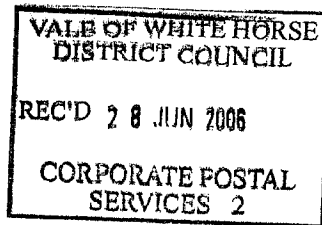


Segen Ltd,  
Wesley Hall,  
Queens Road,  
Aldershot,  
Hampshire,  
GU11 3JD



DOCUMENT 3.

  
**Segen**

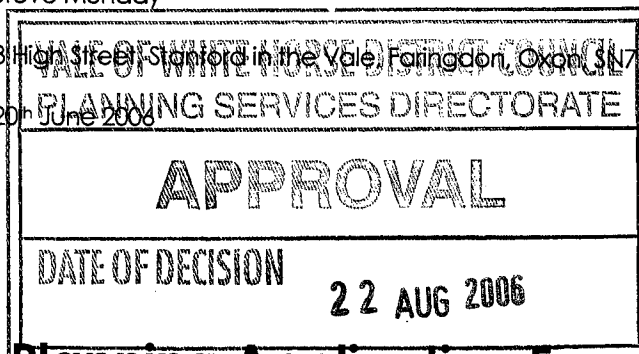
Phone: +44 (0) 1252 401025  
Fax: +44 (0) 1252 336934  
Web: [www.segen.co.uk](http://www.segen.co.uk)

## Planning Application For Small Scale Wind Turbine

Name Steve Munday

Address 3 High Street, Stanford in the Vale, Faringdon, Oxon. SN7 8LH

Date 20th June 2006



## Planning Application For Steve Munday, 3 High Street, Stanford in the Vale, Faringdon, Oxon. SN7 8LH

### This pack contains:

1. A pro forma application with all major issues covered.....(Pages 1-6)
2. Schematic views of the turbine from all sides.....(Pages 7-8)
3. Photos of the turbine.....(Pages 9-11)
4. Photos of the turbine showing scale and colour.....(Page 12)
5. A preliminary noise report.....(Pages 13-15)

All these documents are available in electronic format if required.

You will still need to obtain site plans of the proposed location and mark the site of the development in red and the outline of your property in blue. A description of the suitable scale and scope of these plans will be made by your local planning office. Site plans can be obtained for a small fee from Ordnance Survey **08456 05 05 05** or [customerservices@ordnancesurvey.co.uk](mailto:customerservices@ordnancesurvey.co.uk)

06/01037/FUL STA / 8763/4

**Proposal to Supply and Install a Iskra AT5-1 Small Wind Turbine**

**at 3 High Street, Stanford in the Vale, Faringdon, Oxon. SN7 8LH**

Summary:-

It is proposed to install a small wind turbine on land at 3 High Street, Stanford in the Vale. The wind turbine is designed for electricity generation and will be mounted on a 12 metre tower.

The turbine has a rotor diameter of 5.4 metres and its rated output is 5kW. The turbine is to be used to generate electricity to power Number 3, High Street.

The national wind speed database gives an annual mean wind speed of 4.7 m/s for Grid Ref SU343932

The Iskra turbine is expected to generate an average of 7,600 kilo-Watt-hours of electricity each year, equivalent to a saving of nearly 3,600 kg of carbon dioxide. This installed capacity will also help to contribute towards the regional targets for renewable energy generation for 2010.

The turbine has been designed and developed by Iskra Wind Turbine Manufacturers Ltd of St Anns Nottingham with the assistance of DTI funding.

The turbine has been specifically designed for low noise operation and minimal visual impact, and has exceptional performance especially at the lower average wind speeds expected in this location. The turbine has a survival wind speed of 132 mph.

The proposed location of the wind turbine is shown on the attached map. It is planned to position the turbine at the point indicated wind turbine '+'

The turbine would be positioned approximately 50 m from the nearest point of public access. This is the public footpath Green Lane.

The nearest commonly used road is the High Street, 140 m to the South West. The road is a local unclassified road, the High Street and carry's typically local and residential traffic.

The proposed location of the turbine is 50 m south of the nearest property not owned by the applicant, and the property is very secluded due to position of tree's.

06/01037/FUL STA/8763/4

## Environmental Impact Assessment :-

### Background & Policy Context:-

Wind energy is an abundant natural resource. It is non-polluting, clean and sustainable. The UK has one of Europe's windiest climates and therefore wind energy is expected to be an important element in achieving the UK government's commitment to reduce CO2 emissions to 12.5% below 1990 levels by 2010. More specifically it is Government policy to achieve 10% of the nation's electrical requirements from renewable sources by 2010.

Planning Policy Statement 22, published in 2004 replaces PPG22 - Renewable Energy the statement and supporting notes cover all aspects of renewable energy including considerations for the siting of wind turbines and encourages favourable views towards small scale renewable power sources.

Significantly Paragraph 18:-

#### **SMALL SCALE RENEWABLE ENERGY DEVELOPMENTS**

**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 states: 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.**

The Iskra turbine which has a rotor diameter of 5.4 metres on a 12metre high tower is almost insignificant in comparison to such utility scale giants, being of a similar size to the small wooden power poles which are a familiar and accepted sight throughout rural Britain. However, it was felt that it would be useful to consider those aspects of wind turbines, which could potentially adversely affect the environment in order to dispel any misunderstandings about the nature and scale of the proposed development.

### Environmental Impact

PPS22 Renewable Energy (August 2004) and/or PPG22 (Feb 1993)-Annex on Wind Energy, recommend the consideration of the following factors in the assessment of the planning implications of proposals for wind turbine developments:-

#### Safeguarding:-

PPG22, Not applicable in this case as, due to its small scale, it is not felt appropriate that the installation should be safeguarded by the planning authorities against potentially conflicting future developments.

#### Precedent:-

PPG 22 states that since the merits of particular cases vary widely, fears that granting of planning permission may be seen as setting a precedent is not sufficient reason for refusal.

06/01037/FUL STA/8763/4

#### Standards & Certification:-

There is no recognised standard in general use for small turbines such as the Iskra AT5-1. However the turbine has been designed from the outset to be compliant with current standards for the certification of full sized utility scale turbines. The turbine is designed to survive wind speeds of 60 metres per second (132 mph), which is considerably in excess of those experienced in the East Midlands. Indeed, if such winds were to be experienced inland in the UK there would be very widespread damage to buildings and power lines with considerable destruction. The maximum recorded wind speed during the notorious 1987 gales was 107 mph. The turbine has been approved as a recommended product under the Clear-skies funding scheme.

#### Safety:-

PPG22 identifies little or no risk arising to the public and states that properly designed and maintained turbines are a safe technology.

