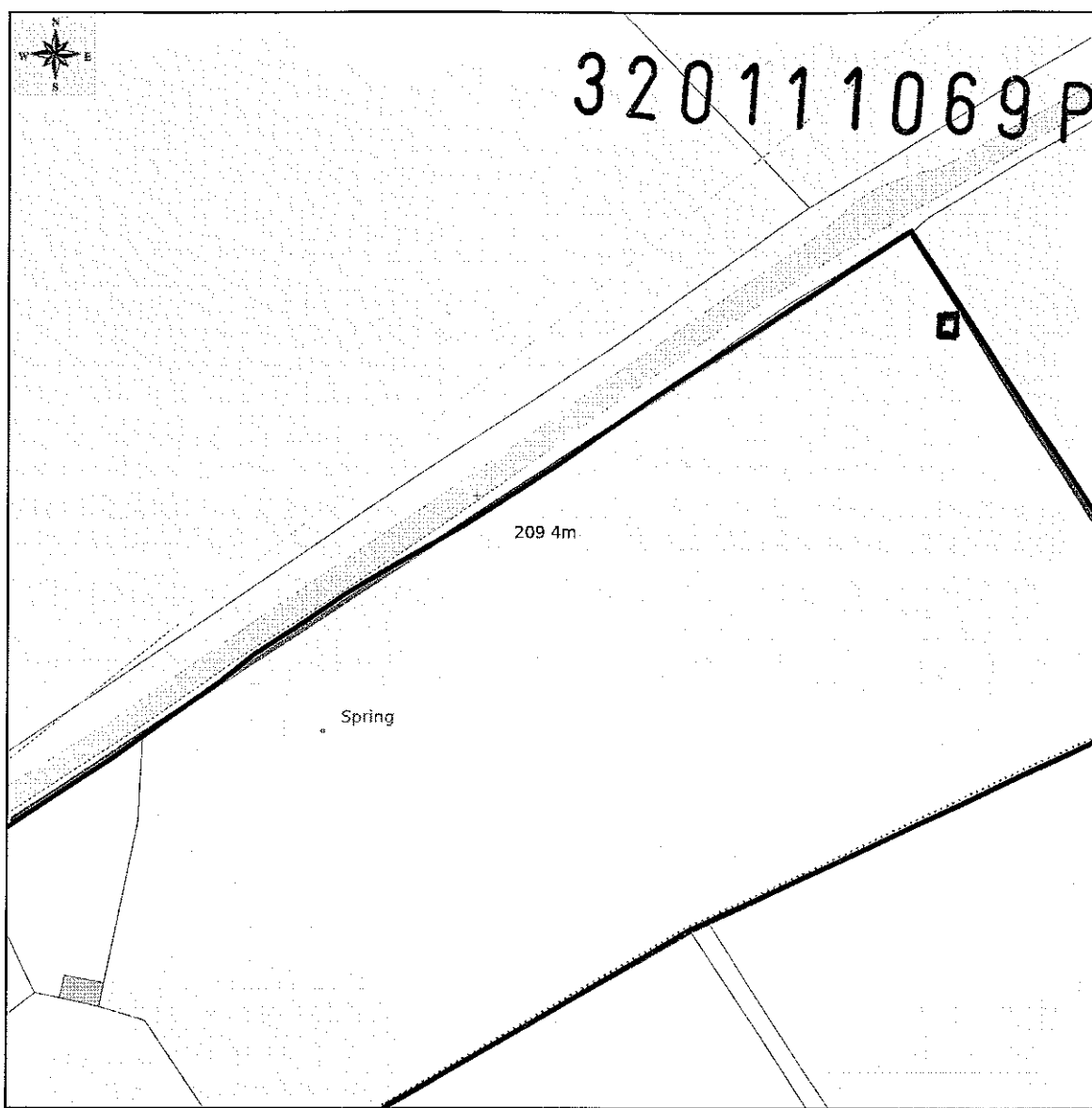
Sustainable Energy Systems



plans ahead by enapsite

Prepared by: Lucy Boulton, 11-01-2012

Stonecroft



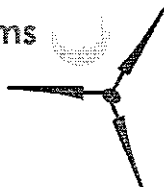
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Scale: 1:1250, paper size: A4

Proposed Wind Turbine

Turbine Grid Reference:
362168, 438775

Sustainable Energy Systems

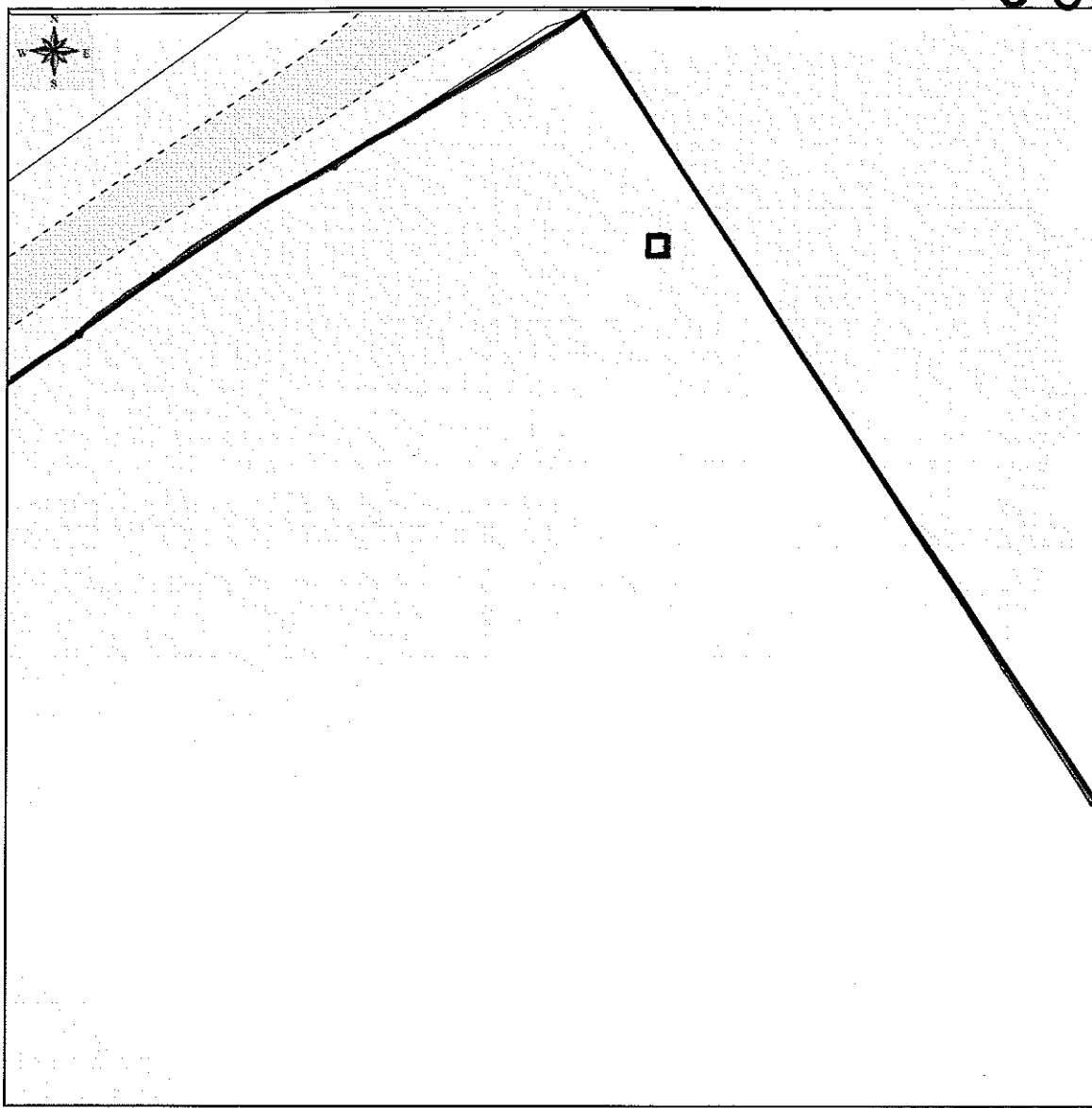


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Prepared by: Lucy Boulton, 21-12-2011

Stonecroft

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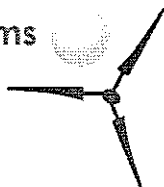
0m 10m 20m 30m

Scale: 1:500, paper size: A4

Proposed Wind Turbine

Turbine Grid Reference:
362168, 438775

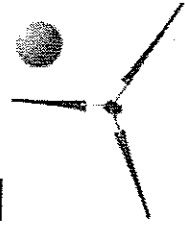
Sustainable Energy Systems



plans ahead by emapsite™

Prepared by: Lucy Boulton 21-12-2011

320111069P



Sustainable **Energy Systems Ltd**

**Design & Access Statement & Supporting Planning Statement for
the siting of a 12kW Xzeres small-scale wind generators at
Jeffrey Hill, Longridge, Preston**

Agent for the application:
Lucy Boulton
Sustainable Energy Systems Ltd
Brook House Buildings
Hall Lane
Great Eccleston
Preston
PR3 0XN
01772 361010
lucy@sustainableenergysystems.co.uk

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1. Application Description

Applicant	Mr Robert Procter	Agent	Sustainable Energy Systems Ltd		
Address	Stonecroft	Address	Brook House Buildings		
	Jeffrey Hill		Hall Lane		
	Forty Acre Lane		Great Eccleston		
	Longridge		Preston		
Post code	PR3 2TU	Post code	PR3 0XN		
Tele. no.		Tele. no.	01772 361010		
mobile		mobile			
email		email	lucy@sustainableenergysystems.co.uk		
Site Address	As above				
Grid ref	Turbine	Northing	362168	Easting	438775

Planning permission for installation of a 12kW Xzeres small-scale wind turbines at Stonecroft is sought to enable the applicants to reduce their out site running costs, carbon emissions and energy bills and to increase their self sufficiency in terms of electricity production. The installation will also enable the applicant to make best use of the land. Once local obstructions have been taken into account, the sites predicted annual average wind speed at 10m of 5.6m/s results in an estimated output of 26.18MWh of electricity per annum. This represents an annual CO₂ saving of 14 686 tonnes. This installed capacity will also help to contribute towards regional and sub regional targets for increase of 20% in renewable energy generation for 2020 as outlined in Policy EM17 of the North West Regional Spatial Strategy.

2. Pre-application discussions

Ribble Valley Borough Council advised will need to provide scale drawings of the turbine, a site plan to scale of 1:1250 and a photomontage of the turbine.

A proforma has also been sent to the CAA. No response has been received however a copy of the application has been enclosed with this application.

3. Turbine Use

The primary use of the turbine will be to power the on-site buildings and will also provide an income from excess electricity sold to the national grid. The land is currently used for grazing cattle however it is thought that the best use for the land is the installation of a turbine. The energy generation expected from the turbine will cover all of the on-site energy usage and in doing so, assist in the reduction of the applicants on-site running costs and allow for future diversification.

4. Site Location

The application site lies to the East of Stonecroft within a field which is currently used for grazing cattle.

The surrounding area comprises of open rolling fields with Longridge just over 1 mile to the South West of the proposal. The closest owned residential property is approximately 210m from the proposed turbine location. The nearest non owned residential property is 205m to the

South East of the proposed turbine location. The site topography is relatively flat land with a slight rise to the north of the site and the south sloping away.

The land is a domestic holding wholly in the ownership of the applicant. A plan at 1:1250 is enclosed showing the extent of this land ownership -outlined in blue

5. Proposal

The installation consists of a 12kWp Xzeres wind turbine, mounted on a monopole 15m galvanised steel mast on a 18m² concrete base. The turbines are of three-bladed design. All none galvanised elements of the turbine will be coloured pale grey.

