



MORAY LOCAL REVIEW BODY

THURSDAY 27 SEPTEMBER 2018

SUMMARY OF INFORMATION FOR CASE No LR213

Planning Application 18/00694/APP – Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore, Drybridge, Buckie

Ward 2: Keith and Cullen

Planning permission was refused under the Statutory Scheme of Delegation by the Appointed Officer on 6 August 2018 on the grounds that:

Noise emissions from the proposed turbine will on occasion adversely affect the amenity of nearby residential property, such that the proposal would therefore be contrary to Moray Local Development Plan 2015 Policies EP8 Pollution, ER1 Renewable Energy Proposals, IMP1 Developer Requirements and Moray Onshore Wind Energy Supplementary Guidance (2017).

Documents considered or prepared by the Appointed Officer in respect of the above planning application are attached as **Appendix 1**.

The Notice of the Review, Grounds for Review and any supporting documents submitted by the Applicant are attached as **Appendix 2**.

Further Representations received in response to the Notice of Review are attached as **Appendix 3**.

The Applicant's response to Further Representations is attached as **Appendix 4**.

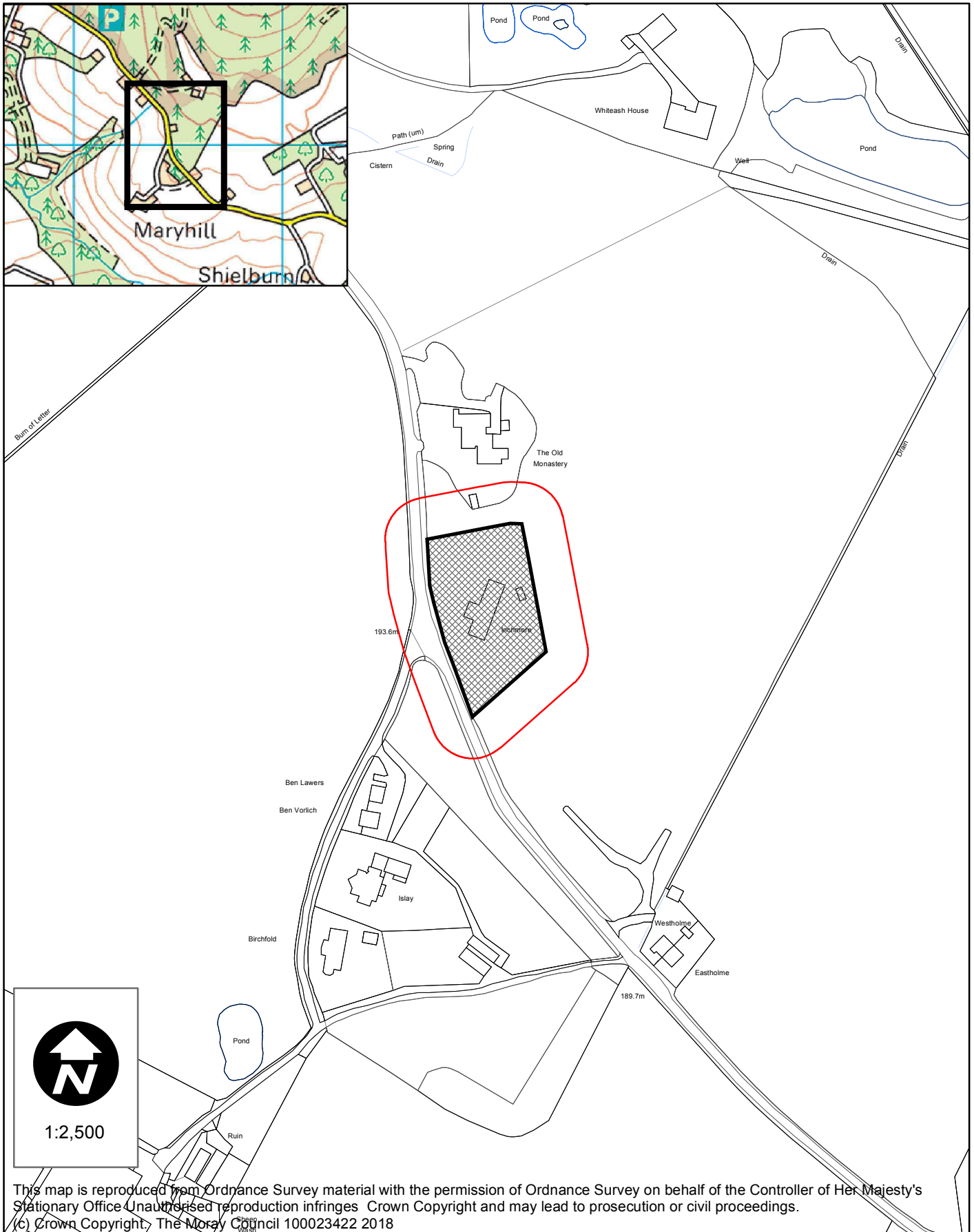
Site Plan for Neighbour Notification purposes only

Town and Country Planning

(Development Management Procedure)(Scotland) Regulations 2008

Planning Application Reference Number:

18/00694/APP



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APPENDIX 1

DOCUMENTS CONSIDERED OR PREPARED BY THE APPOINTED OFFICER



The Moray Council Council Office High Street Elgin IV30 1BX Tel: 01343 563 501 Fax: 01343 563 263 Email: development.control@moray.gov.uk

Applications cannot be validated until all the necessary documentation has been submitted and the required fee has been paid.

Thank you for completing this application form:

ONLINE REFERENCE 100109187-001

The online reference is the unique reference for your online form only. The Planning Authority will allocate an Application Number when your form is validated. Please quote this reference if you need to contact the planning Authority about this application.

Description of Proposal

Please describe accurately the work proposed: * (Max 500 characters)

Installation of Kingspan 6kW wind turbine @ Inchmore Drybridge

Has the work already been started and/ or completed? *

☒ No ☐ Yes - Started ☐ Yes – Completed

Applicant or Agent Details

Are you an applicant or an agent? * (An agent is an architect, consultant or someone else acting on behalf of the applicant in connection with this application)

☒ Applicant ☐ Agent

Applicant Details

Please enter Applicant details

Title:	<input type="text" value="Mr"/>	You must enter a Building Name or Number, or both: *	
Other Title:	<input type="text"/>	Building Name:	<input type="text" value="Inchmore"/>
First Name: *	<input type="text" value="Kenneth"/>	Building Number:	<input type="text"/>
Last Name: *	<input type="text" value="More"/>	Address 1 (Street): *	<input type="text" value="Drybridge"/>
Company/Organisation	<input type="text"/>	Address 2:	<input type="text"/>
Telephone Number: *	<input type="text" value=""/>	Town/City: *	<input type="text" value="Buckie"/>
Extension Number:	<input type="text"/>	Country: *	<input type="text" value="Moray"/>
Mobile Number:	<input type="text"/>	Postcode: *	<input type="text" value="AB565JB"/>
Fax Number:	<input type="text"/>		
Email Address: *	<input type="text" value=""/>		

Site Address Details

Planning Authority:	<input type="text" value="Moray Council"/>
Full postal address of the site (including postcode where available):	
Address 1:	<input type="text" value="INCHMORE"/>
Address 2:	<input type="text" value="DRYBRIDGE"/>
Address 3:	<input type="text"/>
Address 4:	<input type="text"/>
Address 5:	<input type="text"/>
Town/City/Settlement:	<input type="text" value="BUCKIE"/>
Post Code:	<input type="text" value="AB56 5JB"/>

Please identify/describe the location of the site or sites

Northing	<input type="text" value="861999"/>	Easting	<input type="text" value="345489"/>
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Pre-Application Discussion

Have you discussed your proposal with the planning authority? *

☒ Yes ☐ No

Pre-Application Discussion Details Cont.

In what format was the feedback given? *

☐ Meeting ☐ Telephone ☐ Letter ☒ Email

Please provide a description of the feedback you were given and the name of the officer who provided this feedback. If a processing agreement [note 1] is currently in place or if you are currently discussing a processing agreement with the planning authority, please provide details of this. (This will help the authority to deal with this application more efficiently.) * (max 500 characters)

Original application withdrawn due to Environmental objections having noise concerns. New revised proposal for turbine in a new location further away from neighbours property

Title:

Mr

Other title:

First Name:

Kenneth

Last Name:

More

Correspondence Reference Number:

planning application
.....

Date (dd/mm/yyyy):

14/10/2017

Note 1. A Processing agreement involves setting out the key stages involved in determining a planning application, identifying what information is required and from whom and setting timescales for the delivery of various stages of the process.

Trees

Are there any trees on or adjacent to the application site? *

☒ Yes ☐ No

If yes, please mark on your drawings any trees, known protected trees and their canopy spread close to the proposal site and indicate if any are to be cut back or felled.

Access and Parking

Are you proposing a new or altered vehicle access to or from a public road? *

☐ Yes ☒ No

If yes, please describe and show on your drawings the position of any existing, altered or new access points, highlighting the changes you proposed to make. You should also show existing footpaths and note if there will be any impact on these.

Planning Service Employee/Elected Member Interest

Is the applicant, or the applicant's spouse/partner, either a member of staff within the planning service or an elected member of the planning authority? *

☐ Yes ☒ No

Certificates and Notices

CERTIFICATE AND NOTICE UNDER REGULATION 15 – TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE) (SCOTLAND) REGULATION 2013

One Certificate must be completed and submitted along with the application form. This is most usually Certificate A, Form 1, Certificate B, Certificate C or Certificate E.

Are you/the applicant the sole owner of ALL the land? *

☒ Yes ☐ No

Is any of the land part of an agricultural holding? *

☐ Yes ☒ No

Certificate Required

The following Land Ownership Certificate is required to complete this section of the proposal:

Certificate A

Land Ownership Certificate

Certificate and Notice under Regulation 15 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013

Certificate A

I hereby certify that –

(1) - No person other than myself/the applicant was an owner (Any person who, in respect of any part of the land, is the owner or is the lessee under a lease thereof of which not less than 7 years remain unexpired.) of any part of the land to which the application relates at the beginning of the period of 21 days ending with the date of the accompanying application.

(2) - None of the land to which the application relates constitutes or forms part of an agricultural holding

Signed: Mr Kenneth More

On behalf of:

Date: 21/05/2018

☒ Please tick here to certify this Certificate. *

Checklist – Application for Householder Application

Please take a few moments to complete the following checklist in order to ensure that you have provided all the necessary information in support of your application. Failure to submit sufficient information with your application may result in your application being deemed invalid. The planning authority will not start processing your application until it is valid.

- a) Have you provided a written description of the development to which it relates? * ☒ Yes ☐ No
- b) Have you provided the postal address of the land to which the development relates, or if the land in question has no postal address, a description of the location of the land? * ☒ Yes ☐ No
- c) Have you provided the name and address of the applicant and, where an agent is acting on behalf of the applicant, the name and address of that agent? * ☒ Yes ☐ No
- d) Have you provided a location plan sufficient to identify the land to which it relates showing the situation of the land in relation to the locality and in particular in relation to neighbouring land? *. This should have a north point and be drawn to an identified scale. ☒ Yes ☐ No
- e) Have you provided a certificate of ownership? * ☒ Yes ☐ No
- f) Have you provided the fee payable under the Fees Regulations? * ☒ Yes ☐ No
- g) Have you provided any other plans as necessary? * ☒ Yes ☐ No

Continued on the next page

A copy of the other plans and drawings or information necessary to describe the proposals (two must be selected). *

You can attach these electronic documents later in the process.

- ☐ Existing and Proposed elevations.
- ☐ Existing and proposed floor plans.
- ☐ Cross sections.
- ☒ Site layout plan/Block plans (including access).
- ☐ Roof plan.
- ☒ Photographs and/or photomontages.

Additional Surveys – for example a tree survey or habitat survey may be needed. In some instances you may need to submit a survey about the structural condition of the existing house or outbuilding. ☐ Yes ☒ No

A Supporting Statement – you may wish to provide additional background information or justification for your Proposal. This can be helpful and you should provide this in a single statement. This can be combined with a Design Statement if required. * ☒ Yes ☐ No

You must submit a fee with your application. Your application will not be able to be validated until the appropriate fee has been Received by the planning authority.

Declare – For Householder Application

I, the applicant/agent certify that this is an application for planning permission as described in this form and the accompanying Plans/drawings and additional information.

Declaration Name: Mr Kenneth More

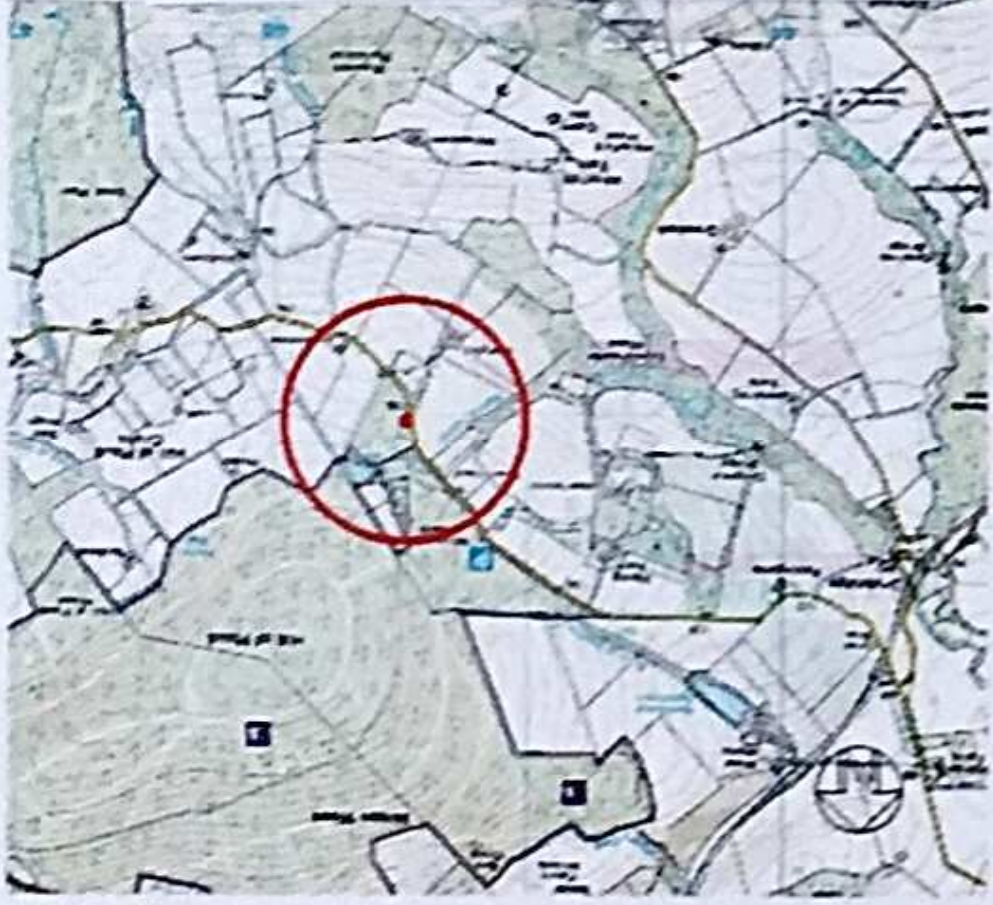
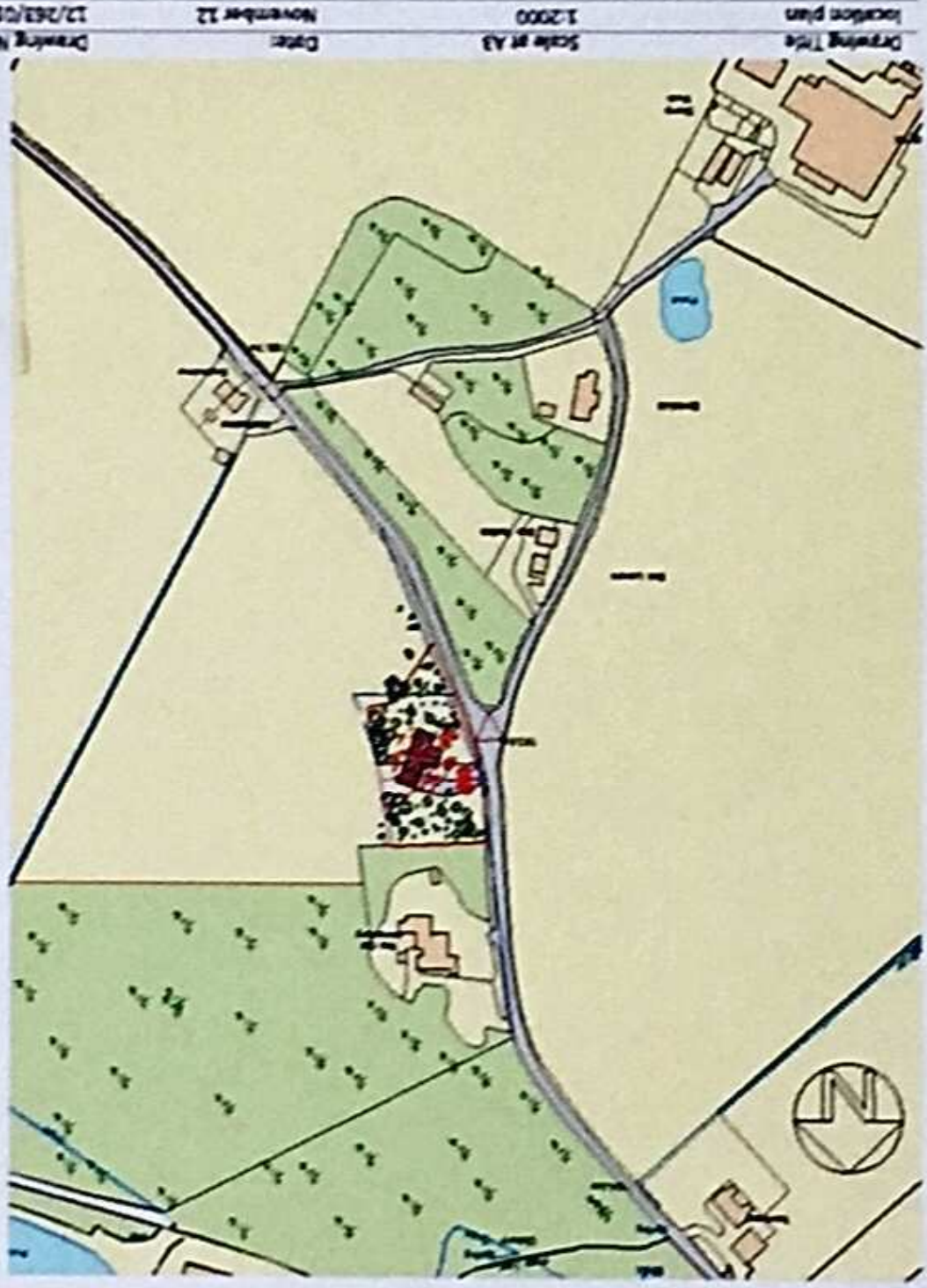
Declaration Date: 21/05/2018

Payment Details

Online payment: 037668

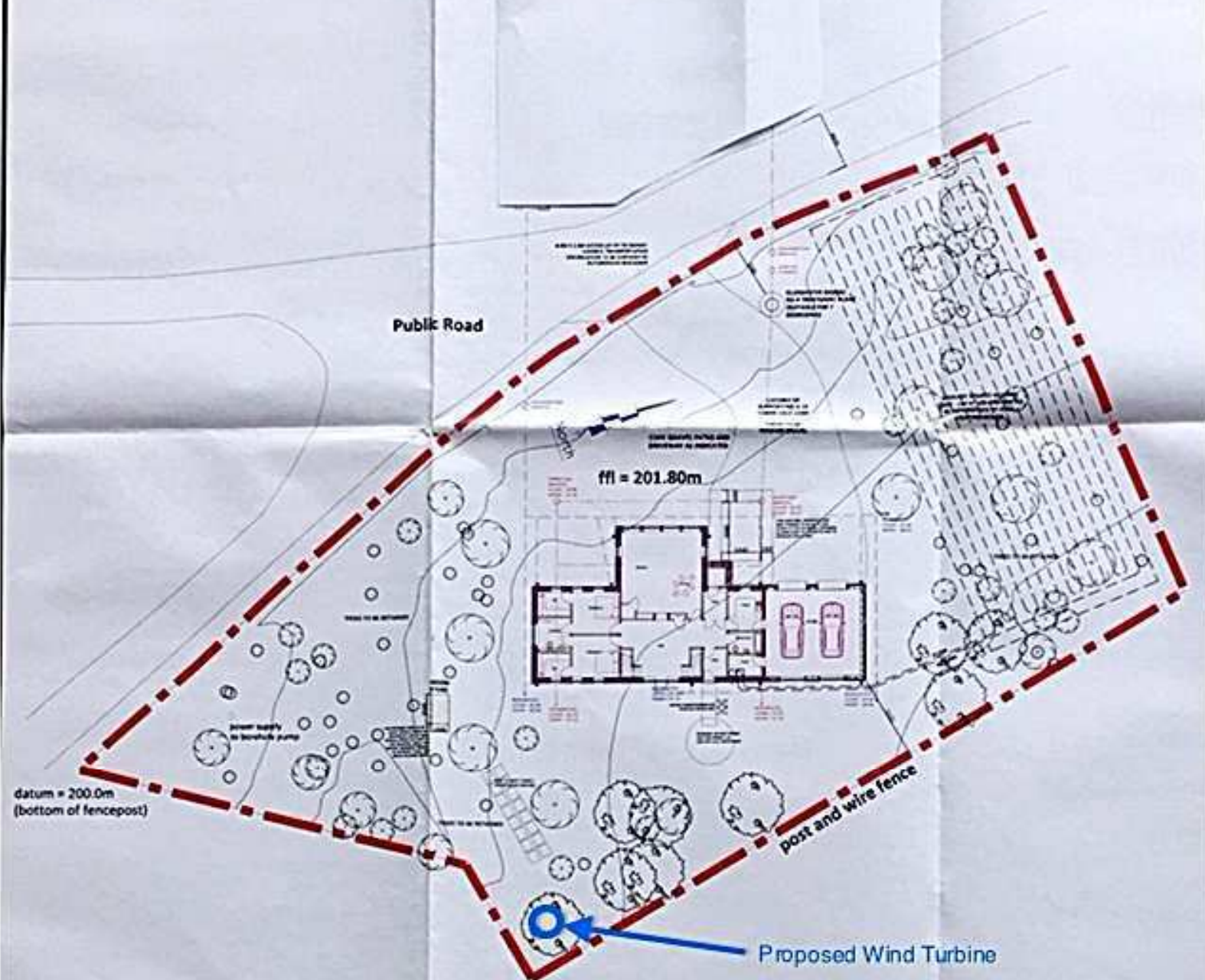
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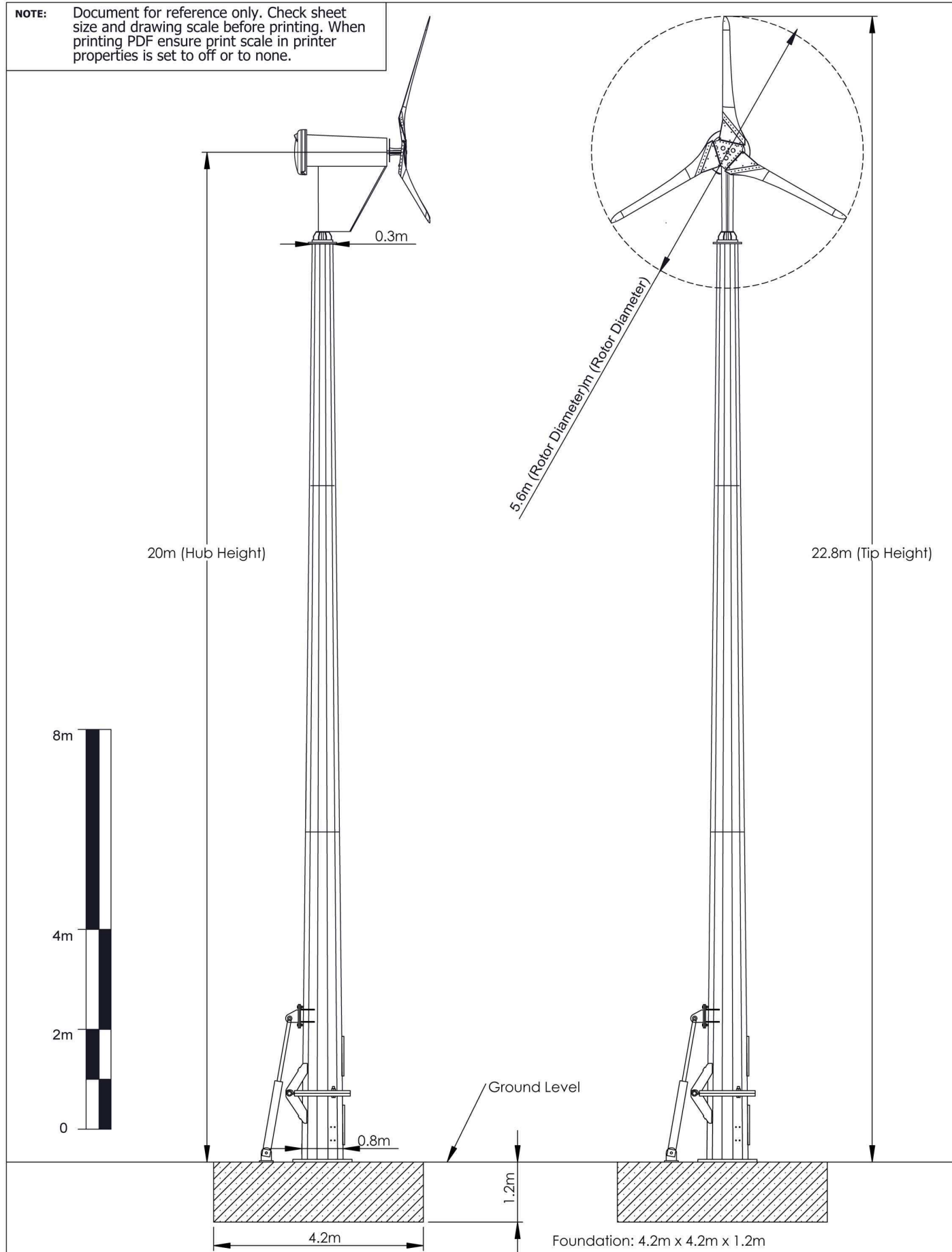


Maryhill, Drybridge

SITE PLAN
SCALE 1:200



NOTE: Document for reference only. Check sheet size and drawing scale before printing. When printing PDF ensure print scale in printer properties is set to off or to none.