#### Icing:-

PPG22. Icing up of the GRP composite blades is not seen as a risk in the proposed location.

#### Proximity to Power Lines:-

The proposed location for the turbines is approximately 60m.

#### Proximity to Airports:-

PPS22 and PPG 22. The nearest airport is Oxford airport 18 miles to the East, Brize Norton 10 miles to the North. This scale of turbine at 12 m in height will not have any impact on air traffic.

#### Proximity to Roads and Railways:-

The turbine will be 60 m from the nearest road. The nearest Railway line is 2miles to the South (GWR Reading/Swindon). PPG22 says it may be advisable for a turbine to be set back from roads and railways by a distance equal to at least the height of the turbine. Clearly in this case the turbine is at a far greater distance than this from both the road and railway track.

#### Shadow Flicker:-

PPG22. Shadow flicker is a rare event which sometimes can occur when the shadow of the turbines blades play on nearby buildings at certain times of day and days of the year. It most commonly would affect nearby buildings to the East or West of the turbine at dusk and dawn. There are no nearby buildings to the east or west of the proposed turbine location likely to be affected by shadow.

06/01037/FUL STA/8763/4

#### Noise Levels:-

The AT5-1 has been designed to be very quiet indeed. The rotor design and in particular, the low rotor tip speed, coupled with direct drive system (no gearbox) all ensure quiet operation. It is generally accepted that if the wind turbine noise is less than 10dB(A) below background noise levels, this will not cause a nuisance to neighbours. On a typical site in the countryside, it is expected that this condition can be met at distances greater than about 50m from the wind turbine base. Therefore as a general rule where possible, the nearest residents to the wind turbine should be 50m or more away. The noises from the wind turbine are gentle and it would be quite reasonable to locate the wind turbine less than 70m from your home. Also as the nearest property has the added advantage that tree's will act as a sound buffer.

#### Electro-magnetic Production and Interference:-

PPG22.The Iskra wind turbine uses a permanent magnet brushless alternator and thereby avoids one main source of potential electromagnetic interference, worn brushes. The other common source of electromagnetic interference is the switching circuitry used in the controller and inverter to adjust the turbine's loading. This equipment will be fully tested to ensure full compliance with industry standards.

#### Scattering of Signal:-

PPG22.This is a phenomenon that very occasionally may affect large utility scale turbines. It is not considered to be relevant to a turbine as small as the Iskra machine.

#### Specialist Consultation:-

PPG22.This is not believed to be appropriate for a small turbine such as the Iskra AT5-1 especially in the proposed location.

#### Siting and the Landscape:-

PPS22 and PPG22. It has been normal practice to site utility scale wind turbines on elevated and exposed ground in order to achieve the highest possible energy capture and optimise the economics of the project. This has led to considerable opposition to wind power projects wherever they have been proposed. It is important to appreciate that the Iskra turbine is of a completely different scale to the now familiar utility scale turbines, which may have tower heights of 100m and rotor diameters of 80m or more.

By comparison the Iskra machine, with a tower height of 12 m and rotor diameter of just 5.4 m, is nearer in scale to a typical telegraph pole or power transmission pole, which form a familiar aspect of our rural landscape.

However it is accepted that the main difference between such installations and the Iskra turbine is that the turbine involves moving parts. The Iskra turbine has been specifically designed to have low visual impact, with slender blades and minimal visual bulk at tower height. The use of a guyed tower allows the diameter of the tower to be minimized, further reducing the visual impact of the turbine. Additionally it is proposed to paint the tower and turbine in a pale grey colour, which will help it to blend with both the sky and the rural background. The nearest property not owned by the applicant has tree's that will limit and visual impact and likely that the turbine will not be seen.

06/01037/FUL STA/8763/4

#### Ecology:-

It is not believed that the proposed site is in any way a protected habitat or area of outstanding natural beauty. PPG 22 suggests that the risk of collision between birds and the moving blades is minimal and this is borne out by Iskra's experience with the AT5-1.

#### Archeology:-

There are not believed to be any known archaeological remains at the proposed location. In any case, the foundations required for the Iskra turbine involve minimal disturbance of the ground beneath the tower and each anchoring point.

#### Listed Buildings and Conservation Areas:-

The proposed location is not in the vicinity of any known listed buildings or conservation areas.

#### Construction Disturbance:-

The amount of additional traffic and need for construction machinery to erect the Iskra turbine is negligible.

#### Conditions:-

Iskra are willing to consider alternative colours for the turbine if it is felt that the pale grey colour normally offered is inappropriate.

Due to the minimal foundations required for the Iskra machine, restoration of the site following possible de-commissioning is particularly simple.

No ancillary structures or buildings are required to house electrical equipment or controllers, which will be located in an existing nearby barn.

If planning officers would like to visit an installed turbine locally to take readings on sound levels or to gain a good firsthand appreciation of the scale of the turbine, Segen would be happy to arrange this. Please contact Lee Baxter @ Segen on 07738 439 071.

Lee Baxter  
Segen Ltd



# Segen

Tel: 01252 401 025

Fax: 01252 336 934

Mob: 07738 439 071

Email: [lee.baxter@segen.co.uk](mailto:lee.baxter@segen.co.uk)

