



APPENDIX 12-4

TURBINE SOUND POWER LEVELS

APPENDIX 12-4. TURBINE SOUND POWER LEVELS

This Appendix presents the sound power levels of the various turbine technologies used in the assessment.

Appendix Table 12-4-1. Cahermurphy West: Vestas V150 at a hub height of 110 m

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz) Sound Power Levels (dB re 10 ⁻¹² W)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
3	73.6	81.3	86.0	87.8	86.5	82.4	75.2	65.1	92.6
4	77.4	85.1	89.8	91.5	90.4	86.2	79.1	69.0	96.4
5	81.7	89.4	94.1	95.8	94.7	90.5	83.5	73.4	100.7
6	84.1	92.0	96.9	98.8	97.7	93.5	86.5	76.3	103.6
7	84.7	92.6	97.5	99.4	98.3	94.1	87.1	76.9	104.2
8	85.6	93.4	98.2	100.1	98.9	94.8	87.7	77.6	104.9
≥9	86.3	93.7	98.2	100.0	98.9	94.9	88.1	78.4	104.9

Appendix Table 12-4-2. Cahermurphy West: Vestas V162 at a hub height of 104 m

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz) Sound Power Levels (dB re 10 ⁻¹² W)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
3	87.6	90.7	88.9	87.0	87.1	85.5	77.7	64.9	96.0
4	88.8	91.7	89.7	87.8	90.0	88.6	81.1	66.5	97.5
5	90.5	94.0	92.7	92.0	94.4	92.6	85.8	72.8	100.8
6	91.3	95.4	96.2	96.1	98.8	97.2	89.7	73.7	104.3
7	90.4	97.4	98.8	98.6	99.6	99.4	94.8	83.4	106.3
8	90.4	97.4	98.8	98.6	99.6	99.4	94.8	83.4	106.3
9	90.4	97.4	98.8	98.6	99.6	99.4	94.8	83.4	106.3

Appendix Table 12-4-3. Cahermurphy West: Nordex N149 at a hub height of 110.5 m

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz) Sound Power Levels (dB re 10 ⁻¹² W)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
3	77.1	83.7	86.6	87.6	88.0	86.2	80.5	71.3	94.0
4	78.4	85.0	87.9	88.9	89.3	87.5	81.8	72.6	95.3
5	81.3	87.9	91.6	93.7	95.0	93.1	83.5	75.6	100.0
6	85.6	92.2	95.9	98.0	99.3	97.4	87.8	79.9	104.3
7	86.9	93.5	97.2	99.3	100.6	98.7	89.1	81.2	105.6
8	87.3	93.5	97.2	99.8	100.5	98.0	90.4	82.4	105.6
9	87.3	93.5	97.2	99.8	100.5	98.0	90.4	82.4	105.6

Appendix Table 12-4-4. Cahermurphy West: Nordex N163 at a hub height of 103.5 m

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz) Sound Power Levels (dB re 10 ⁻¹² W)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
3	78.6	85.2	88.1	89.1	89.5	87.7	82.0	72.8	95.5
4	80.8	87.4	90.3	91.3	91.7	89.9	84.2	75.0	97.7
5	83.7	90.3	94.0	96.1	97.4	95.5	85.9	78.0	102.4
6	88.0	94.6	98.3	100.4	101.7	99.8	90.2	82.3	106.7
7	88.6	95.1	98.8	100.9	102.2	100.4	90.8	82.9	107.2
8	88.9	95.1	98.8	101.4	102.1	99.6	92.0	84.0	107.2
9	88.9	95.1	98.8	101.4	102.1	99.6	92.0	84.0	107.2

Appendix Table 12-4-5. Cahermurphy West: General Electric GE-158 at a hub height of 106 m

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz) Sound Power Levels (dB re 10 ⁻¹² W)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
3	78.2	86.1	89.7	88.8	88.1	87.5	83.2	68.3	95.5
4	81.3	88.3	93.4	94.8	94.4	91.7	85.9	71.6	100.3
5	85.1	91.5	96.6	98.7	99.2	96.4	89.6	75.1	104.4
6	87.2	92.6	97.2	99.7	101.3	99.1	91.7	76.0	106.0
7	87.2	92.6	97.2	99.7	101.3	99.1	91.7	76.0	106.0
8	87.2	92.6	97.2	99.7	101.3	99.1	91.7	76.0	106.0
9	87.2	92.6	97.2	99.7	101.3	99.1	91.7	76.0	106.0

Appendix Table 12-4-6. Existing Cahermurphy: Enercon E92 2.3MW at a hub height of 85 m

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz) Sound Power Levels (dB re 10 ⁻¹² W)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
3	78.0	86.2	86.3	88.1	90.6	91.2	89.4	78.9	97.0
4	78.0	86.2	86.3	88.1	90.6	91.2	89.4	78.9	97.0
5	80.5	88.7	88.8	90.6	93.1	93.7	91.9	81.4	99.5
6	83.0	91.2	91.3	93.1	95.6	96.2	94.4	83.9	102.0
7	84.3	92.5	92.6	94.4	96.9	97.5	95.7	85.2	103.3
8	85.2	93.4	93.5	95.3	97.8	98.4	96.6	86.1	104.2
9	86.0	94.2	94.3	96.1	98.6	99.2	97.4	86.9	105.0

Appendix Table 12-4-7. Kiltumper: Enercon E70 2MW at a hub height of 80 m

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz) Sound Power Levels (dB re 10 ⁻¹² W)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
3	74.5	82.5	82.2	84.8	86.6	81.7	69.4	61.3	91.1
4	74.5	82.5	82.2	84.8	86.6	81.7	69.4	61.3	91.1
5	77.5	85.5	85.2	87.8	89.6	84.7	72.4	64.3	94.1
6	83.1	91.1	90.8	93.4	95.2	90.3	78.0	69.9	99.7
7	85.0	93.0	92.7	95.3	97.1	92.2	79.9	71.8	101.6
8	86.9	94.9	94.6	97.2	99.0	94.1	81.8	73.7	103.5
9	87.9	95.9	95.6	98.2	100.0	95.1	82.8	74.7	104.5