

**DEVELOPMENT MANAGEMENT REVIEW COMMITTEE – 31 MAY 2016**

**ERECTION OF 2 WIND TURBINES, TEMPORARY ANEMOMETER MAST AND  
ANCILLARY DEVELOPMENT AT LAND 600M WEST OF WITTON FARM LETHNOT  
EDZELL**

**REPORT BY THE HEAD OF LEGAL AND DEMOCRATIC SERVICES**

**ABSTRACT**

This report sets out the conditions for Planning Application (Reference: 14/00669/FULL) in respect of the erection of 2 wind turbines of 50 metres to hub height and 74 metres to blade tip, temporary anemometer mast and ancillary development at land 600M West Of Witton Farm, Lethnot, Edzell following on from the decision of the Development Management Review Committee at their meeting of 9 July 2015 to uphold the Review in respect of the development.

**1. RECOMMENDATION**

It is recommended that the Committee confirms approval of the application subject to the conditions detailed in this report.

**2. ALIGNMENT TO THE ANGUS COMMUNITY PLAN/SINGLE OUTCOME AGREEMENT/  
CORPORATE PLAN**

2.1 This report contributes to the following local outcome(s) contained within the Angus Community Plan and Single Outcome Agreement 2013-2016:

- Our communities are developed in a sustainable manner
- Our natural and built environment is protected and enjoyed

**3. INTRODUCTION**

3.1 This Committee, at its meeting on 9 July 2015, considered a request to review the decision of the Appointed Officer to refuse Planning Application (Reference: 14/00669/FULL) in respect of the erection of 2 wind turbines of 50 metres to hub height and 74 metres to blade tip, temporary anemometer mast and ancillary development at land 600M West Of Witton Farm Lethnot Edzell. At that meeting the Committee determined to uphold the review and approve the application subject to the appropriate conditions being submitted to the next meeting of that Committee for approval. A copy of the current proposed appropriate conditions is attached hereto as Appendix 1.

3.2 After the above decision was made it was ascertained that the RSPB submitted advice to the Council by email dated 8 September 2014. The Planning Service had no record of receipt of that email communication and the circumstances surrounding this are being investigated. Notwithstanding that, it appears the RSPB sought to make representations timeously but its comments were not taken into account in the consideration of the application by either the appointed officer or the Committee.

3.3 In light of the above, a further report (Report No. 361/15) on this Planning Application was submitted to this Committee at its meeting on 15 September 2016. At that meeting the Committee agreed:-

- “(i) to note the circumstances that have arisen in connection with this application;
- (ii) to note that an apology has been issued to the applicant in respect of what has transpired and an assurance given that the Council’s Development Standards Service is looking into the circumstances which lead to this situation arising with a view to ensuring that there is no re-occurrence; and

(iii) that the views of the applicant and the appointed officer (who may require to consult with Scottish Natural Heritage) be sought on the terms of the advice dated 8 September 2014 submitted by the RSPB; and that further procedure will be determined having regard to the views of the applicant on the advice submitted by the RSPB.”

3.4 Following on from the meeting of this Committee on 15 September 2015, further discussions took place between the Planning Authority, the Applicant and the RSPB. A proposed condition has been drafted in order to safeguard and avoid disturbance to breeding Red Kites present in the buffer zone of the turbine location during the construction phase and which meets the requirements of the RSPB.

3.5 Accordingly, it is recommended that the Committee confirms approval of the application subject to the conditions detailed in Appendix 1 to this report.

#### **4. HUMAN RIGHTS IMPLICATIONS**

4.1 The decision to grant permission/consent, subject to conditions, has potential implications for neighbours in terms of alleged interference with privacy, home or family life (Article 8) and peaceful enjoyment of their possessions (First Protocol, Article 1). For the reasons referred to elsewhere in this report justifying this decision in planning terms, it is considered that any actual or apprehended infringement of such Convention Rights, is justified. The conditions constitute a justified and proportional control of the use of the property in accordance with the general interest and have regard to the necessary balance of the applicant’s freedom to enjoy his property against the public interest and the freedom of others to enjoy neighbouring property/home life/privacy without undue interference.