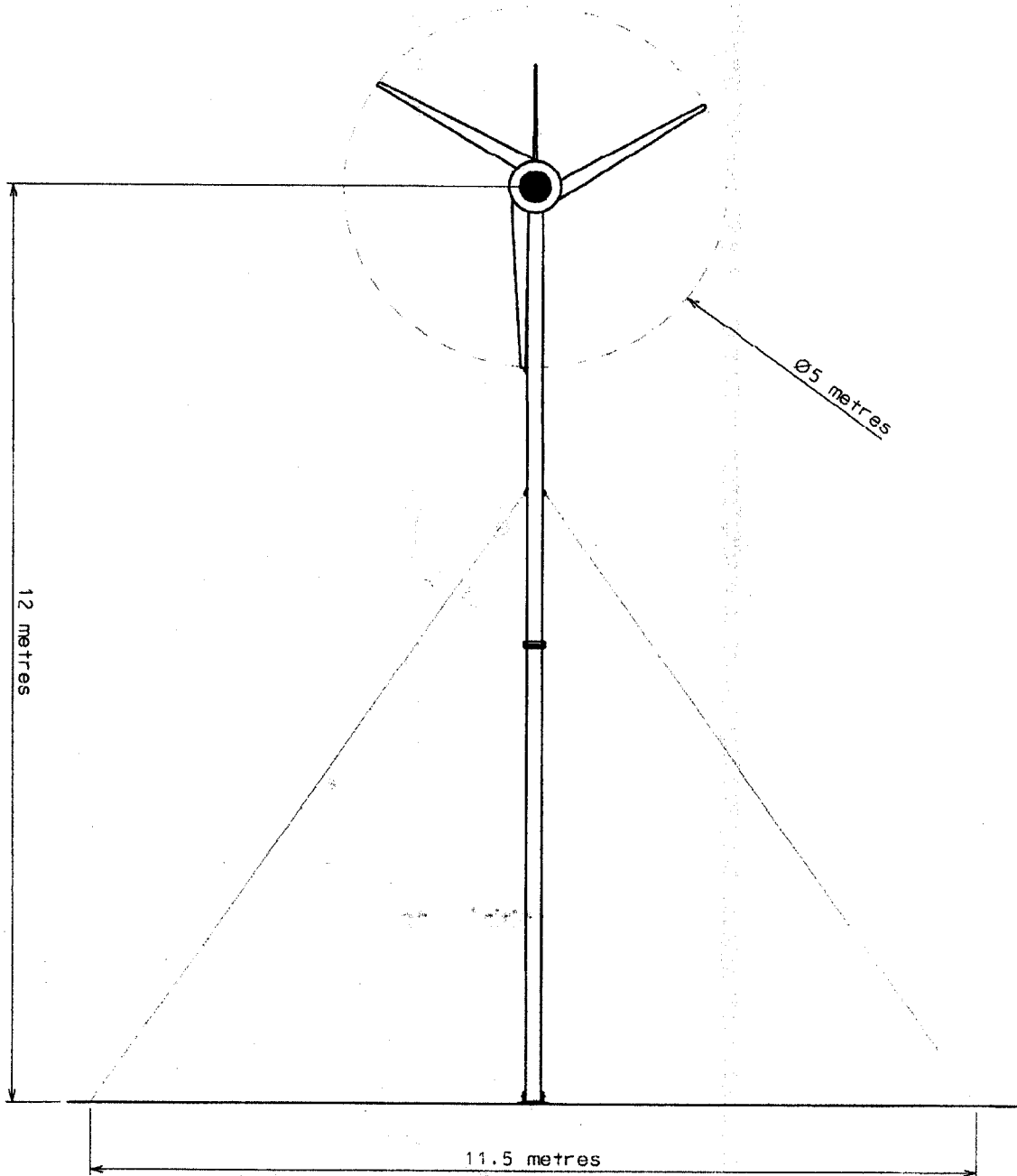
Web: [www.segen.co.uk](http://www.segen.co.uk)

Skype: lee.baxter

26/00371/FUL STA/8763/4

VALE OF WHITE HORSE  
DISTRICT COUNCIL  
REC'D 28 JUN 2006  
CORPORATE POSTAL  
SERVICES - 2

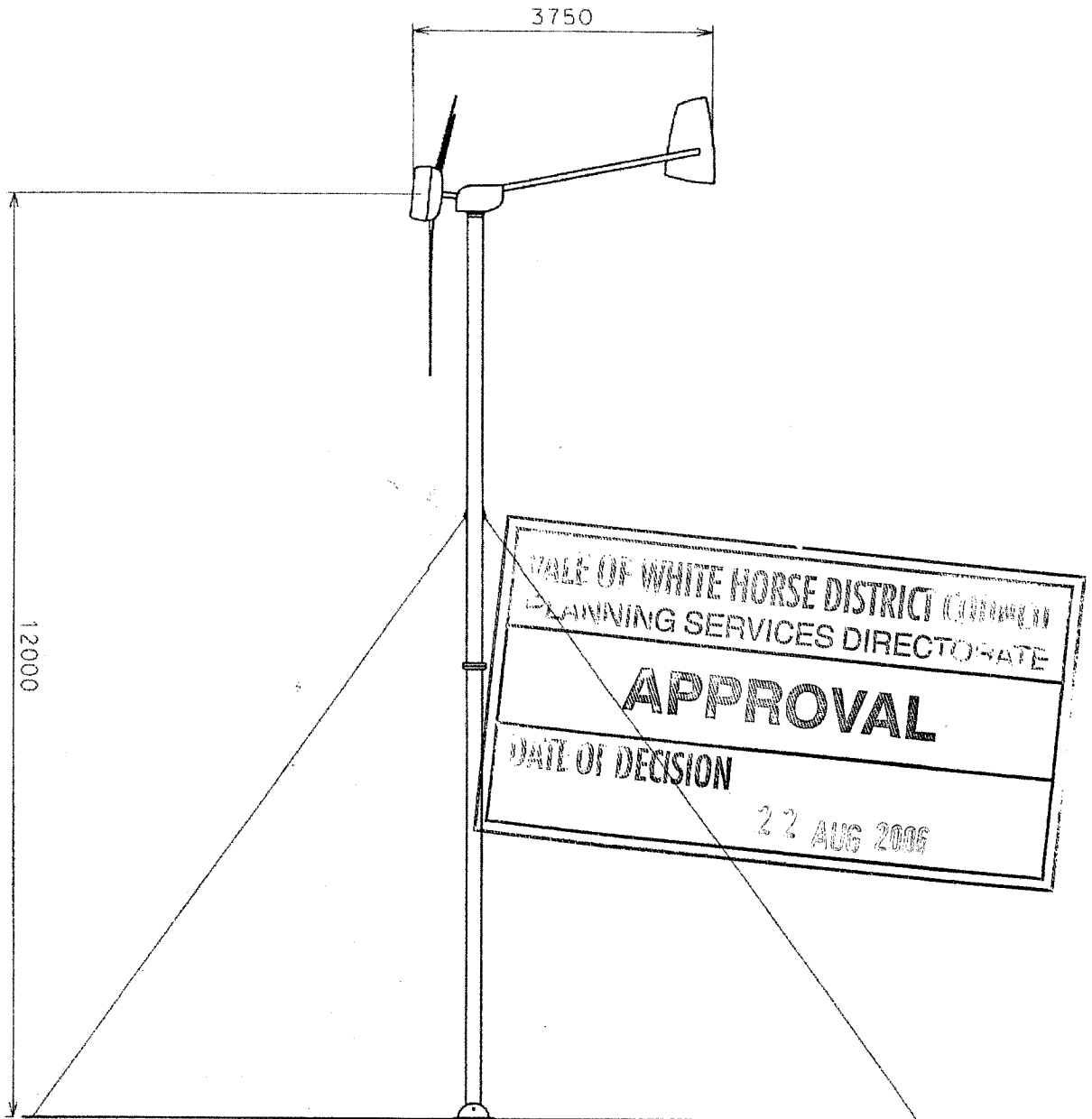
**2. Schematic views of the turbine from all sides.**



