

Environmental Impact Assessment Report

Cummeennabuddoge Wind Farm

Technical Appendix 13-4: Curtailment Modes

Cummeennabuddoge Wind (DAC)

September 2024



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Noise Reduced Operation Modes for the Nordex N163 5.6MW (non-STE)

The Modes from 0 to 18 are presented in order of preference. Mode 0 produces that highest noise emissions, but is the most preferred since it produces the most power (W), conversely Mode 18 is the least preferred mode as it produces the least power but has the lowest noise emissions. The noise levels presented are from manufacturers data standardised to 10m height wind speeds for a hub height of 118m and include 2dB uncertainty.

Table 13-4-1: Mode 0, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	90.7	98.0	102.9	105.4	106.0	102.9	92.9	84.9	110.9
7	91.0	98.3	103.2	105.7	106.3	103.2	93.2	85.2	111.2
8	91.5	97.7	101.9	105.2	106.6	104.2	95.4	86.6	111.2
9	91.5	97.7	101.9	105.2	106.6	104.2	95.4	86.6	111.2
10	91.5	97.7	101.9	105.2	106.6	104.2	95.4	86.6	111.2
11	91.5	97.7	101.9	105.2	106.6	104.2	95.4	86.6	111.2
12	91.5	97.7	101.9	105.2	106.6	104.2	95.4	86.6	111.2

Table 13-4-2: Mode 1, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	90.6	97.9	102.8	105.3	105.9	102.8	92.8	84.8	110.8
7	90.6	97.9	102.8	105.3	105.9	102.8	92.8	84.8	110.8
8	91.1	97.3	101.5	104.8	106.2	103.8	95.0	86.2	110.8
9	91.1	97.3	101.5	104.8	106.2	103.8	95.0	86.2	110.8
10	91.1	97.3	101.5	104.8	106.2	103.8	95.0	86.2	110.8
11	91.1	97.3	101.5	104.8	106.2	103.8	95.0	86.2	110.8
12	91.1	97.3	101.5	104.8	106.2	103.8	95.0	86.2	110.8

Table 13-4-3: Mode 2, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	90.2	97.5	102.4	104.9	105.5	102.4	92.4	84.4	110.4
7	90.2	97.5	102.4	104.9	105.5	102.4	92.4	84.4	110.4
8	90.7	96.9	101.1	104.4	105.8	103.4	94.6	85.8	110.4
9	90.7	96.9	101.1	104.4	105.8	103.4	94.6	85.8	110.4
10	90.7	96.9	101.1	104.4	105.8	103.4	94.6	85.8	110.4
11	90.7	96.9	101.1	104.4	105.8	103.4	94.6	85.8	110.4
12	90.7	96.9	101.1	104.4	105.8	103.4	94.6	85.8	110.4

Table 13-4-4: Mode 3, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	89.8	97.1	102.0	104.5	105.1	102.0	92.0	84.0	110.0
7	89.8	97.1	102.0	104.5	105.1	102.0	92.0	84.0	110.0
8	90.3	96.5	100.7	104.0	105.4	103.0	94.2	85.4	110.0
9	90.3	96.5	100.7	104.0	105.4	103.0	94.2	85.4	110.0
10	90.3	96.5	100.7	104.0	105.4	103.0	94.2	85.4	110.0
11	90.3	96.5	100.7	104.0	105.4	103.0	94.2	85.4	110.0
12	90.3	96.5	100.7	104.0	105.4	103.0	94.2	85.4	110.0

Table 13-4-5: Mode 4, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	89.3	96.6	101.5	104.0	104.6	101.5	91.5	83.5	109.5
7	89.3	96.6	101.5	104.0	104.6	101.5	91.5	83.5	109.5
8	89.8	96.0	100.2	103.5	104.9	102.5	93.7	84.9	109.5
9	89.8	96.0	100.2	103.5	104.9	102.5	93.7	84.9	109.5
10	89.8	96.0	100.2	103.5	104.9	102.5	93.7	84.9	109.5
11	89.8	96.0	100.2	103.5	104.9	102.5	93.7	84.9	109.5
12	89.8	96.0	100.2	103.5	104.9	102.5	93.7	84.9	109.5