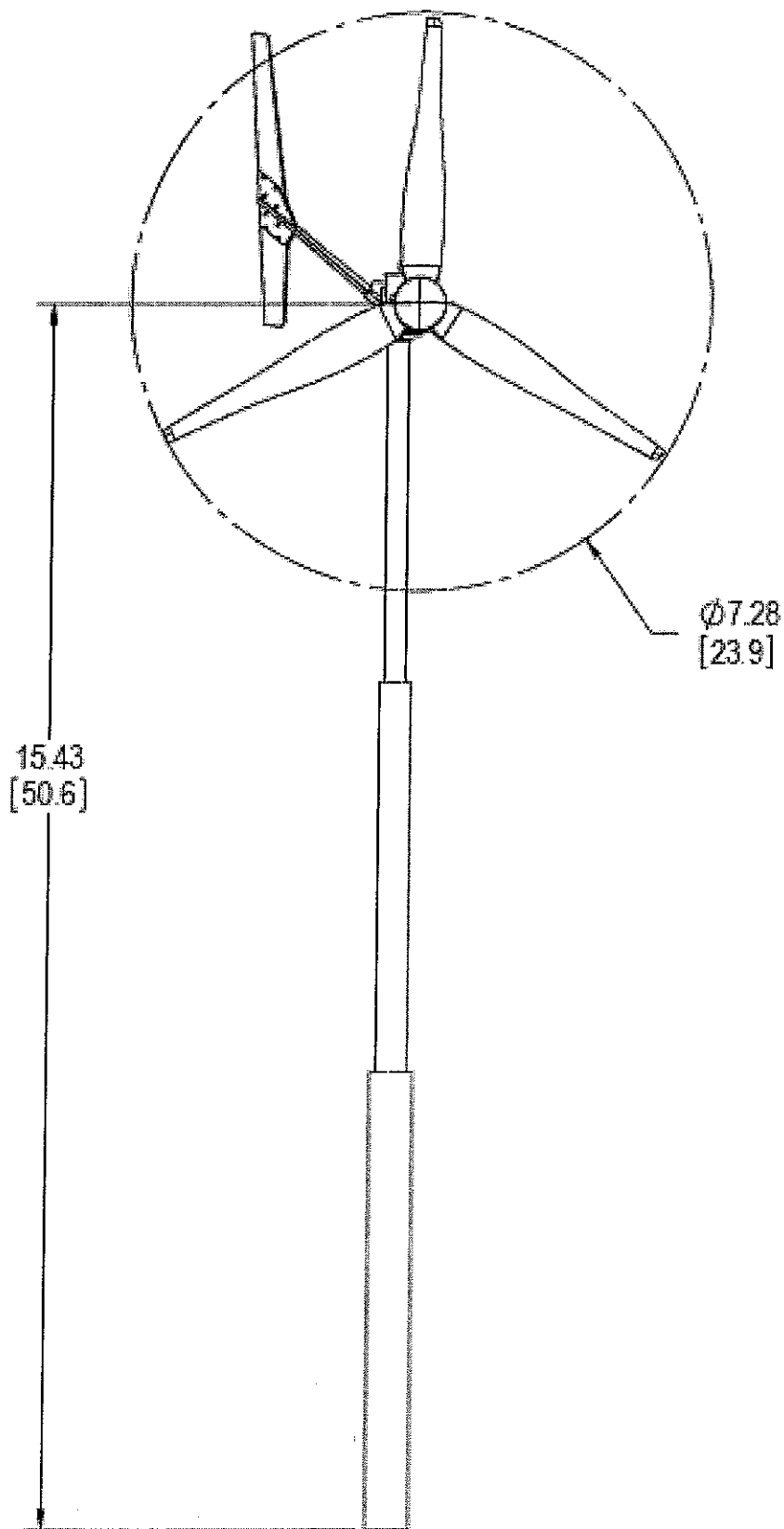
6. Aerial photos of the site



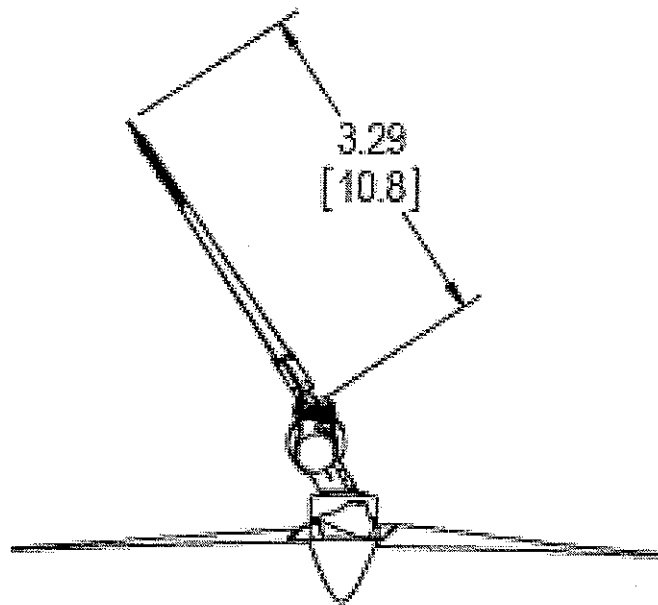
Image 1: Aerial Photo of site with the proposed turbine location to the North East of the owners property
www.google.earth.co.uk, 2002

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7. Xzeres Dimensions & Technical specifications



Cross Section through the rotor



Dimensions of the turbine nacelle (m)

Assembly Height - The turbine assembly is mounted on an 15m high tower. The hub of the rotor is at 15.43m. The rotor is a tri blade design. The its highest point, the tip of the rotor extends to a height of 19.07m and the lowest point is 11.69m above the ground. This is around 1/6th the height of a typical turbine found on a modern wind farm.

Foundation - The bottom of the tower is bolted onto a reinforced concrete base with dimensions 4.25 x 4.25 x 1m. This is set in a hole 1m deep with an 0.6m layer of hard packed earth on top.

Cabling- The turbine is connected to the building power supply at the main fuse box via an armoured cable buried at a depth of 0.75m.

Colour- It has been concluded that a galvanised colouration would be best for this site.

Mast Design - Xzeres turbines can be installed on either a solid or lattice tower structure. In this case it is our preference to install the masts on a monopole tower as this type of tower is considered to be a more permeable structure.

8. Planning Policy Overview

8.1 National

In 2004 national government issued 'PPS 22 Planning for Renewable Energy' and its associated 'Companion Guide'. These two documents provide the national framework within which local planning authorities decide on individual planning applications. The ministerial statement made by Yvette Cooper formalised government support for PPS22. It also encouraged local planning authorities to include in their local development frameworks policies requiring new developments to generate at least 10% of their own energy from on site renewable sources. The Government believes that climate change is the greatest long-term challenge facing the world today. Addressing climate change is therefore the Government's principal concern for sustainable development. Policies and priorities for action, both in the UK and internationally, are set out in the Climate Change Programme and the report of the 2006 Energy Review. PPS 22 sets the objective based criteria that must be applied by local planning authorities in deciding individual planning applications to generate energy from wind.

In particular the following elements of Planning Policy Statement 22 are seen as relevant to this case,

Key Principle V1: Small-scale projects can provide a limited but valuable contribution to overall output 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.

Paragraph 18: Local planning authorities and developers should consider the opportunity for incorporating renewable energy projects in all new developments. Small-scale renewable energy schemes utilising technologies such as solar panels, Biomass heating, small-scale wind turbines, photovoltaic cells and combined heat and power schemes can be incorporated both into new developments and some existing buildings. Local planning authorities should specifically encourage such schemes through positively expressed policies in local development documents.

Paragraph 20: Of all renewable technologies, wind turbines are likely to have the greatest visual and landscape effects. However, 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.

Companion Guide 6.17

For small and medium size projects; in cases where power can be dedicated to on-site uses, economically attractive schemes are a strong possibility. Local Planning Authorities can take a proactive approach to encourage this form of urban wind development.

PPS7 Sustainable Development in Rural Areas draws attention to the Government's objectives for the countryside and sets out the key principles of raising the quality of life in rural areas, encouraging more sustainable use of land, and to diversify and promote growth in rural areas.

Decisions on development proposals should be based on sustainable development principles, ensuring an integrated approach to the consideration of:

- social inclusion, recognising the needs of everyone;
- effective protection and enhancement of the environment;
- prudent use of natural resources; and
- maintaining high and stable levels of economic growth and employment

Paragraph 16 (i) / (iv) Amongst these are promoting good quality, sustainable development that support development that provides for the sensitive exploitation of renewable energy sources in accordance with the policies set out in PPS22

PPS 1 Delivering Sustainable Development. Planning and Climate Change- Supplement to PPS1.

Sets out how planning should contribute to reducing emissions and stabilising climate change and take into account the unavoidable consequences. It notes that tackling climate change is a key Government priority for the planning system. Core Strategy policies should be designed to promote and not restrict renewable and low-carbon energy and supporting infrastructure. A proposal that will contribute to the delivery of the Key Planning Objectives set out in this PPS should expect expeditious and sympathetic handling of the planning application

9. Economic, Social and Environmental benefits of the proposed development

In accordance with PPS22 companion guide the Economic, Social and Environmental benefits of this proposal should be considered as material when determining the application. This proposed wind turbine will use wind energy – this is an abundant natural resource. It is non-polluting, clean and sustainable. The UK has one of Europe's windiest climates and therefore wind energy is an important element in achieving the UK Government's commitment to reduce carbon dioxide emissions to 12.5% below 1990 levels by 2010. More specifically, it is Government policy to achieve 30% of the nation's electrical requirements from renewable sources by 2020; this proposal will help to move towards these targets.

The development will generate electricity for Stonecroft which is an existing rural enterprise.

The UK has the best wind resource in Europe. This site has a good wind speed from which this Xzeres installation would produce on average 26.18MWh of electricity per year. The turbines will cover all energy usage on site and allow for a small income from excess sold to the grid. On this basis, the applicant wishes to support and diversify his current land use and has established that the best way would be to utilise the abundant wind to reducing their fuel costs as well as their environmental and carbon footprints. This application is an essential element in achieving this ambition. To be socially responsible, excess generation not used in peak periods versus lower demand is fed back into the Grid thus providing a wider community benefit works directly towards the Governments regional and national targets for the supply of energy from sustainable sources. This will support the surrounding rural network infrastructure and support local properties energy usage.

10. Siting

Small wind generators are generally linked with a property and as such are rarely in 'prime wind' sites as sought by commercial power generators. Nevertheless, if care is taken with regard to selection and positioning, a small wind generator can make a significant contribution to greenhouse gas reduction as well as being an economically attractive proposition for the owner. The following rules of thumb apply:

- There should be no, or minimal, obstructions in the direction of the prevailing wind. For most sites in the UK the prevailing wind is South West
- Obstacles such as buildings and trees degrade wind quality by producing turbulent zones in their vicinity. These can significantly reduce the output of a turbine. It is important, therefore to select a tower of sufficient height to allow the rotor to sit above any potentially turbulent zones
- Wind speed tends to increase with height in most locations, a phenomenon known as wind shear. This variation in velocity with altitude is most dramatic near the surface. Further, the energy in wind is proportional to the cube of the wind speed. Consequently a small change in wind speed produces a much larger change in wind energy. For example: increasing the height of a turbine rotor, from 9m to 18m will increase the expected wind speeds by 10% and the expected power generated by 34%
- Wind energy capture is related to the area swept by the rotor e.g. a 6m radius rotor sweeps an area 4 times greater than a 3m rotor. Bigger rotors generate more power

11. Impact on the Landscape

The turbine site location is approx 1.5 miles north east of Longridge within the Bowland Forest AONB. The proposal is for a 12kW Xzeres wind turbine. The turbine is mounted at 15.43m AGL mounted on a monopole tower on a 18m² plot of land and will not generate unacceptable effects on the environment and local amenity. The turbines have been positioned to have as little impact as possible on the area. Most neighbours view of the turbine to have a backdrop of rolling countryside with trees and hedgerows.

The application site is located within an AONB. Locating wind turbines is always a compromise between the best ability to capture wind and the visual impact, biological impact and location specific impact. The site chosen we feel best meets all of these requirements.