**Iskra AT5-1 Wind Turbine – Guyed Tower – Front Elevation**

06/01037/FUL STA/8763/4

VALE OF WHITE HORSE  
DISTRICT COUNCIL  
REC'D 28 JUN 2006  
CORPORATE POSTAL  
SERVICES 2



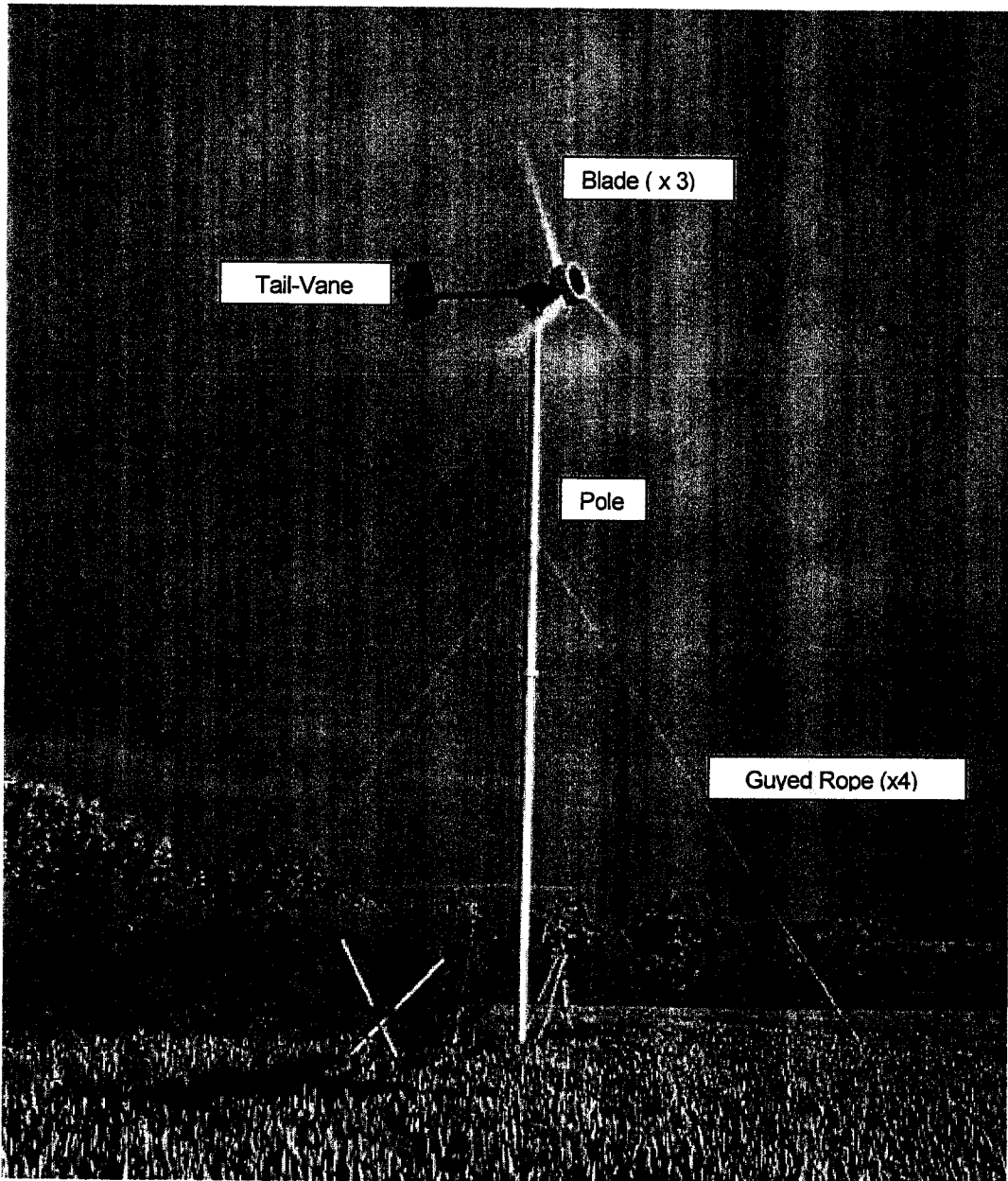
Iskra AT5-1 Wind Turbine – Guyed Tower – Side Elevation