Table 13-4-6: Mode 5, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	88.8	96.1	101.0	103.5	104.1	101.0	91.0	83.0	109.0
7	88.8	96.1	101.0	103.5	104.1	101.0	91.0	83.0	109.0
8	89.3	95.5	99.7	103.0	104.4	102.0	93.2	84.4	109.0
9	89.3	95.5	99.7	103.0	104.4	102.0	93.2	84.4	109.0
10	89.3	95.5	99.7	103.0	104.4	102.0	93.2	84.4	109.0
11	89.3	95.5	99.7	103.0	104.4	102.0	93.2	84.4	109.0
12	89.3	95.5	99.7	103.0	104.4	102.0	93.2	84.4	109.0

Table 13-4-7: Mode 6, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	88.3	95.6	100.5	103.0	103.6	100.5	90.5	82.5	108.5
7	88.3	95.6	100.5	103.0	103.6	100.5	90.5	82.5	108.5
8	88.8	95.0	99.2	102.5	103.9	101.5	92.7	83.9	108.5
9	88.8	95.0	99.2	102.5	103.9	101.5	92.7	83.9	108.5
10	88.8	95.0	99.2	102.5	103.9	101.5	92.7	83.9	108.5
11	88.8	95.0	99.2	102.5	103.9	101.5	92.7	83.9	108.5
12	88.8	95.0	99.2	102.5	103.9	101.5	92.7	83.9	108.5

Table 13-4-8: Mode 7, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.6	93.9	98.8	101.3	101.9	98.8	88.8	80.8	106.8
6	87.8	95.1	100.0	102.5	103.1	100.0	90.0	82.0	108.0
7	87.8	95.1	100.0	102.5	103.1	100.0	90.0	82.0	108.0
8	88.3	94.5	98.7	102.0	103.4	101.0	92.2	83.4	108.0
9	88.3	94.5	98.7	102.0	103.4	101.0	92.2	83.4	108.0
10	88.3	94.5	98.7	102.0	103.4	101.0	92.2	83.4	108.0
11	88.3	94.5	98.7	102.0	103.4	101.0	92.2	83.4	108.0
12	88.3	94.5	98.7	102.0	103.4	101.0	92.2	83.4	108.0

Table 13-4-9: Mode 8, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.4	93.7	98.6	101.1	101.7	98.6	88.6	80.6	106.6
6	87.3	94.6	99.5	102.0	102.6	99.5	89.5	81.5	107.5
7	87.3	94.6	99.5	102.0	102.6	99.5	89.5	81.5	107.5
8	87.8	94.0	98.2	101.5	102.9	100.5	91.7	82.9	107.5
9	87.8	94.0	98.2	101.5	102.9	100.5	91.7	82.9	107.5
10	87.8	94.0	98.2	101.5	102.9	100.5	91.7	82.9	107.5
11	87.8	94.0	98.2	101.5	102.9	100.5	91.7	82.9	107.5
12	87.8	94.0	98.2	101.5	102.9	100.5	91.7	82.9	107.5

Table 13-4-10: Mode 9, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	86.1	93.4	98.3	100.8	101.4	98.3	88.3	80.3	106.3
6	86.8	94.1	99.0	101.5	102.1	99.0	89.0	81.0	107.0
7	86.8	94.1	99.0	101.5	102.1	99.0	89.0	81.0	107.0
8	87.3	93.5	97.7	101.0	102.4	100.0	91.2	82.4	107.0
9	87.3	93.5	97.7	101.0	102.4	100.0	91.2	82.4	107.0
10	87.3	93.5	97.7	101.0	102.4	100.0	91.2	82.4	107.0
11	87.3	93.5	97.7	101.0	102.4	100.0	91.2	82.4	107.0
12	87.3	93.5	97.7	101.0	102.4	100.0	91.2	82.4	107.0