In order to support the application a landscape character assessment has been carried out in accordance with LI/EMA Guidance. LI/EMA Guidelines state that;

"Landscape impacts and visual impacts are separate, but related. Landscape impacts are changes in the fabric, character and quality of the landscape. Visual impacts relate solely to changes in available views of the landscape, and the effects of those changes have on people. Landscape and visual impacts do not necessarily coincide." Impacts can be beneficial as well as adverse.

The significance of the effects of development on the landscape and visual resource are based upon the prediction of the potential impact in relation to baseline conditions. In assessing the effects of the development proposals the LI/EMA guidelines recommend the development of

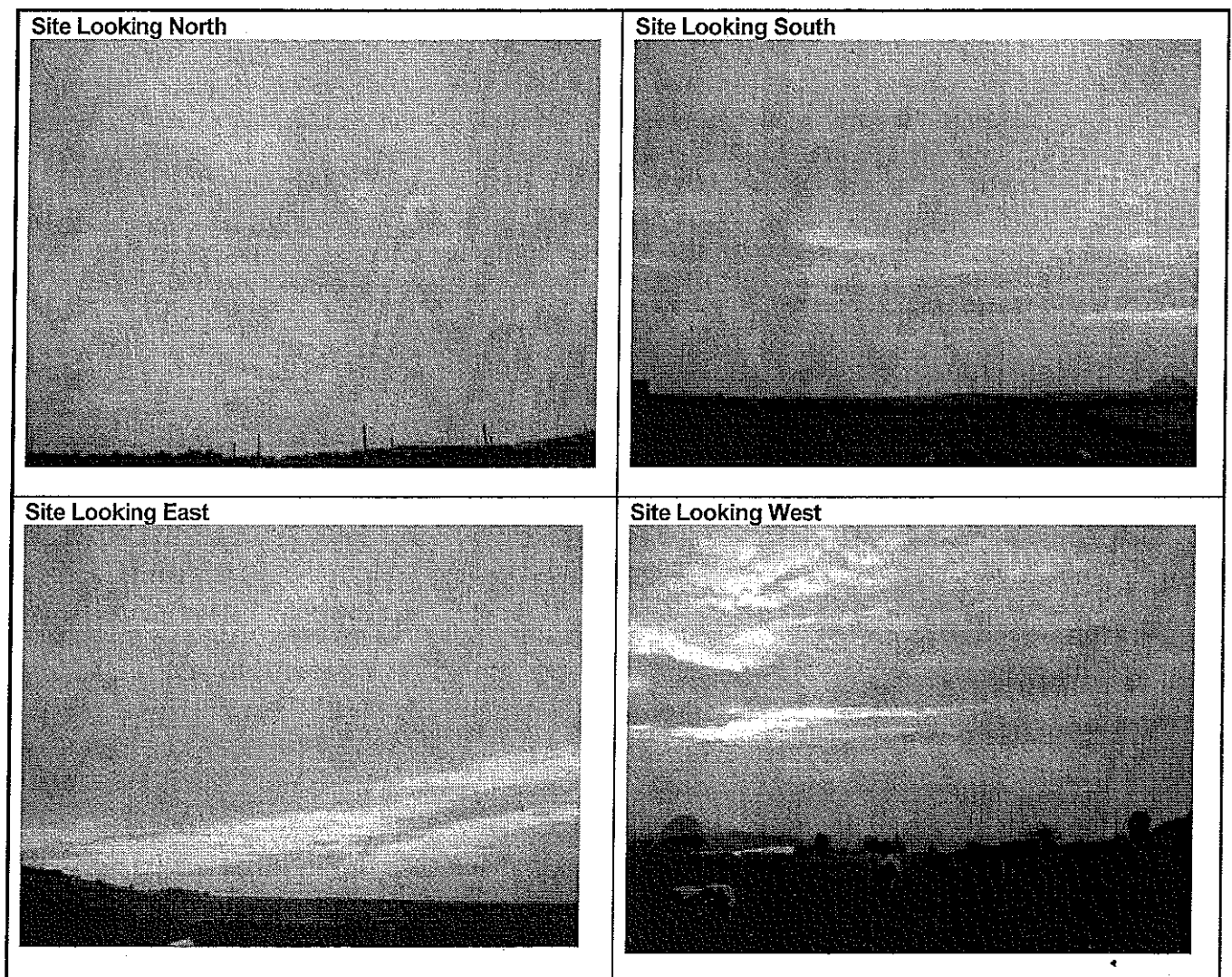
thresholds of significance as a function of the sensitivity of the landscape and the magnitude of change in the baseline conditions (i.e. "impact") resulting from the development proposals. The assessment of significance of landscape and visual impacts relies upon common sense, experience and reasoned judgement, supported by substantiated evidence.

11.1. Landscape Description

The land on which the turbines are to be located is a field currently used for grazing. The wider landscape comprises of large fields and rolling farmland. In the wider distance scout moor dominates the hillside to the North East of the site being visible across the valley.

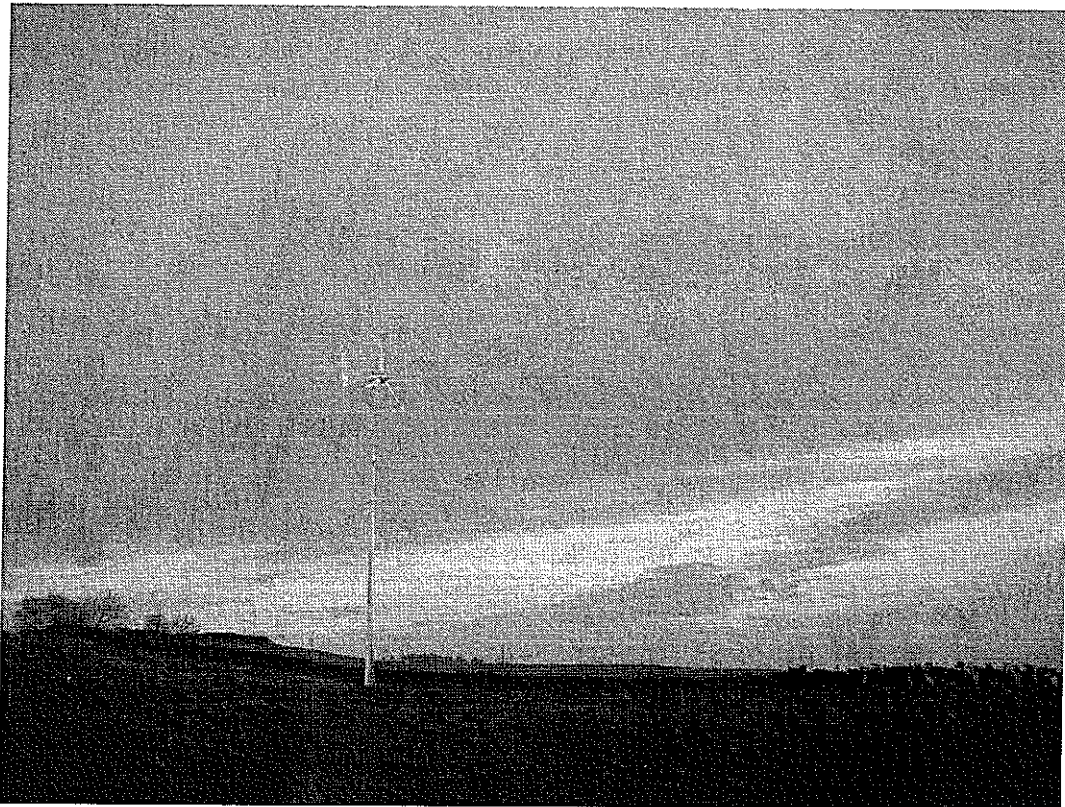
11.2. Photographic survey looking from turbine site

Views from proposed turbine location, looking in all directions, demonstrating the landforms and landscape features in the immediate vicinity of the site. It is clear from these photographs that the site is afforded some screening by the existing rolling landscape and trees.



When assessing planning applications PPS22 Para 20 advises that local authorities should recognise that the impact of turbine 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. The turbines form and siting have been chosen with this in mind. As an engineered structure, where visible the turbine would visually contrast with the more natural rural surroundings. Despite its overall height, the proposal has a limited scale and a relatively minimal form as demonstrated by the photomontage below. The proposal will not adversely impact on the visual amenity and character of the surrounding area as long views will be masked in part by the existing landscape with rolling countryside. In addition to this, there are surrounding trees which create a visual distraction from the turbine. Furthermore the proposal is not a new building and therefore does not contribute towards reducing "green" area, nor will the turbine affect the use of the land in any way, this will continue as normal following installation of the turbine



Montage of turbine looking north

The chosen turbine scale and design, which is slim in profile, will help to breakdown the mass of this installation and will reduce its visibility over a distance. The pale grey colour of the turbine will help them blend with the landscape as it will match the English sky by mirroring the stormy colours and white clouds

As demonstrated in section 7 and 8 PPS1, PPS22 and the RSS place a strong emphasis on the encouragement of site-specific small-scale development and stress that the provision of clean sources of sustainable energy can override perceived landscape harm. PPS22 Key Principle V1 states small-scale projects can provide a limited but valuable contribution to overall output 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. The system has the potential to generate electricity from a sustainable source to cover all of the on-site energy demands, which is extremely significant. The turbine

will contribute directly to regional and national targets for energy produced from renewable sources. This is consistent with up-to-date policy guidance

In conclusion as outlined above the proposed wind turbine will not cause unacceptable harm to the visual amenity of the locality nor will it have a detrimental effect on the character and function of the surrounding area. The minimal and extremely localised effect of the installation will be sufficiently outweighed by the positive environmental effects associated with the proposal. These include the generation of a clean energy supply from a sustainable source that will help to reduce the farms reliance on fossil fuel and lower green house gas emission, which will in turn help to conserve the quality of the landscape for the longer term

12. Residential Amenity

The closest non owned permanent residential property is at 205m from the turbines. This property is sited through a sloping field with a hedgerow. A combination of the site topography and shrubbery will help to screen the proposal and prevent adverse effect on visual amenity in terms noise and shadow flicker.

The applicants property is approx 210m to the west of the proposed installation. Between the turbine site and the main residence are bushes and hedgerows creating a screening from the turbines visual impact.