#### **5. EQUALITIES IMPLICATIONS**

5.1 The issues contained in this Report fall within an approved category that has been confirmed as exempt from an equalities perspective.

#### **6. CONCLUSION**

6.1 It is recommended that the Committee confirms approval of the application subject to the conditions detailed in this report.

**NOTE:** No background papers were relied on to a material extent in preparing the above report.

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List of Appendices:

Appendix 1 – Proposed Conditions for application No 14/00669/FULL

Conditions:

1

That prior any construction work commencing in a Red Kite breeding season (March to July inclusive) a full breeding survey shall be undertaken by a suitably qualified person. The report of survey shall be submitted to and approved in writing by the Planning Authority in consultation with the RSPB. The survey shall be carried out in the buffer zone (600 metres) of the turbine location and the report of survey shall inform any mitigation measures required to prevent the disturbance of breeding Red Kites in the buffer zone of the turbine location.

Reason: In order to safeguard and avoid disturbance to breeding Red Kites present in the buffer zone of the turbine location during the construction phase in accordance with schedule 1A of the Wildlife and Countryside Act 1981.

2

That development shall not commence until full details of the mitigation measures as outlined in Section 5.11 of the Environment and Planning Report dated August 2014 have been submitted to and approved in writing by the planning authority. The approved methodology shall thereafter be implemented during the development of the site.

Reason: To ensure that the proposal incorporates satisfactory mitigation for nesting birds.

3

That the wind turbine hereby approved shall be removed from the site no later than 26 years after the date when electricity is first generated unless otherwise approved by the Planning Authority through the grant of a further planning permission following submission of an application. Written confirmation of the commencement date of electricity generation shall be provided to the Planning Authority within one month of that date.

Reason: In order to limit the permission to the expected operational lifetime of the wind farm and to allow for restoration of the site.

4

That prior to the commencement of development, the applicant shall provide the Ministry of Defence (Defence Estates – Safeguarding) with the following information, a copy of which shall also be submitted to the Planning Authority;

- Proposed date of commencement of construction;
- Estimated date of completion of construction;
- Height above ground level of the tallest structure;
- Maximum extension height of any construction equipment;
- Latitude and Longitude of the proposed turbines.

Reason: In the interests of aviation safety.

5

That should the wind turbine no longer be required or should it cease to generate electricity for a period of six months it shall be removed and the site restored to its previous condition in accordance with the details approved under condition 6(iii) of this permission. The restoration works shall be completed no later than twelve months following the date that the turbine has ceased to generate electricity or as otherwise agreed in writing with the Planning Authority.

Reason: In order to ensure that the turbine is removed and the land restored to its previous condition in the event that the turbine is no longer required in the interests of the visual amenity of the area.

6

That prior to the commencement of the development hereby approved the following information shall be submitted to and approved in writing by the Planning Authority: -

- i) The precise route and details of the transmission cables from the turbine. Thereafter the transmission cables shall be provided only in accordance with the approved details;

- ii) Details of the colour of the wind turbine which shall be Agate Grey (RAL 7038) unless otherwise agreed with the Planning Authority. Thereafter the turbine shall be finished in accordance with the approved details;
- iii) A scheme for the decommissioning and restoration of the site including aftercare measures. The scheme shall set out the means of reinstating the site to agricultural land following the removal of the components of the development. The developer shall obtain written confirmation from the Planning Authority that all decommissioning has been completed in accordance with the approved plan and (unless otherwise agreed in writing by the Planning Authority) works for removal of site apparatus shall be completed within 12 months of the final date electricity is generated at the site;
- iv) A survey of existing television signal reception to establish a baseline against which to assess the impact of the wind turbines. Thereafter, within six weeks of the wind turbines coming into operation, and subsequently at the reasonable request of the Planning Authority following receipt of a complaint, a report assessing the effect of the wind turbines on local television signal reception ('the report') shall be submitted to the Planning Authority. If any impact on TV reception signal takes place, the report shall include detailed measures to overcome reception interference. In the event that interference with TV signals occur, the operation of the turbines shall cease until measures to mitigate any such interference are implemented. Should such measures fail to address the TV interference the operation of the turbines shall cease until otherwise approved in writing by the Planning Authority.