06/01037/FUL STA/8763/4



VALE OF WHITE HORSE  
DISTRICT COUNCIL  
REC'D 28 JUN 2008  
CORPORATE POSTAL  
SERVICES - 2

3. Photos of the turbines installed.



Picture 1 - Iskra AT5-1 wind turbine, guyed rope, pole height 12m

06/0037/FUL STA/8763/4

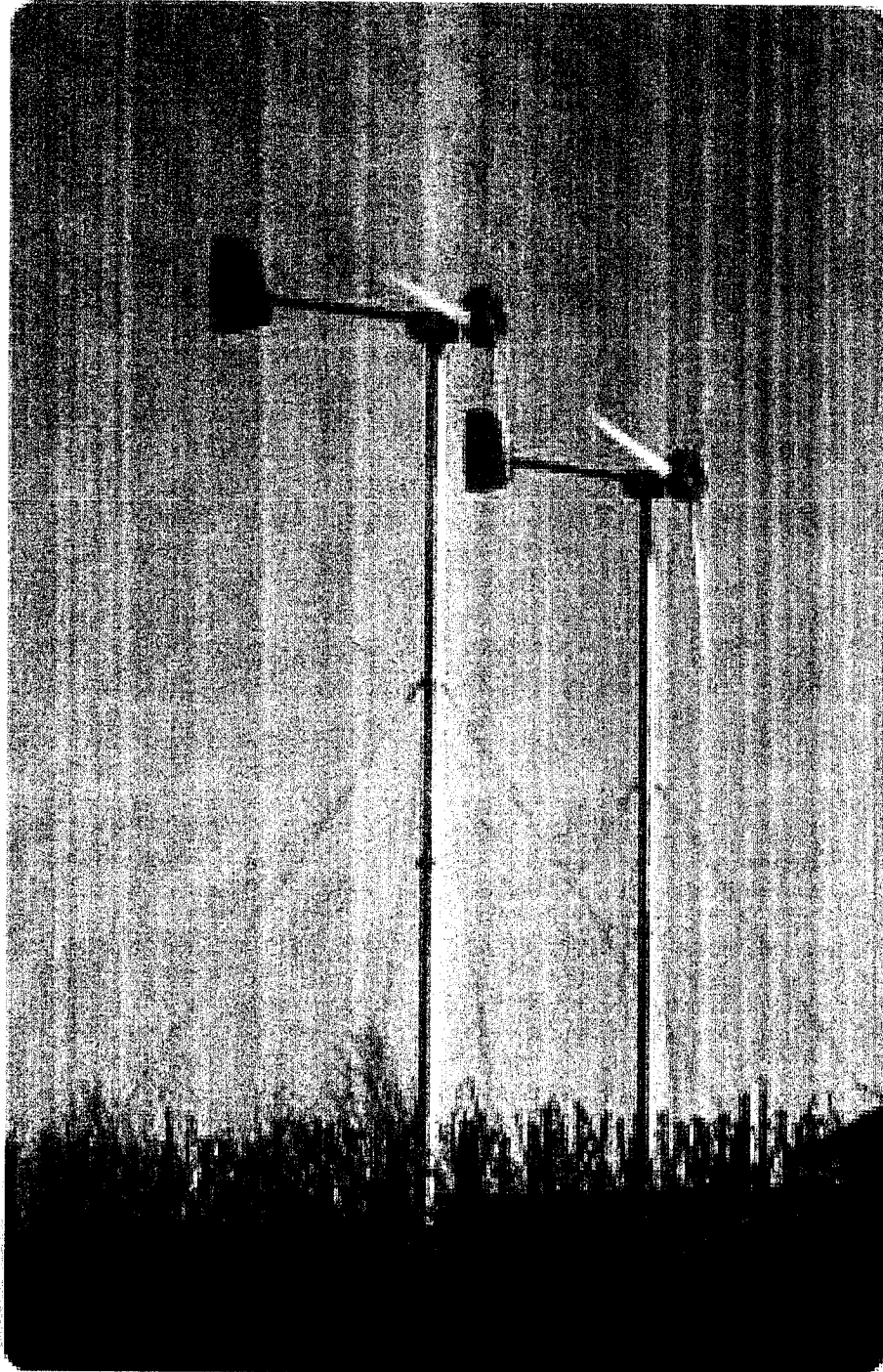
VALE OF WHITE HORSE  
DISTRICT COUNCIL  
REC'D 28 JUN 2006  
CORPORATE POSTAL  
SERVICES 2



Picture 2 - Iskra AT5-1 wind turbine, guyed rope, pole height 12m

06/01037/FUL STA/8763/4

VALE OF WHITE HORSE  
DISTRICT COUNCIL  
REC'D 28 JUN 2008  
CORPORATE POSTAL  
SERVICES - 2

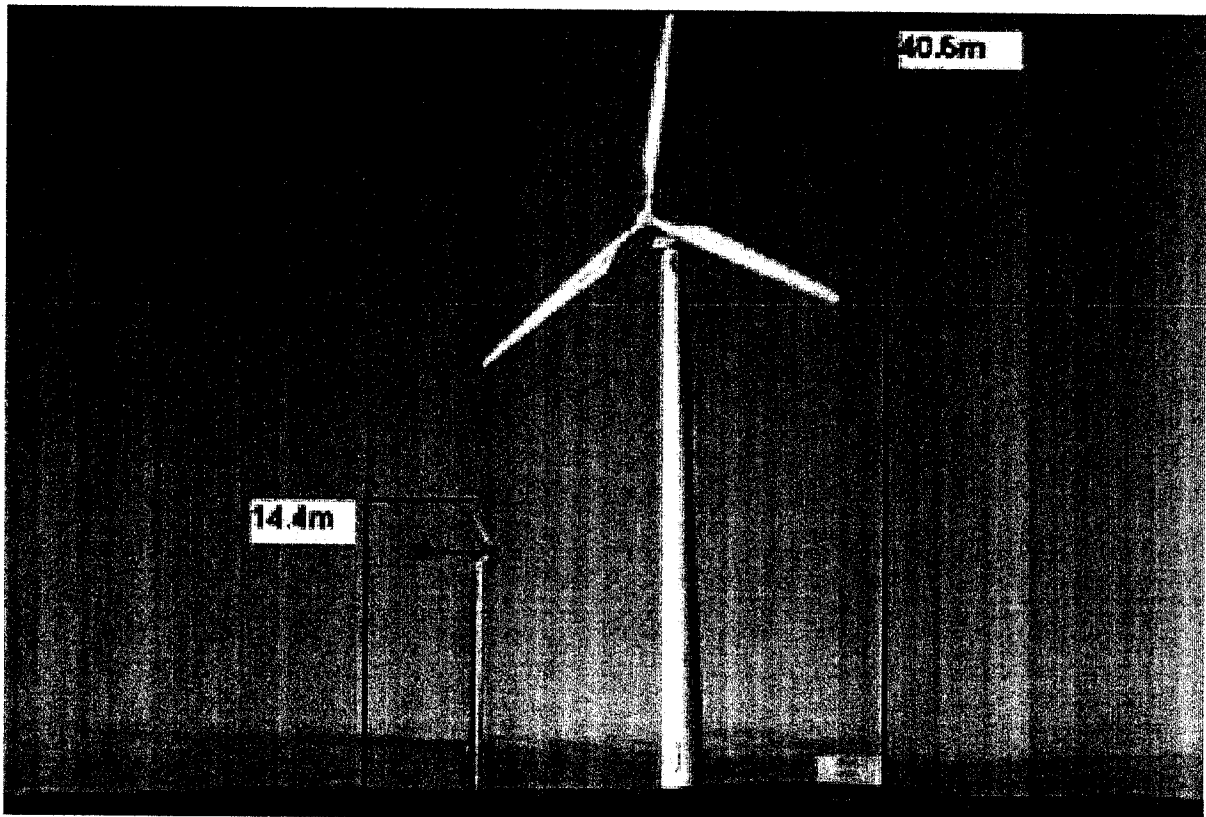


Picture 3 - Iskra AT5-1 wind turbine, guyed rope, pole height 12m

06/01037/Full STA/8763/4

VALE OF WHITE HORSE  
DISTRICT COUNCIL  
REC'D 28 JUN 2006  
CORPORATE POSTAL  
SERVICES 2

4. Photo of the turbine showing scale and colour.



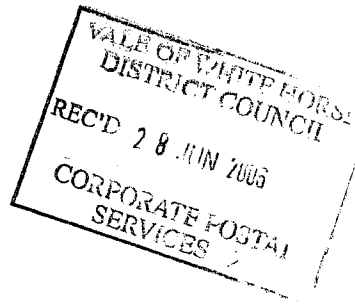
Iskra AT5-1

Other

The above picture reflects the size and scale of the Iskra AT5-1 wind turbine and how its size compares in relation to most common perception of wind turbine.

