APPENDIX 12-7

Noise Study Area Selection

APPENDIX 12-7 NOISE STUDY AREA SELECTION

The list of cumulative wind farms which were considered in the selection of the study area selection extends to an approximate distance of 28 km, based on the set of wind farm developments in Chapter 2; though in terms of environmental noise, this list extends well beyond the range of potential cumulative impacts. These wind farms considered are listed below:

- Shancloon
- Raheen Bar
- Magheramore
- Mace Upper
- Lenanavea
- Derrynadivva
- Derrynadivva Extension
- Cuillalea
- Cuillalea Extension
- Cloontooa
- Ballykinava
- Connaught GAA
- Aghinish Domestic Turbine
- Tonregee Domestic Turbine

The Institute of Acoustics document *Good Practice Guide To The Application Of Etsu-R-97 For The Assessment And Rating Of Wind Turbine Noise* states, in section 2.2 in relation to the extent of the study area:

The 'study area' for background noise surveys (and noise assessment) should, as a minimum, be the area within which noise levels from the proposed, consented and existing wind turbine(s) may exceed 35 dB L_{A90} at up to 10 m/s wind speed. (Note: unless stated, in this document the wind speed reference for noise data is the 10 metre standardised wind speed, derived from the wind speed at turbine hub height as explained in Section 2.6).

If there were no other wind farms to be considered, the study area could be considered to be simply the 35 dB L_{A90} noise contour at maximum sound power level for the turbine, due to the proposed development only. The inclusion of other wind farms in the noise model has the potential to increase predicted noise levels to above 35dB L_{A90} at a wider set of noise-sensitive locations (NSLs). Theoretically, any predicted noise level above 25 dB L_{A90}, due to another wind farm in its own right, could cumulatively result in a noise level above 35 dB L_{A90} when considered in conjunction with the proposed development. This methodology is considered a robust means of selecting the zone of potential cumulative noise impact.

The approach here is to model the full set of potentially cumulative wind farms and predict 25 dB L_{A90} contours for each one. Where any 25 dB L_{A90} contour touches or overlaps the 35 dB L_{A90} contour from the proposed development, then that wind farm should be included in the cumulative assessment.

Figure 1 presents the 25 dB L_{A90} contours for wind farms in close proximity to the 35 dB contour for the Proposed Development. All of the noise contours from the surrounding wind farms do not touch or overlap the Proposed Development 35 dB noise contour, therefore it is not necessary to include them in the cumulative noise assessment. For this screening exercise, all turbines have been modelled with a sound power level of 105 dB(A), this being a typical maximum sound power level at rated power.

Note that the terrain in this screening model is considered flat as a worst-case.

Figure 1: 35 dB L_{A90} contour for the Proposed Project (in red) and 25 dB L_{A90} contours from surrounding wind farms. 1.45 km study area of residential receptors (in yellow) within the 35 dB L_{A90} Contour for the Proposed Project.