Reason: In order that the Planning Authority may verify the acceptability of the transmission lines, access route and turbine colour in the interests of visual amenity; in order to ensure appropriate site restoration; in order to mitigate any impacts on television reception; in the interests of road safety and in the interests of air safety.

7

The prior to the commencement of development, the verge crossing at the proposed access shall be provided at the proposed access in the form of a new bellmouth junction with kerbed radii of 9 metres and a minimum throat width of 5.5 metres. The access shall be constructed in accordance with the standards of Angus Council (Type D).

Reason: To ensure a satisfactory standard of construction.

8

That unless other first approved in writing by the planning authority, the turbines hereby approved shall:

- (i) have no symbols, signs, logos or other lettering by way of advertisement displayed on any part of the wind turbines;
- (ii) not be light other than for the purposes of aviation safety.

Reason: In the interests of the visual amenity of the area.

9

The rating level of noise imissions from the combined effects of the wind turbines (including the application of any tonal penalty) when determined in accordance with the attached Guidance Notes (to this condition), shall not exceed at any property lawfully existing at the date of this planning permission

- (a) the LA90 dB (A) 10min levels, shown in tables A & B, during the respective periods described in these tables; where there is more than one property at a location the noise limits apply to all properties at that location or
- (b) LA90 35dB (A) 10min at wind speeds up to 10 m/s at 10m height at any other location.

Reason: In order to safeguard the residential amenity of adjacent property.

**Table A: Operational wind turbine noise between 2300hrs – 0700hrs**

Location	Standardised/measured 10m Height Wind Speed m/s								
	4	5	6	7	8	9	10	11	12
Tillydovie Cottage	43	43	43	43	43	43	43	43	43
Tillydovie Farmhouse	43	43	43	43	43	43	43	43	43
Tillydovie - new dwellinghouse (Planning Ref:	43	43	43	43	43	43	43	43	43

08/00757/FUL)									
Oldtown Cottage	43	43	43	43	43	43	43	43	43
Larkhall House	43	43	43	43	43	43	43	43	43
Larkhall – new dwellinghouse (Planning Ref: 04/00872/OUT)	43	43	43	43	43	43	43	43	43

**Table B: Operational wind turbine noise at all other times**

Location	Standardised/measured 10m Height Wind Speed m/s								
	4	5	6	7	8	9	10	11	12
Tillydovie Cottage	35.0	35.0	35.3	37.2	39.3	41.6	44.1	46.8	46.8
Tillydovie Farmhouse	35.0	35.0	35.3	37.2	39.3	41.6	44.1	46.8	46.8
Tillydovie - new dwellinghouse (Planning Ref: 08/00757/FUL)	35.0	35.0	35.3	37.2	39.3	41.6	44.1	46.8	46.8
Oldtown Cottage	35.0	35.0	35.0	36.4	38.7	41.2	44.0	47.1	47.1
Larkhall House	35.0	35.0	35.0	36.4	38.7	41.2	44.0	47.1	47.1
Larkhall – new dwellinghouse (Planning Ref: 04/00872/OUT)	35.0	35.0	35.0	36.4	38.7	41.2	44.0	47.1	47.1

10

Prior to the commencement of development the make and model of the turbines selected for use in the development shall be submitted for the written approval of the Planning Authority.

Reason:

In order that the planning authority can verify the model of turbines to be used to ensure that noise limits could be met.