TITLE: KW6 20m Tower System		
DWG No: KWI-06-TW-20-001		
SCALE: 1:100	SHEET SIZE: A4	
DRAWN BY: RL 15-03-2018	CHECKED BY: PH 15-03-2018	REV: A

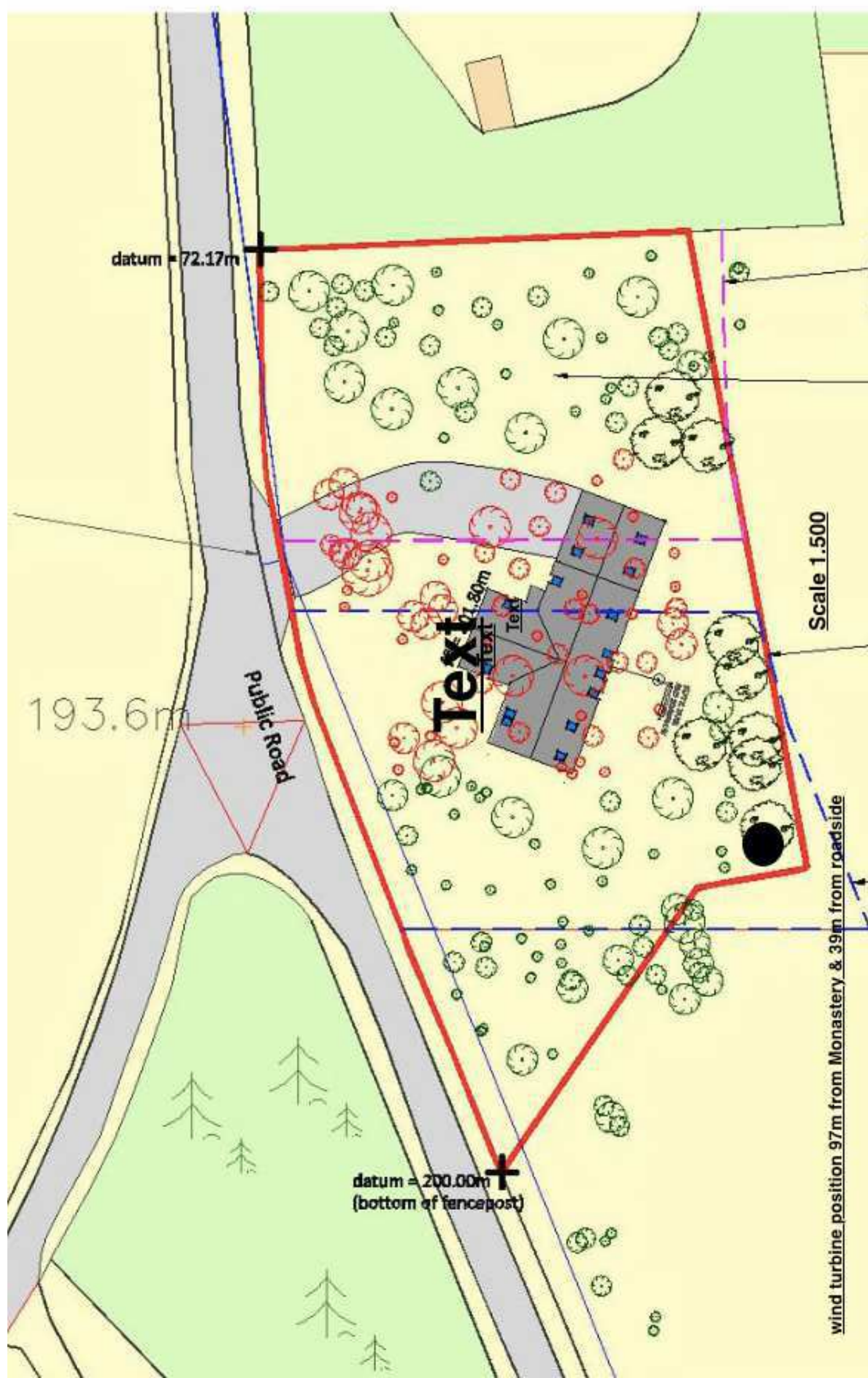


COLOUR:

Tower and Frame: Galvanised Grey

Covers: Jet Black (RAL9005)

Light Grey (RAL7035)





Find your property

Drybridge, Buckie AB56 5.

Draw Property Boundary

Remove Wind Speed

Delete Selected Shape

Measure Distance

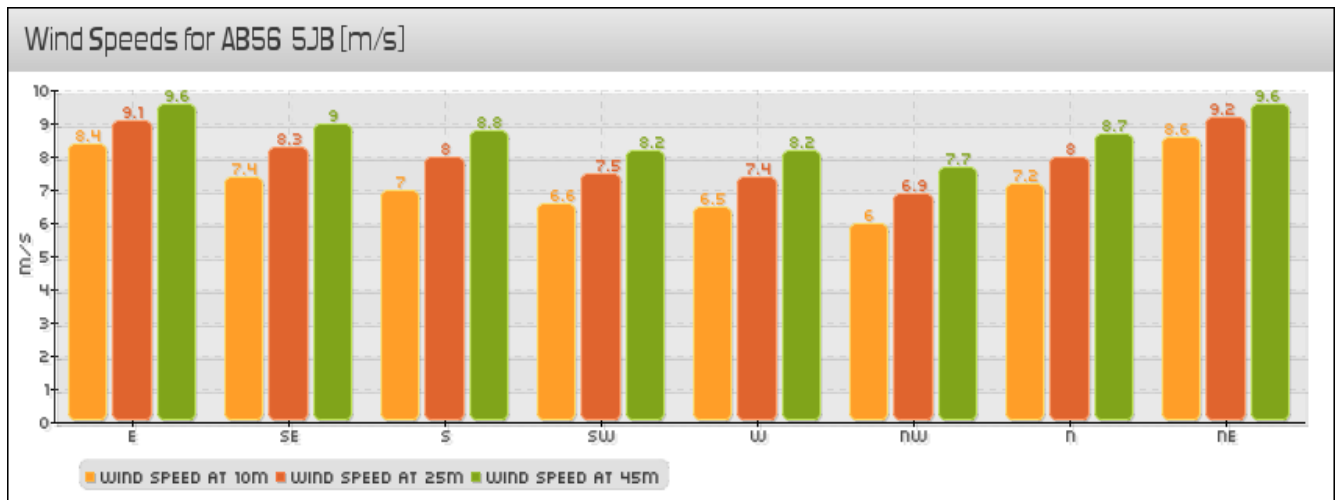
2 Mark the boundary

Click the 'Draw Property Boundary' icon above, then repeatedly click the map along your boundary line until you close the loop.

3 Check the wind speed

Click the 'Check Wind Speed' icon. The

YOUR RESULTS FOR AB56 5JB



Wind Speed at 10m

6	7.2	8.6
6.5	8.3	8.4
6.6	7	7.4

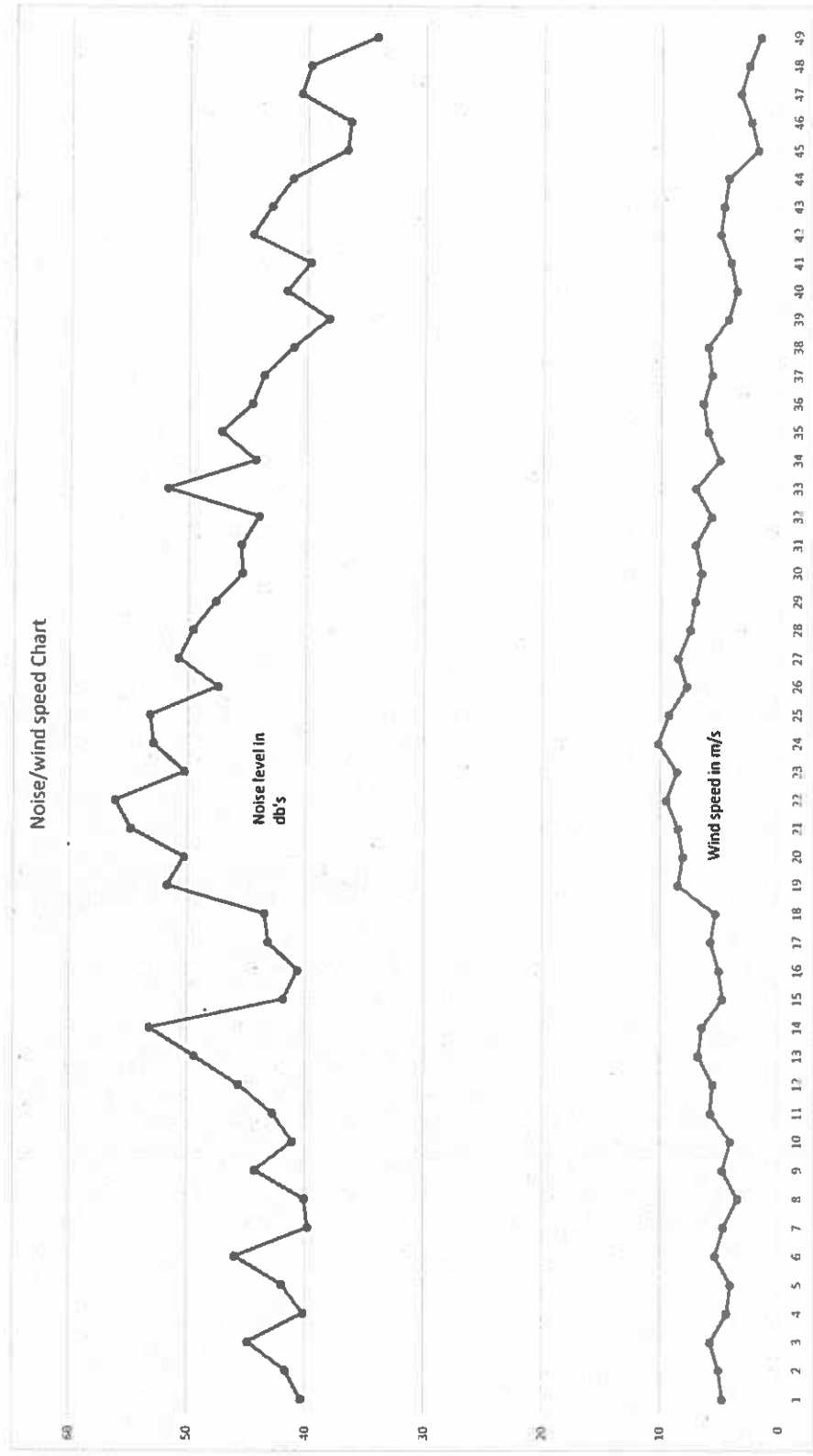
Wind Speed at 25m

6.9	8	9.2
7.4	8.9	9.1
7.5	8	8.3

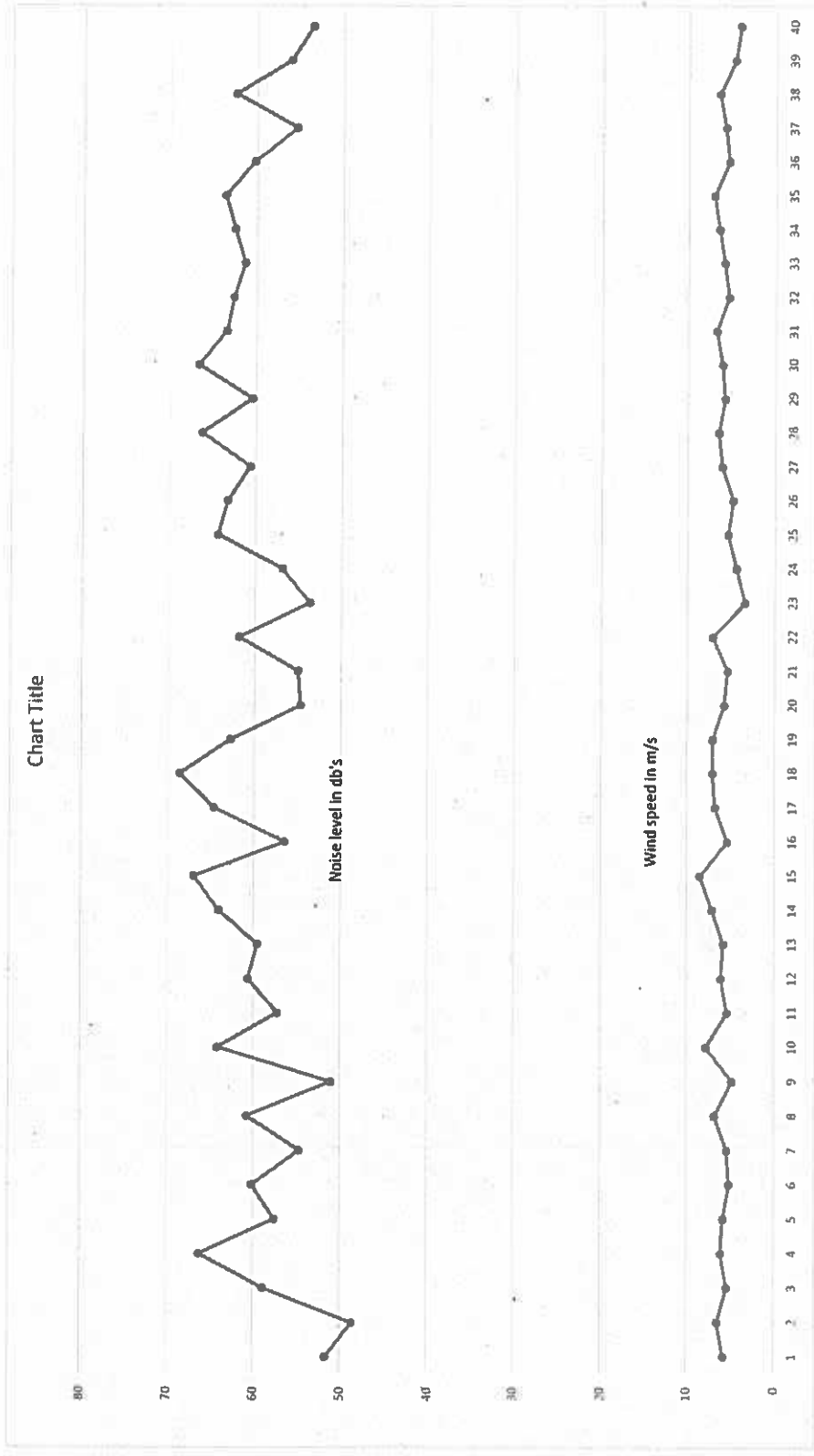
Wind Speed at 45m

7.7	8.7	9.6
8.2	9.4	9.6
8.2	8.8	9

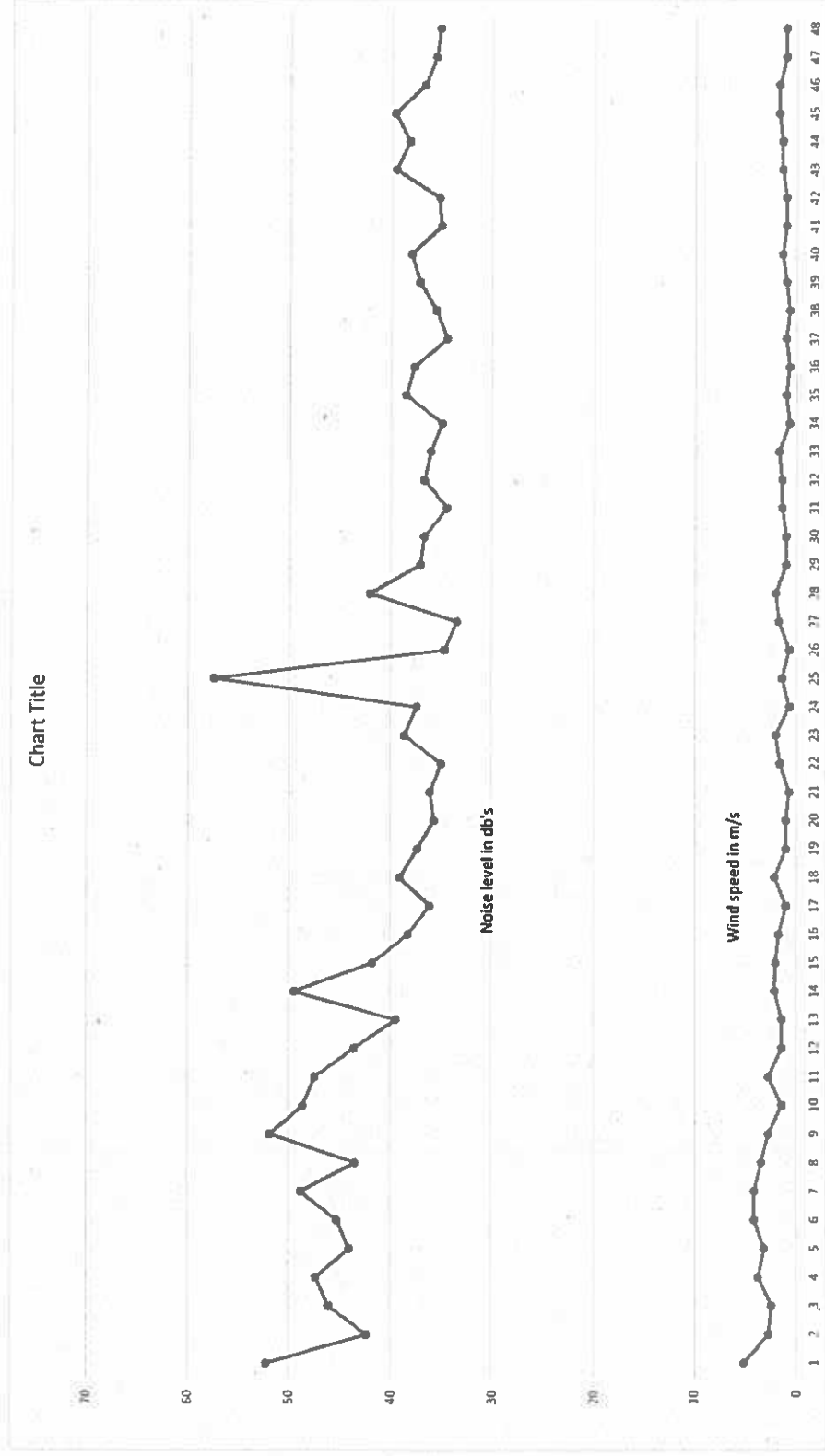
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12.03	42	4.1
12.13	46	5.4
12.23	39.8	4.7
12.33	40.1	3.5
12.43	44.3	4.8
12.53	41.1	4.1
13.03	42.8	5.8
13.13	45.7	5.6
13.23	49.4	6.8
13.33	53.2	6.5
13.43	41.9	4.8
13.53	40.7	5.1
14.03	43.2	5.8
14.13	43.5	5.4
14.23	51.7	8.5
14.33	50.3	8.1
14.43	54.8	8.5
14.53	56.1	9.5
15.03	50.3	8.6
15.13	52.9	10.2
15.23	53.2	9.3
15.33	47.5	7.8
15.43	50.8	8.5
15.53	49.6	7.5
16.03	47.7	7.1
16.13	45.5	6.6
16.23	45.6	7.1
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17.23	43.7	5.8
17.33	41.2	6.1
17.43	38.2	4.4
17.53	41.8	3.7
18.03	39.8	4.2
18.13	44.7	5.1
18.23	43.1	4.8
18.33	41.3	4.4
18.43	36.7	1.9
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19.03	40.6	3.4
19.13	39.8	2.7
19.23	34.2	1.7



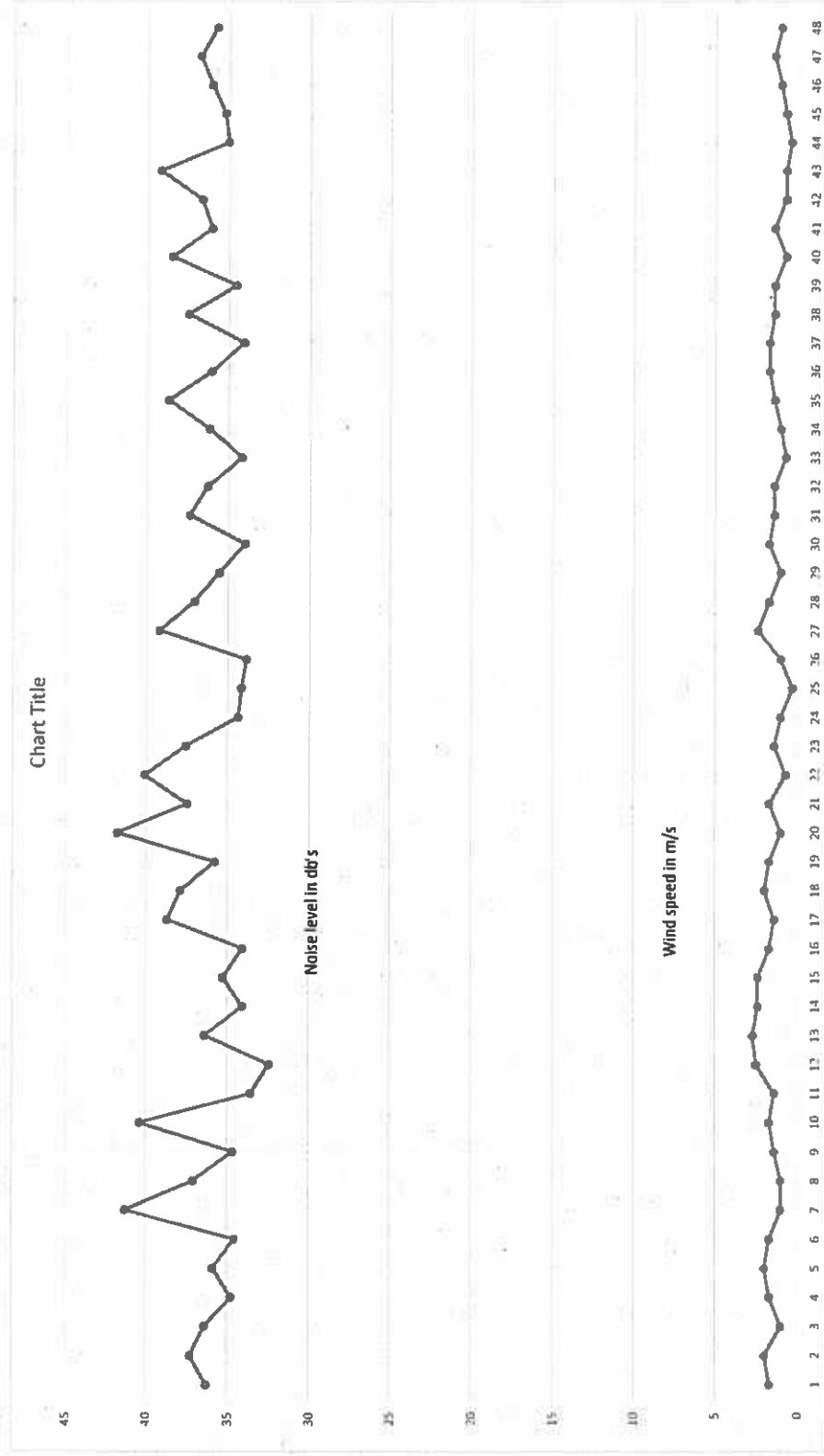
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10.25	60.2	5.1
10.35	54.7	5.4
10.45	60.8	6.8
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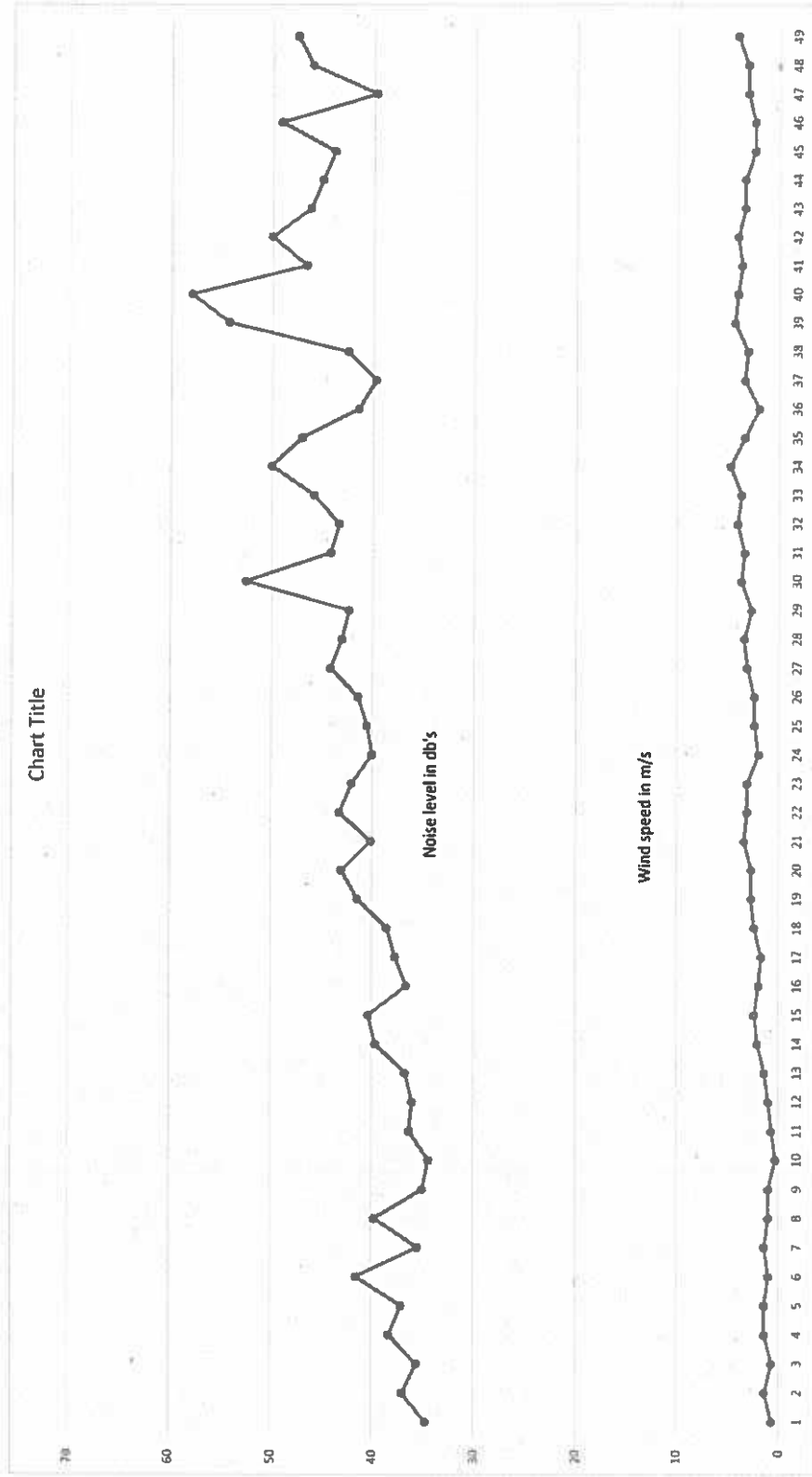
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17.45	35.2	1
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18.25	39.7	1.7
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18.45	35.7	1
18.55	35.3	1