The AT5-1 is always referred as 'small scale' wind turbine. Dimension's shown in meters (m).

06/01037/FUL STA/8763/4



## **5. A preliminary noise report.**

### **Noise Emissions from the Iskra AT5-1 5kW Wind Turbine**

#### **1.0 Introduction**

This document provides indicative, predicted, noise levels versus distance associated with the Iskra AT5.1 wind turbine. The predictions are based on measured noise levels undertaken by Nottingham County Council. The measurements were taken at 5-6m/s wind speed at 10m from the tower base with both the wind turbine operating and with the wind turbine stationary in order to provide ambient noise levels.

Standard assumptions have been used to predict the noise level at other distances.

#### **2.0 Design philosophy of the Iskra 5kW Turbine**

One of the principal design criteria for the Iskra turbine was to minimise noise.

Generally there are two sources of noise generated by a wind turbine.

- (1) Mechanical noise produced by vibrations within the gearbox, generator, brake system and other rotating parts. Of these sources, the tonal noise associated with the gearbox is often dominant.
- (2) Aerodynamic noise caused principally by the movement of the blades through the air.

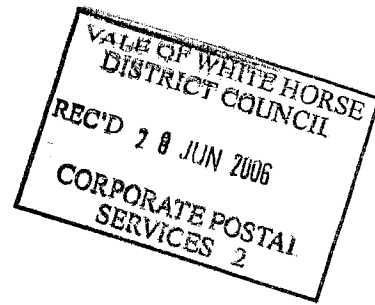
#### **Mechanical Noise:-**

The Iskra turbine is of the direct drive type using a low speed permanent magnet generator. This eliminates the need for a gearbox of any sort, and completely eliminates this source of noise.

All braking on the turbine is effected by the electronic control of electrical loads on the generator. Thus there is no mechanical braking system to act as a source of noise.

Therefore, the only remaining source of mechanical noise is from any torque fluctuations associated with power extraction in the generator. By ensuring that the power extraction is smooth and continuous, this source of noise has also been minimised.

06/01037/FUL STA/8763/4



### **Aerodynamic Noise:-**

The Iskra turbine blades are specifically designed to minimise aerodynamic noise. To achieve this, the rotor is designed to operate at unusually low speed, with a typical blade tip speed of less than 60 m/s.

The blades vary in twist and chord along their length to maximise efficiency and thus minimise noise. In particular, the blade chord has been kept as small as practicable near the tip. Also the blade tips themselves are carefully shaped specifically to minimise noise.

The rotor is upwind of the tower and therefore there is no risk of the 'thud' type noise which can be heard on some downwind machines as the blades pass through the 'wind shadow' of the tower.

Aerodynamic noise from wind turbines is normally most noticeable at low wind speeds, when the background noise caused by the wind blowing in the trees and around buildings is lowest. The Iskra wind turbine is variable speed, and this means the rotational speed of the wind turbine automatically reduces to further reduce aerodynamic noise at times of low wind speed, when the background noise is lowest.

### **3.0 Predicted Noise Emission from the Iskra Turbine.**

Noise measurements were undertaken by Nottingham County Council. Measurements were taken at distance of 10m from the base of an operating wind turbine. The test conditions were as follows:

Date: 10/11/04

Weather: Overcast, dry, wind speed 5-6m/s from North

Measurement type: 1 minute average, 'free field', taken with B+K 2260 sound level meter

Microphone height: 1.5m

Tower height: 12m

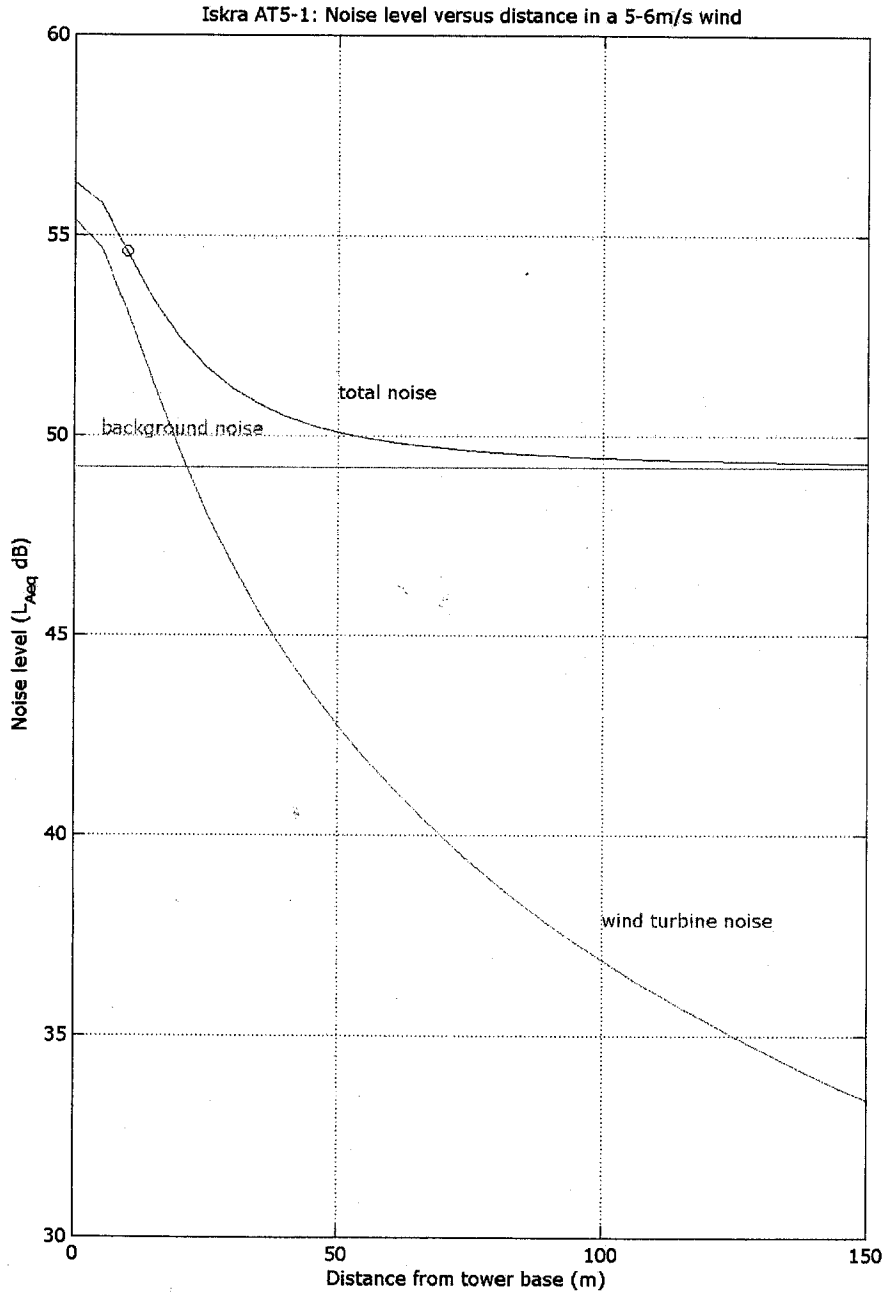
The results were:

Measurement	Distance	Noise when operating, Laeq(dB)	Ambient noise Laeq(dB)	Calculated turbine specific noise Laeq(dB)
1	10m	54.6	49.2	53.1
2	10m	55.1	49.2	53.8

The measurements were used to estimate the noise levels versus distance from the hub, assuming 6dB decrease in the noise contribution from the wind turbine per doubling of distance. The results of this calculation are shown in the attached figure below.