Table 13-4-11: Mode 10, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	84.4	91.7	96.6	99.1	99.7	96.6	86.6	78.6	104.6
6	84.8	92.1	97.0	99.5	100.1	97.0	87.0	79.0	105.0
7	84.8	92.1	97.0	99.5	100.1	97.0	87.0	79.0	105.0
8	85.3	91.5	95.7	99.0	100.4	98.0	89.2	80.4	105.0
9	85.3	91.5	95.7	99.0	100.4	98.0	89.2	80.4	105.0
10	85.3	91.5	95.7	99.0	100.4	98.0	89.2	80.4	105.0
11	85.3	91.5	95.7	99.0	100.4	98.0	89.2	80.4	105.0
12	85.3	91.5	95.7	99.0	100.4	98.0	89.2	80.4	105.0

Table 13-4-12: Mode 11, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	84.0	91.3	96.2	98.7	99.3	96.2	86.2	78.2	104.2
6	84.3	91.6	96.5	99.0	99.6	96.5	86.5	78.5	104.5
7	84.8	91.0	95.2	98.5	99.9	97.5	88.7	79.9	104.5
8	84.8	91.0	95.2	98.5	99.9	97.5	88.7	79.9	104.5
9	84.8	91.0	95.2	98.5	99.9	97.5	88.7	79.9	104.5
10	84.8	91.0	95.2	98.5	99.9	97.5	88.7	79.9	104.5
11	84.8	91.0	95.2	98.5	99.9	97.5	88.7	79.9	104.5
12	84.8	91.0	95.2	98.5	99.9	97.5	88.7	79.9	104.5

Table 13-4-13: Mode 12, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	83.5	90.8	95.7	98.2	98.8	95.7	85.7	77.7	103.7
6	83.8	91.1	96.0	98.5	99.1	96.0	86.0	78.0	104.0
7	84.3	90.5	94.7	98.0	99.4	97.0	88.2	79.4	104.0
8	84.3	90.5	94.7	98.0	99.4	97.0	88.2	79.4	104.0
9	84.3	90.5	94.7	98.0	99.4	97.0	88.2	79.4	104.0
10	84.3	90.5	94.7	98.0	99.4	97.0	88.2	79.4	104.0
11	84.3	90.5	94.7	98.0	99.4	97.0	88.2	79.4	104.0
12	84.3	90.5	94.7	98.0	99.4	97.0	88.2	79.4	104.0

Table 13-4-14: Mode 13, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.5	91.0	94.9	96.5	96.2	93.0	87.0	77.8	102.0
5	83.0	90.3	95.2	97.7	98.3	95.2	85.2	77.2	103.2
6	83.3	90.6	95.5	98.0	98.6	95.5	85.5	77.5	103.5
7	83.8	90.0	94.2	97.5	98.9	96.5	87.7	78.9	103.5
8	83.8	90.0	94.2	97.5	98.9	96.5	87.7	78.9	103.5
9	83.8	90.0	94.2	97.5	98.9	96.5	87.7	78.9	103.5
10	83.8	90.0	94.2	97.5	98.9	96.5	87.7	78.9	103.5
11	83.8	90.0	94.2	97.5	98.9	96.5	87.7	78.9	103.5
12	83.8	90.0	94.2	97.5	98.9	96.5	87.7	78.9	103.5

Table 13-4-15: Mode 14, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.4	90.9	94.8	96.4	96.1	92.9	86.9	77.7	101.9
5	82.5	89.8	94.7	97.2	97.8	94.7	84.7	76.7	102.7
6	82.8	90.1	95.0	97.5	98.1	95.0	85.0	77.0	103.0
7	83.3	89.5	93.7	97.0	98.4	96.0	87.2	78.4	103.0
8	83.3	89.5	93.7	97.0	98.4	96.0	87.2	78.4	103.0
9	83.3	89.5	93.7	97.0	98.4	96.0	87.2	78.4	103.0
10	83.3	89.5	93.7	97.0	98.4	96.0	87.2	78.4	103.0
11	83.3	89.5	93.7	97.0	98.4	96.0	87.2	78.4	103.0
12	83.3	89.5	93.7	97.0	98.4	96.0	87.2	78.4	103.0