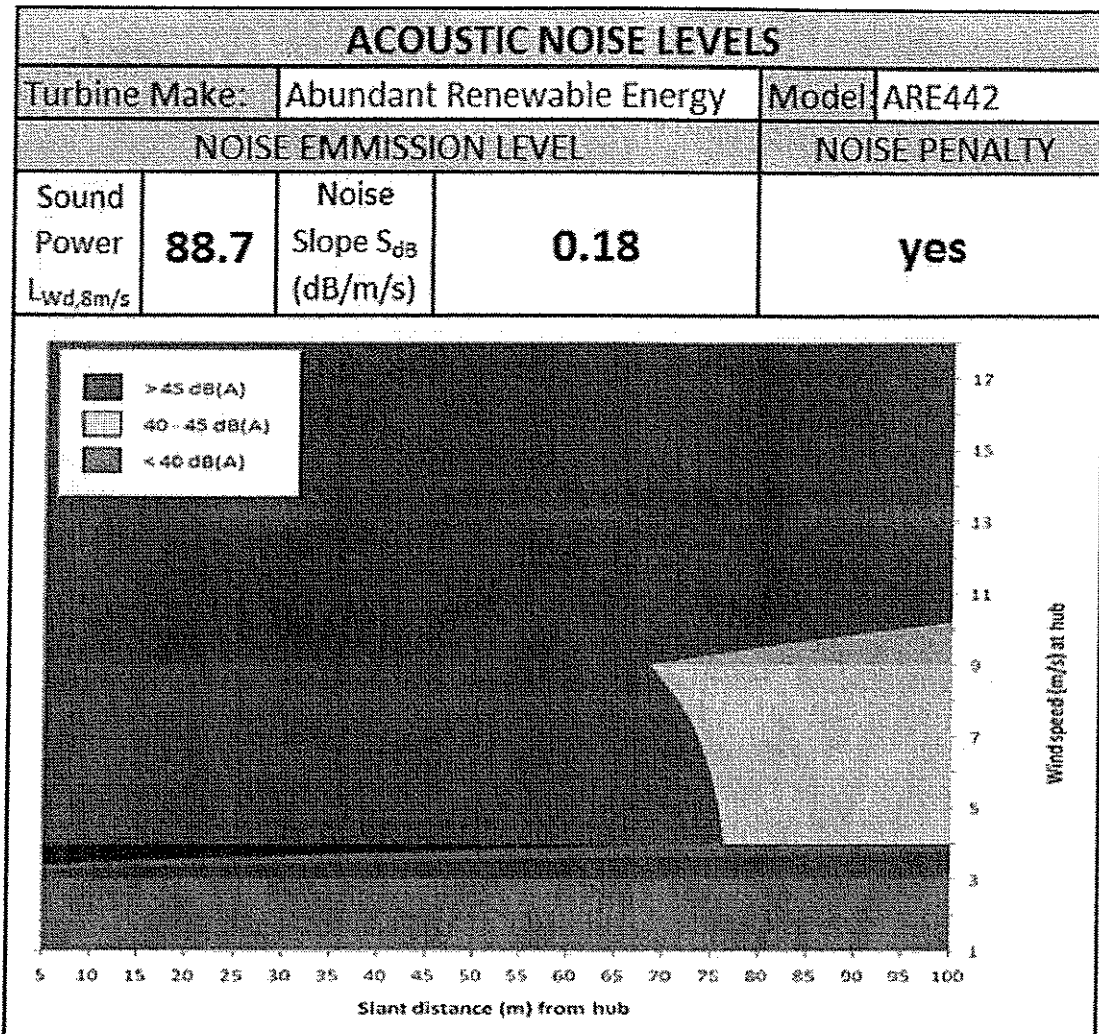
13. Noise

The turbine site chosen is 210m from the application property and 205m from the closest non associated permanent residential neighbours. The selected position provides adequate exposure to the prevailing wind and minimises the risk of turbulence. The site has been appropriately specified, designed and located to allow sufficient distance between the wind generator and any existing noise-sensitive development so that noise from the wind generator will not be a nuisance or a material consideration in deciding the planning application.

In practice, turbine noise is often masked by background noise such as wind, leaves rustling, traffic noise etc. Noise impact is somewhat dependent on a number of factors including the operational noise level of the equipment in a range of wind conditions.

ETSY-R-97 is a Noise Assessment and Rating advice note for Wind Turbine Developments. This Guidance Note recommends that in most the fixed noise limit for night time is 43dB (A) is acceptable. This limit is derived from 35dB (A) sleep disturbance criteria referred to in Planning Policy Guidance Note 24. An allowance of 10dB (A) is made for attenuation through an open window (free-field to internal) and 2dB subtracted to account for use of LA₉₀ 10min rather than LA_{eq} 10 min. The Noise Working Group recommends that day time lower fixed limits can be higher than this at 45 dB(A). They also state that considerations should be given to increasing the permissible margin above background where the occupier of the site has some financial involvement in the wind turbines meaning that it can be acceptable to have higher noise readings where the applicant's property is the primary affected residence.

As advocated by the Noise Working Group noise emission of the turbine in the open countryside should be no higher than 43 -45 dB (A) at any noise sensitive properties. At 205m which is the distance of the turbine from the closest non owned property, the sound level will be <40dB which falls below the recommended 43 dB(A) night-time level.



14. Shadow flicker

Shadow flicker can cause a problem to nearby properties early in the morning or late in evening. It is caused by the rotating blades interrupting the light from sun when the turbine is between you and the sun. This occurs early in the morning to the west of the turbine and late in the evening to the east of turbine. The effect is likely to be worse on sunny days in winter than in summer, as in summer the sun is much higher for longer and therefore the shadow is more local to the actual turbine. It is generally accepted that some degree of shadow flicker is acceptable, but that limits should be imposed to restrict the number of hours per year for which any one property is affected. There are no specific rules on this, but a 30 hour per year maximum has been suggested as reasonable in Germany and this seems to be generally accepted. Expected shadow flicker is difficult to predict however some general rules and guidance can be applied. Assuming an 18m tower and 13m diameter blades at the latitude of London, the following guidelines may be used to ensure a low risk of adverse affects.

No property with a window facing the turbine should be within 36m of the turbine location from due east, through north, to due west.

Care should be taken to ensure that any property within 72m at a direction from 120 degrees west to 120 degrees east of the turbine location does not have a light sensitive outlook towards the turbine. E.g. a west facing conservatory or patio where the occupant might be expected to sit out on a sunny evening.

Properties greater than 85m are unlikely to be seriously affected, since the duration of any shadow flicker will be reduced, and its severity will be lower since the shadows from the blades will become more diffuse. In this case the separation distances between the turbine and the closest property is 205m thus demonstrating that shadow flicker will not be a concern.

15. Aviation

Because of their physical size, in particular their height, wind farms can have an effect on the aviation domain. Additionally, rotating wind turbine blades may have an impact on certain aviation operations, particularly those involving radar. The aviation community has procedures in place which are designed to assess the potential effect of developments such as wind farms on its activities, and, where necessary, to identify mitigating measures.

Following discussions throughout 2001 by the DTI-led 'Working Group for Wind Energy, Defence and Civil Aviation Interests', a consultation proforma has been agreed between the BWEA and key Aviation issue consultees such as the MoD, NATS and CAA. It is in the interests of all developers to use the proforma when making enquiries to ensure that consultation responses are able to be dealt with quickly and consistently. Developers who don't will be likely to be directed to it by the consultee with subsequent delays. Details on the issues and background concerning aviation and wind turbines can be found on the BWEA website at www.bwea.com/aviation/index.html. In line with the guidance issued by the BWEA and key aviation parties, the Wind Turbine proforma was completed and issued to the MOD and CAA as per standard procedure. A copy of the proforma submitted is enclosed with this application. To date, no response has been received however once a response has been received from the consultees, it will be forwarded to the Planning Authority to be included as part of this application.

16. Historic Environment

The turbine site is sufficiently remote from all listed buildings and scheduled monuments so as not to cause an adverse impact.

Although it is not anticipated that there will be any sites of archaeological interest affected by the proposed construction or operation of the wind turbines due to the modest ground works associated with the development, the applicant is concerned to assist the Local planning authority to meet the ambitions of PPS16 (Planning and Archaeology). Accordingly during the excavation of the void for the base of the wind turbine should any building foundations, artefacts or other unusual finds be made these will be notified to the relevant local authority archaeologist.

17. Access

Access for digging equipment, concrete dumpers etc. will be directly from Forty Acre Lane via the applicants existing site access. The components that require mechanical handling will be delivered to site on vehicles with HIAB type cranes and there is space on site for safe off-road

unloading and temporary storage. The components will then be moved into position by mini-digger.

Excavations for the foundation and cable trenches will be carried out by small, tracked mini-digger. All excavations, protection, cable laying, builders work, holes through existing walls etc. will be carried out in accordance with relevant health and safety requirements and good construction practice and the safe use of tools and equipment.

During the course of the works protection to excavations, working areas etc. will be provided in accordance with good construction practice. Once the work is complete no special protection to the installation is required.

A temporary trackway may be required during installation. This will be removed on completion.

18. Health & Safety

Training for the safe use of the equipment will be provided to the end use. All the components of the turbine are designed for a trouble free long life with minimum maintenance. An annual inspection of the turbine head is required to comply with the warranty requirements and to ensure efficient operation.

Experience indicates that properly designed and maintained wind generators are a safe technology. The very few accidents that have occurred involving injury to humans have been caused by failure to observe manufacturers' and operators' instructions for the operation of the machines. There has been no example of injury to a member of the public. The minimum desirable distance between wind turbines and occupied buildings calculated on the basis of expected noise levels and visual impact will often be greater than that necessary to meet safety requirements. Fall over distance (i.e. the height of the wind turbine to the tip of the blade) plus 10% is often used as a safe separation distance. The wind turbine erected in accordance with manufacturer's instructions is a stable and safe structure. In accordance with good practice the proposed location has been chosen to achieve a setback of at least fall over distance from nearby roads, buildings, paths and public access routes.

The wind turbine will be separated from overhead power lines in accordance with the Electricity Council Standard 44-8 'Overhead Line Clearances'. No overhead cables are proposed to the installation. All underground cables will be installed in accordance with manufacturer's recommendations.

The scale and design of the wind turbine and the choice of location have been consciously made to reduce the risks associated with; the collection of ice on the blades, the incidence of shadow flicker and of reflected light. On the basis of the manufacturer's guidance and historical performance of this model of wind turbine these aspects are not considered to pose any risk to public safety or security.

19. Ecology and Hydrology

The field in which the micro wind generator is proposed to be located is currently used for grazing cattle. The adjoining land is also pastureland. The field into which the micro wind generator is proposed to be located contains no locally rare or protected species of plant or animal.

There are no sites designated for ecological value within the immediate proximity of the turbines. No ecological assets of any significance will be affected by the construction and operation of the micro wind generator. The operations to construct the micro wind generator will respect the interests of ground nesting birds and no construction operations will take place to adversely affect ground nesting birds.

The local hydrology will not be materially affected by the installation of the concrete pad. No designated main rivers or private watercourses or Ground Water Protection Zones will be materially affected by the construction of the concrete pad to support the micro wind generator. The local hydrology including main rivers, private watercourses or Ground Water Protection Zones will not be materially affected by the installation of the concrete pad to support the micro wind generators. The area around the concrete base of the turbine will also be unaffected by the wind turbine. There are no impacts predicted on any ground living mammals or any plants or invertebrates. Any grass sods removed during excavation of the foundations for the 5m² concrete base will be removed and set aside prior to excavation and then replaced on completion of the base. Any surplus soil will also be deposited and levelled on site, the whole site being left in a fully reinstated condition.

Many nature conservation bodies now support the use of small scale renewables installation including domestic turbines, for example the National Trust "believe there is great potential in developing renewable energy, for both electricity and heat, at a more local and small scale, in households, businesses and communities" http://www.nationaltrust.org.uk/main/w-microgen-policy_from_practice.pdf and English Nature also "support the development of renewable energy schemes (including wind, biomass and energy from waste projects) where these have appropriate standards for environmental protection, will not damage wildlife and natural features, and will contribute to achieving sustainability as well as emissions reduction targets".

Taking the above into account the proposed construction and operation of the wind turbines can be carried out without having any adverse impact on existing ecological or hydrological features or assets of value as such the proposal does not conflict with local or national planning policy concerning this matter.

20. Decommissioning

The design of the wind turbines and the choice of location have been consciously made to facilitate ease of dismantling of the equipment and restoration of the site at the end of its useful life – 20/25 years. Annual maintenance will be required; measures will be taken to ensure this is carried out in accordance with health and safety requirements and to protect the safety and security of the public.

Neither the applicant or SES Ltd have objection to the imposition of a planning condition requiring removal of the turbine at the end of its operational life and reinstatement of the land to its former condition.