11

Prior to the commencement of development; where any turbine other than the candidate turbines is to be installed, a detailed noise assessment, including where necessary a cumulative assessment taking into account any existing wind turbine developments approved prior to the date of this permission, demonstrating that the noise limits specified by this permission shall not be exceeded shall be submitted for the written approval of the Planning Authority.

Reason:

In order to safeguard the residential amenity of adjacent property.

12

Prior to the commencement of development; where any wind turbine is required to operate in a reduced power mode in order to comply with the noise limits specified by this permission a scheme for the mitigation of noise shall be submitted for the written approval of the Planning Authority.

Reason:

In order to safeguard the residential amenity of adjacent property.

13

The wind farm operator shall continuously log power production, wind speed and wind direction, all in accordance with Guidance Note 1(d). This data shall be retained for a period of not less than 24 months. The wind farm operator shall provide this information in the format set out in Guidance Note 1(e) to the Local Planning Authority on its request, within 14 days of receipt in writing of such a request.

Reason:

In order to safeguard the residential amenity of adjacent property.

14

No electricity shall be exported until the wind farm operator has submitted to the Local Planning Authority for written approval a list of proposed independent consultants who may undertake noise compliance measurements in accordance with this permission. Amendments to the list of approved consultants shall be made only with the prior written approval of the Local Planning Authority.

Reason:

In order to safeguard the residential amenity of adjacent property.

15

Within 21 days from receipt of a written request from the Local Planning Authority following a complaint to it from an occupant of a dwelling alleging noise disturbance at that dwelling, the wind farm operator shall, at its expense, employ a consultant approved by the Local Planning Authority to assess the level of noise immissions from the wind farm at the complainant's property in accordance with the procedures described in the attached Guidance Notes. The written request from the Local Planning Authority shall set out at least the date, time and location that the complaint relates to and any identified atmospheric conditions, including wind direction, and include a statement as to whether, in the opinion of the Local Planning Authority, the noise giving rise to the complaint contains or is likely to contain a tonal component.

Reason:

In order to safeguard the residential amenity of adjacent property.

16

The assessment of the rating level of noise immissions shall be undertaken in accordance with an assessment protocol that shall previously have been submitted to and approved in writing by the Local Planning Authority. The protocol shall include the proposed measurement location identified in accordance with the Guidance Notes where measurements for compliance checking purposes shall be undertaken, whether noise giving rise to the complaint contains or is likely to contain a tonal component, and also the range of meteorological and operational conditions (which shall include the range of wind speeds, wind directions, power generation and times of day) to determine the assessment of rating level of noise immissions. The proposed range of conditions shall be those which prevailed during times when the complainant alleges there was disturbance due to noise, having regard to the written request by the Local Planning Authority to investigate a complaint, and such others as the independent consultant considers likely to result in a breach of the noise limits.

Reason:

In order to safeguard the residential amenity of adjacent property.

17

Where a dwelling to which a complaint is related is not listed in the tables attached to these conditions, the wind farm operator shall submit to the Local Planning Authority for written approval proposed noise limits to be adopted at the complainant's dwelling for compliance checking purposes. The proposed noise limits are to be those limits selected from the Tables specified for a listed location which the independent consultant considers as being likely to experience the most similar background noise environment to that experienced at the complainant's dwelling. The rating level of noise immissions resulting from the combined effects of the wind turbines when determined in accordance with the attached Guidance Notes shall not exceed the noise limits approved in writing by the Local Planning Authority for the complainant's dwelling.

Reason:

In order to safeguard the residential amenity of adjacent property.

18

The wind farm operator shall provide to the Local Planning Authority the independent consultant's assessment of the rating level of noise immissions undertaken in accordance with the Guidance Notes within 2 months of the date of the written request of the Local Planning Authority for compliance measurements to be undertaken, unless the time limit is extended in writing by the Local Planning Authority. The assessment shall include all data collected for the purposes of undertaking the compliance measurements, such data to be provided in the format set out in Guidance Note 1(e) of the Guidance Notes. The instrumentation used to undertake the measurements shall be calibrated in accordance with Guidance Note 1(a) and certificates of calibration shall be submitted to the Local Planning Authority with the independent consultant's assessment of the rating level of noise immissions.