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17.50	36.7	0.7
18.00	39.2	0.7
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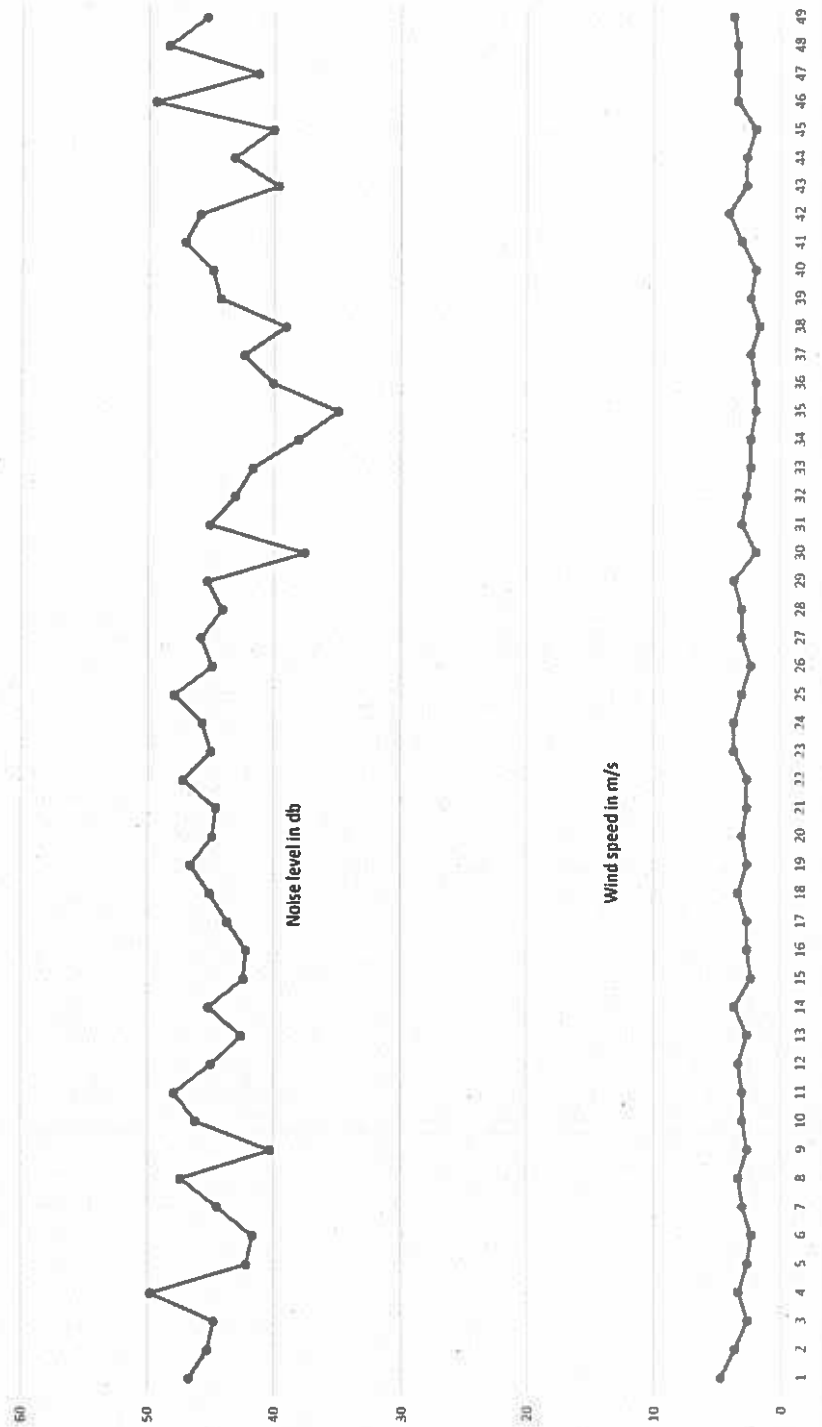


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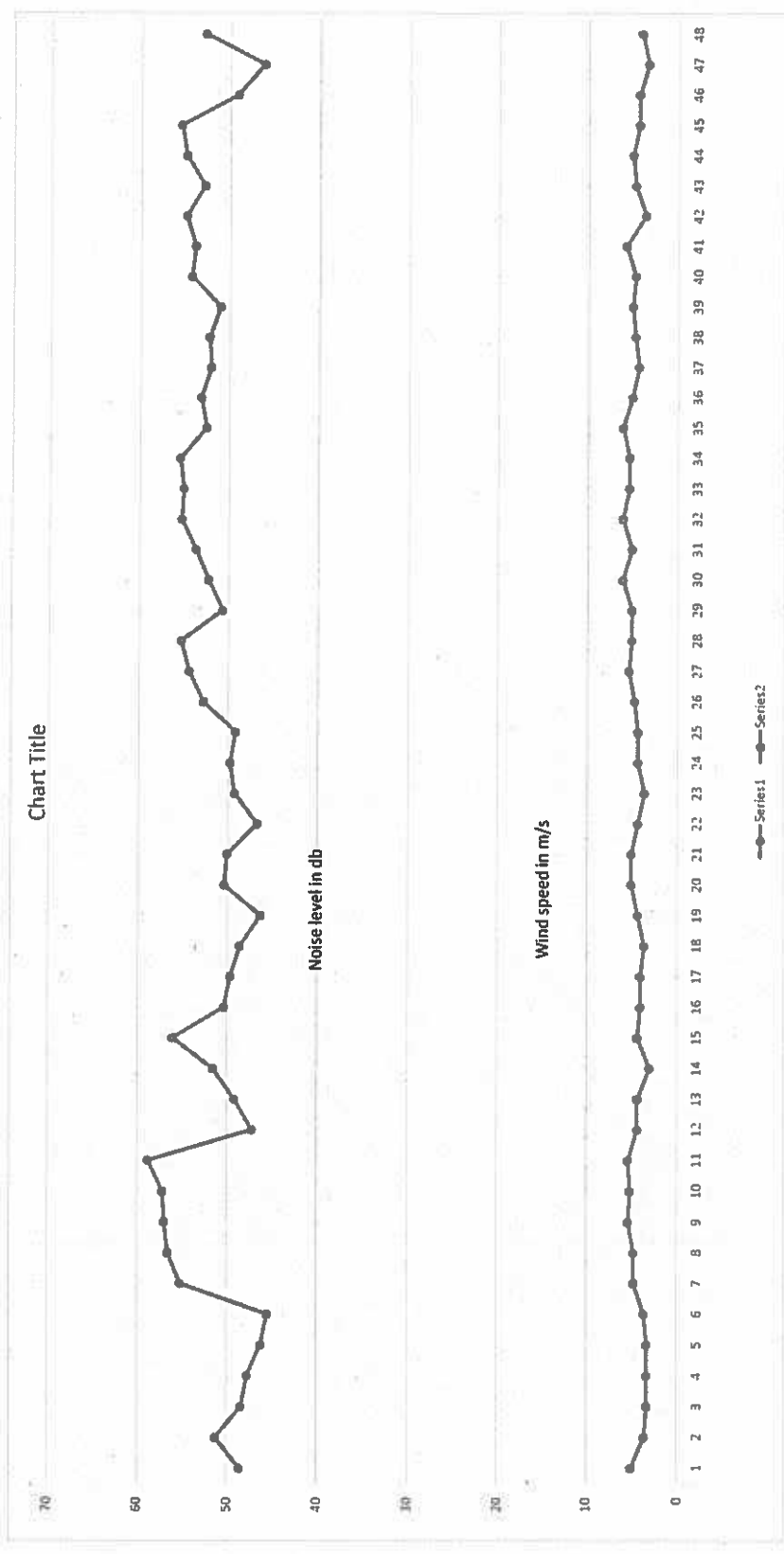


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15.30	45.4	3.7

Chart Title



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11.40	54.4	5.4
11.50	55.3	5.1
12.00	50.7	5.1
12.10	52.3	6.1
12.20	53.7	5.1
12.30	55.3	6.1
12.40	55.1	5.4
12.50	55.5	5.4
13.00	52.6	6.1
13.10	53.2	5.1
13.20	52.1	4.4
13.30	52.3	4.8
13.40	51.1	5.1
13.50	54.3	4.8
14.00	53.9	5.8
14.10	54.9	3.7
14.20	52.9	4.8
14.30	54.9	5.1
14.40	55.5	4.4
14.50	49.2	4.4
15.00	46.2	3.4
15.10	52.8	4.1



PRODUCT SPECIFICATION

ARCHITECTURE AND ROTOR

Type: Downwind, 360 degrees free yawing
Speed control: Self-regulating
Blades: 3 blades, passive coning and pitch control
Rotor diameter: 5.6m
Rated speed: 11m/s
Rotor thrust: 10kN

GENERATOR

Type: Brushless permanent magnet, direct drive
Output: Grid connect (300v), battery charging (48V)

TOWER

Type: Self-supporting monopole
Hub height: 9m, 11m and 15m (hinged or hydraulic tower)
3.5m x 3.5m x 0.9m (max) Pad Foundation
Root Foundations are also available

WEIGHTS

Wind turbine: 600kg

PERFORMANCE

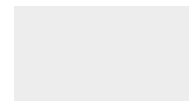
Cut-in wind speed: 3.5m/s
Max wind speed (survival): Designed to Class 1 (70m/s), Tested to Class 2 (59.5m/s)
Rated Power: 5.2kW (at 11m/s measured at hub height)
Peak Power: 6.1kW
RAE: 8,949kWh as certified by TUV NEL (at 5m/s measured at hub height)

BUILD MATERIALS AND COLOURS

Frame: Galvanised steel, grey (not visible)
Towers: Galvanised steel, grey
Blades: Glass thermoplastic composite, black, white or grey
Covers: Plastic.



Black (RAL 9005)



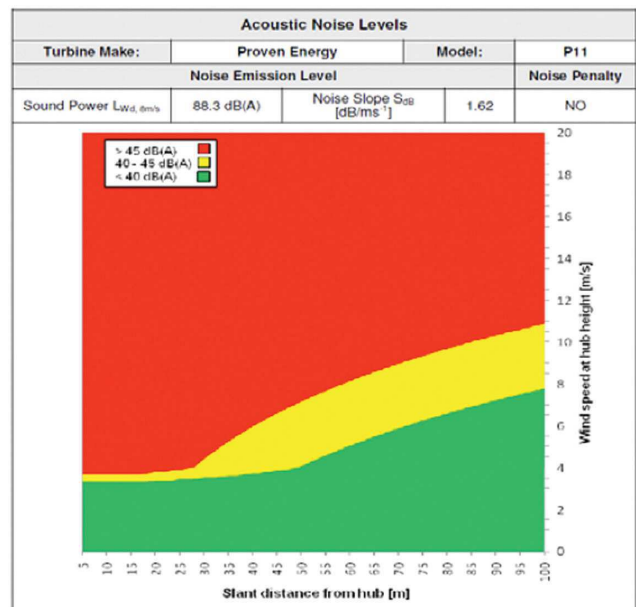
White (RAL 9003)



Grey (RAL7000)

ACOUSTIC DATA

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



A full report is available upon request from
wind.support@kingspan.com



Trees in focus

Practical Care and Management

Trees & Shrubs for Noise Control

Martin Dobson¹ and Jo Ryan

Arboricultural Advisory and Information Service

Summary

Noise, or unwanted sound, can be one of the most problematic environmental factors of both urban and rural areas; traffic noise in particular is a common problem. Noise attenuation can be achieved by increasing the distance between the noise source and hearer. However, very often this is not possible and other methods, such as erecting a solid barrier can be adopted. Where space permits, trees and shrubs can make effective noise barriers and at the same time be visually attractive. Based on published research, this Note makes recommendations and prescriptions for planting trees and shrubs to reduce noise and discusses the merits of various planting specifications.

The Problem of Noise

Few things are more irritating or tiring than continuous loud noise. And it isn't a new phenomenon. "Citizens of Rome perish for lack of sleep" wrote Juvenal, a satirist of the first century AD and in the same period Julius Caesar banned chariot traffic from the streets of Rome at night because it was too noisy! Traffic noise is an even greater problem today and has probably become the most widespread social irritant, especially in urban areas and near to roads carrying large volumes of traffic. It has been estimated that about 1 in 10 people live with an intrusive level of road noise (Huddart, 1990). Other sources of intrusive and persistent noise include trains, factories, airports and quarries to name a few.

The most effective way to minimize noise is to reduce it at source. However, this is often not possible and so the remaining options are to increase the distance from the source (which is frequently impractical) or to place a barrier between the source of noise and the hearer. A personal barrier (e.g. earmuffs) is acceptable in

some situations as a last resort, but a reduction in noise for the public at large is preferable. Solid barriers such as fences or mounds of earth have frequently been used as sound barriers, but trees and shrubs can also be effective in reducing noise and have the advantage of being more attractive and less expensive. Trees may be used in conjunction with solid barriers, either as visual screens or to reduce their reflective properties.

What is Noise?

It may seem a naïve question, but understanding noise is fundamental to solving the problem of how it can be reduced. Noise is created by vibrations in the air which cause variations in air pressure. The result is waves which radiate from the source like waves on a pond caused by a stone. When a noise-induced wave (a sound wave) reaches the ear it causes the ear drum to vibrate. The vibrations are then converted to a nervous impulse transmitted to the brain, which registers the noise.

How is Noise Measured?

Any movements in the air perceptible to the human ear are classed as 'sound' and only when sound becomes uncomfortable or unacceptable, is it classed as noise. However, noise is a subjective phenomenon; what one person calls noise, another may not, which makes it difficult to categorise. Sound waves, however, have physical attributes that can be objectively measured by acoustical equipment. The unit of sound is expressed as the decibel (dB) and measures the sound pressure level. Most studies seem to have adopted the dB(A) scale, which weights the frequencies in sound to approximate human responses to loudness.

Now at:

¹ Ivy House, 49 Liphook Road, Whitehill, Bordon GU35 9DA

A zero decibel level corresponds to the threshold of human hearing. An increase of 1 decibel is roughly equivalent to the smallest difference in loudness perceptible to the human ear and an increase of 10 decibels roughly corresponds to a doubling in the apparent loudness of a sound. Thus 20dB is twice as loud as 10dB but 30dB is four times louder than 10dB, and 40dB eight times louder, and so on. Most ordinary sounds fall in the range of about 25dB (as in a library) to 80dB (in a noisy street). Above a sound intensity of about 60dB sound becomes uncomfortable and would be considered 'noise'; at 120dB a noise becomes unbearably loud. The sound pressure levels of some common sounds, measured at close quarters, are shown in Table 1 below.

Table 1
Sound Pressure levels of some common sounds.

Sound	Decibels (dB)
Jet aircraft	120+
Car horn	110
Passing train	100
Chainsaw	100
Dog barking	92
Busy dual carriageway	72-78
Normal speech	48
Whisper	20
Threshold of hearing	0

Reducing Noise

Sound is greatest nearest to the source and diminishes with distance - so, obviously, the further away you are, the less you will hear. This is because of 'geometric spreading' i.e. the further a sound wave travels the greater the dissipation of its energy, like ripples on a pond. Sound can originate from either a single point such as a chainsaw cutting wood (point source) or from a continuous activity, such as a stream of traffic (line source). Increasing the distance between you and a noise will reduce its loudness; there is a reduction of about 6dB when the distance from a point source is doubled and about 3dB when doubling the distance from a line source (Fig.1). For example, if the noise from road traffic (approximately 20m away) is 70dB, doubling the distance over a hard surface to 40m will reduce the noise by 3dB to 67dB.

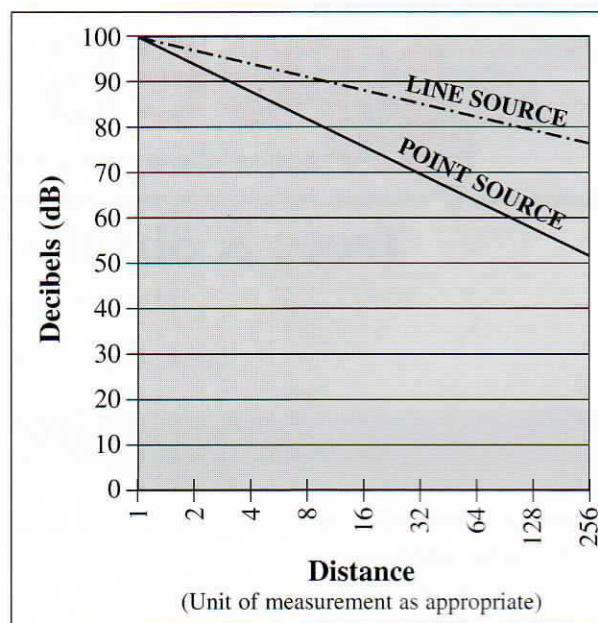


Figure 1
Effect of distance on noise reduction.

Objects between the source and the hearer can also help attenuate noise, for example closing windows and doors or erecting a tall fence or wall. This is because most sound waves are significantly reduced when passing through solid objects or they are reflected off them; the density and area of an object presented to a sound largely determines the attenuation. On the other hand, fibrous and porous materials are able to absorb sound and hence may effectively reduce noise.

Sound travels (*propagates*) differently over various kinds of surfaces. Asphalt and concrete reflect virtually all incident sound at any angle, whereas grass covered surfaces interact with sound quite differently. Although the wave is still reflected, its phase is somewhat slower due to the interaction with the ground surface. As a result, sound travelling directly from a source to a listener is partly cancelled by this out-of-phase reflection, leaving the listener in a type of 'sound shadow'. The net effect is a reduction in sound levels near the ground. This change of phase can be explained literally at a grass roots level. It is thought that the roots of vegetation keep the soil surface open and the soil structure more porous, effectively making the ground a sound absorbing material.

One obvious way that trees may be useful is in reducing human perception of noise by creating a visual barrier between the source and the hearer. It has been suggested that people are less conscious

of noise if they cannot see the source. Trees, then, might be useful in reducing the *perception* of noise by providing an aesthetically pleasing visual barrier, for example between houses and a nearby source of noise such as a road. The effect of trees as a visual barrier to reduce perception of noise is a subject which has not been fully studied. However, Aylor (1972) reports on one experiment which found a screen of trees with gaps in it to be more effective than a dense screen in making people *think* they were hearing relatively less noise. Correspondingly, a visually impenetrable screen of trees increased the subjects' perception of noise. This and more recent research suggest that people expect a visually opaque barrier to reduce noise more than it actually does (Watts, personal communication, TRL, Crowthorne). When this does not occur, the level of irritation is greater and the noise appears louder. Nevertheless, another study indicated that people would rather have an aesthetically pleasing barrier to screen a noise source from view, even if noise is not substantially reduced (Perfater, 1979).

surrounding noise. Masking noise may be useful in a situation where the noise is simply annoying rather than overwhelmingly loud.

Can Trees and Shrubs Reduce Noise?

Research has indicated that trees and shrubs can make a contribution to noise reduction. Usually, comparisons have been made between noise propagated over a grass surface and noise propagated through tree and shrub belts. The difference between the two is known as *insertion loss* and is the amount of noise reduction directly attributable to the trees. Published results on the effectiveness of tree and shrub barriers vary enormously, however, a review by Huddart (1990) shows that in some instances noise can be reduced by 6dB over a distance of 30 m where planting is particularly dense. Leonard and Parr (1970) and Reethof (1973) found that a dense belt of trees and shrubs between 15-30 m wide could reduce sound levels by as much as 6-10dB. Cook and Van

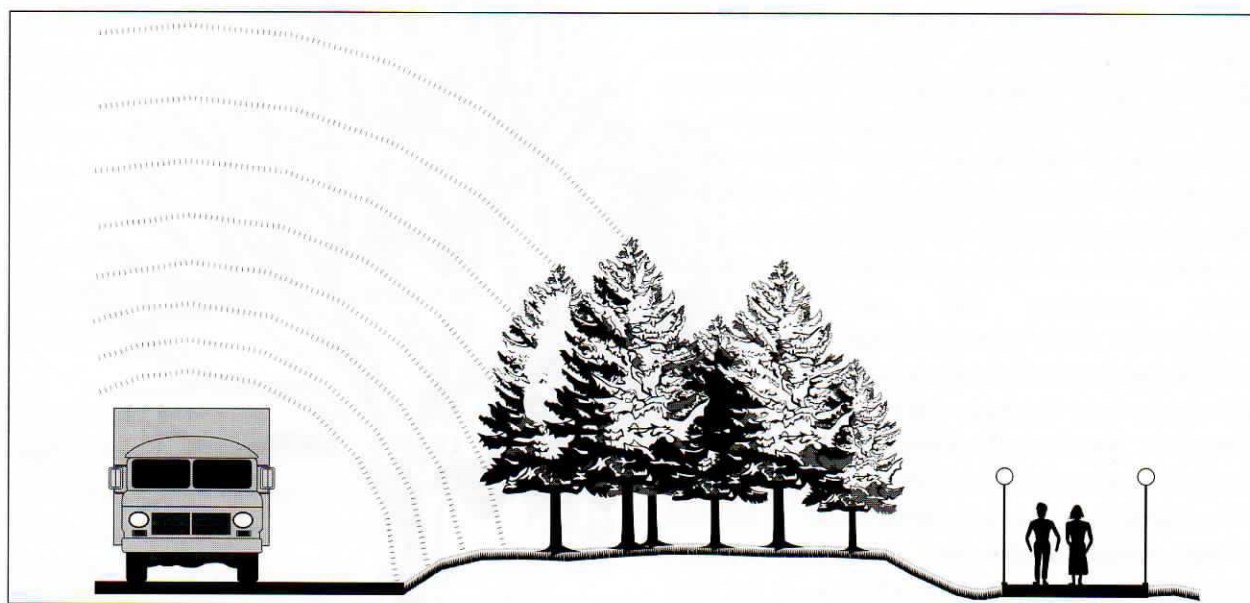


Figure 2

A visual barrier between the noise source and the hearer may help reduce the perception of noise.

(Source: Grey & Deneke, 1986)

Another way in which noise may be made less intrusive is through the masking effect created by the rustling of leaves, needles and branches in the wind. The sounds of birds and other animals associated with trees may also help to mask

Haverbeke (1972) also found reductions in noise level of 5-10dB for belts of trees between 15-30m wide.

It is difficult to generalise but a thick belt of densely planted trees and shrubs should provide a useful reduction in noise of several decibels although reductions will be significantly less than a purpose built noise barrier of the same height and length.

How Can Trees Reduce Noise?

Trees and shrubs can reduce noise levels, particularly at high frequencies (or pitch), whereas a reduction in low frequency noise levels can be attributed more to the effect of the ground.

The attenuation of sound by vegetation is commonly attributed to the processes of reflection, scattering and absorption. Reflection and scattering from the surfaces of leaves, branches, trunks and the ground can alter the phase of sound, which can cause interference in the sound waves and a reduction in noise level. Thus, the more surfaces: leaves, needles and branches there are within a tree belt, the better the reduction of noise will be, provided they are evenly distributed in the space between ground level and the tops of trees.

Foliage appears to be the most efficient part of a tree for scattering sound and it seems that large leaves are more effective than small leaves. Broadleaved trees with large leaves tend to reduce noise more than conifers that have needle-like leaves (Tanaka et al., 1979). However, since most broadleaved trees lose their leaves in winter, conifers may give better year-round noise reduction, although the most effective trees are likely to be broadleaved evergreens (e.g. holly, evergreen oak and eucalyptus). Low shrubs and/or hedges along the edge of a group of trees can improve sound reduction, particularly those on the side nearest the sound source. Nevertheless, during British winters people spend most time indoors, making the need for noise control less critical.

Whilst trees themselves do not absorb a great deal of noise (tree bark appears to be the most efficient part of a tree in noise absorption) the ground within a group of trees seems to have a relatively large noise absorbing capacity. Studies within woodlands have shown that the greatest noise reduction occurs near ground level. Trees

help to keep the soil loose through the action of their roots exploring the soil, by the fall of leaf litter to form a soft humus layer, and because of the shading of trees which prevents soils becoming baked hard in hot, dry summers.

The developmental stage of the trees is important in relation to their effectiveness in noise control. Young (1.5–4.0m tall) and middle aged (4–10m tall) tree belts appear to be best (Kellomäki et al., 1976). Noise reduction tends to increase with tree height up to 10–12m after which attenuation decreases. This is probably a result of lower branches dying back through shading as trees get taller, opening the understorey and allowing sound to travel more easily. This implies that a noise barrier comprising both trees and shrubs should be managed to ensure that the density of branches and foliage (particularly from ground level to 10m) remains high.