06/01037/FUL STA/B763/4

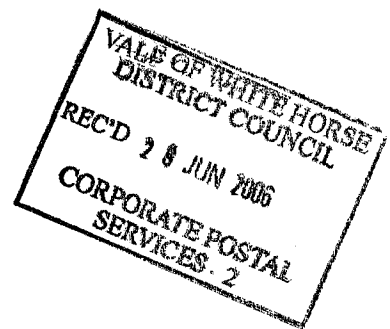
VALE OF WHITE HORSE  
DISTRICT COUNCIL  
RECT 28 JUN 2008  
CORPORATE HOUSING  
SERVICES



Iskra AT5-1 wind turbine noise graph



View south from position of wind turbine to nearest property,  
25 Horsecroft, showing extent of tree line audible and visible barrier.  
Distance to house at least 50m.



Small Scale Wind Turbine

3 High Street  
Stanford in the Vale

Document No.4

S R Munday 26-06-06

**APPENDIX 1**

06/01037/FUL STA/8763/4



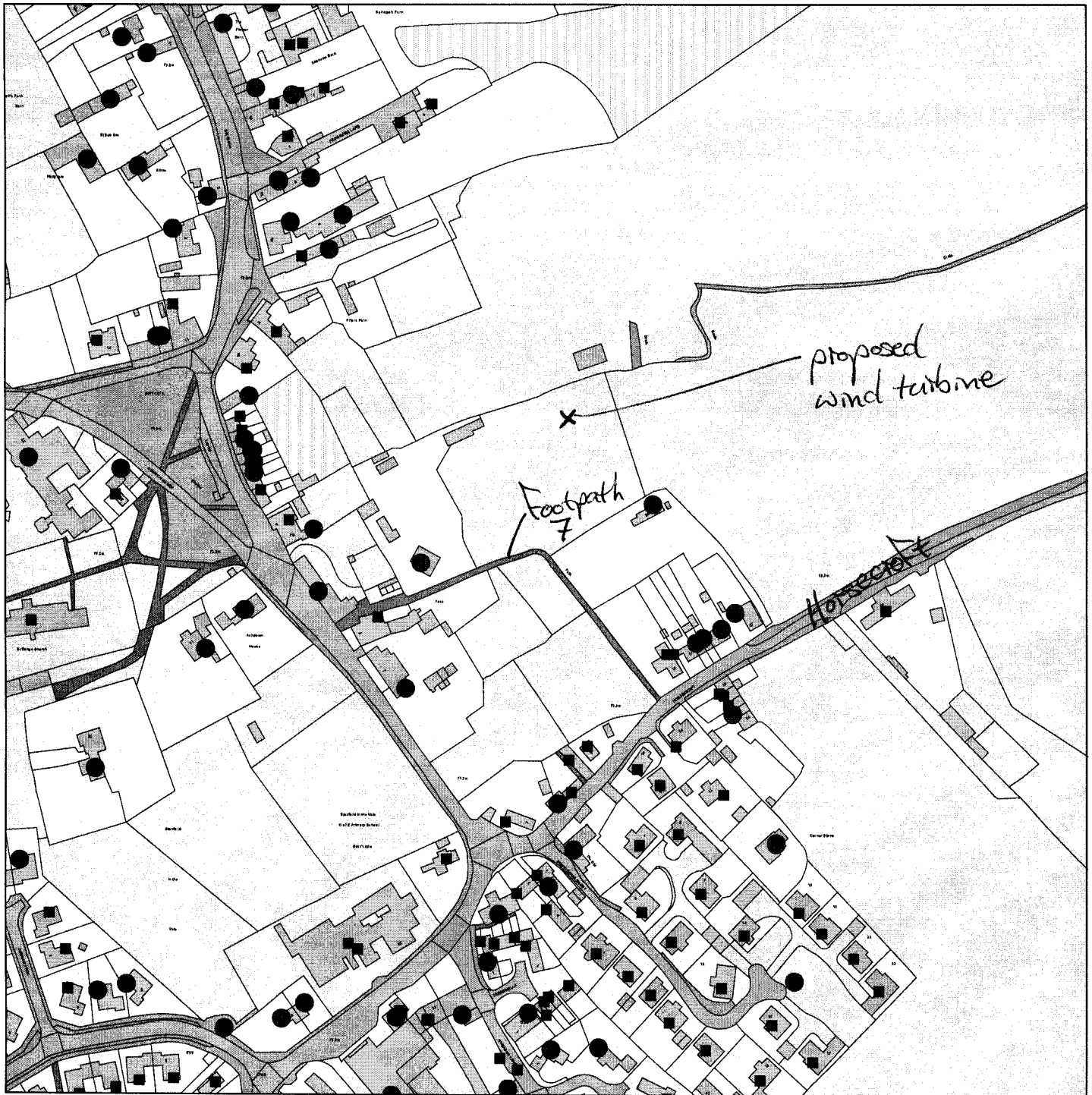
Not Set

Not Set

# APPENDIX 2



GIS by ESRI (UK)



Scale : 1:2500

Reproduced from the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright 2000.