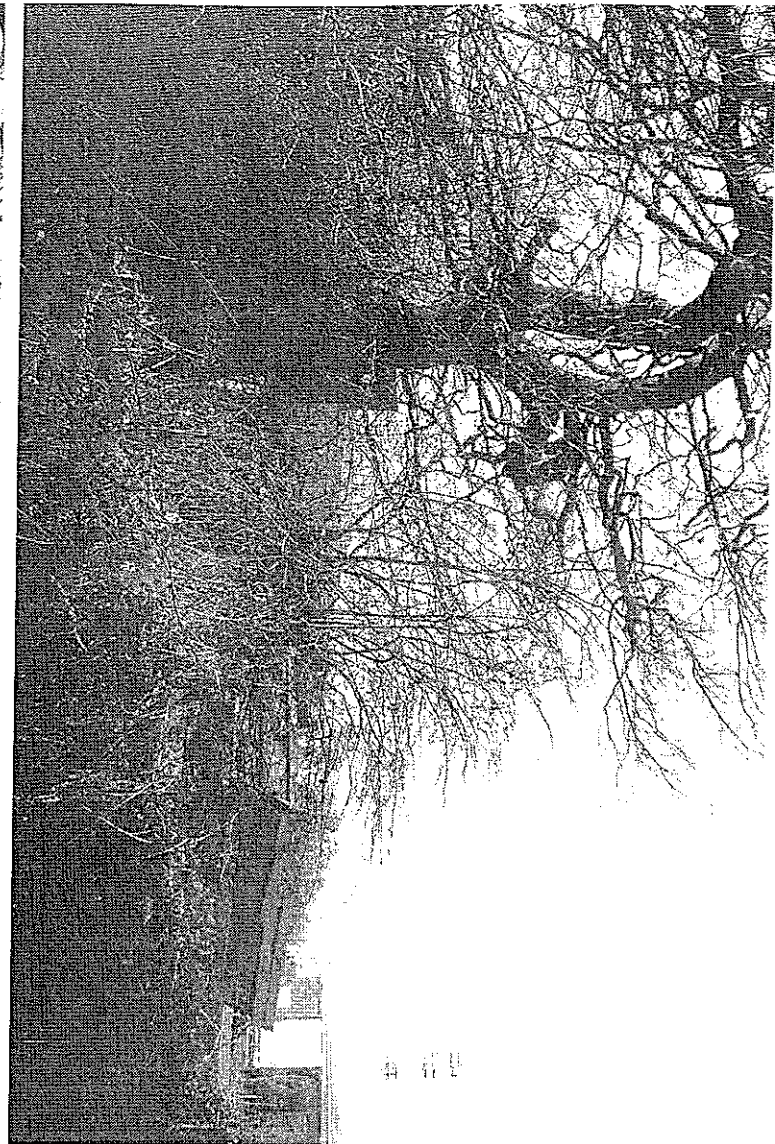
21. Conclusion

The site for the wind turbine has been carefully chosen to ensure that it can be absorbed by the local landscape and is largely indistinguishable from most mid and distant public viewpoints. Where distinguishable from close vantage points on the public and private right of ways the visual effects of the wind turbines have been minimised through appropriate siting and design, and are outweighed by the economic, social and environmental benefits of the proposal outlined above. This taken together with the demonstration of no harm it is considered that this development is appropriate for the location and purpose for which it is proposed.

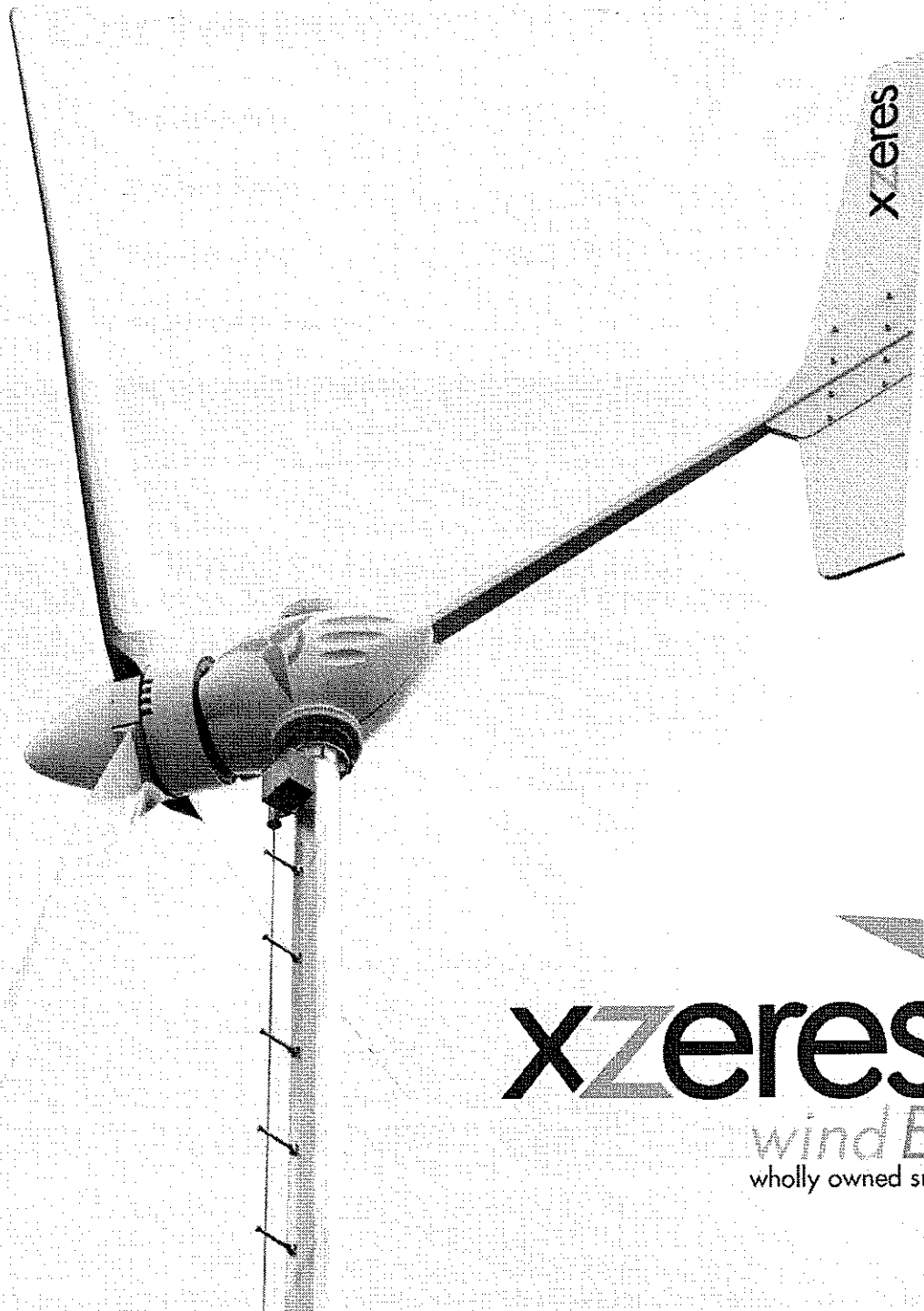
22. Additional Information

The information contained within this application provides a comprehensive assessment of the landscape, visual effects and other aspects of the proposed development. It also provides details of the specific environmental, economic and social benefits that arise from this renewable energy project. As such it provides the necessary objective criteria based information for the planning authority to address the key development control issues and to determine the application. However the applicant recognises that notwithstanding the contents of this submission, local politicians and stakeholders may have questions or may require further information. The applicant (and representatives) is prepared to meet with politicians and stakeholders to provide any further information and in order to address any subjective concerns as part of the planning application determining process. Should the planning authority be minded to refuse the application based on any such concerns, then the applicant would wish to have the opportunity to provide further information, to modify the application, submit to relevant conditions or negotiate a developer obligation before a refusal was issued.

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wind **EUROPE** Ltd
wholly owned subsidiary of XZERES Corp

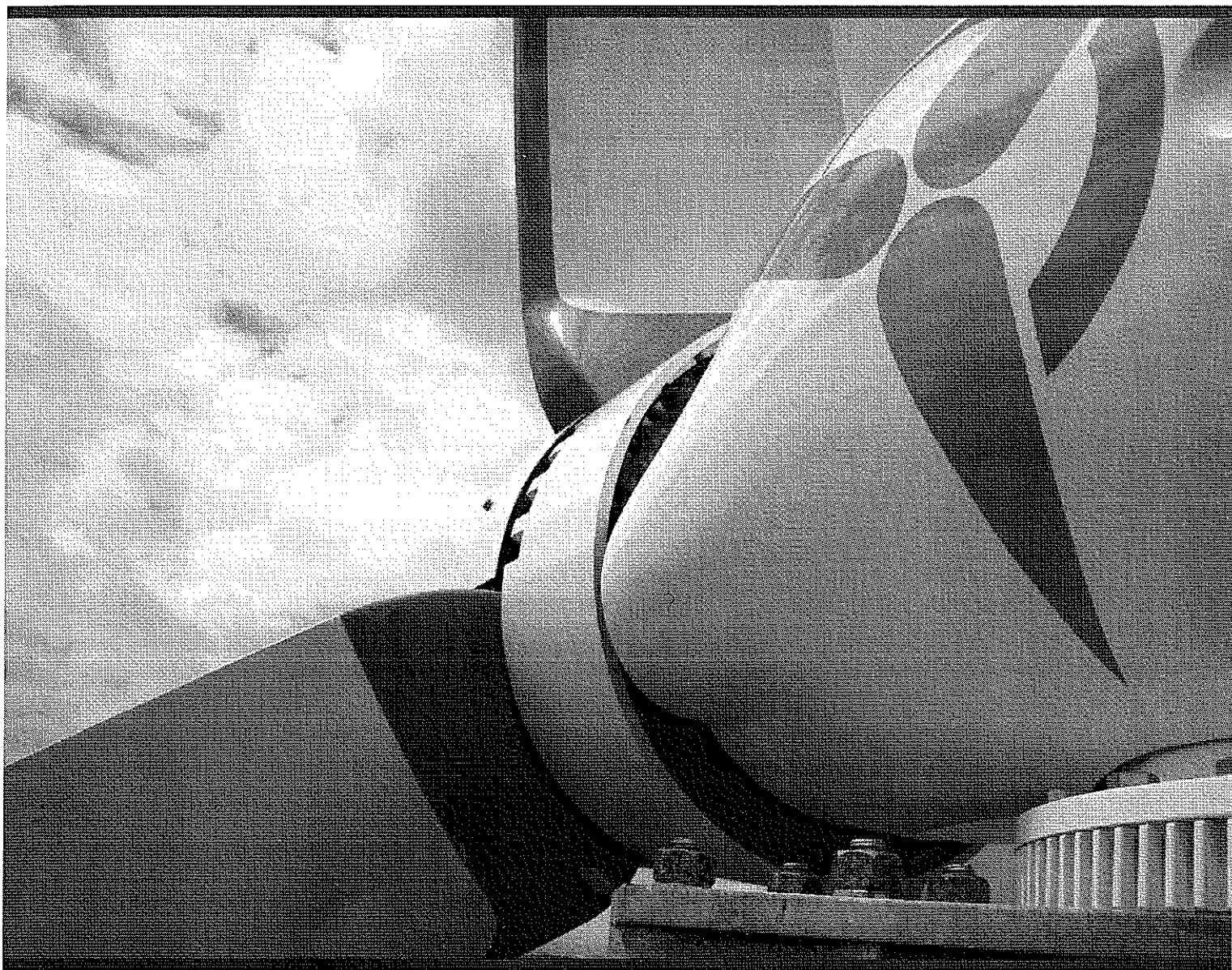
XZERES 442SR - Planning Support Document

APPROVED PRODUCT



Certificate Number: MCS BBA 0071

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XZERES MACHINES FOR SERIOUS POWER™

320111069P

Contents

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Technical Drawings

G83/G59 Compliance

System One Line Drawing

Introduction

This document is intended as an aid to complete planning applications. It includes product information normally required for UK planning applications.

For additional information please contact XZERES Wind Europe Ltd.

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Product Specifications

Model: XZERES 442SR

IEC 61400-2 Small Wind Turbine Class: II ($V_{avg} = 8.5$ m/s)

Design Life: 20 years

Rotor

Type: Upwind, Horizontal axis

Blades: 3 Blades, fixed pitch

Rotor diameter: 7.2 m

Blade length: 3.567 m

Swept Area: 40.7 m²

Rotor Rotational Direction: Clockwise viewed from upwind

Generator

Type: 3-phase neodymium permanent magnet

Output: Grid connect

Max AC voltage: 540 VAC

AC voltage at rated power: 377 VAC

Current at rated power: 24.4 A

Control System

Yaw control: Passive 360 degree way

Braking: Independent failsafe electronic braking load

Over-speed control: PWM modulated dynamic braking with stall regulation

Rotor speed: 0-160 RPM, 140 RPM nominal

Electrical Interconnect

Nacelle to tower rotational connection: Slip rings

Controller input requirements: 120/240 VAC 50/60 Hz

Controller idle power consumption: 40 W

Controller DC voltage at rated power: 463 V

Controller DC current at rated power: 19.9 A

Alternator to grid connection configuration: Variable frequency, variable voltage AC to rectified DC to inverter generated line AC.