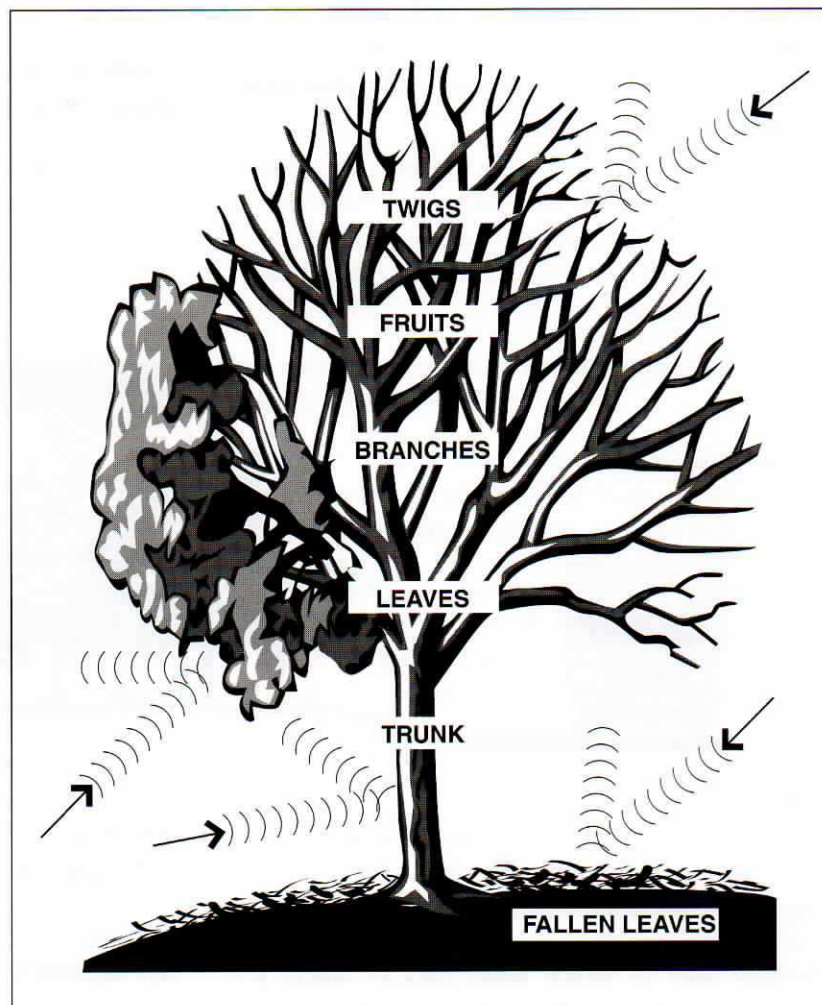


Figure 3

Illustration of how plants can attenuate sound. (Source: Grey & Deneke, 1986)

Does Size Matter?

Allowing trees to become too tall, resulting in gaps opening up in the understorey, will lessen their effectiveness. Kellomäki *et al.* (1976) found that noise attenuation by a stand of mature pines was less than in stands of any other species, or even clear cut areas. This may be due to the open structure exhibited by a group of mature trees combined with the reflection of sound downwards from the crowns of the trees.

Noise reduction is correlated with the width of a belt of trees, *i.e.* the wider it is, the greater the noise reduction. However, the amount of additional noise reduction declines with increasing distance. For example, from studies of traffic noise, Huddart (1990) found that a 10m wide strip of trees planted close to a road gave an attenuation of about 5dB more than the same width of grass whilst a strip of trees 20m wide only gave an attenuation of 6dB more than grass. This appears to be because the interior of a wide group of trees is relatively free of foliage and small branches, especially at lower levels, and therefore somewhat 'hollow', whereas narrow strips of trees, especially young conifers, have foliage and small branches throughout, from top to bottom. These compensating factors probably account for the smaller than expected differences in sound level attenuation between wide and narrow belts.

The length a tree and shrub belt extends may also influence its effectiveness in noise attenuation. Actual prescriptions are difficult however, as they will depend on the dimensions of the noise source, *i.e.* point or line source. Of more importance in noise attenuation is the actual *siting* of the barrier; a screen placed relatively close to a noise source is more effective than one placed close to an area to be protected. However, at midway between the source and receiver, noise reduction is least. Also, a barrier is most effective when trees and shrubs are combined with soft rather than hard ground surfaces, *i.e.* grass instead of tarmac or gravel. Hard surfaces tend to reflect noise with little or no attenuation.

To maximise noise attenuation

- A vegetation barrier should ideally form an irregular structure comprising:
 - Trees
 - Shrubs
 - Herb and
 - Litter layers
- Particular attention should be paid to:
 - Density
 - Height
 - Amount of foliage in the shrub layer
- Large-leaved deciduous species may be more effective at reducing noise during spring and summer but evergreens will provide better year-round attenuation.

Trees and Solid Barriers

Walls, fences, earth mounds and other solid barriers have proved useful as noise screens (Huddart, 1990). Whilst trees and shrubs have often been combined with solid barriers, for aesthetic purposes, relatively little thought has been given to the noise reducing capabilities of this combination. However, limited research has shown that a screen consisting of a solid barrier and trees/shrubs is no more effective for noise abatement than a solid barrier on its own.

Although planting trees may initially be more cost effective than erecting a solid barrier, it would incur more on-going management costs than a solid barrier. Tree and shrub belts, however, offer many **additional** benefits over conventional techniques of controlling noise. Tree belts may develop into more effective windbreaks and provide more protection from the glare of the sun than mounds or fences. In addition, trees can also help purify the air, stabilize embankments with their roots, provide habitats for wildlife, and improve the appearance of roads.

Where are Tree and Shrub Belts Useful?

In order to achieve a significant noise reduction of say, 6dB (corresponding to a reduction in loudness of about one third of the original level), a barrier

consisting of trees and shrubs needs to be relatively wide (between 20-30m). Such barriers are therefore best suited to areas where land is freely available for planting. However, the cost of land may be extremely high and in many instances is the main argument against the use of vegetation as a noise barrier. Nevertheless, a narrow strip of densely planted trees and shrubs of about 10m wide could still give significant reductions in traffic noise level - of the order of 5dB (Huddart, 1990). For comparison, a 3m high solid barrier (e.g. a wall or a fence), erected on flat ground might be expected to give an attenuation of 15dB immediately behind it (Watts, Personal Communication, TRL). Motorways and trunk roads which often have a relatively wide verge, quarries or landfill sites, or industrial complexes could all benefit from having trees and shrubs planted around them. However, where the sound source is above the potential canopy height, as with aircraft or overhead roads, trees will be effective only very locally.

Another argument against the use of vegetation for noise barriers is the length of time taken for the barrier to become established. However, trees and shrubs can grow rapidly if appropriate stock is planted and attention is given to proper aftercare, particularly keeping trees free of weeds (Davies, 1987). If this is done, benefits should be noticeable within about 5 years.

Vegetated Solid Barriers

Willow walls, which have been pioneered on the continent, have recently been introduced into the UK. These 'living walls' generally consist of two parallel sets of posts which form the outer faces of the wall, between which willow branches are woven, in a similar way to a wicker basket, and as the weaving progresses the core is filled with soil. At each metre in height internal irrigation pipes are installed and lateral rods for structural support. The woven willow then produce new shoots on the outside and roots within the internal core, providing a total covering of foliage within the first year after construction. Construction should be during the dormant period (November to March) using live shoots, freshly cut, or kept in cold storage. A typical wall may have a basal width of about 2.5m and a height of 4.0m. Overall costs may be high; the willow requires cutting back annually but living walls may be a suitable option where space is

limited, and where there needs to be a combination of 'greenery' and noise reduction. The level of noise reduction provided by willow walls is similar to the reduced level of a solid noise barrier of similar height, because the soil core prevents sound leakage. Unlike a tree belt which takes time to become established, the benefits of such vegetated barriers are immediately available.

Conclusions

There are several factors to be considered before deciding to create a tree and shrub barrier against noise. In each case, where possible, use trees that will develop dense foliage and relatively uniform vertical foliage distribution, or combinations of shrubs and taller trees to give this effect. Where the use of trees is restricted, use combinations of shrubs and tall grass or similar soft ground cover in preference to paved, tarmac or gravel surfaces to encourage absorption of noise rather than reflection.

Some other points to bear in mind are:

- noise is more effectively attenuated by *completely* screening the source from view. Although gaps and partial views through a barrier may create an *impression* of greater noise reduction, they will allow noise to penetrate.
- a noise barrier should be planted as close to the noise source as possible.
- widely spaced trees do not reduce noise effectively. Wide belts of high densities are required to achieve significant noise reductions.
- effectiveness is closely related to the density of stems, branches and leaves. Use trees with dense foliage and branches that reach close to the ground. Alternatively plant an understorey of dense shrubs or a surrounding hedge.
- where year-round noise screening is desired use broadleaved evergreens or a combination of conifer and broadleaved evergreen species.
- soft ground is an efficient noise absorber. Avoid hard surfaces - asphalt and concrete reflect virtually all incident sound at any angle. Cultivating ground before planting, and the addition of well-rotted organic matter to the soil surface may also help to reduce noise whilst vegetation becomes established.

Acknowledgments

The authors would like to thank Dr. Greg Watts of the Transport Research Laboratory Ltd., Crowthorne, Berkshire, for his guidance and helpful comments throughout the preparation of this Note. Thanks also to the Department of the Environment, Transport and the Region's staff for their comments and suggestions.

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Consultee Comments for Planning Application 18/00694/APP

Application Summary

Application Number: 18/00694/APP

Address: Inchmore Drybridge Buckie Moray AB56 5JB

Proposal: Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at

Case Officer: Shona Strachan

Consultee Details

Name: Mr CL Consultations

Address: Environmental Health, Council Offices, High Street Elgin, Moray IV30 1BX

Email: clconsultations@moray.gov.uk

On Behalf Of: Contaminated Land

Comments

No Comments.

Adrian Muscutt

Contaminated Land Officer

From: DeveloperObligations
Sent: 15 Jun 2018 14:46:36 +0100
To: Shona Strachan
Cc: DC-General Enquiries
Subject: 18/00694/APP Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore, Drybridge, Buckie

Hi

No developer obligations will be sought for the above planning application.

Regards
Hilda

Find us on 
[Moray Council Planning](#)

Hilda Puskas
Developer Obligations Officer
Development Plans
hilda.puskas@moray.gov.uk
01343 563265

The logo for Moray Council, featuring the word 'moray' in a stylized, lowercase, serif font with a pinkish-red color. Below it, the word 'council' is written in a smaller, lowercase, sans-serif font, also in the same color.

Consultation Request Notification

Planning Authority Name	The Moray Council
Response Date	28th June 2018
Planning Authority Reference	18/00694/APP
Nature of Proposal (Description)	Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at
Site	Inchmore Drybridge Buckie Moray AB56 5JB
Site Postcode	N/A
Site Gazetteer UPRN	000133058247
Proposal Location Easting	345489
Proposal Location Northing	861999
Area of application site (Ha)	m²
Additional Comment	
Development Hierarchy Level	LOCAL
Supporting Documentation URL	http://public.moray.gov.uk/eplanning/centralDistribution.do?caseType=Application&keyVal=P948RJBGIAU00
Previous Application	17/01779/APP
Date of Consultation	14th June 2018
Is this a re-consultation of an existing application?	No
Applicant Name	Mr Kenneth More
Applicant Organisation Name	
Applicant Address	Inchmore Drybridge Buckie Moray AB565JB
Agent Name	
Agent Organisation Name	
Agent Address	
Agent Phone Number	
Agent Email Address	N/A
Case Officer	Shona Strachan
Case Officer Phone number	01343 563303
Case Officer email address	shona.strachan@moray.gov.uk
PA Response To	consultation.planning@moray.gov.uk

NOTE:

If you do not respond by the response date, it will be assumed that you have no comment to make.

The statutory period allowed for a consultation response is 14 days. Due to scheduling pressures if a definitive response is not received within 21 days this may well cause the two month determination period to be exceeded.

Please respond using the attached form:-

MORAY COUNCIL

PLANNING CONSULTATION RESPONSE

From: Environmental Health Manager

Planning Application Ref. No: 18/00694/APP

Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore Drybridge Buckie Moray for Mr Kenneth More

I have the following comments to make on the application:-

- | | Please |
|---|--------------------------|
| (a) I OBJECT to the application for the reason(s) as stated below | x
x |
| (b) I have NO OBJECTIONS to the application and have no condition(s) and/or comment(s) to make on the proposal | <input type="checkbox"/> |
| (c) I have NO OBJECTIONS to the application subject to condition(s) and/or comment(s) about the proposal as set out below | <input type="checkbox"/> |
| (d) Further information is required in order to consider the application as set out below | <input type="checkbox"/> |

Reason(s) for objection

Shadow flicker: the proposals are greater than 10 times rotor diameter distance to a dwelling and therefore shadow flicker is not considered a significant issue.

Noise: This Section has assessed the predicted noise levels at the proposed location, described as being 97m from the neighbouring dwelling façade to the north. The measurement and assessment of wind turbine is within a garden amenity area and this has been taken as 90m distance from the turbine. As in the previous withdrawn application (17/01779/APP) this Section has considered the Declared Apparent Emission sound power level and noise slope provided in the Sgurr Energy Noise Performance Test. Based on standard hemispherical noise propagation conditions, wind turbine noise levels are predicted to be a sound pressure level L A eq (10 min) of 41.2 dB at 8m/s wind speed. This still significantly exceeds the limit required of L A eq (10 min) 38 dB, 8 m/s wind speed. This limit is the level of noise emissions required in the Moray Onshore Wind Energy Supplementary Guidance (2017), as deemed acceptable for small wind turbines to proceed, subject to a noise limit planning condition. Using the standard hemispherical propagation calculation a distance of 130m to a similar external garden amenity is required to meet this limit for the proposed turbine.

Where an absolute limit cannot be met it may be feasible to recommend a planning condition that ensures the wind turbine noise does not exceed the existing background noise by more than 5 dB(A), or the absolute limit of 38 dB(A) (whichever is greater). Moray Onshore Wind Energy Supplementary Guidance (2017) confirms in situations where a background noise level survey is required for wind turbine proposals (whether under or over the 50 kw threshold) that it is necessary to follow the guidance provided on that topic in ETSU-R-97 and the Institute of Acoustics (IOA) "A Good Practice Guide to the Application of ETSU-R-97 For the Assessment and Rating of Wind Turbine Noise ".

The applicant sought consideration of this by carrying out their own background assessment. This Section notes that the applicant has taken a variety of readings of noise and wind speed covering the period of 5th April to 11th April 2018. There was no prior agreement with this Section on the methodologies to be used and at the Pre- Application meeting at the Council Annexe on March 9 2018, also attended by Planning Officers Neal MacPherson and Shona Strachan, this Section advised the applicant that the initial proposals for a background assessment were likely to result in this Section having to make a refusal recommendation.

This Section left the IOA Good Practice Guide with the applicant at a site meeting on 16 May 2018 and highlighted the required standard and confirmed a number of aspects of the applicant's own methodology and assessment which would not be in accordance with this Guide. These included matters such as the location and number of measurements, noise parameter, noise measuring equipment (including calibration and wind shield standards), wind speed measurement height, synchronisation of noise and wind measurements in 10 minute intervals, survey duration, inclusion of amenity hours and night time hours, etc.

Whilst it is recognised the considerable efforts made by the applicant, this Section has to confirm that the applicant's own assessment and methodology do not accord with the standards which the background noise survey has to be based in order to enable planning conditions to be recommended. This Section has also taken advice from other local authority colleagues with relevant experience in this field and they concur on this view.

This Section has alternatively considered two other processes, firstly the Aberdeenshire Council's notional background levels for daytime and night time. By applying the predicted noise levels across all relevant wind speeds, using the noise slope in the Sgurr Energy Noise Performance Test, it can be concluded that relative noise levels (i.e. background noise + 5) are still significantly exceeded for day and night across common operational wind speeds. This is illustrated in the two tables below, highlighting in bold the wind speeds where exceedances occur:

DAYTIME								
Wind Speed (m/s)	3	4	5	6	7	8	9	10
Aberdeenshire National Background Level (LA90 in (dB))	28.7	29.2	30.2	31.6	33.4	35.7	38.3	41.5
Aberdeenshire Turbine Limit (35dB or Background +5)	35	35	35.2	35.6	38.4	40.7	43.3	45.5
Predicted Wind Turbine Noise (dB)	33.2	34.8	36.4	38	39.6	41.2	42.8	44.4
Margin of Exceedance of Limits (dB)			1.2	1.4	1.2	0.5		

NIGHT TIME								
Wind Speed (m/s)	3	4	5	6	7	8	9	10
Aberdeenshire National Background Level (LA90 in (dB))	22.3	23.4	25	27	29.6	32.7	36.2	40.3
Aberdeenshire Turbine Limit (38dB or Background +5)	38	38	38	38	38	38	41.2	45.3
Predicted Wind Turbine Noise (dB)	33.2	34.8	36.4	38	39.6	41.2	42.8	44.4
Margin of Exceedance of Limits (dB)					1.6	3.2	1.6	

Note

At 97m to the nearest house façade, a further 7m from the external amenity assessment point , the predicted noise levels in the Night Time table will reduce by a further 0.6 dB but will further

increase by a further 3 dB within 2m of the façade due to sound reflection , where sound pressure levels double.

Having regards to the above tables, it can be noted that wind turbine noise limits are predicted to be exceeded across all the common wind speed conditions that will regularly occur on the site. The highest margin of exceedance is at night time at 8m/s , giving rise to concern of an increased risk of sleep disturbance complaints as well as daytime annoyance as a regular occurrence. This is relevant in assessing the significance of noise in any development, and this is further detailed in Planning Advice (PAN 1/2011), Paragraph 15:

“Issues which may be relevant when considering noise in relation to a development proposal include:

- type of development and likelihood of significant noise impact,*
- sensitivity of location (e.g. existing land uses, NMA, Quiet Area),*
- existing noise level and likely change in noise levels,*
- character (tonal, impulsivity etc), duration, frequency of any repetition and time of day of noise that is likely to be generated, and*
- absolute level and possible dose-response relationships² e.g. health effects if robust data available.”*

Secondly, as a further alternative consideration, the NOABL mean wind speed has been provided in the applicant's submissions, with an average wind speed noted as 8.3 m/s at 10m height. Following the suggested procedure in page 18 of the BWEA Small Wind Performance and Safety Standard, the calculated separation distance required to be acceptable for a 20m hub height position is 347m, considerably in excess of the 90m currently proposed in the application. An average wind speed of 4.1 m/s at 10m height at the current distance of 90m to an external amenity area can achieve an acceptable outcome. This Section would not usually apply this methodology and would clarify that based on the available information, a 130m separation distance is considered necessary, based on an assessment in terms of Moray Onshore Wind Energy Supplementary Guidance (2017) and detailed earlier in this consultation.

This Section has also reviewed the Arboricultural Advisory and Information Service document “Trees and Shrubs for Noise Control” and recognises the section on “Vegetated Solid barriers” has had successful applications, for example the Lhanbryde bypass, to mitigate low height road traffic noise in the form of willow walls. A barrier that is solid and of a certain level of density can reduce noise levels , where line of sight is obstructed. In the circumstances with a proposed turbine in an elevated position and significant portion of the trees under the control of your neighbour, it is not a robust methodology to assume as high as 6 dB can be reduced on predicted noise levels, as mentioned in this document. ETSU-R-97 and the Institute of Acoustics Good Practice Guide require to be considered as the overriding technical documents and do not consider this as reliable mitigation. This Section has also consulted with neighbouring Aberdeenshire and Highland Councils, who both support this view.

When this Section was carrying out a site assessment on 11 May, it was very apparent that the local area is subject to elevated tree noise levels during high wind periods and experienced gusty conditions that exceeded the capabilities of this Section's noise meter's wind shield with greater than 5m/s wind speed at the measurement height of 1.3m .Whilst noise levels of 50 dB(A) and higher may indeed occur in high wind conditions, the assessment of noise levels and correlation with wind speed should be to the standards highlighted within ETSU-R-97 and the associated IOA Good Practice Guide.

Having carefully considered all the information available, this Section recommends refusal to the Planning Officer on the application. This Section is not satisfied that noise emissions from the proposed turbine will not adversely affect the local neighbouring amenity, and is therefore considered to be contrary to Local Development Plan Policy EP 8, as well as Moray Onshore Wind Energy Supplementary Guidance (2017).A further relevant consideration is the inability to mitigate

the effects of this turbine noise once built and operational. Paragraph 20 of Planning Advice PAN 1/2011 further highlights a number of possible mitigation options which can't be applied in this situation.

Contact: Douglas Caldwell
email address:
Consultee:

Date: 28 June 2018
Phone No

Return response to	consultation.planning@moray.gov.uk
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Please note that information about the application including consultation responses and representations (whether in support or objection) received on the proposal will be published on the Council's website at <http://public.moray.gov.uk/eplanning/> (You can also use this site to track progress of the application and view details of any consultation responses and representations (whether in support or objection) received on the proposal). In order to comply with the Data Protection Act, personal information including signatures, personal telephone and email details will be removed prior to publication using "redaction" software to avoid (or mask) the display of such information. Where appropriate other "sensitive" information within documents will also be removed prior to publication online.



Defence Infrastructure Organisation

Claire Duddy
Assistant Safeguarding Officer
Ministry of Defence
Safeguarding – Wind Energy
Kingston Road
Sutton Coldfield
West Midlands B75 7RL
United Kingdom

Your Reference: 18/00694/APP

Our Reference: DIO10042344

Telephone [MOD]: +44 (0)121 311 2143

Facsimile [MOD]: +44 (0)121 311 2218

E-mail: Claire.duddy532@mod.gov.uk

Shona Strachan
Planning Officer
Moray Council

6th July 2018

Dear Ms Strachan

Please quote in any correspondence: DIO10042344

Site Name: Inchmore, Drybridge, Buckie, Moray AB56 5JB

Proposal: Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m)

Planning Application Number: 18/00694/APP

The Ministry of Defence (MOD) has completed a detailed reassessment of the above planning consultation, based on the revised grid reference which you have provided. I am pleased to advise you that as a result of this reassessment the MOD is in a position to withdraw its objection as detailed in my response to Moray Council dated 2nd July 2018.

I can therefore confirm that the MOD has no objection to the application for 1 turbine, 22.8 metres to blade tip, located at grid reference below:

Turbine	Easting	Northing
1	345513	861985

The principal safeguarding concern of the MOD with respect to the development of wind turbines relates to their potential to create a physical obstruction to air traffic movements and cause interference to Air Traffic Control and Air Defence radar installations.

Defence Infrastructure Organisation Safeguarding wishes to be consulted and notified of the progression of planning applications and submissions relating to this proposal to verify that it will not adversely affect defence interests.

If planning permission is granted we would like to be advised of the following prior to commencement of construction;

- the date construction starts and ends;
- the maximum height of construction equipment;

- the latitude and longitude of every turbine.

This information is vital as it will be plotted on flying charts to make sure that military aircraft avoid this area.

If the application is altered in any way we must be consulted again as even the slightest change could unacceptably affect us.

I hope this adequately explains our position on the matter. If you require further information or would like to discuss this matter further please do not hesitate to contact me.

Further information about the effects of wind turbines on MOD interests can be obtained from the following websites:

MOD: <https://www.gov.uk/government/publications/wind-farms-ministry-of-defence-safeguarding>

Yours sincerely



Claire Duddy
Assistant Safeguarding Officer – Wind Energy
Defence Infrastructure Organisation

SAFEGUARDING SOLUTIONS TO DEFENCE NEEDS

Consultation Request Notification

Planning Authority Name	The Moray Council
Response Date	28th June 2018
Planning Authority Reference	18/00694/APP
Nature of Proposal (Description)	Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at
Site	Inchmore Drybridge Buckie Moray AB56 5JB
Site Postcode	N/A
Site Gazetteer UPRN	000133058247
Proposal Location Easting	345489
Proposal Location Northing	861999
Area of application site (Ha)	m²
Additional Comment	
Development Hierarchy Level	LOCAL
Supporting Documentation URL	http://public.moray.gov.uk/eplanning/centralDistribution.do?caseType=Application&keyVal=P948RJBGIAU00
Previous Application	17/01779/APP
Date of Consultation	14th June 2018
Is this a re-consultation of an existing application?	No
Applicant Name	Mr Kenneth More
Applicant Organisation Name	
Applicant Address	Inchmore Drybridge Buckie Moray AB565JB
Agent Name	
Agent Organisation Name	
Agent Address	
Agent Phone Number	
Agent Email Address	N/A
Case Officer	Shona Strachan
Case Officer Phone number	01343 563303
Case Officer email address	shona.strachan@moray.gov.uk
PA Response To	consultation.planning@moray.gov.uk

NOTE:

If you do not respond by the response date, it will be assumed that you have no comment to make.

The statutory period allowed for a consultation response is 14 days. Due to scheduling pressures if a definitive response is not received within 21 days this may well cause the

two month determination period to be exceeded.

Please respond using the attached form:-

MORAY COUNCIL

PLANNING CONSULTATION RESPONSE

From: Transportation Manager

Planning Application Ref. No: 18/00694/APP

Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore Drybridge Buckie Moray for Mr Kenneth More

I have the following comments to make on the application:-

Please

- | | |
|---|-------------------------------------|
| (a) I OBJECT to the application for the reason(s) as stated below | <input type="checkbox"/> |
| (b) I have NO OBJECTIONS to the application and have no condition(s) and/or comment(s) to make on the proposal | <input type="checkbox"/> |
| (c) I have NO OBJECTIONS to the application subject to condition(s) and/or comment(s) about the proposal as set out below | <input checked="" type="checkbox"/> |
| (d) Further information is required in order to consider the application as set out below | <input type="checkbox"/> |

Further comment(s) to be passed to applicant

Planning consent does not carry with it the right to carry out works within the public road boundary.

Public utility apparatus may be affected by this proposal. Contact the appropriate utility service in respect of any necessary utility service alterations which have to be carried out at the expense of the developer.

No building materials/scaffolding/builder's skip shall obstruct the public road (including footpaths) without permission from the Roads Authority.