Table 13-4-16: Mode 15, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	83.2	90.7	94.6	96.2	95.9	92.7	86.7	77.5	101.7
5	82.1	89.4	94.3	96.8	97.4	94.3	84.3	76.3	102.3
6	82.3	89.6	94.5	97.0	97.6	94.5	84.5	76.5	102.5
7	82.8	89.0	93.2	96.5	97.9	95.5	86.7	77.9	102.5
8	82.8	89.0	93.2	96.5	97.9	95.5	86.7	77.9	102.5
9	82.8	89.0	93.2	96.5	97.9	95.5	86.7	77.9	102.5
10	82.8	89.0	93.2	96.5	97.9	95.5	86.7	77.9	102.5
11	82.8	89.0	93.2	96.5	97.9	95.5	86.7	77.9	102.5
12	82.8	89.0	93.2	96.5	97.9	95.5	86.7	77.9	102.5

Table 13-4-17: Mode 16, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	82.9	90.4	94.3	95.9	95.6	92.4	86.4	77.2	101.4
5	81.6	88.9	93.8	96.3	96.9	93.8	83.8	75.8	101.8
6	81.8	89.1	94.0	96.5	97.1	94.0	84.0	76.0	102.0
7	82.3	88.5	92.7	96.0	97.4	95.0	86.2	77.4	102.0
8	82.3	88.5	92.7	96.0	97.4	95.0	86.2	77.4	102.0
9	82.3	88.5	92.7	96.0	97.4	95.0	86.2	77.4	102.0
10	82.3	88.5	92.7	96.0	97.4	95.0	86.2	77.4	102.0
11	82.3	88.5	92.7	96.0	97.4	95.0	86.2	77.4	102.0
12	82.3	88.5	92.7	96.0	97.4	95.0	86.2	77.4	102.0

Table 13-4-18: Mode 17, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	82.5	90.0	93.9	95.5	95.2	92.0	86.0	76.8	101.0
5	81.2	88.5	93.4	95.9	96.5	93.4	83.4	75.4	101.4
6	81.3	88.6	93.5	96.0	96.6	93.5	83.5	75.5	101.5
7	81.8	88.0	92.2	95.5	96.9	94.5	85.7	76.9	101.5
8	81.8	88.0	92.2	95.5	96.9	94.5	85.7	76.9	101.5
9	81.8	88.0	92.2	95.5	96.9	94.5	85.7	76.9	101.5
10	81.8	88.0	92.2	95.5	96.9	94.5	85.7	76.9	101.5
11	81.8	88.0	92.2	95.5	96.9	94.5	85.7	76.9	101.5
12	81.8	88.0	92.2	95.5	96.9	94.5	85.7	76.9	101.5

Table 13-4-19: Mode 18, SWL (dBA)

Standardised 10m Height Wind Speed (m/s)	Octave Band (Hz)								Total
	63	125	250	500	1k	2k	4k	8k	
4	82.1	89.6	93.5	95.1	94.8	91.6	85.6	76.4	100.6
5	80.7	88.0	92.9	95.4	96.0	92.9	82.9	74.9	100.9
6	80.8	88.1	93.0	95.5	96.1	93.0	83.0	75.0	101.0
7	81.3	87.5	91.7	95.0	96.4	94.0	85.2	76.4	101.0
8	81.3	87.5	91.7	95.0	96.4	94.0	85.2	76.4	101.0
9	81.3	87.5	91.7	95.0	96.4	94.0	85.2	76.4	101.0
10	81.3	87.5	91.7	95.0	96.4	94.0	85.2	76.4	101.0
11	81.3	87.5	91.7	95.0	96.4	94.0	85.2	76.4	101.0
12	81.3	87.5	91.7	95.0	96.4	94.0	85.2	76.4	101.0