Single phase grid voltages supported: 220-240 VAC, 50/60 Hz

Single phase inverter type: 2 x SMA Windy Boy 6000 W inverter (WB6000A)

Three phase grid voltages supported: 400Y240 VAC, 50 Hz

Three phase inverter type: 3 x SMA Windy Boy 5000 W inverter (WB5000A)

Operating Environment

Altitude limit: 2000 m

Marine environment: Suitable for coastal environments with no direct salt spray

Ambient temperature limits: -20°C min, 50°C max

Static survival wind speed: 62 m/s

Controller installation environment: Indoor/Outdoor

Controller enclosure environment classification: NEMA type 3R

Diversión load installation environment: Indoor/Outdoor

Build materials and colors

Body Construction: Ductile iron casting and steel (white)

Blades: molded fiberglass (white with grey)

Tower: Galvanized steel (grey)

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Tower Interface

Tower top weight: 725 kg

Maximum lateral thrust: 5650 N

Maximum axial thrust: 7580 N

Maximum moment: 7950 N•m

Tower

Type: Self-supporting monopole

Hub height: 15m, 18m and 25m (hinged or hydraulic lift)

Standards Compliance

MCS certification (BWEA compliance), certificate number: MCS BBA 0071



Figure 1: Certificate No: MCS BBA 0071

Noise Report

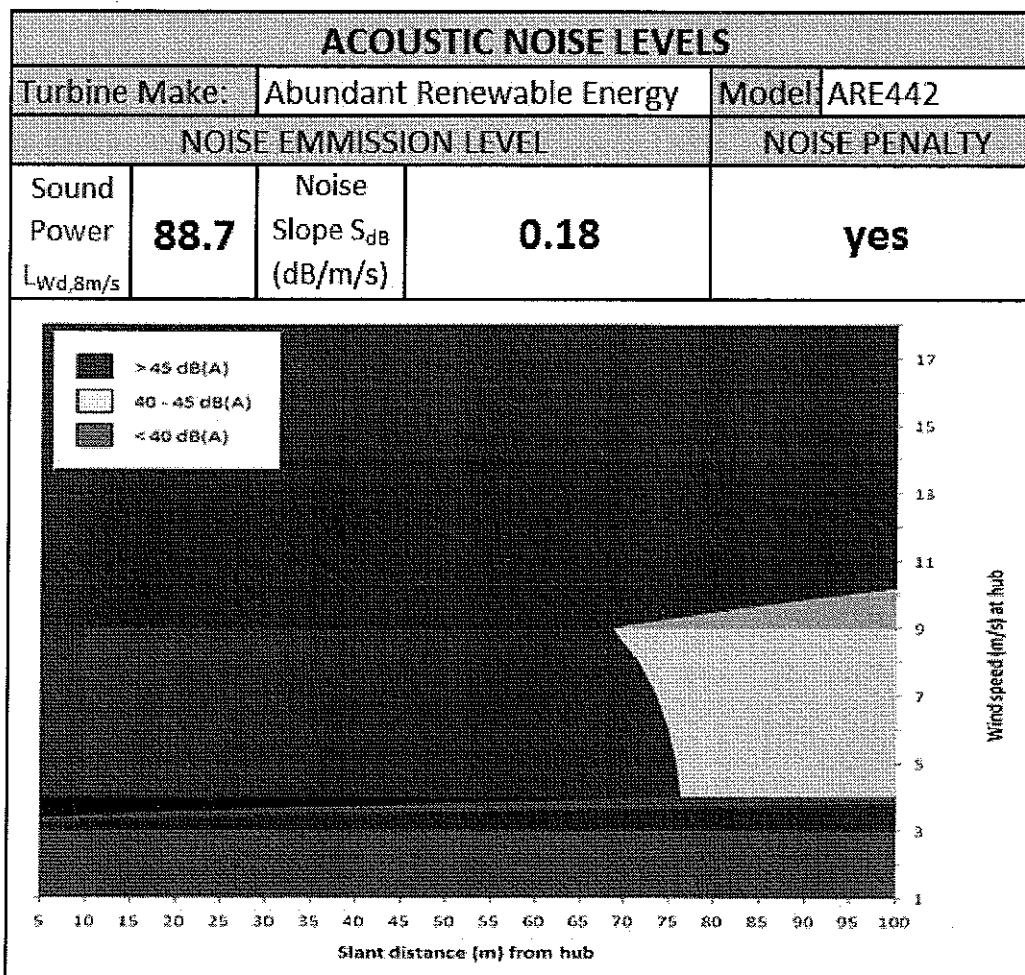
Declared apparent emission sound level at 8 m/s: 88.7 dB(A)

Reference 25m sound level at 8 m/s: 57.7 db(A)

Reference 60m sound level at 8 m/s: 50.2 dB(A)

- Huskey, A. and Van Dam, J., Wind Turbine Generator System Acoustic Noise Test Report for the ARE442 Wind Turbine, Table 5, NREL, December 2010

The following noise map is a declaration of the sound power level, tested according to BWEA standard 29th Feb 2008 which amends IEC 61400-11 for the purposes of acoustic testing of small wind turbines.

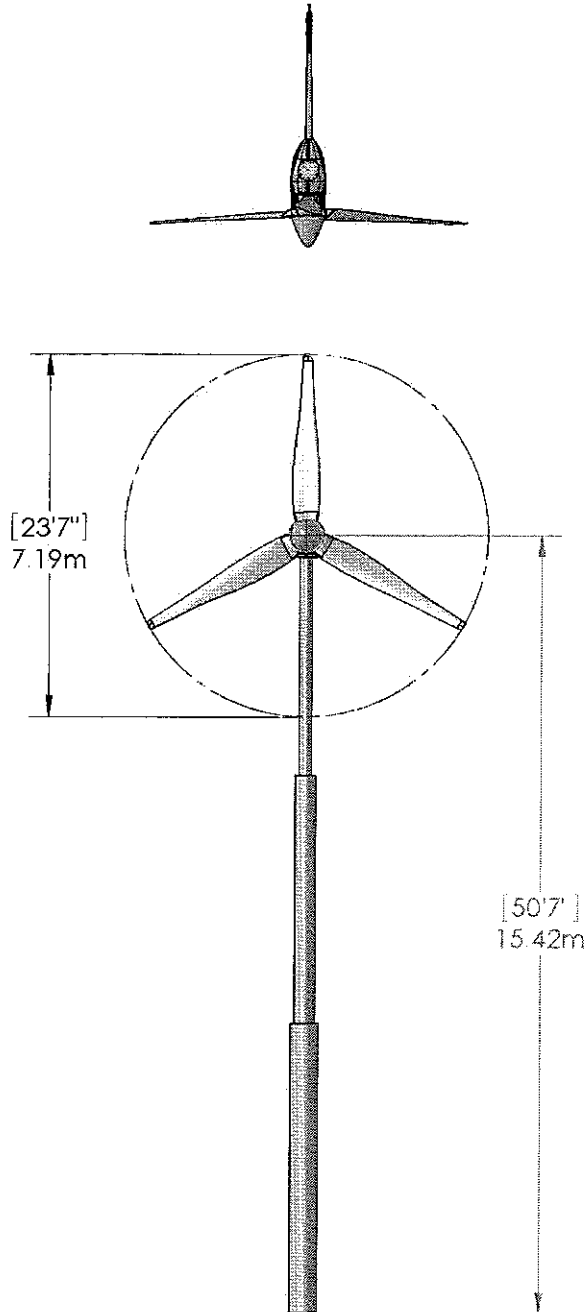
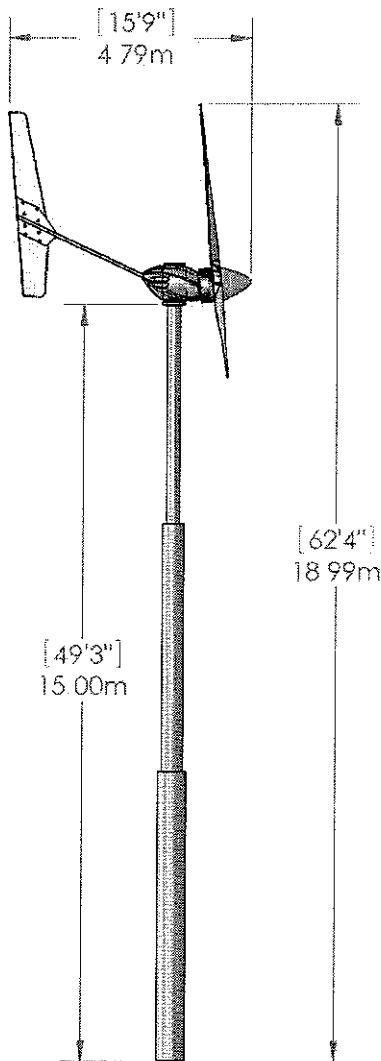


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Technical Drawings

NOTES

1. SHOWN ON 15m MONOPOLE
2. THIS INFORMATION IS FOR PLANNING PURPOSES ONLY



LEGEND ☐ NOTE ☐ ITEM
☒ INSPECTION DIM. NUMBER ☐ REVISION

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN METERS AND [feet and inches]



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REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	8/15/2011	XC0547



DRAWN BY J. PRUYN
 DATE 8/11/2011
 SCALE 1:125

442SR ELEVATION DRAWING
 SIZE A DWG. NO. 3643

SHEET 1/1 REV A

G83 Compliance

Certificate G83/1-1

Engineering Recommendation

Manufacturer:	SMA Solar Technology AG		
Address:	Sonnenallee 1		
Postal code, place:	34266 Niestetal		
Country:	Germany		
Test house details:	Masterpower Electronics Ltd, Aberdeen (UK) (a)		
	SMA Solar Technology AG, R&D Department, Niestetal (D) (b)		
Type reference:	Sunny Mini Central SMC 4600A / 5000 A / 6000 A		
	Windy Boy WB	5000 A / 6000 A	
Max AC power:	5000 W / 5500 W / 6000 W		
Nominal AC power:	4600 W / 5000 W / 6000 W		

The results of the G83/1-1 tests are summarized in this certificate. SMA declares that all devices (with G83 setting) that are shipped to the UK comply with the requirements defined in engineering recommendation G83/1-1. These settings cannot be changed by an installer, user or by any other person without the use of a tool (password protected). The complete documentation can be viewed at SMA (headquarters) after prior announcement.

Test details

- Power quality
- Harmonic current emissions as per BS EN 61000-3-2 A
- Voltage fluctuations and flicker as per BS EN 61000-3-3 A
- DC injection / Power factor
- Under / Over frequency switch off
- Under / Over voltage switch off
- Loss of mains test
- Reconnection time

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SMA

Test results

Power quality

Harmonic current emissions as per BS EN 61000-3-2 A, tested by (b)								
Harmonic	2 nd	3 rd	5 th	7 th	9 th	11 th	13 th	15 th ... 39 th
Limit [A]	1.08	2.3	1.14	0.77	0.4	0.33	0.21	$0.15 \times [15/n]$
Test value [A]	0.155	0.494	0.447	0.365	0.267	0.196	0.130	< limit BS EN 61000-3-2 A

Voltage Fluctuations and Flicker, tested by (a)				
	starting	stopping	running	
Limit	4 %	4 %	$P_{st} = 1.0$	$P_{st} = 0.65$
Test value	< 0.7 %	< 1.7 %	0.119	0.01

	DC injection, tested by (b)			Power factor, tested by (b)		
G83/1-1 Limit	20 mA, tested at three levels			0.95 lag - 0.95 lead at three voltage levels at P_{rated}		
Test level	10 %	55 %	100 %	212 V	230 V	248 V
Test value	< 1 mA	< 1 mA	< 1 mA	0.99	0.99	0.99

Under / Over frequency switch off

	Under frequency switch off, tested by (b)		Over frequency switch off, tested by (b)	
Parameter	Frequency [Hz]	Time [s]	Frequency [Hz]	Time [s]
G83/1-1 Limit	47 Hz $\pm$ 0.5 %	5 s	50.5 Hz $\pm$ 0.5 %	5 s
Actual setting	47.0 Hz	-	50.5 Hz	-
Trip value	46.99 Hz	< 1 s	50.51 Hz	< 1 s

Under / Over voltage switch off

	Under voltage switch off, tested by (b)		Over voltage switch off, tested by (b)	
Parameter	Voltage [V]	Time [s]	Voltage [V]	Time [s]
G83/1-1 Limit	207 V	5 s	264 V	5 s
Actual setting	209 V	-	261 V	-
Trip value	207 V	< 1 s	264 V	< 1 s

Loss of mains test, tested by (b)

Method used	Resonant Circuit as per Annex C		
Output power level	10 % P_{rated}	55 % P_{rated}	100 % P_{rated}
G83/1-1 Limit	5 s	5 s	5 s
Trip setting	-	-	-
Trip value	3.1 s	0.8 s	0.4 s

G83_SMA_V084-440A_ZEN1071 2/3



Fault level contribution

Self monitoring -- solid state switching

Not applicable as electro-mechanical relays used.