Contact: DA/AG

Date 18 June 2018

email address: transport.develop@moray.gov.uk

Consultee: TRANSPORTATION

Return response to

consultation.planning@moray.gov.uk

Please note that information about the application including consultation responses and representations (whether in support or objection) received on the proposal will be published on the Council's website at <http://public.moray.gov.uk/eplanning/>. (You can also use this site to track progress of the application and view details of any consultation responses and representations (whether in support or objection) received on the proposal). In order to comply with the Data Protection Act, personal information including signatures, personal telephone and email details will be removed prior to publication using "redaction" software to avoid (or mask) the display of such information. Where appropriate other "sensitive" information within documents will also be removed prior to publication online.

Lissa Rowan

From: Shona Strachan
Sent: 25 July 2018 10:10
To: Planning Consultation
Subject: FW: Consultation reponse: 18/00694/APP: Inchmore

Follow Up Flag: Follow up
Flag Status: Completed

Hello Fi,

The email response below should supersede the one from 14 June.

Many thanks,

Shona Strachan
Planning Officer

Development Management Section
T: 01343 563303
E: Shona.strachan@moray.gov.uk



This advice is given without prejudice to the future consideration of and decision on any application received by The Moray Council

From: Planning Consultation
Sent: 25 July 2018 10:08 AM
To: Shona Strachan
Subject: RE: Consultation reponse: 18/00694/APP: Inchmore

Hi Shona

This one was entered into uniform and DMS on the 14 June.

Thanks

Fi

From: Shona Strachan
Sent: 24 July 2018 3:06 PM
To: Planning Consultation
Subject: FW: Consultation reponse: 18/00694/APP: Inchmore

Hello,

Please can you upload the email below as the updated consultation response from National Air Traffic Systems on this application.

Many thanks,

Shona Strachan
Planning Officer

Development Management Section
T: 01343 563303
E: Shona.strachan@moray.gov.uk



This advice is given without prejudice to the future consideration of and decision on any application received by The Moray Council

From: NATS Safeguarding [<mailto:NATSSafeguarding@nats.co.uk>]
Sent: 24 July 2018 2:44 PM
To: Shona Strachan
Subject: FW: Consultation reponse: 18/00694/APP: Inchmore

Hi Shona

The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.

However, please be aware that this response applies specifically to the above consultation and only reflects the position of NATS (that is responsible for the management of en route air traffic) based on the information supplied at the time of this application. This letter does not provide any indication of the position of any other party, whether they be an airport, airspace user or otherwise. It remains your responsibility to ensure that all the appropriate consultees are properly consulted.

If any changes are proposed to the information supplied to NATS in regard to this application which become the basis of a revised, amended or further application for approval, then as a statutory consultee NERL requires that it be further consulted on any such changes prior to any planning permission or any consent being granted.

Yours Faithfully

NATS

NATS Safeguarding

D: 01489 444687
E: NATSSafeguarding@nats.co.uk

4000 Parkway, Whiteley,
Fareham, Hants PO15 7FL
www.nats.co.uk



****Please note:** We have recently made some changes to our mailbox structure. I would be grateful if you could delete previous instances of our email address (e.g. in outlook email address auto-fill) and re-typing NATSSafeguarding@nats.co.uk to ensure that the correct inbox is picked up

From: gmb-bdn-000913
Sent: 23 July 2018 14:15

To: NATS Safeguarding
Subject: FW: Consultation reponse: 18/00694/APP: Inchmore

From: Shona Strachan
Sent: 23 July 2018 14:03:47 (UTC+00:00) Dublin, Edinburgh, Lisbon, London
To: gmb-bdn-000913
Subject: Consultation reponse: 18/00694/APP: Inchmore

Mimecast Attachment Protection has deemed this file to be safe, but always exercise caution when opening files.

Hello,

18/00694/APP: Inchmore Drybridge Buckie

The consultation response attached has been received from NATs on this application proposal. However, I am unclear what your response to the proposal is, therefore, please can I ask that you provide clarification on your response.

Many thanks,

Shona Strachan
Planning Officer

Development Management Section
T: 01343 563303
E: Shona.strachan@moray.gov.uk

moray
council

This advice is given without prejudice to the future consideration of and decision on any application received by The Moray Council

If you are not the intended recipient, please notify our Help Desk at Email Information.Solutions@nats.co.uk immediately. You should not copy or use this email or attachment(s) for any purpose nor disclose their contents to any other person.

NATS computer systems may be monitored and communications carried on them recorded, to secure the effective operation of the system.

Please note that neither NATS nor the sender accepts any responsibility for viruses or any losses caused as a result of viruses and it is your responsibility to scan or otherwise check this email and any attachments.

NATS means NATS (En Route) plc (company number: 4129273), NATS (Services) Ltd (company number 4129270), NATSNAV Ltd (company number: 4164590) or NATS Ltd (company number 3155567) or NATS Holdings Ltd (company number 4138218). All companies are registered in England and their registered office is at 4000 Parkway, Whiteley, Fareham, Hampshire, PO15 7FL.

REPORT OF HANDLING

Ref No:	18/00694/APP	Officer:	Shona Strachan
Proposal Description/ Address	Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore Drybridge Buckie Moray		
Date:	06/08/2018	Typist Initials:	LMC

RECOMMENDATION

Approve, without or with condition(s) listed below		N
Refuse, subject to reason(s) listed below		Y
Legal Agreement required e.g. S,75		N
Notification to Scottish Ministers/Historic Scotland		N
Hearing requirements	Departure	N
	Pre-determination	N

CONSULTATIONS

Consultee	Date Returned	Summary of Response
Contaminated Land	19/06/18	No objection
National Air Traffic Systems Limited	24/07/18	No objection
MOD Safeguarding - Wind	06/07/18	Based on revised co-ordinates provided the MOD has no safeguarding objections to the wind turbine.
Transportation Manager	18/06/18	No objection with standard informatives
Planning And Development Obligations	15/06/18	None sought
Environmental Health Manager	28/06/18	Objection on noise grounds, following discussion with the applicant and consideration of all submitted information.

DEVELOPMENT PLAN POLICY

Policies	Dep	Any Comments (or refer to Observations below)
BE1: Sch Monuments and Nat Designations		
BE2: Listed Buildings		
IMP3: Developer Obligations		
E1: Natura 2000 and Natural Cons Sites		
E2: Loc Nature Cons Sites & Biodiversity		
E3: Protected Species		
PP1: Sustainable Economic Growth		
PP2: Climate Change		

EP8: Pollution	Y	See discussion on noise below
EP9: Contaminated Land		
ER1: Renewable Energy Proposals	Y	See observations
T2: Provision of Access		
IMP1: Developer Requirements	Y	See observations
EP13: MoD Safeguarding Areas		

REPRESENTATIONS

Representations Received		NO
Total number of representations received		
Names/Addresses of parties submitting representations		
Summary and Assessment of main issues raised by representations		
Issue:		
Comments (PO):		

OBSERVATIONS – ASSESSMENT OF PROPOSAL

Section 25 of the 1997 Act as amended requires applications to be determined in accordance with the development plan i.e. the adopted Moray Local Development Plan 2015 (MLDP 2015) unless material considerations indicate otherwise. In this case the main planning issues are considered below.

Proposal

- This application seeks planning permission for the installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore Drybridge Buckie.
- The turbine is a 3-blade model and will have a galvanised grey finish.

Site Characteristics

- The site is located in the south east corner of the garden ground of the dwelling house Inchmore. The proposed turbine is to be located to the rear of the dwelling house.
- The C11L Drybridge - Deskford road is located approximately 39m from the position of the turbine. Beyond the public road to the east is an established area of tall mature forestry plantation.
- There are juvenile trees planted in the land to the south and west of the defined boundary for the house at Inchmore.
- The site is not located within any landscape designation nor are there any environmental or historic designations within close proximity to the site.
- The closest residential properties to the site are The Old Monastery which is located approximately 90m to the north of the proposed turbine (i.e. from the turbine to the garden ground of The Old Monastery). There is a woodland strip between the garden ground of Inchmore and The Old Monastery.
- The properties Westholm and Eastholm are located approximately 137m and 156m (respectively) to the south east of the proposed turbine.
- The properties Islay and Birchfold are located approximately 117m and 155m (respectively) to the south west of the proposed turbine.

Site History

An application for the installation of a 6kW Kingspan wind turbine (17.8m to tip and rotor diameter 5.6m) in an area of garden ground to the north of the dwelling was submitted under planning reference 17/01779/APP. At this location the proposed turbine was approximately 30m from the neighbouring property to the north. This application was withdrawn prior to determination as the application due to concern over potential shadow flicker and noise impacts to this neighbouring property.

Policy Assessment

Landscape and Visual (ER1, MOWE and MWELCS, PP1, PP2 and IMP1)

The proposal site falls within Landscape Character Type (LCT) 8 'Upland Farmland', as defined in the Moray Wind Energy Landscape Capacity Study 2017 (MWELCS). Within this LCT, the MWELCS advises that there is medium-low sensitivity for small typology turbines (20-35m high) and that the simple, gently undulating landform and overall medium scale of the landscape could best relate to the size of smaller typologies.

In this instance, the turbine is to be located in the garden ground of the property 'Inchmore'. This means that the turbine will relate to the dwelling as a domestic turbine and will be seen in the context of the dwelling house.

- Trees to the east will help provide a point of scale for the height of the turbine and given the height of the trees the turbine is likely to be of comparable size.
- When viewed from the north west any views will be seen in the context of the house given the turbine's position to the rear of the dwelling house.
- From the south over more distant views the turbine will be seen in the context of roof and trees to the east (most prominent views will be from the south).

In general terms the turbine will be perceived as clearly ancillary and related to the nearby parent property, and would not be out of scale with the scale of the property itself, its generous grounds or the surrounding mature woodland, and landscaping within other gardens. It is acknowledged that as the location is approached from the north the turbine would be suddenly visible and partially obscured by the parent house, which would initially be a minor distraction. Once established, this view, which is only evident over a short stretch of road would not be a distraction to regular users of the road or those located in the local vicinity.

Noise and Shadow Flicker (ER1, EP8, EP12, IMP1)

Wind turbines have the potential due to their movement to cause a detrimental impact on neighbouring properties by virtue of the effect of the passing shadows cast by the moving blades upon properties where shadows are being cast, and also by noise generated from the noise and generation equipment.

In terms of shadow flicker, Environmental Health has advised that because the turbine is located greater than 10 times rotor diameter distance to the neighbouring dwelling to the north shadow flicker is not an issue, and that other than any effect on the parent property will have no impact on other properties and would have a very limited impact if any on passing vehicles at earlier times of the day only.

Following consultation with the Environmental Health Section of the Council, who have spent a considerable time assessing the proposed turbine at this location under various noise assessment models the predicted noise levels would exceed those acceptable in relation to the impact on neighbouring properties. The nearest residential properties (discounting the applicants own residence) would experience on occasion a level of noise from the turbines contrary to noise limits set down for such types of development. Policy ER1 ER1 Renewable Energy Proposals does state that renewable energy applications should be considered favourably where all the necessary criteria are met. However noise impacts are one of those specific criteria that must be satisfied.

The proposal is therefore contrary to MLDP policies ER1 Renewable Energy Proposals, EP8 and IMP1 where new development must not have a detrimental effect on the amenity nearby properties. Notwithstanding other implications of the turbine which have been addressed by the applicant, or are acceptable, noise in this instance would depart from the above policies and the MWELCS guidance.

Cultural Heritage and Archaeology (ER1, BE1, BE2, IMP1)

The proposed turbines will not affect any cultural, historic or archaeological interests. There are no listed building setting issues for this proposal given its siting and scale.

Natural Environment (PP1, ER1, E1, E2, E3, IMP1)

The turbine is not located within or in close proximity to any environmental designations, nor is the proposal likely to have an adverse impact on protected species. On this basis the proposal is considered to compromise these policies.

Tourism/recreation interests (ER1, IMP1)

The turbine will not affect any designated landscapes or recreational areas and as such, it is considered that any effect on tourism or recreation interests would be minimal.

Access (T2)

The Transportation Manager has no objections to the proposal on the basis of the small scale nature of the turbine, which is unlikely to require abnormal load delivery. The proposal is not considered to comprise the terms of Policy T2.

Aircraft Activity (ER1, EP13, IMP1)

The National Air Traffic Service (NATS) has raised no objection to the proposal. The Ministry of Defence (MOD) has removed their initial objection following clarification of the grid coordinates for the turbine. Therefore the proposal is not considered to comprise MOD activity.

Conclusion

The turbine location, which has been revised since a previous application, does satisfy the majority of policy and supplementary guidance requirement for small wind turbines of this scale. However, the proximity of the turbine to other residential properties and the predicted noise levels it would generate will occasionally reach levels incompatible with neighbouring amenity, and as such not satisfy all the policy requirements. On this basis the application is being refused.

OTHER MATERIAL CONSIDERATIONS TAKEN INTO ACCOUNT

None

HISTORY

Reference No.	Description			
17/01779/APP	Installation of a 6kW Kingspan wind turbine (17.8m to tip and rotor diameter 5.6m) at Inchmore Drybridge Buckie Moray AB56 5JB			
	Decision	Withdrawn	Date Of Decision	19/02/18

ADVERT

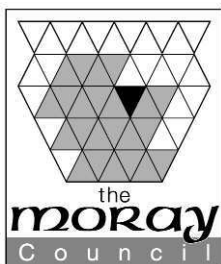
Advert Fee paid?	N/A		
Local Newspaper	Reason for Advert	Date of expiry	

DEVELOPER CONTRIBUTIONS (PGU)	
Status	NONE SOUGHT

DOCUMENTS, ASSESSMENTS etc. *	
* Includes Environmental Statement, Appropriate Assessment, Design Statement, Design and Access Statement, RIA, TA, NIA, FRA etc	
Supporting information submitted with application?	YES
Summary of main issues raised in each statement/assessment/report	
Document Name:	Position of wind turbine from Monastery and Roadside Kingspan KW6 Acoustics Data Average Wind Speed at Differing Hub Heights for Site Location Noabl Average Wind Speed For Site Location Noise Reduction by Trees and Shrubs Wind Speed and Noise Spread Sheet for Site
Main Issues:	This series of documents provides information about the site's location, as well as wind speed and noise data for the turbine and the site.

S.75 AGREEMENT		
Application subject to S.75 Agreement		NO
Summary of terms of agreement:		
Location where terms or summary of terms can be inspected:		

DIRECTION(S) MADE BY SCOTTISH MINISTERS (under DMR2008 Regs)			
Section 30	Relating to EIA		NO
Section 31	Requiring planning authority to provide information and restrict grant of planning permission		NO
Section 32	Requiring planning authority to consider the imposition of planning conditions		NO
Summary of Direction(s)			



**THE MORAY COUNCIL
TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997,
as amended**

REFUSAL OF PLANNING PERMISSION

**[Keith And Cullen]
Application for Planning Permission**

TO Mr Kenneth More
Inchmore
Drybridge
Buckie
Moray
AB565JB

With reference to your application for planning permission under the above mentioned Act, the Council in exercise of their powers under the said Act, have decided to **REFUSE** your application for the following development:-

Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore Drybridge Buckie Moray

and for the reason(s) set out in the attached schedule.

Date of Notice: **6 August 2018**

Pp



HEAD OF DEVELOPMENT SERVICES

Environmental Services Department
The Moray Council
Council Office
High Street
ELGIN
Moray
IV30 1BX

IMPORTANT
YOUR ATTENTION IS DRAWN TO THE REASONS and NOTES BELOW

SCHEDULE OF REASON(S) FOR REFUSAL

By this Notice, the Moray Council has REFUSED this proposal. The Council's reason(s) for this decision are as follows: -

Noise emissions from the proposed turbine will on occasion adversely affect the amenity of nearby residential property, such that the proposal would therefore be contrary to Moray Local Development Plan 2015 Policies EP8 Pollution, ER1 Renewable Energy Proposals, IMP1 Developer Requirements and Moray Onshore Wind Energy Supplementary Guidance (2017).

LIST OF PLANS AND DRAWINGS SHOWING THE DEVELOPMENT

The following plans and drawings form part of the decision:-

Reference	Version	Title
		Elevations
		Site and location plan
		Site plan

NOTICE OF APPEAL
TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997

If the applicant is aggrieved by the decision to refuse permission for or approval required by a condition in respect of the proposed development, or to grant permission or approval subject to conditions, the applicant may require the planning authority to review the case under section 43A of the Town and Country Planning (Scotland) Act 1997 within three months from the date of this notice. The notice of review should be addressed to The Clerk, The Moray Council Local Review Body, Legal and Committee Services, Council Offices, High Street, Elgin IV30 1BX. This form is also available and can be submitted online or downloaded from www.eplanning.scotland.gov.uk

If permission to develop land is refused or granted subject to conditions and the owner of the land claims that the land has become incapable of reasonably beneficial use in its existing state and cannot be rendered capable of reasonably beneficial use by the carrying out of any development which has been or would be permitted, the owner of the land may serve on the planning authority a purchase notice requiring the purchase of the owner of the land's interest in the land in accordance with Part 5 of the Town and Country Planning (Scotland) Act 1997.



APPENDIX 2

NOTICE OF REVIEW, GROUNDS FOR REVIEW & SUPPORTING DOCUMENTS



The Moray Council Council Office High Street Elgin IV30 1BX Tel: 01343 563 501 Fax: 01343 563 263 Email: development.control@moray.gov.uk

Applications cannot be validated until all the necessary documentation has been submitted and the required fee has been paid.

Thank you for completing this application form:

ONLINE REFERENCE 100109187-009

The online reference is the unique reference for your online form only. The Planning Authority will allocate an Application Number when your form is validated. Please quote this reference if you need to contact the planning Authority about this application.

Applicant or Agent Details

Are you an applicant or an agent? * (An agent is an architect, consultant or someone else acting on behalf of the applicant in connection with this application)

☒ Applicant ☐ Agent

Applicant Details

Please enter Applicant details

Title:	<input type="text" value="Mr"/>	You must enter a Building Name or Number, or both: *	
Other Title:	<input type="text"/>	Building Name:	<input type="text" value="Inchmore"/>
First Name: *	<input type="text" value="Kenneth"/>	Building Number:	<input type="text"/>
Last Name: *	<input type="text" value="More"/>	Address 1 (Street): *	<input type="text" value="Drybridge"/>
Company/Organisation	<input type="text"/>	Address 2:	<input type="text"/>
Telephone Number: *	<input type="text" value=""/>	Town/City: *	<input type="text" value="Buckie"/>
Extension Number:	<input type="text"/>	Country: *	<input type="text" value="Moray"/>
Mobile Number:	<input type="text"/>	Postcode: *	<input type="text" value="AB565JB"/>
Fax Number:	<input type="text"/>		
Email Address: *	<input type="text" value=""/>		

Site Address Details

Planning Authority:

Moray Council

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

Address 1:

INCHMORE

Address 2:

DRYBRIDGE

Address 3:

Address 4:

Address 5:

Town/City/Settlement:

BUCKIE

Post Code:

AB56 5JB

Please identify/describe the location of the site or sites

Northing

861999

Easting

345489

Description of Proposal

Please provide a description of your proposal to which your review relates. The description should be the same as given in the application form, or as amended with the agreement of the planning authority: *
(Max 500 characters)

Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m) at Inchmore, Drybridge, Buckie

Type of Application

What type of application did you submit to the planning authority? *



Application for planning permission (including householder application but excluding application to work minerals).



Application for planning permission in principle.



Further application.



Application for approval of matters specified in conditions.

What does your review relate to? *

- ☒ Refusal Notice.
- ☐ Grant of permission with Conditions imposed.
- ☐ No decision reached within the prescribed period (two months after validation date or any agreed extension) – deemed refusal.

Statement of reasons for seeking review

You must state in full, why you are seeking a review of the planning authority's decision (or failure to make a decision). Your statement must set out all matters you consider require to be taken into account in determining your review. If necessary this can be provided as a separate document in the 'Supporting Documents' section: * (Max 500 characters)

Note: you are unlikely to have a further opportunity to add to your statement of appeal at a later date, so it is essential that you produce all of the information you want the decision-maker to take into account.

You should not however raise any new matter which was not before the planning authority at the time it decided your application (or at the time expiry of the period of determination), unless you can demonstrate that the new matter could not have been raised before that time or that it not being raised before that time is a consequence of exceptional circumstances.

1 Dismissal of credited/proven information relating to noise reduction from trees and shrubs 2 Dismissal of demonstrated high background noise at the site location 3 The noise graph provided by the MCS manufactures indicates that the distance from the wind turbine to the neighbouring building is bordering allowable green/amber section 40-45db's and far from the red unacceptable >45db (prohibited zone)

Have you raised any matters which were not before the appointed officer at the time the Determination on your application was made? *

☐ Yes ☒ No

If yes, you should explain in the box below, why you are raising the new matter, why it was not raised with the appointed officer before your application was determined and why you consider it should be considered in your review: * (Max 500 characters)

Please provide a list of all supporting documents, materials and evidence which you wish to submit with your notice of review and intend to rely on in support of your review. You can attach these documents electronically later in the process: * (Max 500 characters)

Appeal letter Photographs of site & neighbouring land Location drawings Noise survey results Manufactures data Average wind speed data for location Extracts from wind power engineering and noise reduction by trees and shrubs

Application Details

Please provide details of the application and decision.

What is the application reference number? *

18/00694/APP

What date was the application submitted to the planning authority? *

22/05/2018

What date was the decision issued by the planning authority? *

06/08/2018

Review Procedure

The Local Review Body will decide on the procedure to be used to determine your review and may at any time during the review process require that further information or representations be made to enable them to determine the review. Further information may be required by one or a combination of procedures, such as: written submissions; the holding of one or more hearing sessions and/or inspecting the land which is the subject of the review case.

Can this review continue to a conclusion, in your opinion, based on a review of the relevant information provided by yourself and other parties only, without any further procedures? For example, written submission, hearing session, site inspection. *

☒ Yes ☐ No

In the event that the Local Review Body appointed to consider your application decides to inspect the site, in your opinion:

Can the site be clearly seen from a road or public land? *

☒ Yes ☐ No

Is it possible for the site to be accessed safely and without barriers to entry? *

☒ Yes ☐ No

Checklist – Application for Notice of Review

Please complete the following checklist to make sure you have provided all the necessary information in support of your appeal. Failure to submit all this information may result in your appeal being deemed invalid.

Have you provided the name and address of the applicant?. *

☒ Yes ☐ No

Have you provided the date and reference number of the application which is the subject of this review? *

☒ Yes ☐ No

If you are the agent, acting on behalf of the applicant, have you provided details of your name and address and indicated whether any notice or correspondence required in connection with the review should be sent to you or the applicant? *

☐ Yes ☐ No ☒ N/A

Have you provided a statement setting out your reasons for requiring a review and by what procedure (or combination of procedures) you wish the review to be conducted? *

☒ Yes ☐ No

Note: You must state, in full, why you are seeking a review on your application. Your statement must set out all matters you consider require to be taken into account in determining your review. You may not have a further opportunity to add to your statement of review at a later date. It is therefore essential that you submit with your notice of review, all necessary information and evidence that you rely on and wish the Local Review Body to consider as part of your review.

Please attach a copy of all documents, material and evidence which you intend to rely on (e.g. plans and Drawings) which are now the subject of this review *

☒ Yes ☐ No

Note: Where the review relates to a further application e.g. renewal of planning permission or modification, variation or removal of a planning condition or where it relates to an application for approval of matters specified in conditions, it is advisable to provide the application reference number, approved plans and decision notice (if any) from the earlier consent.

Declare – Notice of Review

I/We the applicant/agent certify that this is an application for review on the grounds stated.

Declaration Name: Mr Kenneth More

Declaration Date: 08/08/2018

Scottish government is encouraging households to reduce carbon dioxide emissions, a major cause of climate change and reduce our reliance on fossil fuels. To utilize environmentally friendly renewable energy sources to help reduce global warming and sustain the future of the planet.

Wind is a domestic power source, it helps to create and promote a more sustainable country.

40% of all wind energy in Europe blows over the UK and our site is ideally located with a high yearly average wind speed in excess of 8m/second.

Wind turbines complement other renewable energy technologies e.g. combining a wind turbine with our solar panel array will maintain a steady and reliable supply of electricity all year.

The FIT (feed in tariff) is being stopped early 2019 and will render the wind turbine installation non-viable for us. We are passionate about sustaining the planet's future but we can only do this if financially viable.

Our home heating and domestic hot water is provided by 2 electrically operated air source heat pumps. The addition of the wind turbine will greatly contribute to our electrical demand requirements in the winter months and with the existing solar PV array in the summer we will achieve a zero carbon footprint.

The high cost of a professional noise survey is prohibitive for a domestic application.

We carried out a noise survey onsite in line with the Environmental Health Officers (EHO) guidance although he did not agree to the methodology as this requires high cost instrumentation, costing in excess of £10,000.00. The survey we carried out used the same instrumentation used by a previous applicant for Drayton House to appeal a declined decision, this was accepted by Scottish ministers and the appeal was successful.

Our survey demonstrates a high background noise exists and the EHO personally witnessed this during a site visit. We have demonstrated that the background noise is greater than Moray Council's maximum noise level of 38db at wind speeds above 2.7m/second and the proposed turbines cut in/start-up speed is 3.5m/second.

The proposed turbine will not produce a higher noise level than the ambient/background noise for any wind speed above the startup speed for the turbine.

All noise measurements were taken when there was no local traffic, no farm animals in adjacent fields or activities by neighbours causing extraneous noise.

Our site is a rural location and subjected to farming activities associated with neighbouring Maryhill farm giving rise to considerable long term background noises, i.e. from sheep in adjacent fields (early spring to the backend of the year), farm machinery movements and road traffic associated with local motor repair garage and school route.

Our site is also surrounded on three sides by trees and our neighbouring property to the North is hidden from view by trees and shrubs. The prevailing wind in the UK is South West and our neighbouring property lies to the North of the proposed turbine position.

The noise data provided by the MCS approved manufacture is the absolute noise level which we are very close to the green/acceptable level and far from the red /unacceptable level.

We have provided accredited/proven evidence for reduction in noise by trees and shrubs on the leeward side but this has not been taken into consideration by the EHO.