Reason:

In order to safeguard the residential amenity of adjacent property.

19

Where a further assessment of the rating level of noise immissions from the wind farm is required pursuant to Guidance Note 4(c), the wind farm operator shall submit a copy of the further assessment within 21 days of submission of the independent consultant's assessment pursuant to condition 8 above unless the time limit has been extended in writing by the Local Planning Authority.

Reason:

In order to safeguard the residential amenity of adjacent property.

20

In the event that noise emissions from the wind turbines exceed the levels set by this permission, operation of the turbines shall cease until measures to reduce noise levels to comply with this permission are implemented. Should such measures fail to achieve compliance with the noise levels set by this permission the operation of the turbines shall cease until otherwise approved in writing by the planning authority.

Reason:

In order to safeguard the residential amenity of adjacent property.

21

Prior to the commencement of development a shadow flicker assessment shall be submitted for the written approval of the Planning Authority. The aforementioned assessment shall consider any sensitive receptors a minimum of 1km from any proposed turbine. Where under worst case conditions any property is predicted to be affected by shadow flicker for more than 30 minutes per day or more than 30 days per year then a scheme of mitigation shall be submitted for the written approval of the Planning Authority. Once approved the operation of the wind farm shall take place in accordance with the said scheme unless the Planning Authority gives written consent to any variation. For the avoidance of doubt sensitive receptors includes all residential properties, hospitals, schools and office buildings.

Reason:

In order to safeguard the residential amenity of adjacent property.

22

That in the event of a pollution incident or interruption to supply, caused by the wind farm development, affecting or likely to affect any private water supply, the wind farm operator shall provide an immediate temporary supply to those affected until permanent mitigation can be effected to the satisfaction of the Planning Authority. Any replacement supply shall be of a quality to meet the private water supplies (Scotland) Regulations 1992 or any other appropriate Regulation in force at the time. In any case a permanent replacement supply or mitigation measures shall be provided no later than one month after the supply is first affected.

Reason:

In order to safeguard the residential amenity of adjacent property.

23

Noise associated with construction operations including the movement of materials, plant and equipment shall not exceed the noise limits shown in table C below for the times shown. At all other times noise associated with construction operations shall be inaudible at any sensitive receptor. For the avoidance of doubt sensitive receptors includes all residential properties, hospitals, schools and office buildings.

Reason:

In order to safeguard the residential amenity of adjacent property.

**Table C: Construction Noise limits**

Day	Time	Average Period (t)	Noise limit
Monday-Friday	0700-0800	1 hour	55 dBA Leq
Monday-Friday	0800-1800	10 hour	65 dBA Leq
Monday-Friday	1800-1900	1 hour	55 dBA Leq
Saturday	0700-0800	1 hour	55 dBA Leq
Saturday	0800-1800	10 hour	65 dBA Leq
Saturday	1800-1900	1 hour	55 dBA Leq
Sunday	0800-1800	10 hour	55 dBA Leq

24

That the turbines shall be fitted with 25 candela omni-directional red lighting or infrared lighting with an optimised flash pattern of 60 flashes per minute of 200ms to 500ms duration at the highest practicable point on the turbines unless otherwise agreed in writing with the planning authority.

Reason:

In the interests of aviation safety.

25

That, prior to the commencement of works on site, a route condition survey shall be submitted for approval by the planning authority. The survey shall cover the Kirkton of Menmuir to Edzell road between the site access and the B966 High Street, Edzell. The survey shall be approved, in writing, by the planning authority, prior to the commencement of development on site.

Reason:

In order to record the baseline condition of the identified public road.