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G59 Compliance

Certificate G59/2

Engineering Recommendation

Manufacturer:	SMA Solar Technology AG
Address:	Sonnenallee 1
Postal code, place:	34266 Niestetal
Country:	Germany

Test house details:	SMA Solar Technology AG
---------------------	-------------------------

Type reference:	Max AC power:	Nominal AC power:	Nominal AC Current:
SMC 5000A/WB 5000A	5 500 W	5 000 W	26 A
SMC 6000A/WB 6000A	6 000 W	6 000 W	26 A
SMC 7000HV-11	7 000 VA	6 650 W	28.9 A

The results of the G59/2 tests are summarized in this certificate. SMA declares that all devices (with G59 setting) that are shipped to the UK comply with the requirements defined in engineering recommendation G59/2. These settings cannot be changed by an installer, user or by any other person without the use of a tool (password protected). The complete documentation can be viewed at SMA (headquarters) after prior announcement.

Test details

- Power quality
- Harmonic current emissions as per BS EN 61000-3-12
- Voltage fluctuations and flicker as per BS EN 61000-3-3
- DC injection / Power factor
- Under / Over voltage switch off (based on requirement for LV connected)
- Under / Over frequency switch off
- Loss of mains test
- Reconnection time

Test results

Power quality

Harmonic current emissions as per BS EN 61000-3-12									
Minimal Short Circuit Ratio R_{SC} : 33									
Value of Short Circuit Power S_{SC} corresponding to R_{SC} :									
SMC 5000A						0.165 MVA			
WB 5000A						0.165 MVA			
SMC 6000A						0.198 MVA			
WB 6000A						0.198 MVA			
SMC 7000HV-11						0.219 MVA			
Description	Harmonic Current % = $100 I_n / I_1$						Harmonic Current Distortion Factors (%)		
Harmonic	3rd	5th	7th	9th	11th	13th	THD	PWHD	
Limit BS EN 61000-3-12 Table 2-4	21.6	10.7	7.2	3.8	3.1	2	23 (13)	23 (22)	
Actual Values:									
SMC 5000A	0.31	0.35	0.40	0.46	0.42	0.40	1.15	2.68	
WB 5000A	0.31	0.35	0.40	0.46	0.42	0.40	1.15	2.68	
SMC 6000A	0.27	0.30	0.31	0.39	0.40	0.39	1.04	2.62	
WB 6000A	0.27	0.30	0.31	0.39	0.40	0.39	1.04	2.62	
SMC 7000HV-11	1.19	0.22	0.22	0.25	0.19	0.13	1.39	1.20	

Voltage Fluctuations and Flicker				
	starting	stopping	running [at rated power]	
BS EN 61000-3-3 Limit	4 %	4 %	$P_{st} = 1.0$	$P_{it} = 0.65$
Test values	< 0.7 %	< 1.7 %	0.119	0.033

DC Injection			
G59/2 Limit		20 mA	
Test level [% of rated power]	10 %	55 %	100 %
Test values	<< 20 mA	<< 20 mA	<< 20 mA

The above listed devices are equipped with a grid frequency transformer

Power factor			
G59/2 Limit		0.95 lag – 0.95 lead	
Test level (AC voltage)	212 V	230 V	248 V
Test values [at rated power]	> 0.99	> 0.99	> 0.99

Under / Over voltage

Under / Over voltage test						
	G59/2 Limit		Setting		Test Results	
	Voltage	Time	Voltage	Time	Voltage	Time
Under voltage Stage 1	200.1 V	2.5 s	202.1 V	2 s	201.0 V	2.03 s
Under voltage Stage 2	184 V	0.5 s	186 V	0.4 s	184.1 V	0.43 s
Over voltage Stage 1	253 V	1 s	251 V	0.5 s	250.5 V	0.52 s
Over voltage Stage 2	264.5 V	0.5 s	262 V	0.4 s	262.3 V	0.43 s

Under / Over frequency

Under / Over frequency test						
	G59/2 Limit		Setting		Test Results	
	Frequency	Time	Frequency	Time	Frequency	Time
Under frequency Stage 1	47.5 Hz	20 s	47.55 Hz	19.5 s	47.54 Hz	19.55 s
Under frequency Stage 2	47 Hz	0.5 s	47.05 Hz	0.4 s	47.04 Hz	0.45 s
Over frequency Stage 1	51.5 Hz	90 s	51.45 Hz	9.5 s	51.46 Hz	9.56 s
Over frequency Stage 2	52 Hz	0.5 s	51.95 Hz	0.4 s	51.96 Hz	0.45 s

Loss of mains test

Loss of mains test (method used: frequency shift)			
Test level (% of rated power)	10 %	55 %	100 %
G59/2 Limit	2.5 s	2.5 s	2.5 s
Actual setting	-	-	-
Trip values	1.26 s	0.65 s	0.68 s

Reconnection times

Reconnection times			
Test level (% of rated power)	Under/Over Voltage	Under/Over Frequency	Loss of mains
G59/2 Limit	180 s	180 s	180 s
Actual setting	180 s	180 s	180 s
Recorded values	200 s	200 s	200 s

Fault level contribution

As SSEGs [small-scale embedded generators] for PV or wind turbine systems are inverter-connected, they are deemed to automatically comply with regulations and no further tests are required

Self monitoring – solid state switching

Not applicable as electro-mechanical relays used

EC Declaration of Conformity

in terms of the Guidelines of the European Community

- Electromagnetic Compliance 2004/108/EC
- Low Voltage 2006/95/EC
- R&TTE 1999/5/EC

The devices stated below have been developed, constructed and manufactured according to the above mentioned EC directives. The applied harmonized standards are shown in the following table.

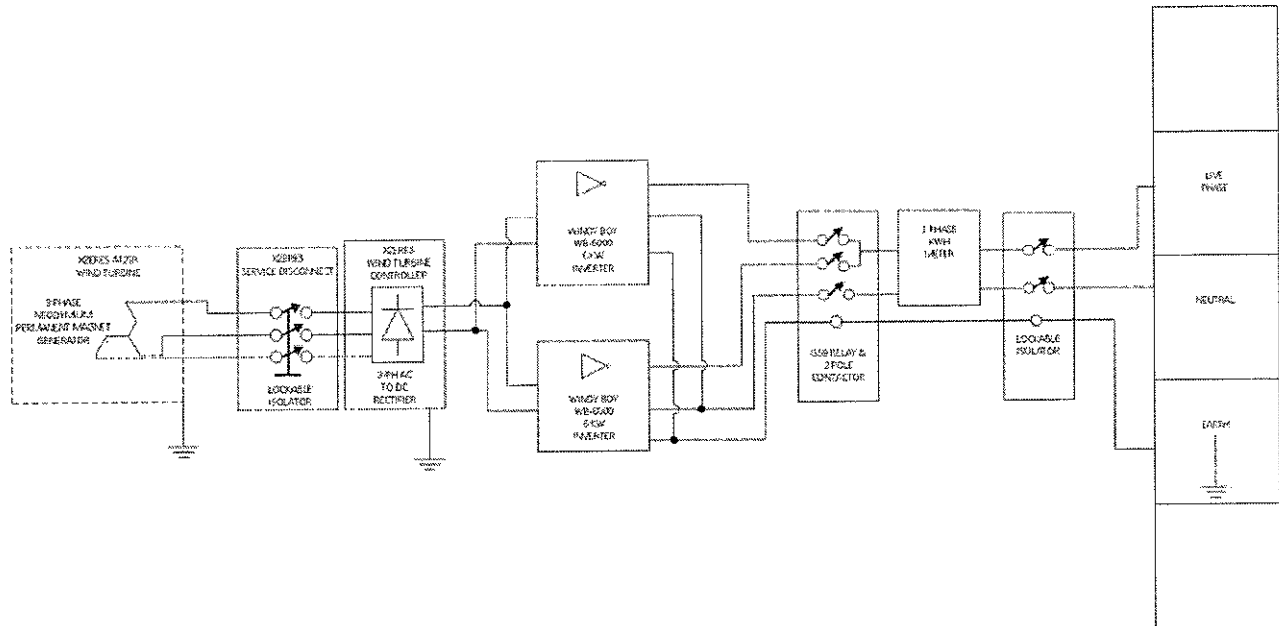
	Windy Boy	Windy Boy	Windy Boy	Windy Boy
	WB 1100LV, WB 1100, WB 1200, WB 1700, WB 2500, WB 3000	WB 3300, WB 3800, WB 5000A, WB 6000A	WB 2000HF-30, WB 2500HF-30, WB 3000HF-30	WB 3600TL-20, WB 5000TL-20
Emission:				
EN 61000-6-3:2007	x	x	x	x
EN 61000-6-4:2007	x	x	x	x
Utility Interference:				
EN 61000-3-3:2008	x		x	
EN 61000-3-2:2006+A1:2009+A2:2009	x		x	
EN 61000-3-11:2000		x		x
EN 61000-3-12:2005		x		x
Immunity:				
EN 61000-6-1:2007	x	x	x	x
EN 61000-6-2:2005	x	x	x	x
Safety:				
EN 50178:1997	x	x	x	x
Radio module (Bluetooth):				
EN 301 489-1 V1.8.1			x	x
EN 301 489-17 V1.3.2			x	x
EN 300 328 V1.7.1			x	x



Declaration of conformity with German, European and international (non-european) standards used for WINDY BOY inverters

German Standard DIN EN		European Standard EN		International Standard IEC (IEC/CISPR)
DIN EN 61000-6-1:2007-10	based on	EN 61000-6-1:2007	based on	IEC 61 000-6-1:2005
DIN EN 61000-6-2:2006-03	based on	EN 61000-6-2:2005	based on	IEC 61 000-6-2:2005
DIN EN 61000-6-3:2007-09	based on	EN 61000-6-3:2007	based on	IEC 61 000-6-3:2006
DIN EN 61000-6-4:2007-09	based on	EN 61000-6-4:2007	based on	IEC 61 000-6-4:2006
DIN EN 61000-3-2:2010-03	based on	EN 61000-3-2:2006+A1:2009+A2:2009	based on	IEC 61000-3-2:2005+A1:2008+A2:2009
DIN EN 61000-3-3:2009-06	based on	EN 61000-3-3:2008	based on	IEC 61000-3-3:2008
DIN EN 61000-3-11:2001-04	based on	EN 61000-3-11:2000	based on	IEC 61000-3-11:2000
DIN EN 61000-3-12:2005-09	based on	EN 61000-3-12:2005	based on	IEC 61000-3-12:2004
DIN EN —		EN 301 489-1 V1.8.1		IEC —
DIN EN —		EN 301 489-17 V1.3.2		IEC —
DIN EN —		EN 300 328 V1.7.1		IEC —
DIN EN 50178:1998-04	based on	EN 50178:1997	led to	IEC 62103:2003