We have researched two other local applications for the same turbine that were appealed and both won - Both applications are for a Proven turbine which has been taken over by Kingspan (the same turbine we propose to install) and both turbines are closer to neighbouring properties without any barriers to help reduce noise;

1 08/01278/FUL Rowan bank , Main Road, Cummingston, Moray, hub height 15m and located 90m from nearest residential dwelling

2 09/00577/FUL Drayton House, Forres, Moray, hub height 9m and located 65m from nearest residential dwelling. NB The noise meter used for this application is the same one used for our application

Our original proposal was for a position approximately 45m from the nearest residential dwelling. This was relocated following planners recommendations to a position 97m away and hub height increased to the next size up tower from 15m to 20m due to lower ground level at this revised position and the dense tree lines. There is an article in the wind power engineering site, <https://www.windpowerengineering.com/construction/loud-wind-turbine-really> that highlights sound decreases significantly with distance and height – another good reason to allow taller towers.

We hope that the review will show that all information we have provided ensures that the proposed wind turbine will not cause any discomfort or detrimental effects to our neighbours.

Proposed Wind turbine @ Inchmore, Drybridge, Buckie with proposed revised position, 97m from neighbouring monastery gable wall (closest point) and 39m from highway edge.

On each day for 1 week, as agreed by Environmental health department wind and noise levels were measured every 10minutes and data noted.

Measurements are listed on attached files.

Precision Gold sound level meter N05CC and weather station N96GY were used to collate noise levels and wind speeds.

The noise levels were recorded 49m North of the proposed wind turbine position, at the tree line in our own land, bordering the neighbouring monastery building which is a further 48m away from this point. The wind speed was recorded at the proposed position of the wind turbine, 97m from the monastery gable wall (closest point) and 39m from highway edge.

All measurements were taken with no road traffic passing, no farm animals in the field to the West and no activity from neighbours that could have added any extra noise.

There are trees surrounding the proposed site, to the north bordering the monastery, to the south and to the rear (East) previously wooded area which is self-regenerating, with closely rooted/dense young trees now >2m tall.

The noise levels from the proposed Kingspan KW6 wind turbine will be below the prevailing ambient noise and therefore virtually indistinguishable to a listener in the grounds of the monastery which is separated by 20-30m strip of trees & shrubs on the boundary with a narrow obstructed line of sight to the proposed position of the turbine. The obstructed line of sight is narrow due to the position of Inchmore house, outbuilding (shed/log store) and the tree line.

The ambient noise level is greater than Moray council's maximum of 38db for all wind speeds & directions above 2.7m/s

The wind turbines cut in speed (start-up) is 3.5m/s.

There is also evidence to support that the trees & shrubs positioned at the border will reduce noise, a belt of trees and shrubs 15-30m can reduce noise by 6 -10db.

The ambient/background noise above 7m/s is >60db's and the turbines noise level at 8m/s at the monastery 97m away would be approximately 40db (Kingspan Acoustic Noise Levels data sheet), considerably lower than the ambient noise levels.

The Kingspan KW6 turbine is a direct drive alternator, no gearbox and is the quietest MCS accredited domestic wind turbines of this size and type available on the market.

PRODUCT SPECIFICATION

ARCHITECTURE AND ROTOR

Type: Downwind, 360 degrees free yawing
Speed control: Self-regulating
Blades: 3 blades, passive coning and pitch control
Rotor diameter: 5.6m
Rated speed: 11m/s
Rotor thrust: 10kN

GENERATOR

Type: Brushless permanent magnet, direct drive
Output: Grid connect (300v), battery charging (48V)

TOWER

Type: Self-supporting monopole
Hub height: 9m, 11m and 15m (hinged or hydraulic tower)
3.5m x 3.5m x 0.9m (max) Pad Foundation
Root Foundations are also available

WEIGHTS

Wind turbine: 600kg

PERFORMANCE

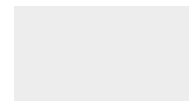
Cut-in wind speed: 3.5m/s
Max wind speed (survival): Designed to Class 1 (70m/s), Tested to Class 2 (59.5m/s)
Rated Power: 5.2kW (at 11m/s measured at hub height)
Peak Power: 6.1kW
RAE: 8,949kWh as certified by TUV NEL (at 5m/s measured at hub height)

BUILD MATERIALS AND COLOURS

Frame: Galvanised steel, grey (not visible)
Towers: Galvanised steel, grey
Blades: Glass thermoplastic composite, black, white or grey
Covers: Plastic.



Black (RAL 9005)



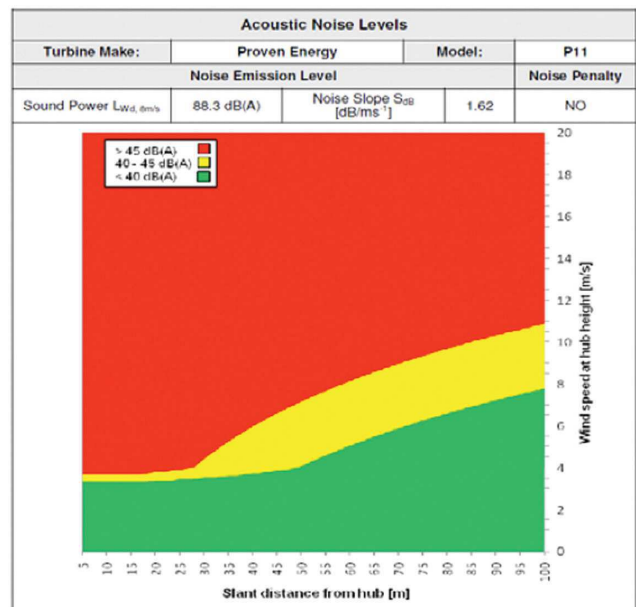
White (RAL 9003)



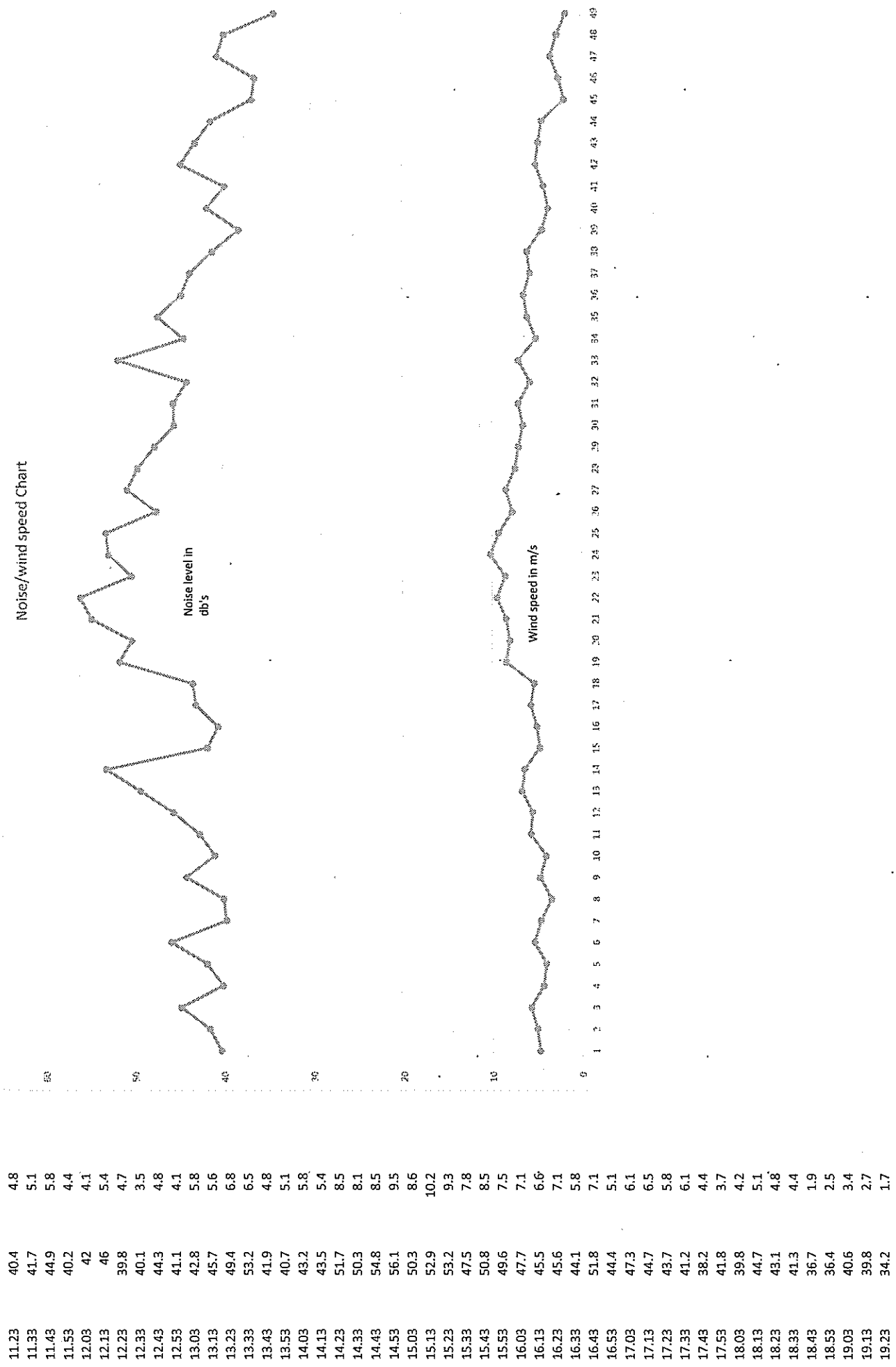
Grey (RAL7000)

ACOUSTIC DATA

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

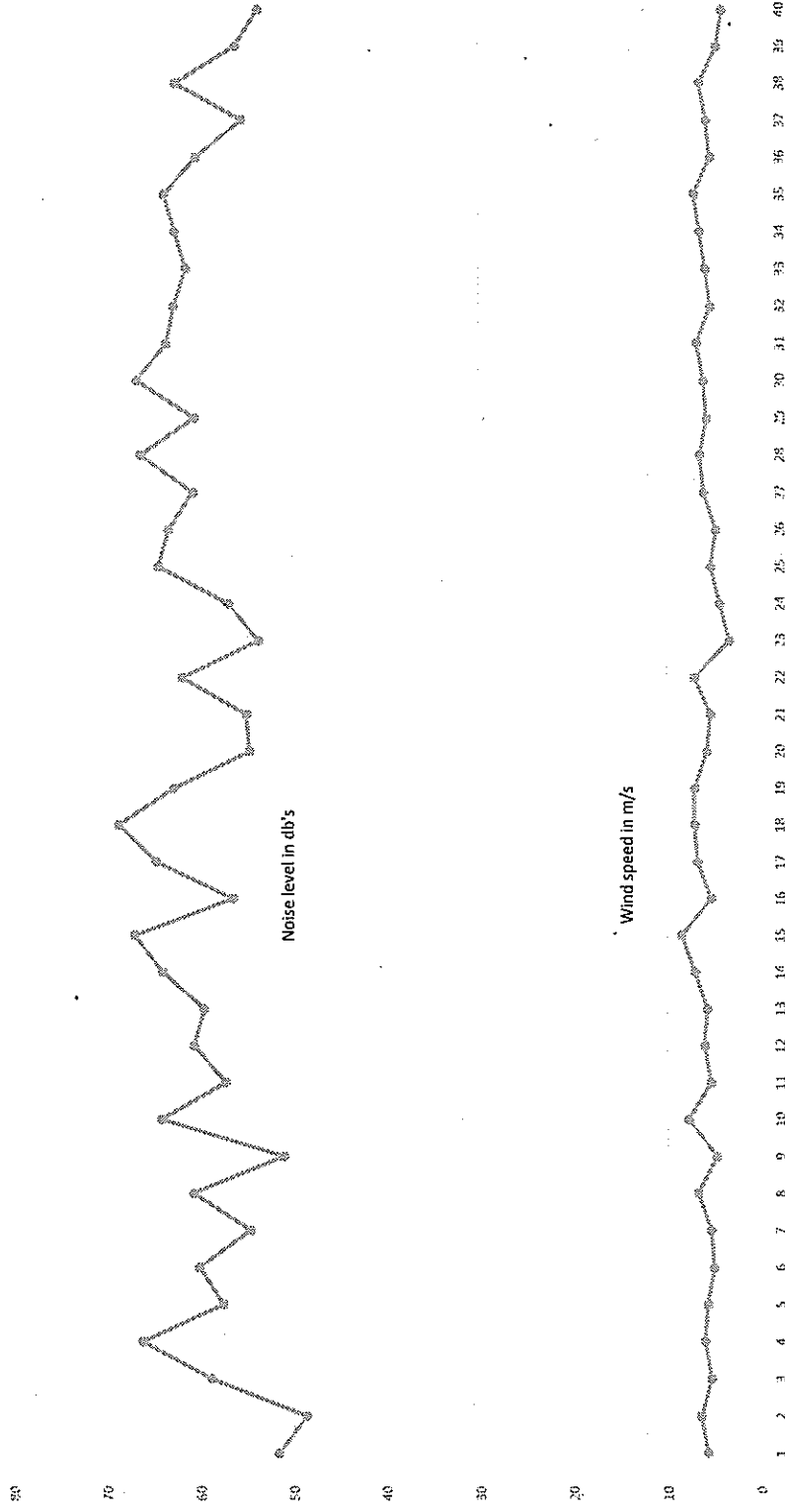


A full report is available upon request from
wind.support@kingspan.com



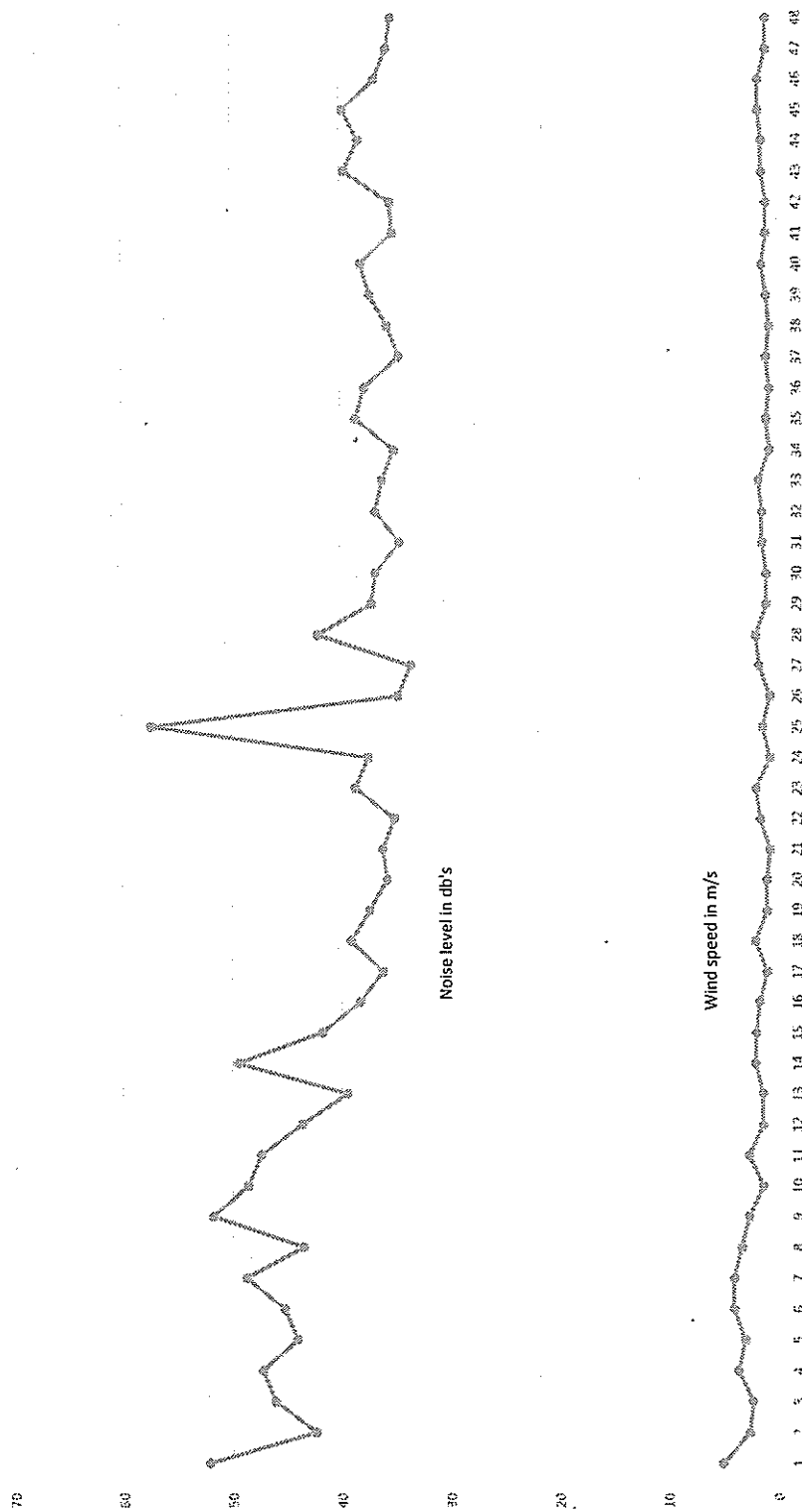
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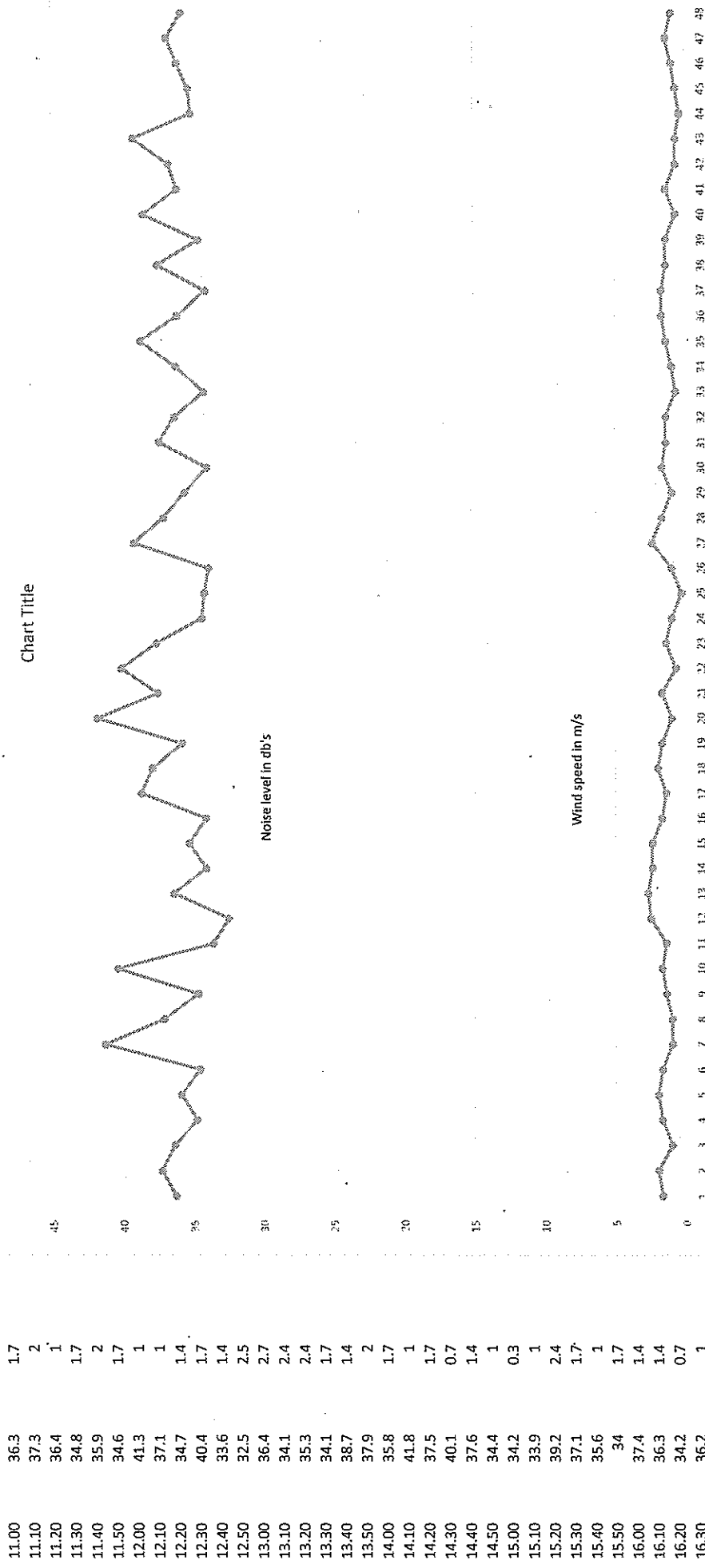
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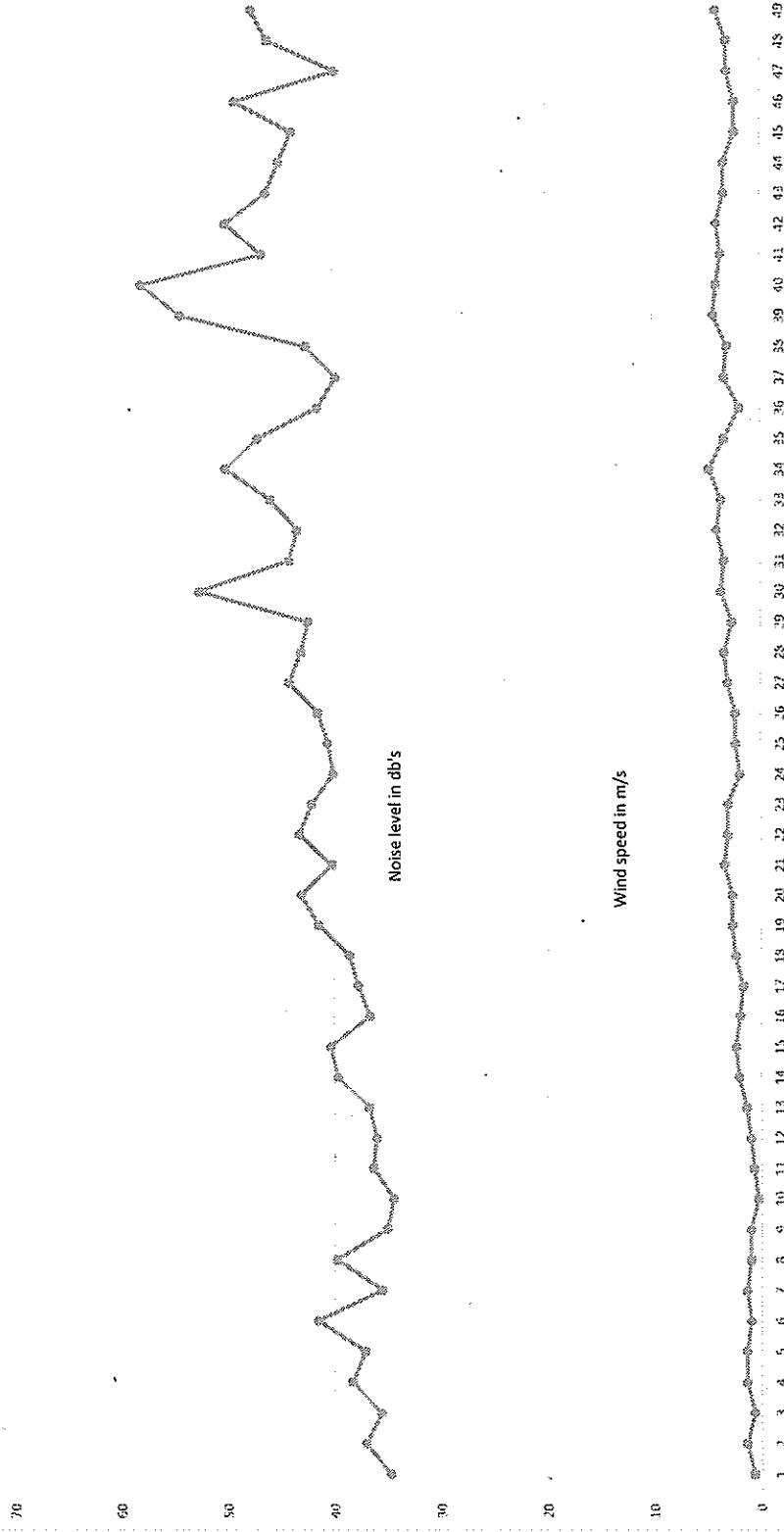
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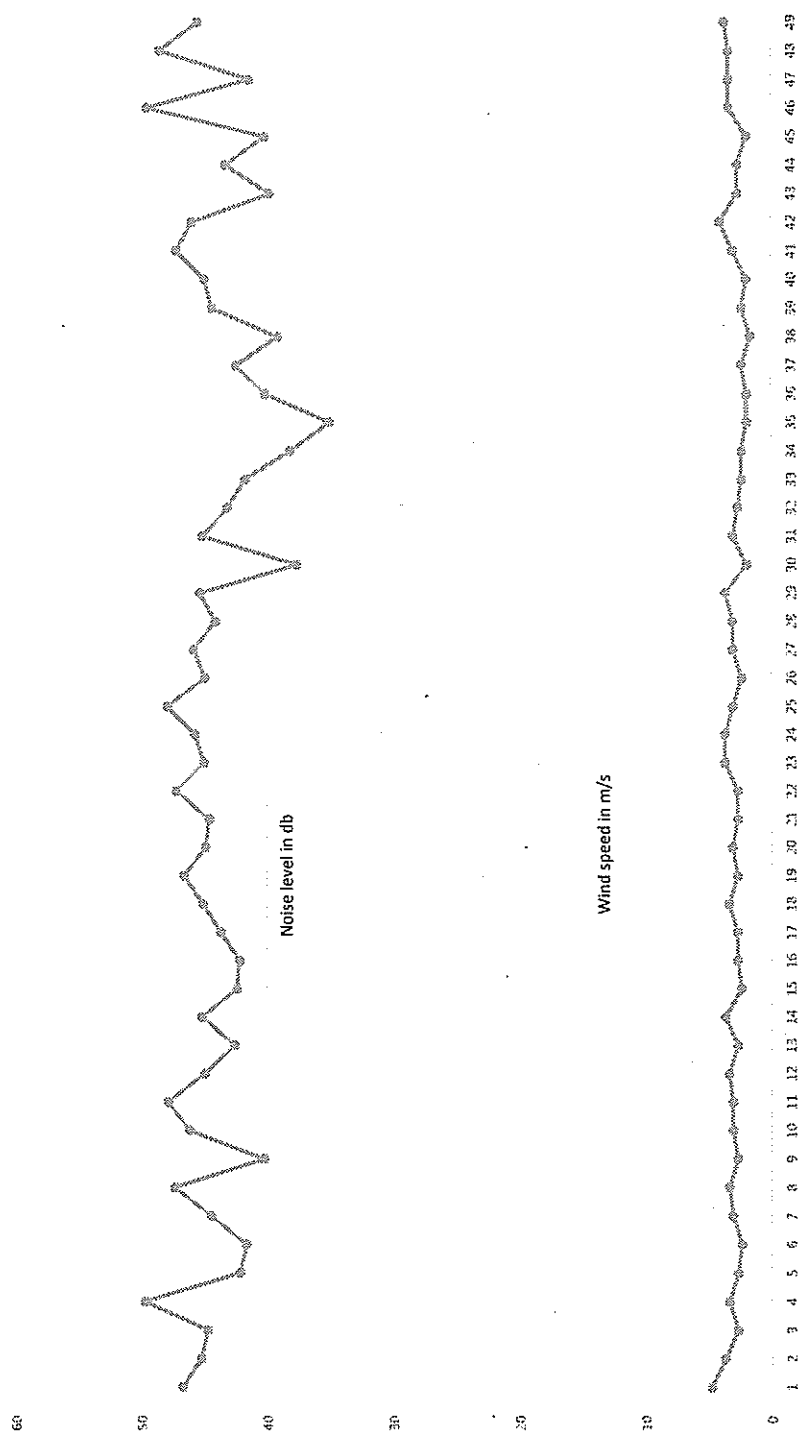
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Chart Title



