APPENDIX E: NOISE MODEL PARAMETERS

Project:
479 Glen Dhu Wind Data

DECIBEL - Assumptions for noise calculation
Calculation: Sound map layout V 9.0

Noise calculation model:
ISO 9613-2 Deutschland
Wind speed:
95% rated power else 10,0 m/s
Ground attenuation:
Alternative
Meteorological coefficient, C0:
0,0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
5,0 m Allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0,0 dB(A)
Octave data not required
Air absorption: 1,9 dB/km

WTG: ENERCON E-82 2000 82.0 !-!
Noise: Herstellerangabe 104dB (A)

Source   Source/Date Creator Edited
ENERCON 24.02.2006   USER   17.03.2006 12:34
Werte unterhalb 95% Nennleistung werden erst nach erfolgter Prototypenvermessung garantiert

Status	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones
From Windcat	10,0	104,0	No

Decibel

Function
Calculates and documents the noise impact from a wind turbine/wind farm.

Calculation module
At present, the module can carry out calculations based on ten models:

- ISO 9613-2 International Standard
- ISO 9613-2, Germany
- ISO 9613-2, UK
- Denmark; The Guidelines of the Dept. of Environment (Miljøstyrelsen)
- The Netherlands guidelines of 1999
- Sweden: Ljud från landbaserade vindkraftverk, Naturvårdsverket, 2002.
- Sweden: Ljud från havsbaserade vindkraftverk, Naturvårdsverket, 2002.
- Former German guideline VDI 2714
  Former Netherlands guidelines: IL-HR-13-01
- Former Swedish codes

Necessary Input Data (Objects)
Please note that the objects are entered in the WindPRO module BASIS. Please read the description of the
Site map

WindPRO module BASIS for further details.

Wind Turbine: One or more wind turbines are entered (position and type). Usually, the wind turbine can be found in the wind turbine catalogue, which contains more than 500 different types and models. If no noise e   sion data, LWA,ref, is given for the actual WTG in the catalogue, this data can be entered manually at the beginning of the calculation.

Noise Sensitive Areas: Noise sensitive areas and/or positions are entered graphically on an on-screen map. For each area/position, a minimum distance to the nearest wind turbine and the maximum allowable noise impact in dB(A) can be entered.

Description
The WindPRO module DECIBEL for Noise Impact Calculation makes noise calculations an easy task. Both existing and new wind turbines are included, and it is possible to define Noise Sensitive Positions (spots) as well as areas described by polygons. These polygons can be drawn directly on the background map using the mouse. The program calculates based on the noise emission data (Lwa or octave data) the point on the polygon line with the highest noise impact and prints the coordinates and noise level for the point in the report. Differences in elevations between wind turbines and neighbors are included in the calculations since the coordinates for the wind turbines and the noise sensitive areas/positions all are given in 3D. The program can automatically calculate these elevations if digital maps are used. For each polygon/position, the maximum allowable noise level can be entered. In this way, it is possible to simultaneously carry out, for example, calculations relative to the nearest neighbor based on a 45 dB level and a nearby urban area at another distance based on a 40 dB level. Also it is possible to enter the initial background noise level without turbines if this is known and then calculate the additional noise inflicted by the wind turbines.

It is also possible to link a DECIBEL calculation to a project layout so a noise isoline map is automatically updated in the project window when changes are made. This makes it easier to find the optimal layout with regards to noise impact.

(ulations Report
Main Printout, with assumptions including a map rendering the wind turbines and noise sensitive areas. For each noise sensitive area, coordinates and calculated noise level are printed out for the point with the highest noise impact. Finally, a table is included which shows the distances between the wind turbines and the noise sensitive areas in a matrix.
Detailed Result: for each noise sensitive area or point every part of the noise from each WTG and all noise parameters are listed (only when calculating with the ISO standard).
Maps: See the reverse page for an example of a map printout from a DECIBEL calculation.
Data to file: Print of noise Isolines in an Arc View GIS package format (Shape files).

View reports from the Decibel module