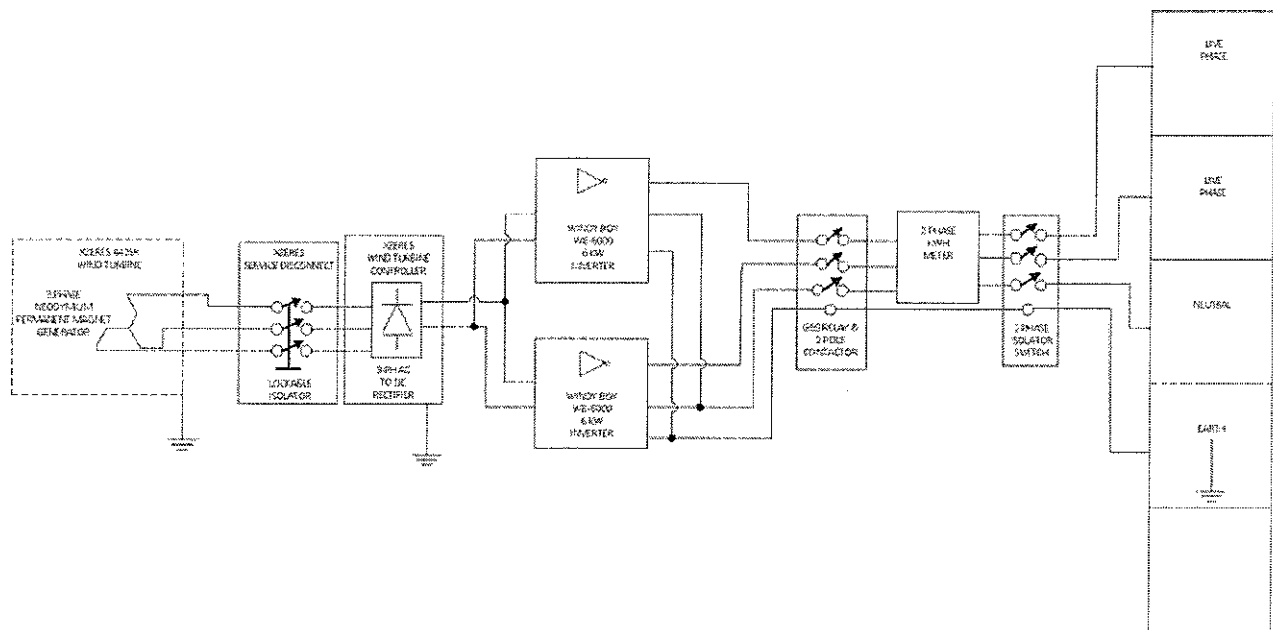
Single Phase Wiring Diagram



REV	XCO	DATE	REVISION DESCRIPTION	TITLE:	
A	628	10/13/2011	INITIAL	XZERES 442SR SINGLE PHASE WIRING DIAGRAM W/ G59-2 PROTECTION (UK)	
				1 PAGE OF 1	3862 XPN
				DRAWN BY: KEVIN THOMAS	DATE: 10/13/2011



Split Phase Wiring Diagram

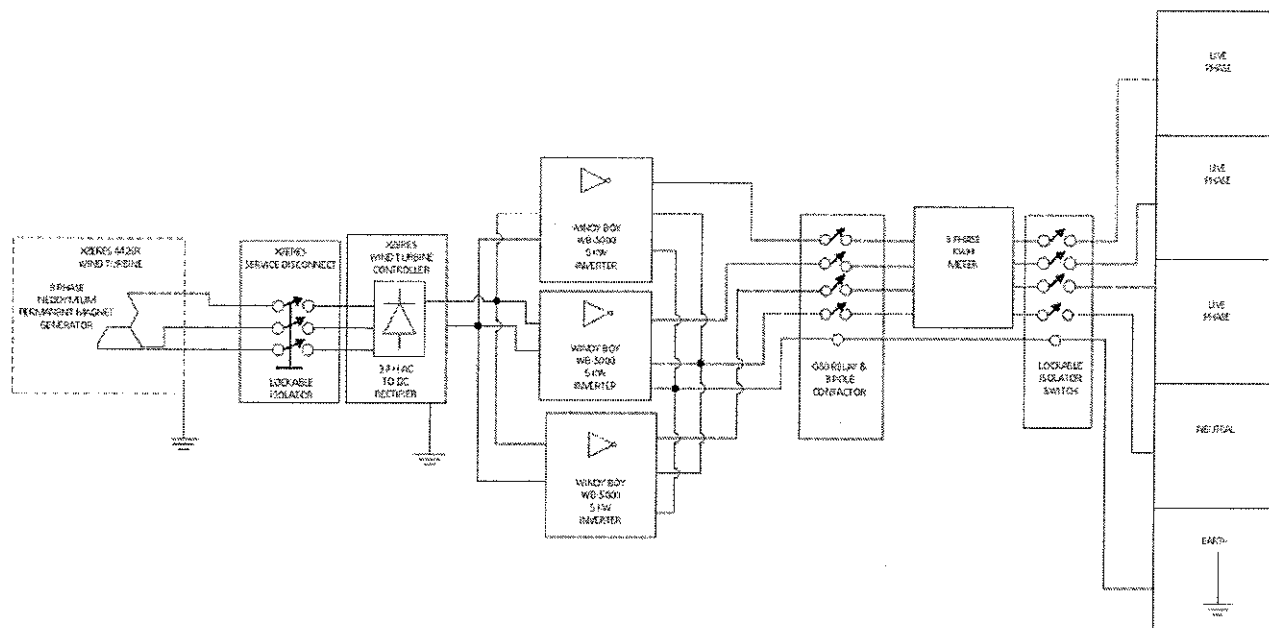


REV	XCO	DATE	REVISION DESCRIPTION	TITLE:	
A	628	10/13/2011	INITIAL	XZERES 442SR SPLIT PHASE WIRING DIAGRAM W/ GS9-2 PROTECTION (UK)	
				1 PAGE OF 1	3864 XPN
				DRAWN BY: KEVIN TIEMAN	DATE: 10/13/2011

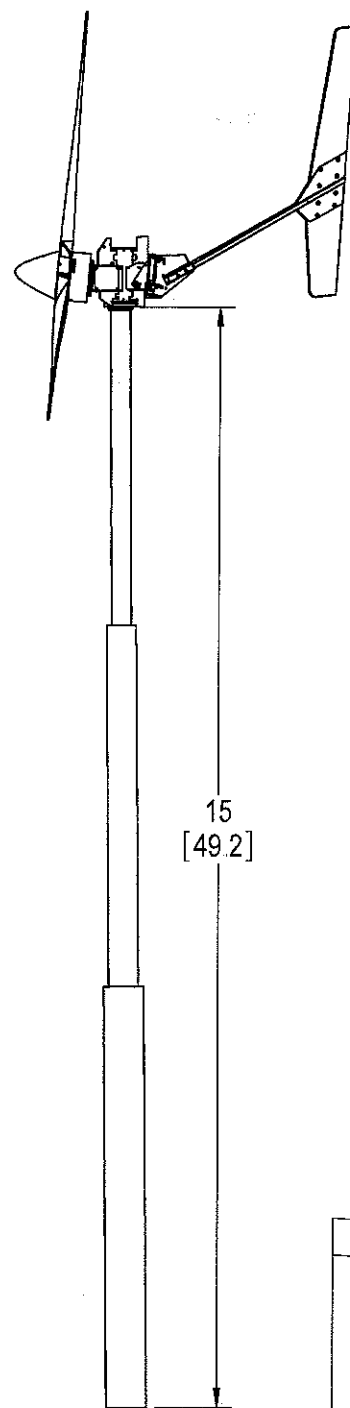
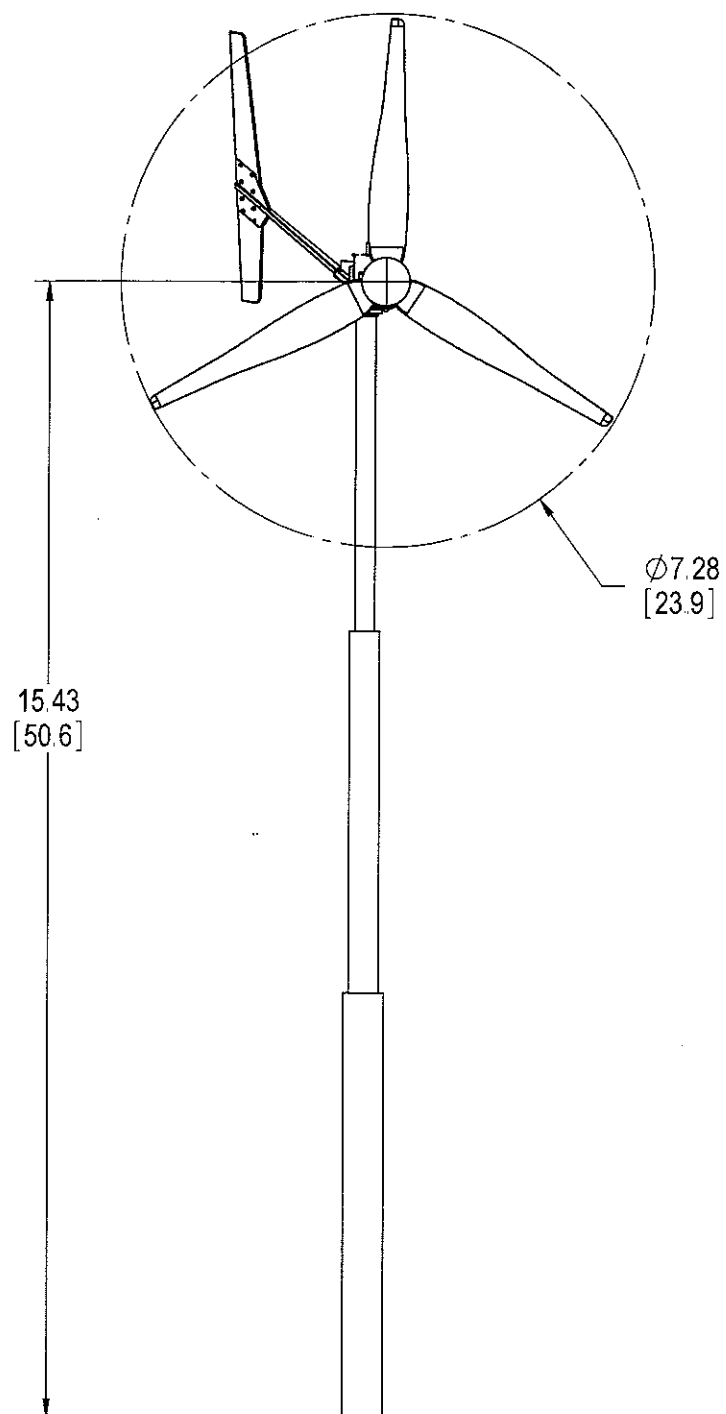
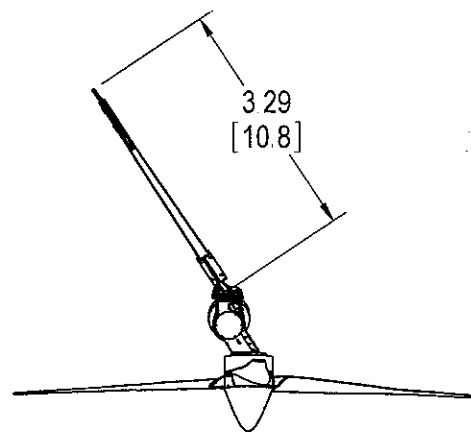


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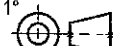
Three Phase Wiring Diagram



REV	XCO	DATE	REVISION DESCRIPTION	TITLE:			
A	628	10/13/2011	INITIAL	XZERES 442SR THREE PHASE WIRING DIAGRAM W/ G59-2 PROTECTION (UK)			
				1 PAGE OF 1	3863 XPN	DRAWN BY: KEVIN TIEMAN	DATE: 10/13/2011



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REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	10/2010	EC
DRAWN BY John Pruyn		ASSY 442SR TURBINE 15m TOWER	
DATE 1/21/11			
SCALE 1:100			
		SIZE A3	DWG. NO. SHEET 1/1 REV A