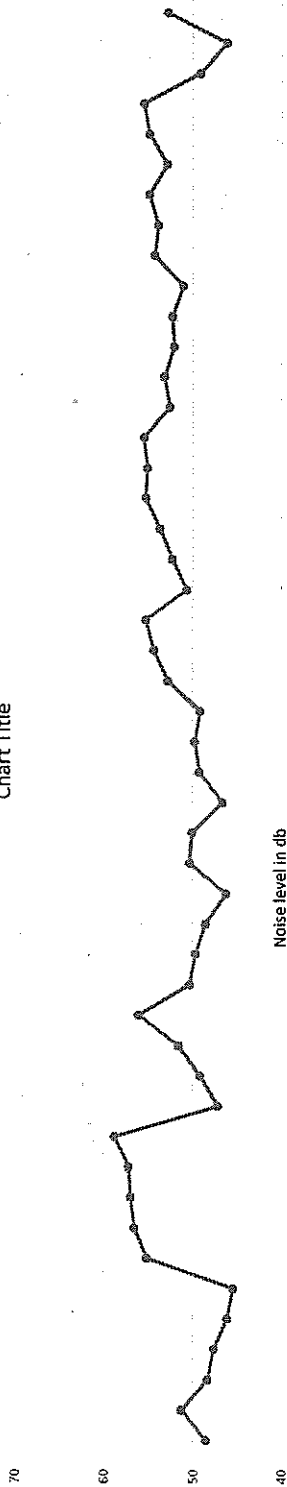
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Chart Title

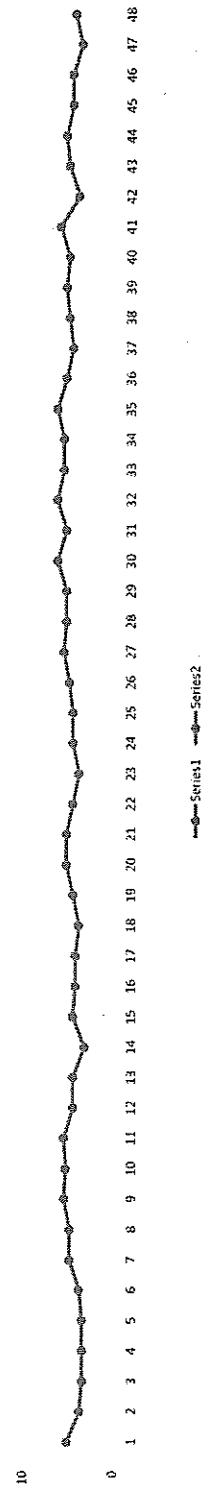


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12.10 52.3 6.1
12.20 53.7 5.1
12.30 55.3 6.1
12.40 55.1 5.4
12.50 55.5 5.4
13.00 52.6 6.1
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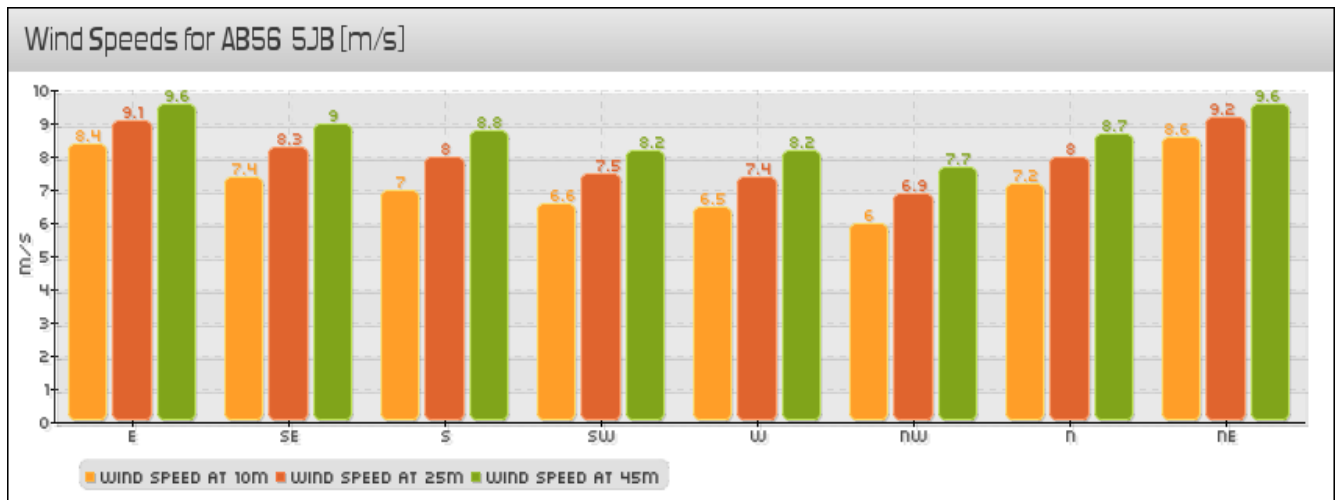
Chart Title



Wind speed in m/s



YOUR RESULTS FOR AB56 5JB



Wind Speed at 10m

6	7.2	8.6
6.5	8.3	8.4
6.6	7	7.4

Wind Speed at 25m

6.9	8	9.2
7.4	8.9	9.1
7.5	8	8.3

Wind Speed at 45m

7.7	8.7	9.6
8.2	9.4	9.6
8.2	8.8	9

Post Code

AB56 5JB

Go

Location (Road , Town)

Go

Grid Reference

Go

X (Easting)

Y (Northing)

Go

Lat

Long

Go

Reference (6 figure)

NJ454620

Easting) :

Y (Northing) :

345483

862015

Latitude :

Longitude :

57.644742

-2.9149387

Address (near) :

Unnamed Road, Buckle AB56 5JB, UK

Postcode (nearest) :

AB56 5JB

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Find your property

Drybridge, Buckie AB56 5.

Draw Property Boundary



Remove Wind Speed



Delete Selected Shape



Measure Distance



2 Mark the boundary

Click the 'Draw Property Boundary' icon above, then repeatedly click the map along your boundary line until you close the loop.



3 Check the wind speed

Click the 'Check Wind Speed' icon. The



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How loud is a wind turbine really?

By Editor | December 4, 2009

Modern small wind turbines have better insulation, lower rotation speeds, fewer moving parts, no gearboxes, and more efficient blades that make them much quieter than their ancestors. Today's small wind turbines emit sound that is barely discernible from ambient noise, even with a decibel (dB) meter. Sound from traffic, rustling trees, airplanes, and people in fact often sufficiently mask the dull, low, "white noise" sounds a small turbine can make at certain wind speeds. Only during short-term events like severe storms or utility outages do small wind turbines make distinctive sounds, but in these occurrences ambient sound levels increase as well.

To put this into further perspective, the sound made by the lanyard clasp on a flagpole line hitting its pole is far more "tonal" and distinguishable than any sound a small wind turbine makes, and is



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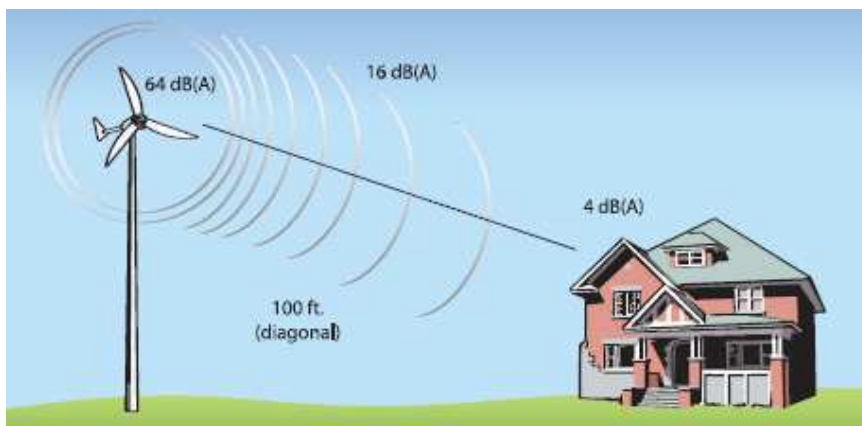
WIND TALK PODCASTS



Windpower Editors Paul Dvorak and Michelle Froese interview the industry's biggest newsmakers and allow them to tell their

less easily masked by ambient sounds.

Zoning policy should reflect ambient sound levels as well as occasions where no affected parties are located immediately outside a property boundary. Therefore, except during short-term events like storms and utility outages, a small wind system should be installed and operated such that sound pressure levels do not exceed the definition of “nuisance noise” as established by existing zoning code. or at the nearest dwelling, whichever is greater. Sound levels should always be measured downwind of the turbine to account for the canceling effect of the sound of the wind itself. If ambient sound levels exceed “nuisance” levels on certain occasions, such as during storms, sound level limits of small wind systems should also be given reprieve during these events which are out of everyone’s control.



Sound waves are diluted with distance

Or, instead of singling out wind turbines in sound regulations, it may be more fair and administratively simple to use default sound/noise regulations that apply universally to other objects and appliances in a community. The small wind section of Wisconsin’s (state-wide) zoning ordinance, for example, has no mention of sound because its designers chose to treat small wind turbines equally with other allowed devices/structures.

Also Keep in Mind

- Sound decreases significantly with distance from the source (including height – another good reason to allow tall towers). Doubling the distance from the turbine decreases the sound level by a factor of four. For example, sound level readings at 25ft. from the turbine hub drop by a factor of 4 at 50ft., and by

stories.

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a factor of 16 at 100ft. Noise intrusion across a property line from a turbine that is set back 100ft. or more is typically very limited.

- Turbine manufacturers are keenly aware of the public demand for quieter machines and have invested in new materials and designs to minimize sound. As a result, today's turbines operate at near-ambient sound levels.
- Only a few events or circumstances can cause a normal operating wind system to become audible, including utility blackouts (or a full battery bank for those models that incorporate batteries). Both situations are temporary, and in many cases (but not all), easily remedied by the owner by manually shutting down the turbine.
- Sound level test data for some turbines is available from the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL).⁷
- Requiring certified noise tests for a residential wind system is unnecessary given the lower sound emissions of today's turbines and that sound data is readily available from manufacturers. Such tests are also beyond the budget of any homeowner.
- "Noise" is a subjective term. Whether a person generally favors wind turbines or not can determine how he or she views a single, seemingly objective sound.
- The single best way to understand the nature of a turbine's sound is to visit an installation site. All turbines are a marginally different so be sure to visit a location with a similar wind resource and the same model turbine as is in question.

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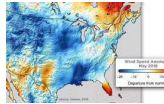
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Trees in focus

Practical Care and Management

Trees & Shrubs for Noise Control

Martin Dobson¹ and Jo Ryan

Arboricultural Advisory and Information Service

Summary

Noise, or unwanted sound, can be one of the most problematic environmental factors of both urban and rural areas; traffic noise in particular is a common problem. Noise attenuation can be achieved by increasing the distance between the noise source and hearer. However, very often this is not possible and other methods, such as erecting a solid barrier can be adopted. Where space permits, trees and shrubs can make effective noise barriers and at the same time be visually attractive. Based on published research, this Note makes recommendations and prescriptions for planting trees and shrubs to reduce noise and discusses the merits of various planting specifications.

The Problem of Noise

Few things are more irritating or tiring than continuous loud noise. And it isn't a new phenomenon. "Citizens of Rome perish for lack of sleep" wrote Juvenal, a satirist of the first century AD and in the same period Julius Caesar banned chariot traffic from the streets of Rome at night because it was too noisy! Traffic noise is an even greater problem today and has probably become the most widespread social irritant, especially in urban areas and near to roads carrying large volumes of traffic. It has been estimated that about 1 in 10 people live with an intrusive level of road noise (Huddart, 1990). Other sources of intrusive and persistent noise include trains, factories, airports and quarries to name a few.

The most effective way to minimize noise is to reduce it at source. However, this is often not possible and so the remaining options are to increase the distance from the source (which is frequently impractical) or to place a barrier between the source of noise and the hearer. A personal barrier (e.g. earmuffs) is acceptable in

some situations as a last resort, but a reduction in noise for the public at large is preferable. Solid barriers such as fences or mounds of earth have frequently been used as sound barriers, but trees and shrubs can also be effective in reducing noise and have the advantage of being more attractive and less expensive. Trees may be used in conjunction with solid barriers, either as visual screens or to reduce their reflective properties.

What is Noise?

It may seem a naïve question, but understanding noise is fundamental to solving the problem of how it can be reduced. Noise is created by vibrations in the air which cause variations in air pressure. The result is waves which radiate from the source like waves on a pond caused by a stone. When a noise-induced wave (a sound wave) reaches the ear it causes the ear drum to vibrate. The vibrations are then converted to a nervous impulse transmitted to the brain, which registers the noise.

How is Noise Measured?

Any movements in the air perceptible to the human ear are classed as 'sound' and only when sound becomes uncomfortable or unacceptable, is it classed as noise. However, noise is a subjective phenomenon; what one person calls noise, another may not, which makes it difficult to categorise. Sound waves, however, have physical attributes that can be objectively measured by acoustical equipment. The unit of sound is expressed as the decibel (dB) and measures the sound pressure level. Most studies seem to have adopted the dB(A) scale, which weights the frequencies in sound to approximate human responses to loudness.

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¹ Ivy House, 49 Liphook Road, Whitehill, Bordon GU35 9DA

A zero decibel level corresponds to the threshold of human hearing. An increase of 1 decibel is roughly equivalent to the smallest difference in loudness perceptible to the human ear and an increase of 10 decibels roughly corresponds to a doubling in the apparent loudness of a sound. Thus 20dB is twice as loud as 10dB but 30dB is four times louder than 10dB, and 40dB eight times louder, and so on. Most ordinary sounds fall in the range of about 25dB (as in a library) to 80dB (in a noisy street). Above a sound intensity of about 60dB sound becomes uncomfortable and would be considered 'noise'; at 120dB a noise becomes unbearably loud. The sound pressure levels of some common sounds, measured at close quarters, are shown in Table 1 below.

Table 1
Sound Pressure levels of some common sounds.

Sound	Decibels (dB)
Jet aircraft	120+
Car horn	110
Passing train	100
Chainsaw	100
Dog barking	92
Busy dual carriageway	72-78
Normal speech	48
Whisper	20
Threshold of hearing	0

Reducing Noise

Sound is greatest nearest to the source and diminishes with distance - so, obviously, the further away you are, the less you will hear. This is because of 'geometric spreading' i.e. the further a sound wave travels the greater the dissipation of its energy, like ripples on a pond. Sound can originate from either a single point such as a chainsaw cutting wood (point source) or from a continuous activity, such as a stream of traffic (line source). Increasing the distance between you and a noise will reduce its loudness; there is a reduction of about 6dB when the distance from a point source is doubled and about 3dB when doubling the distance from a line source (Fig.1). For example, if the noise from road traffic (approximately 20m away) is 70dB, doubling the distance over a hard surface to 40m will reduce the noise by 3dB to 67dB.

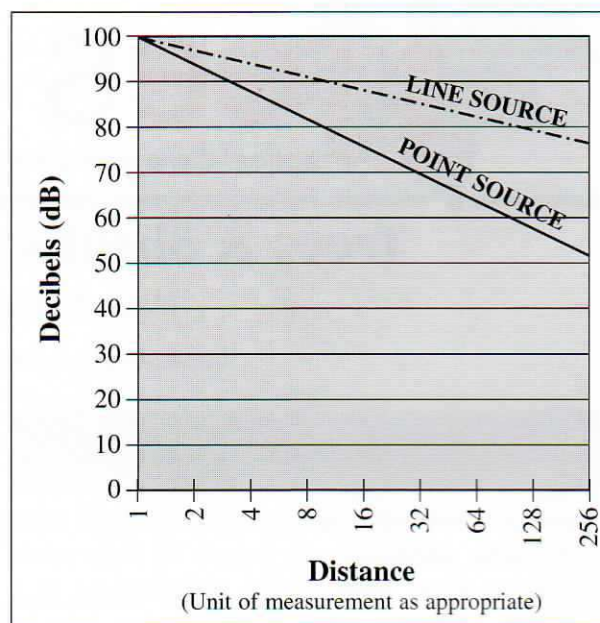


Figure 1
Effect of distance on noise reduction.

Objects between the source and the hearer can also help attenuate noise, for example closing windows and doors or erecting a tall fence or wall. This is because most sound waves are significantly reduced when passing through solid objects or they are reflected off them; the density and area of an object presented to a sound largely determines the attenuation. On the other hand, fibrous and porous materials are able to absorb sound and hence may effectively reduce noise.

Sound travels (*propagates*) differently over various kinds of surfaces. Asphalt and concrete reflect virtually all incident sound at any angle, whereas grass covered surfaces interact with sound quite differently. Although the wave is still reflected, its phase is somewhat slower due to the interaction with the ground surface. As a result, sound travelling directly from a source to a listener is partly cancelled by this out-of-phase reflection, leaving the listener in a type of 'sound shadow'. The net effect is a reduction in sound levels near the ground. This change of phase can be explained literally at a grass roots level. It is thought that the roots of vegetation keep the soil surface open and the soil structure more porous, effectively making the ground a sound absorbing material.

One obvious way that trees may be useful is in reducing human perception of noise by creating a visual barrier between the source and the hearer. It has been suggested that people are less conscious

of noise if they cannot see the source. Trees, then, might be useful in reducing the *perception* of noise by providing an aesthetically pleasing visual barrier, for example between houses and a nearby source of noise such as a road. The effect of trees as a visual barrier to reduce perception of noise is a subject which has not been fully studied. However, Aylor (1972) reports on one experiment which found a screen of trees with gaps in it to be more effective than a dense screen in making people *think* they were hearing relatively less noise. Correspondingly, a visually impenetrable screen of trees increased the subjects' perception of noise. This and more recent research suggest that people expect a visually opaque barrier to reduce noise more than it actually does (Watts, personal communication, TRL, Crowthorne). When this does not occur, the level of irritation is greater and the noise appears louder. Nevertheless, another study indicated that people would rather have an aesthetically pleasing barrier to screen a noise source from view, even if noise is not substantially reduced (Perfater, 1979).

surrounding noise. Masking noise may be useful in a situation where the noise is simply annoying rather than overwhelmingly loud.

Can Trees and Shrubs Reduce Noise?

Research has indicated that trees and shrubs can make a contribution to noise reduction. Usually, comparisons have been made between noise propagated over a grass surface and noise propagated through tree and shrub belts. The difference between the two is known as *insertion loss* and is the amount of noise reduction directly attributable to the trees. Published results on the effectiveness of tree and shrub barriers vary enormously, however, a review by Huddart (1990) shows that in some instances noise can be reduced by 6dB over a distance of 30 m where planting is particularly dense. Leonard and Parr (1970) and Reethof (1973) found that a dense belt of trees and shrubs between 15-30 m wide could reduce sound levels by as much as 6-10dB. Cook and Van

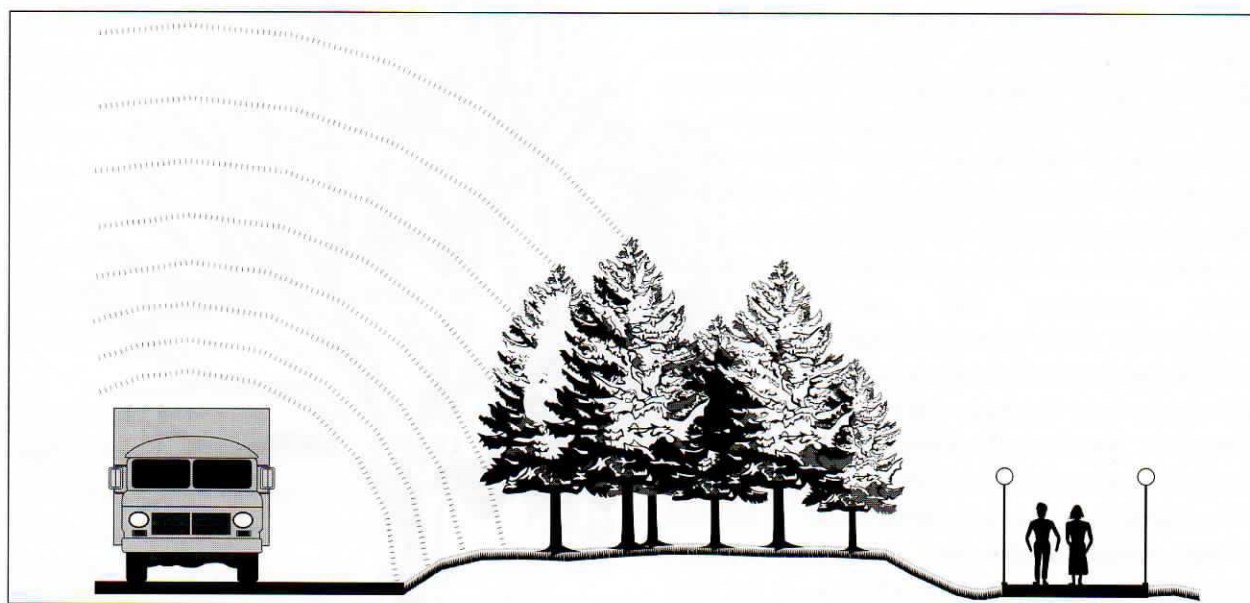


Figure 2

A visual barrier between the noise source and the hearer may help reduce the perception of noise.

(Source: Grey & Deneke, 1986)

Another way in which noise may be made less intrusive is through the masking effect created by the rustling of leaves, needles and branches in the wind. The sounds of birds and other animals associated with trees may also help to mask

Haverbeke (1972) also found reductions in noise level of 5-10dB for belts of trees between 15-30m wide.

It is difficult to generalise but a thick belt of densely planted trees and shrubs should provide a useful reduction in noise of several decibels although reductions will be significantly less than a purpose built noise barrier of the same height and length.

How Can Trees Reduce Noise?

Trees and shrubs can reduce noise levels, particularly at high frequencies (or pitch), whereas a reduction in low frequency noise levels can be attributed more to the effect of the ground.

The attenuation of sound by vegetation is commonly attributed to the processes of reflection, scattering and absorption. Reflection and scattering from the surfaces of leaves, branches, trunks and the ground can alter the phase of sound, which can cause interference in the sound waves and a reduction in noise level. Thus, the more surfaces: leaves, needles and branches there are within a tree belt, the better the reduction of noise will be, provided they are evenly distributed in the space between ground level and the tops of trees.

Foliage appears to be the most efficient part of a tree for scattering sound and it seems that large leaves are more effective than small leaves. Broadleaved trees with large leaves tend to reduce noise more than conifers that have needle-like leaves (Tanaka et al., 1979). However, since most broadleaved trees lose their leaves in winter, conifers may give better year-round noise reduction, although the most effective trees are likely to be broadleaved evergreens (e.g. holly, evergreen oak and eucalyptus). Low shrubs and/or hedges along the edge of a group of trees can improve sound reduction, particularly those on the side nearest the sound source. Nevertheless, during British winters people spend most time indoors, making the need for noise control less critical.

Whilst trees themselves do not absorb a great deal of noise (tree bark appears to be the most efficient part of a tree in noise absorption) the ground within a group of trees seems to have a relatively large noise absorbing capacity. Studies within woodlands have shown that the greatest noise reduction occurs near ground level. Trees

help to keep the soil loose through the action of their roots exploring the soil, by the fall of leaf litter to form a soft humus layer, and because of the shading of trees which prevents soils becoming baked hard in hot, dry summers.

The developmental stage of the trees is important in relation to their effectiveness in noise control. Young (1.5–4.0m tall) and middle aged (4–10m tall) tree belts appear to be best (Kellomäki et al., 1976). Noise reduction tends to increase with tree height up to 10–12m after which attenuation decreases. This is probably a result of lower branches dying back through shading as trees get taller, opening the understorey and allowing sound to travel more easily. This implies that a noise barrier comprising both trees and shrubs should be managed to ensure that the density of branches and foliage (particularly from ground level to 10m) remains high.