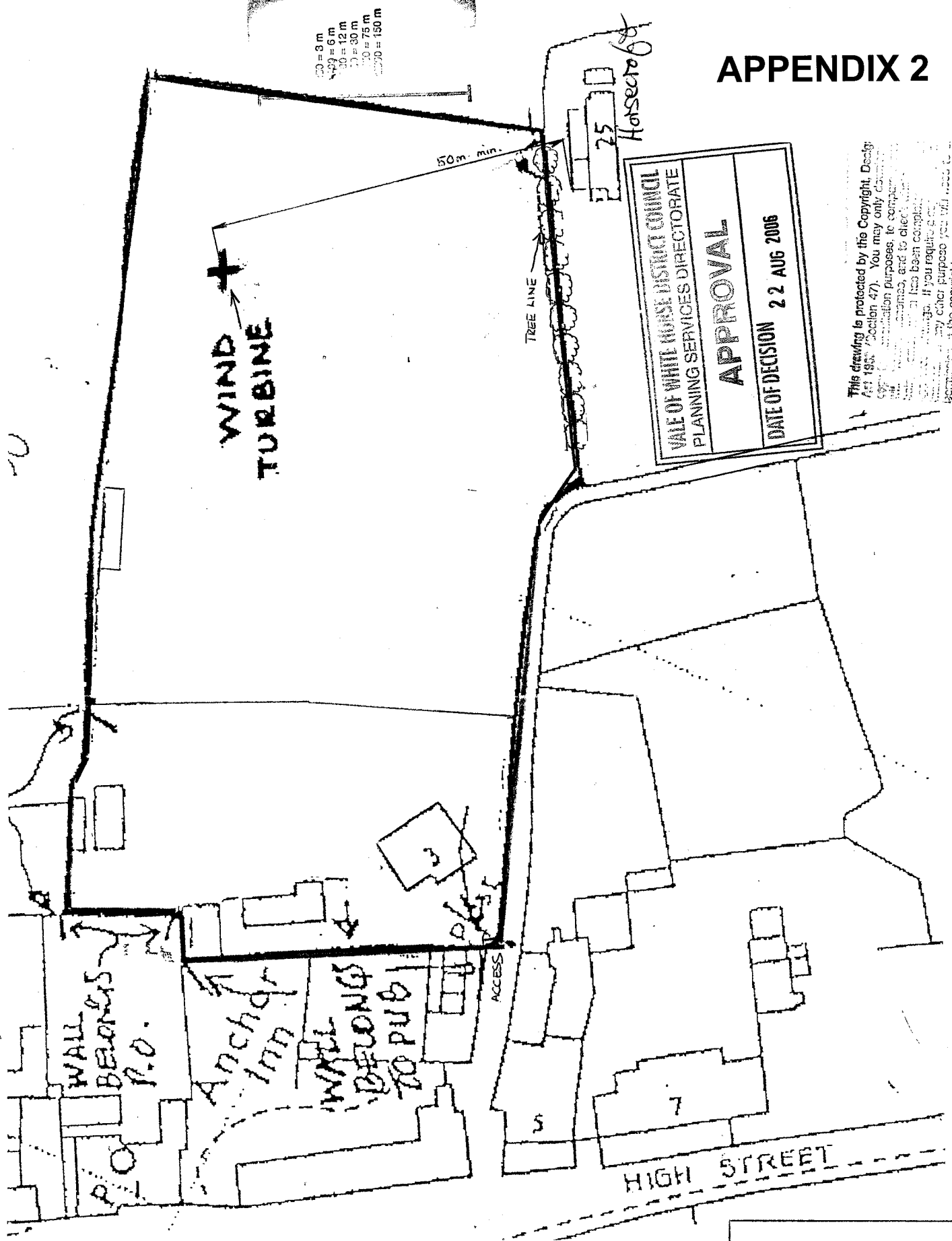
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings.

Produced using ESRI (UK)'s MapExplorer 2.0 - <http://www.esriuk.com>

Organisation	Not Set
Department	Not Set
Comments	Not Set
Date	24 October 2006
SLA Number	Not Set

# APPENDIX 2

1:50 = 3 m  
 1:100 = 6 m  
 1:200 = 12 m  
 1:300 = 30 m  
 1:750 = 75 m  
 1:2500 = 150 m



**APPROVAL**  
 VALE OF WHITE HORSE DISTRICT COUNCIL  
 PLANNING SERVICES DIRECTORATE  
 DATE OF DECISION 22 AUG 2006

This drawing is protected by the Copyright, Design and Patents Act 1988 (Section 47). You may only download or copy this drawing for personal or non-commercial purposes, to compare with previous schemes, and to check whether any new schemes have been completed. You may not use this drawing for any other purpose without the permission of the copyright owner.

This drawing is protected by the Copyright, Design and Patents Act 1988 (Section 47). You may only download and/or print a copy for consultation purposes, to compare a current application with previous schemes, and to check whether a development is being carried out or has been completed in accordance with any approved drawings. If you require a copy of the drawings or other material for any other purpose you will need to obtain the prior permission of the copyright owner.

VALE OF WHITE HORSE DISTRICT COUNCIL  
 REC'D 28 JUN 2006  
 CORPORATE POSTAL SERVICES - 2

1:50 = 3 m  
 1:100 = 6 m  
 1:200 = 12 m  
 1:300 = 30 m  
 1:750 = 75 m  
 1:2500 = 150 m

06/008776/L  
 STA/876S/4

SMALL SCALE  
 WIND TURBINE  
 BLOCK PLAN  
 Dwg. No 2



**TOWN AND COUNTRY PLANNING ACT 1990**

**NOTICE OF PERMISSION**

To:

S R Munday  
Meadowlands  
3 High Street  
Stanford In The Vale  
Faringdon  
Oxon  
SN7 8LH

Application No: **STA/8763/4**

Proposal:

**Erection of a small scale wind turbine**

Address:

**Meadowlands 3 High Street Stanford In The Vale Faringdon Oxon SN7  
8LH**

DATE OF DECISION: **22nd August 2006**

The Vale of White Horse District Council, in pursuance of powers under the Above Act, hereby **PERMIT** the above development to be carried out in accordance with the application and accompanying plans submitted by you, subject to compliance with the **conditions** specified hereunder.

1 The development to which this permission relates shall begin within a period of three years from the date of this permission.

2 Prior to the commencement of the development hereby approved, details of noise emissions from the wind turbine shall be submitted to, and approved in writing by, the District Planning Authority. If necessary, noise attenuation measures shall be carried out in accordance with details first submitted to, and approved in writing by, the District Planning Authority, which shall not result in the background noise (expressed as LA90) being increased by more than 3 dB at the boundary of the property.

The REASONS for the Council's decision to grant permission for the development subject to compliance with the conditions hereinbefore specified are:

25/9/03



1 To comply with the requirements of Section 91 of the Town & Country Planning Act, 1990 (as amended).

2 In the interest of residential amenity. (Policy DC9 of the adopted Local Plan).

**INFORMATIVE(S)**

Planning permission has been granted as the proposed development is considered to comply with the provisions of the development plan, in particular Policy DC9 of the adopted Vale of White Horse Local Plan.

**Rodger Hood**  
**Deputy Director (Planning and Community Strategy)**