26

That, prior to the commencement of works on site, a Construction Traffic Management and Routing Plan shall be submitted for the advance approval of the planning authority. Thereafter, the Plan shall be implemented in accordance with the approved details. As a minimum, the plan shall include those matters listed in paragraph 13.11 of the Environment and Planning Report submitted as part of the application.

Reason: In the interests of road safety, free traffic flow and the amenity of all road users.

27

That, the above Construction Traffic Management Plan shall include a method for the review and monitoring of the road condition referred to in Condition 1, above and allow for any deterioration identified during the construction phase of the development to be rectified by the applicant.

Reason:

In order to protect the structural integrity of the public road.

28

That, any mitigation works identified as necessary within the boundaries of a public road shall be carried out to the satisfaction of the planning authority, in accordance with the standards of Angus Council.

Reason:

In order to maintain the public road network in a satisfactory manner.

29

That, prior to the commencement of works on site, visibility splays shall be provided at the junction of the proposed access with the Kirkton of Menmuir to Edzell road, giving a minimum sight distance of 90 metres in each direction at a point 2.4 metres from the adjacent channel line of the Kirkton of Menmuir to Edzell road.

Reason: In the interests of road safety.

30

That, within the above visibility splays nothing shall be erected or planting permitted to grow to a height in excess of 1050mm above the adjacent road channel. Thereafter, the visibility sightlines shall be maintained as such until the turbines are decommissioned or the access to the public road is stopped-up, whichever is the latter.

Reason: In the interests of road safety.

31

That, prior to the commencement of use of the site access, the verge crossing at its junction with the public road shall be formed and constructed, in accordance with the standards of Angus Council (Type C).

Reason: To provide a safe and satisfactory access in a timely manner.

32

That, the above access shall be designed so as to prevent the discharge of surface water onto the public road.

Reason: In the interests of road safety.



## **Guidance Notes for Noise Conditions**

These notes are to be read with and form part of the noise condition. They further explain the condition and specify the methods to be employed in the assessment of complaints about noise immissions from the wind farm. The rating level at each integer wind speed is the arithmetic sum of the wind farm noise level as determined from the best-fit curve described in Guidance Note 2 of these Guidance Notes and any tonal penalty applied in accordance with Guidance Note 3. Reference to ETSU-R-97 refers to the publication entitled “The Assessment and Rating of Noise from Wind Farms” (1997) published by the Energy Technology Support Unit (ETSU) for the Department of Trade and Industry (DTI).

### **Guidance Note 1**

(a) Values of the LA90,10 minute noise statistic should be measured at the complainant’s property, using a sound level meter of EN 60651/BS EN 60804 Type 1, or BS EN 61672 Class 1 quality (or the equivalent UK adopted standard in force at the time of the measurements) set to measure using the fast time weighted response as specified in BS EN 60651/BS EN 60804 or BS EN 61672-1 (or the equivalent UK adopted standard in force at the time of the measurements). This should be calibrated in accordance with the procedure specified in BS 4142: 1997 (or the equivalent UK adopted standard in force at the time of the measurements). Measurements shall be undertaken in such a manner to enable a tonal penalty to be applied in accordance with Guidance Note 3.

(b) The microphone should be mounted at 1.2 – 1.5 metres above ground level, fitted with a two-layer windshield or suitable equivalent approved in writing by the Local Planning Authority, and placed outside the complainant’s dwelling. Measurements should be made in “free field” conditions. To achieve this, the microphone should be placed at least 3.5 metres away from the building facade or any reflecting surface except the ground at the approved measurement location. In the event that the consent of the complainant for access to his or her property to undertake compliance measurements is withheld, the wind farm operator shall submit for the written approval of the Local Planning Authority details of the proposed alternative representative measurement location prior to the commencement of measurements and the measurements shall be undertaken at the approved alternative representative measurement location.

(c) The LA90,10 minute measurements should be synchronised with measurements of the 10-minute arithmetic mean wind and operational data logged in accordance with Guidance Note 1(d), including the power generation data from the turbine control systems of the wind farm.