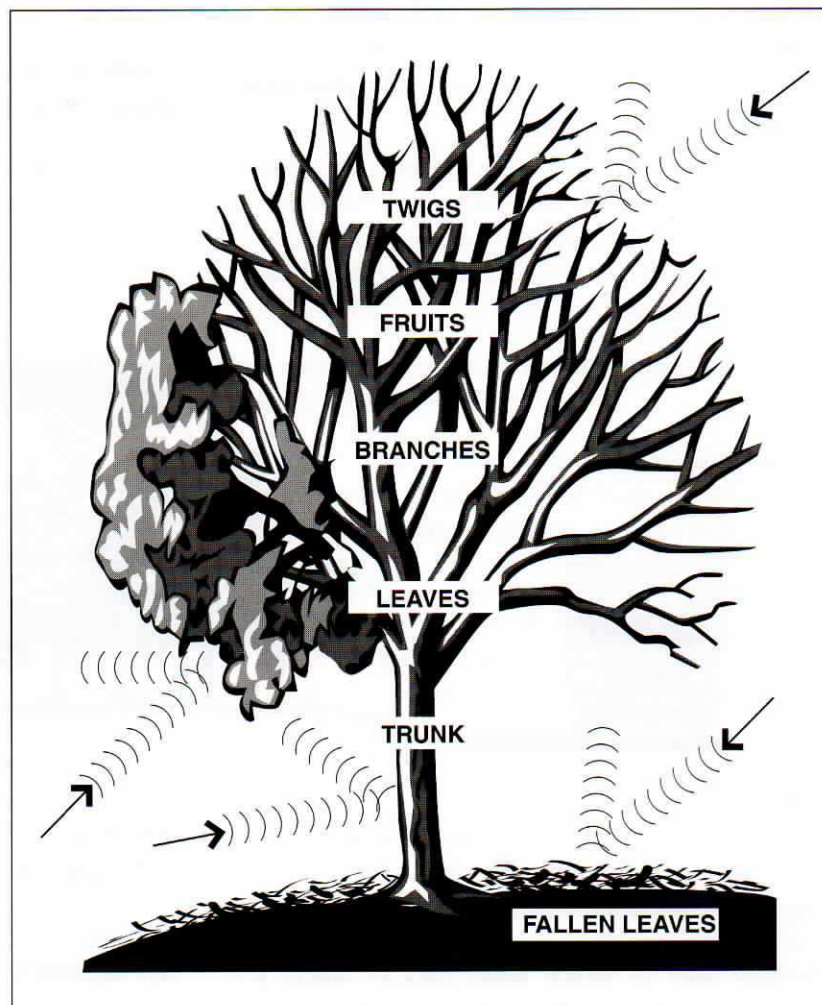


Figure 3

Illustration of how plants can attenuate sound. (Source: Grey & Deneke, 1986)

Does Size Matter?

Allowing trees to become too tall, resulting in gaps opening up in the understorey, will lessen their effectiveness. Kellomäki *et al.* (1976) found that noise attenuation by a stand of mature pines was less than in stands of any other species, or even clear cut areas. This may be due to the open structure exhibited by a group of mature trees combined with the reflection of sound downwards from the crowns of the trees.

Noise reduction is correlated with the width of a belt of trees, *i.e.* the wider it is, the greater the noise reduction. However, the amount of additional noise reduction declines with increasing distance. For example, from studies of traffic noise, Huddart (1990) found that a 10m wide strip of trees planted close to a road gave an attenuation of about 5dB more than the same width of grass whilst a strip of trees 20m wide only gave an attenuation of 6dB more than grass. This appears to be because the interior of a wide group of trees is relatively free of foliage and small branches, especially at lower levels, and therefore somewhat 'hollow', whereas narrow strips of trees, especially young conifers, have foliage and small branches throughout, from top to bottom. These compensating factors probably account for the smaller than expected differences in sound level attenuation between wide and narrow belts.

The length a tree and shrub belt extends may also influence its effectiveness in noise attenuation. Actual prescriptions are difficult however, as they will depend on the dimensions of the noise source, *i.e.* point or line source. Of more importance in noise attenuation is the actual *siting* of the barrier; a screen placed relatively close to a noise source is more effective than one placed close to an area to be protected. However, at midway between the source and receiver, noise reduction is least. Also, a barrier is most effective when trees and shrubs are combined with soft rather than hard ground surfaces, *i.e.* grass instead of tarmac or gravel. Hard surfaces tend to reflect noise with little or no attenuation.

To maximise noise attenuation

- A vegetation barrier should ideally form an irregular structure comprising:
 - Trees
 - Shrubs
 - Herb and
 - Litter layers
- Particular attention should be paid to:
 - Density
 - Height
 - Amount of foliage in the shrub layer
- Large-leaved deciduous species may be more effective at reducing noise during spring and summer but evergreens will provide better year-round attenuation.

Trees and Solid Barriers

Walls, fences, earth mounds and other solid barriers have proved useful as noise screens (Huddart, 1990). Whilst trees and shrubs have often been combined with solid barriers, for aesthetic purposes, relatively little thought has been given to the noise reducing capabilities of this combination. However, limited research has shown that a screen consisting of a solid barrier and trees/shrubs is no more effective for noise abatement than a solid barrier on its own.

Although planting trees may initially be more cost effective than erecting a solid barrier, it would incur more on-going management costs than a solid barrier. Tree and shrub belts, however, offer many **additional** benefits over conventional techniques of controlling noise. Tree belts may develop into more effective windbreaks and provide more protection from the glare of the sun than mounds or fences. In addition, trees can also help purify the air, stabilize embankments with their roots, provide habitats for wildlife, and improve the appearance of roads.

Where are Tree and Shrub Belts Useful?

In order to achieve a significant noise reduction of say, 6dB (corresponding to a reduction in loudness of about one third of the original level), a barrier

consisting of trees and shrubs needs to be relatively wide (between 20-30m). Such barriers are therefore best suited to areas where land is freely available for planting. However, the cost of land may be extremely high and in many instances is the main argument against the use of vegetation as a noise barrier. Nevertheless, a narrow strip of densely planted trees and shrubs of about 10m wide could still give significant reductions in traffic noise level - of the order of 5dB (Huddart, 1990). For comparison, a 3m high solid barrier (e.g. a wall or a fence), erected on flat ground might be expected to give an attenuation of 15dB immediately behind it (Watts, Personal Communication, TRL). Motorways and trunk roads which often have a relatively wide verge, quarries or landfill sites, or industrial complexes could all benefit from having trees and shrubs planted around them. However, where the sound source is above the potential canopy height, as with aircraft or overhead roads, trees will be effective only very locally.

Another argument against the use of vegetation for noise barriers is the length of time taken for the barrier to become established. However, trees and shrubs can grow rapidly if appropriate stock is planted and attention is given to proper aftercare, particularly keeping trees free of weeds (Davies, 1987). If this is done, benefits should be noticeable within about 5 years.

Vegetated Solid Barriers

Willow walls, which have been pioneered on the continent, have recently been introduced into the UK. These 'living walls' generally consist of two parallel sets of posts which form the outer faces of the wall, between which willow branches are woven, in a similar way to a wicker basket, and as the weaving progresses the core is filled with soil. At each metre in height internal irrigation pipes are installed and lateral rods for structural support. The woven willow then produce new shoots on the outside and roots within the internal core, providing a total covering of foliage within the first year after construction. Construction should be during the dormant period (November to March) using live shoots, freshly cut, or kept in cold storage. A typical wall may have a basal width of about 2.5m and a height of 4.0m. Overall costs may be high; the willow requires cutting back annually but living walls may be a suitable option where space is

limited, and where there needs to be a combination of 'greenery' and noise reduction. The level of noise reduction provided by willow walls is similar to the reduced level of a solid noise barrier of similar height, because the soil core prevents sound leakage. Unlike a tree belt which takes time to become established, the benefits of such vegetated barriers are immediately available.

Conclusions

There are several factors to be considered before deciding to create a tree and shrub barrier against noise. In each case, where possible, use trees that will develop dense foliage and relatively uniform vertical foliage distribution, or combinations of shrubs and taller trees to give this effect. Where the use of trees is restricted, use combinations of shrubs and tall grass or similar soft ground cover in preference to paved, tarmac or gravel surfaces to encourage absorption of noise rather than reflection.

Some other points to bear in mind are:

- noise is more effectively attenuated by *completely* screening the source from view. Although gaps and partial views through a barrier may create an *impression* of greater noise reduction, they will allow noise to penetrate.
- a noise barrier should be planted as close to the noise source as possible.
- widely spaced trees do not reduce noise effectively. Wide belts of high densities are required to achieve significant noise reductions.
- effectiveness is closely related to the density of stems, branches and leaves. Use trees with dense foliage and branches that reach close to the ground. Alternatively plant an understorey of dense shrubs or a surrounding hedge.
- where year-round noise screening is desired use broadleaved evergreens or a combination of conifer and broadleaved evergreen species.
- soft ground is an efficient noise absorber. Avoid hard surfaces - asphalt and concrete reflect virtually all incident sound at any angle. Cultivating ground before planting, and the addition of well-rotted organic matter to the soil surface may also help to reduce noise whilst vegetation becomes established.

Acknowledgments

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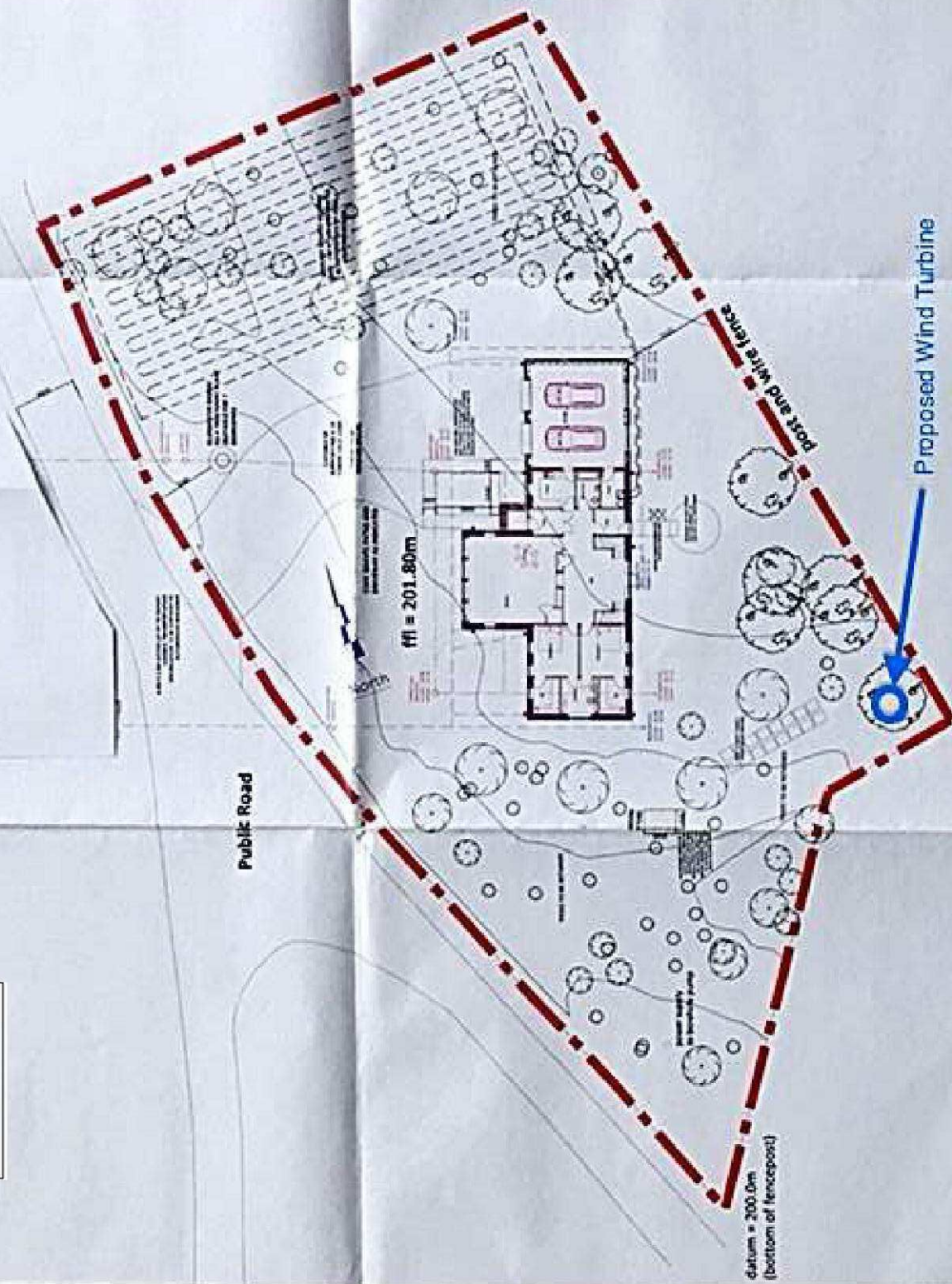
Town & Country Planning
(Scotland) Act, 1997
as amended

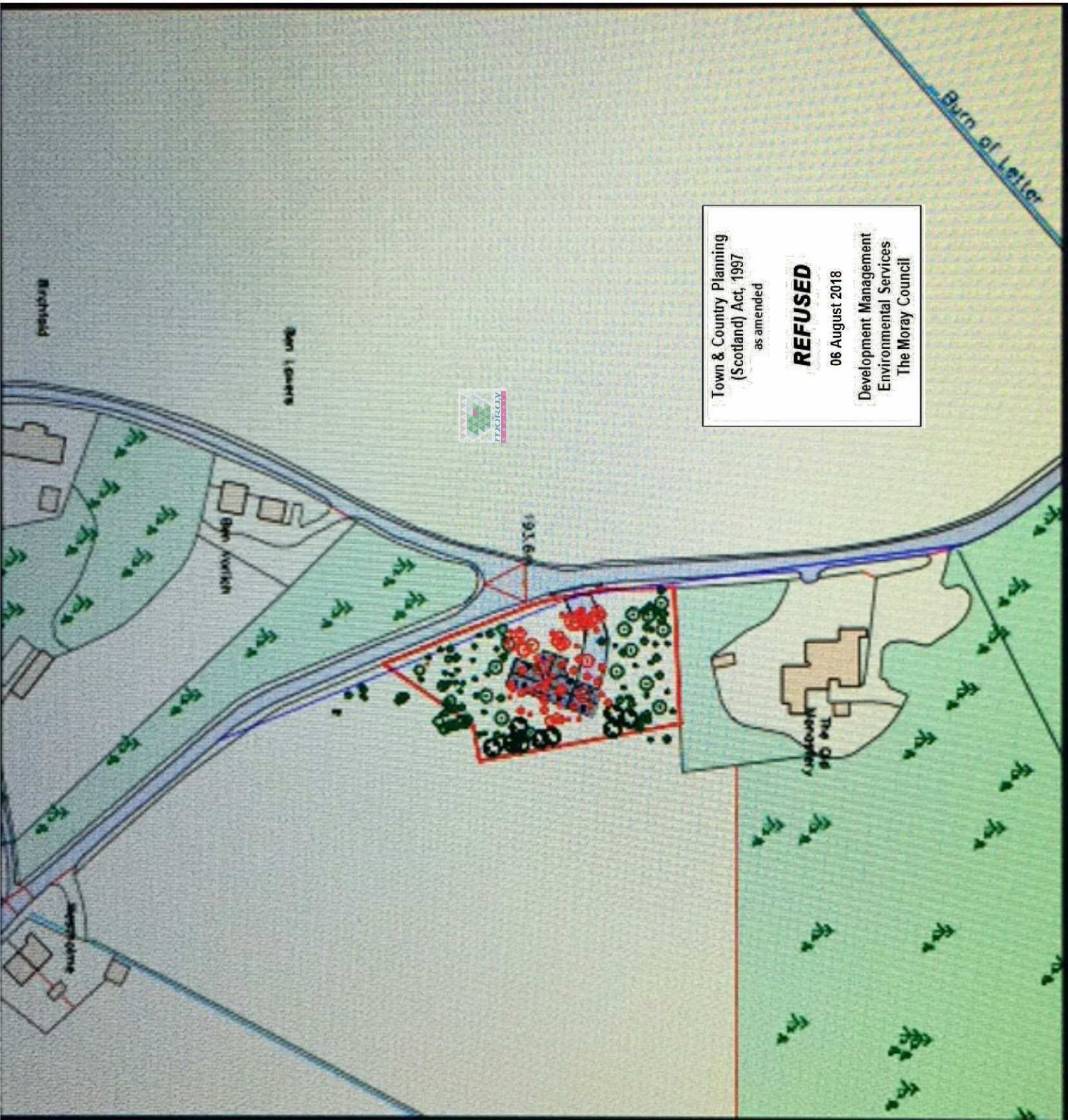
REFUSED

06 August 2018

Development Management
Environmental Services
The Moray Council

SITE PLAN
Scale 1:200





Town & Country Planning
(Scotland) Act, 1997
as amended

REFUSED

06 August 2018

Development Management
Environmental Services
The Moray Council



APPENDIX 3

FURTHER REPRESENTATIONS FROM INTERESTED PARTIES

Notice of Review: 100109187-009

The Environmental Health Section wishes to provide the following additional comments in relation to some of the matters raised by the applicants in their Grounds for Review and also feels that that the detailed consultation response provided by this Section to the planning application addresses the other matters included in the Grounds for Review.

For the sake of clarification the relevant sections from the Grounds of Review are initially highlighted below and thereafter commented on:

“The high cost of a professional noise survey is prohibitive for a domestic application. We carried out a noise survey onsite in line with the Environmental Health Officers (EHO) guidance although he did not agree to the methodology as this requires high cost instrumentation, costing in excess of £10,000.00”

Response

In relation to the applicant's assertion that a noise survey was carried out 'in line with the Environmental Health Officers guidance', I would draw attention to the following comments made in this Section's consultation response, "there was no prior agreement with this Section on the methodologies to be used and at the pre- application meeting at the Council Annexe on March 9 2018, also attended by Planning Officers Neal MacPherson and Shona Strachan, this Section advised the applicant that the initial proposals for a background assessment were likely to result in this Section having to make a refusal recommendation".

In respect of the comment on the cost of instrumentation, although it is correct to say that the Council's own noise equipment had that initial cost layout, the cost however, of engaging the services of a noise consultant to carry out the survey, in order to meet the standards detailed in the Moray Onshore Wind Energy Supplementary Guidance (2017) and Institute of Acoustics (IOA) Good Practice Guide, would be considerably less and typically in the range of around £3000 to £6000.

“We have demonstrated that the background noise is greater than Moray Council's maximum noise level of 38db at wind speeds above 2.7m/second and the proposed turbines cut in/start-up speed is 3.5m/second. The proposed turbine will not produce a higher noise level than the ambient/background noise for any wind speed above the startup speed for the turbine”.

Response

This Section detailed in our consultation response a number of areas where the applicant's assessment did not meet the IOA Good Practice Guide and subsequently is not assured on the accuracy of noise levels and wind speeds reported above.

“We have researched two other local applications for the same turbine that were appealed and both won - Both applications are for a Proven turbine which has been taken over by Kingspan (the same turbine we propose to install) and both turbines are closer to neighbouring properties without any barriers to help reduce noise;

1. 08/01278/FUL Rowanbank , Main Road, Cummington, Moray, hub height 15m and located 90m from nearest residential dwelling

2. 09/00577/FUL Drayton House, Forres, Moray, hub height 9m and located 65m from nearest residential dwelling. NB The noise meter used for this application is the same one used for our application”

Response

For the sake of clarification it can be confirmed that neither of the turbines in the planning applications referred to above were actually built and the consents have since lapsed. The concerns highlighted in relation to noise problems arising from these turbines, particularly at Drayton House, were therefore never realised and it is not possible to confirm if complaints would have arisen from affected persons. In relation to the Drayton House application it should also be noted that Moray Council refused the application but that the Scottish Government reporter subsequently overturned that decision on appeal.

This Section wishes also to highlight that both of the above applications predate several significant changes in the approach adopted by Moray Council when dealing with applications for small wind turbines. Firstly, those applications were made and determined before the establishment of the Moray Onshore Wind Energy Supplementary Guidance (2017) which has more specific requirements for large and small wind turbines, including noise limits and a methodology that follows ETSU –R -97 and the Institute of Acoustics Good Practice Guide. Secondly they also predate the Sgurr Energy noise report, which is a third party review of the turbine, which in effect was more onerous than previous information supplied direct from the manufacturer Proven, subsequently bought over by Kingspan. The combined effects of both these changes would result in a significantly greater separation distance required to noise sensitive dwellings for subsequent wind turbine applications of this type than those previously approved turbines.



Defence Infrastructure Organisation

Your Ref. LR/LR213
DIO Ref. 10042344

Ministry of Defence
Safeguarding
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Via Email

Moray Council
Local Review Body Team
Council Offices
High Street
Elgin
IV30 1BX

21st August 2018

Dear Sir/Madam,

Council Planning Review Body reference – LR/LR213

Planning Application reference – 18/00694/APP

Re: Installation of a 6kW Kingspan wind turbine (22.8m to tip and rotor diameter 5.6m)

Location: Inchmore, Drybridge, Buckie

The Ministry of Defence (MOD) has received notification from Moray Council stating that the above planning application will be reviewed by the Council's Planning Review Body.

The MOD submitted a response dated 6th July 2018 to Moray Council raising no objection to the proposal. The MOD has reviewed this response in light of the Review and I can confirm that the MOD still raises no objections to this proposal.

If planning permission is granted, the MOD would like to be advised of the following information;

- The date construction starts and ends;
- The maximum height of construction equipment;
- The latitude and longitude of the turbine erected

I trust that the above will be taken into account during the Review consideration. Should you require any additional information, please do not hesitate to contact me.

Yours faithfully

Laura Nokes
Senior Safeguarding Officer



APPENDIX 4

APPLICANT'S RESPONSE TO FURTHER REPRESENTATIONS

Lissa Rowan

From: kenny more [REDACTED]
Sent: 04 September 2018 12:17
To: Lissa Rowan
Subject: Re: Planning Application - 18/00694/APP

Hi Lissa

Below is our response to the EHO's correspondence,

Thanks & regards,
Kenny

The initial meeting held at Moray council office included the repositioning of the proposed turbine to meet with the planners and road departments requirements and the discussion on carrying out our own noise survey. The Environmental Health Officer (EHO), advised that readings for both wind & noise required to be recorded @ 10 minute intervals. The EHO did advise that the noise meter was to be of a type, as used by Moray council and it was discussed the use of other noise meters. At the end of the meeting, the EHO was very upfront about saying he did not agree to us carrying out our own survey.

On a later site visit after we had completed compiling our noise survey, he personally witnessed our test method and left behind a highly technical document referring to numerous calculations, acronyms and procedures.

We were left with the impression that at no time would he consider anything other than a very costly professional noise survey. The high cost of a professional noise survey, even at the lower cost claimed by the EHO in his response and with no guarantee of success of the application is grossly prohibitive and unrealistic for a domestic installation.

On another visit to our site 11th May the EHO personally witnessed high background noise of 50db and higher where by wind speeds were nowhere near the proposed wind turbines upper 8m per second/40db acceptable noise level, green area at a position 100m away from the turbine as seen on the Kingspan manufactures supporting document. The EHO response comment is copied below.

"When carrying out my site assessment on 11 May, it was very apparent that the local area is subject to elevated tree noise levels during high wind periods as I experienced gusty conditions that exceeded the capabilities of my noise meter's wind shield with greater than 5m/s wind speed at the measurement height of 1.3m. Whilst levels of 50 dB(A) and higher may indeed occur in high wind conditions, the assessment of noise levels and correlation with wind speed should be to the standards highlighted within ETSU-R-97 and the associated IOA Good Practice Guide".

The proposed position of the wind turbine is 97m from our neighbouring property and is just inside the amber zone of Kingspan noise data graph. It should be noted that this is the absolute noise level and does not take into consideration surroundings and obstructions that are obviously present in our application that will unquestionably reduce noise.

We used the same instrumentation that was used for Drayton house that was accepted by the Scottish ministers -

The EHO compared the noise meter we used with Moray councils for accuracy and the meter we used read a little higher than his at low noise levels and slighter lower than his at higher noise levels, both instruments were relative and we believe to be within acceptable limits. If anything the noise levels we

recorded at higher winds speeds is less favourable for us compared to the higher readings the councils own high cost instrument registered when winds were gusting.

At the time of conducting our noise survey all readings were taken in the very best lowest noise conditions which is not the norm for this rural site. The photographs we have provided clearly show farm animals grazing in the opposite fields bordering the road and our neighbours house, the animals are present from early spring until early winter. The animals are moved on occasion by the farmer and the fields are farmed, eg grass cut for silage, also seen on photographs provided. We carried out our noise survey when no farm animals or farm activities or vehicles passing on the road which would have resulted in higher noise level. Anyone who lives near a farm will appreciate just how much noise farm animals make, they make in excess of 70db's (continuous night and day), again this is much higher than the proposed wind turbine noise level would be at our neighbouring property.

We appreciate and accept that improvements are made to protect persons from noise pollution and changes were made after the Drayton house appeal was lodged and won but Drayton house is 30m closer (1/3rd closer) to the neighbouring property.

I can also confirm the reason why the wind turbine for Drayton house was not installed was due to the lengthy time for the appeal resulting in the applicant missing out on financial aid (grant) and making it non viable for the applicant.

The EHO has rejected to accept credited data from numerous international bodies for noise reduction by trees and shrubs and has rejected that background noise levels exist above the noise emitted by the proposed turbine.

We have demonstrated that the noise from the wind turbine, above the cut-in speed of 3.5m-s, will be less than the background noise for the site and the turbine noise will be undistinguishable at our neighbours property at 97m away from the proposed turbine position.

A visit to the proposed site on a breezy day will clearly identify, without the use of any instruments that there is high background noise.

It would be of the utmost disappointment and grave inopportunity to have a zero carbon footprint rejected due not satisfying the EHO who clearly rejects proven worldwide data provided and dismisses the fact that the site is subject to high noise/wind that he personally witnessed all be because we did not follow his criteria and did not use very expensive instruments or employ a high cost professional surveyor. We strongly believe we have carried out a fair and accurate noise survey that demonstrates a high background noise exists, we would not be applying for this if we thought for one moment that it would cause any concerns to our neighbours.

The Scottish Government is encouraging households to reduce carbon dioxide emissions, a major cause of climate change and reduce our reliance on fossil fuels. To utilise environmentally friendly renewable energy sources to help reduce global warming and sustain the future of the planet.

We strongly believe we have the ideal location and opportunity to support this but are being prevented from doing so by the EHO rejection of proven and demonstrated information provided.

From: Lissa Rowan <Lissa.Rowan@moray.gov.uk>

Sent: 04 September 2018 09:25

To: 'kenny more'

Subject: RE: Planning Application - 18/00694/APP

Hi Kenny