(d) To enable compliance with the conditions to be evaluated, the wind farm operator shall continuously log arithmetic mean wind speed in metres per second and wind direction in degrees from north at hub height for each turbine and arithmetic mean power generated by each turbine, all in successive 10-minute periods. Unless an alternative procedure is previously agreed in writing with the Planning Authority, this hub height wind speed, averaged across all operating wind turbines, shall be used as the basis for the analysis. All 10 minute arithmetic average mean wind speed data measured at hub height shall be ‘standardised’ to a reference height of 10 metres as described in ETSU-R-97 at page 120 using a reference roughness length of 0.05 metres . It is this standardised 10 metre height wind speed data, which is correlated with the noise measurements determined as valid in accordance with Guidance Note 2, such correlation to be undertaken in the manner described in Guidance Note 2. All 10-minute periods shall commence on the hour and in 10- minute increments thereafter.

(e) Data provided to the Local Planning Authority in accordance with the noise condition shall be provided in comma separated values in electronic format.

(f) A data logging rain gauge shall be installed in the course of the assessment of the levels of noise immissions. The gauge shall record over successive 10-minute periods synchronised with the periods of data recorded in accordance with Note 1(d).

### **Guidance Note 2**

(a) The noise measurements shall be made so as to provide not less than 20 valid data points as defined in Guidance Note 2 (b)

(b) Valid data points are those measured in the conditions specified in the agreed written assessment protocol, but excluding any periods of rainfall measured in the vicinity of the sound level meter. Rainfall shall be assessed by use of a rain gauge that shall log the occurrence of rainfall in each 10 minute period concurrent with the measurement periods set out in Guidance Note 1. In specifying such conditions the Local Planning Authority shall have regard to those conditions which prevailed during times when the complainant alleges there was disturbance due to noise or which are considered likely to result in a breach of the limits.

(c) For those data points considered valid in accordance with Guidance Note 2(b), values of the LA90,10 minute noise measurements and corresponding values of the 10- minute wind speed, as derived from the standardised ten metre height wind speed averaged across all operating wind turbines using the procedure specified in Guidance Note 1(d), shall be plotted on an XY chart with noise level on the Y-axis and the standardised mean wind speed on the X-axis. A least squares, "best fit" curve of an order deemed appropriate by the independent consultant (but which may not be higher than a fourth order) should be fitted to the data points and define the wind farm noise level at each integer speed.

### **Guidance Note 3**

(a) Where, in accordance with the approved assessment protocol, noise immissions at the location or locations where compliance measurements are being undertaken contain or are likely to contain a tonal component, a tonal penalty is to be calculated and applied using the following rating procedure.

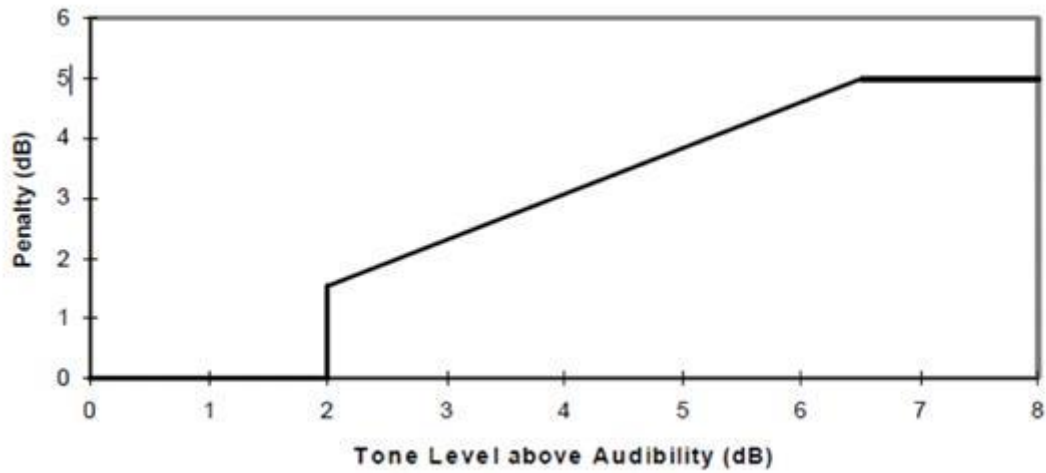
(b) For each 10 minute interval for which LA90,10 minute data have been determined as valid in accordance with Guidance Note 2 a tonal assessment shall be performed on noise immissions during 2 minutes of each 10 minute period. The 2 minute periods should be spaced at 10 minute intervals provided that uninterrupted uncorrupted data are available ("the standard procedure"). Where uncorrupted data are not available, the first available uninterrupted clean 2 minute period out of the affected overall 10 minute period shall be selected. Any such deviations from the standard procedure, as described in Section 2.1 on pages 104-109 of ETSU-R-97, shall be reported.

(c) For each of the 2 minute samples the tone level above or below audibility shall be calculated by comparison with the audibility criterion given in Section 2.1 on pages 104-109 of ETSU-R-97.

(d) The tone level above audibility shall be plotted against wind speed for each of the 2 minute samples. Samples for which the tones were below the audibility criterion or no tone was identified, a value of zero audibility shall be used.

(e) A least squares "best fit" linear regression line shall then be performed to establish the average tone level above audibility for each integer wind speed derived from the value of the "best fit" line at each integer wind speed. If there is no apparent trend with wind speed then a simple arithmetic mean shall be used. This process shall be repeated for each integer wind speed for which there is an assessment of overall levels in Guidance Note 2.

(f) The tonal penalty is derived from the margin above audibility of the tone according to the figure below.



**Guidance Note 4**

(a) If a tonal penalty is to be applied in accordance with Guidance Note 3 the rating level of the turbine noise at each wind speed is the arithmetic sum of the measured noise level as determined from the best fit curve described in Guidance Note 2 and the penalty for tonal noise as derived in accordance with Guidance Note 3 at each integer wind speed within the range specified by the agreed written assessment protocol.

(b) If no tonal penalty is to be applied then the rating level of the turbine noise at each wind speed is equal to the measured noise level as determined from the best fit curve described in Guidance Note 2.

(c) In the event that the rating level is above the limit(s) set out in the Tables attached to the noise conditions or the noise limits for a complainant’s dwelling, the independent consultant shall undertake a further assessment of the rating level to correct for background noise so that the rating level relates to wind turbine noise immission only.

(d) The wind farm operator shall ensure that all the wind turbines in the development are turned off for such period as the independent consultant requires to undertake the further assessment. The further assessment shall be undertaken in accordance with the following steps:

(e). Repeating the steps in Guidance Note 2, with the wind farm switched off, and determining the background noise (L3) at each integer wind speed within the range requested by the Local Planning Authority in its written request and the approved protocol.

(f) The wind farm noise (L1) at this speed shall then be calculated as follows where L2 is the measured level with turbines running but without the addition of any tonal penalty:

$$L_1 = 10 \log \left[ 10^{L_2/10} - 10^{L_3/10} \right]$$

(g) The rating level shall be re-calculated by adding arithmetically the tonal penalty (if any is applied in accordance with Note 3) to the derived wind farm noise L1 at that integer wind speed.

(h) If the rating level after adjustment for background noise contribution and adjustment for tonal penalty (if required in accordance with note 3 above) at any integer wind speed lies at or below the values set out in the Tables attached to the conditions or at or below the noise limits approved by the Local Planning Authority for a complainant’s dwelling then no further action is necessary.

(i) If the rating level at any integer wind speed exceeds the values set out in the Tables attached to the conditions or the noise limits approved by the Local Planning Authority for a complainant’s dwelling then the development fails to comply with the conditions.