

- allowances in the data, a further correction factor of +2 dB was added to the specification data in line with advice in the IOA GPG. The sound power data has been made available for standardised reference wind speeds of 3 m/s to 12 m/s inclusive. In addition to the overall sound power data, reference has been made to EnVentus V172-6.X MW test reports for the unit to derive a representative sound spectrum for the turbine, based on an energetic average of the available information at each octave band. The overall sound power and spectral data, including low noise modes, are presented in Table B3 and B4 in Annex B.
- 5.3.5 Assessment of the cumulative noise from operating the Clyde Wind Farm together with the Proposed Development and the nearby (around 5-6 km) M74 West Renewable Energy Park, Middle Muir Wind Farm, Andershaw Wind Farm also requires source information for the relevant turbine types. The data assumed for Clyde Wind Farm is for a Siemens SWT-2.3-93 model which are the constructed turbines specification currently in operation. The Repower 3.4M114 turbines were modelled for the Middle Muir Wind Farm, V117-3.45 MW turbines were modelled for Andershaw Wind Farm as built, and Siemens Gamesa SG 6.6-155 were modelled for the M74 West Renewable Energy Park turbines as stated in their noise assessment. Noise emission data and respective one-octave spectrum for each respective wind farm turbines included in this assessment turbine are presented in Annex B along with reference to their noise assessment and data sources. It is unlikely that noise emissions from these sites could be higher without resulting in potential excess of their individual consent noise limits. In particular, Middle Muir wind Farm turbines were further uplifted by 2 dB to align modelled emission levels to their consented limits at its nearest property. This is therefore consistent with the guidance of the IOA GPG.
- 5.4 Choice of Wind Farm Operational Noise Propagation Model
- 5.4.1 The ISO 9613-2 model²⁶ has been used to calculate the noise immission levels at the selected nearest residential neighbours as advised in the IOA GPG. The model accounts for the attenuation due to geometric spreading, atmospheric absorption, and barrier and ground effects. All attenuation calculations have been made on an octave band basis and therefore account for the sound frequency characteristics of the turbines.
- 5.4.2 For the purposes of the present assessment, all noise level predictions have been undertaken using a receiver height of four metres above local ground level, mixed ground (G=0.5) and an air absorption based on a temperature of 10°C and 70% relative humidity, and a receiver height of four metres. The attenuation due to terrain screening accounted for in the calculations has been limited to a maximum of 2 dB(A). In situations of propagation above concave ground, a correction of +3 dB was added. These propagation factors are shown in Annex B Table B2 for all Proposed Development turbines.
- 5.4.3 This method is consistent with the recommendations of the above-referenced Institute of Acoustics Good Practice Guide which provides recommendations on the appropriate approach when predicting wind turbine noise levels. The IOA GPG also allows for directional effects to be taken into account within the noise modelling: under upwind propagation conditions between a given receiver and the wind farm the noise immission level at that receiver can be as much as 10 dB(A) to 15 dB(A) lower than the level predicted using the ISO 9613-2 model. However, predictions have initially been made assuming downwind propagation from every turbine to every receptor at the same time as a worst-case²⁷.

26 ISO 9613-2:1996 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation', International Standards Organisation, 1996.

27 Directional predictions are considered further for one receptor: Waterhead Toll Cottage in the assessment.

- 5.5 Predicted Wind Turbine Operational Noise Immission Levels
- 5.5.1 Table 12 shows predicted noise immission levels for the Proposed Development in isolation, at each of the selected assessment locations for each wind speed over the range of wind speeds where source noise emission level data are available. All wind farm noise immission levels in this report are presented in terms of the L_{A90} noise indicator in accordance with the recommendations of the ETSU-R-97 report, obtained by subtracting 2 dB(A) from the calculated L_{Aeq} noise levels based on the turbine sound power levels presented in Annex B.

Table 12 - Predicted L_{A90} (dB) wind farm noise immission levels at each of the noise assessment locations as a function of standardised wind speed for the Proposed Development alone, assuming selective operational control as stated in paragraph 5.3.3.

Property	Standardised 10 m Wind Speed (m/s)									
	3	4	5	6	7	8	9	10	11	12
Lettershaws Farm	23.0	26.6	31.7	34.6	34.7	34.7	34.7	34.7	34.7	34.7
Kirkton	23.0	26.6	31.8	34.8	34.9	34.9	34.9	34.9	34.9	34.9
Glencaple Farm House	22.4	26.0	31.2	34.3	34.4	34.4	34.4	34.4	34.4	34.4
Glencaple	21.9	25.5	30.7	33.8	33.9	33.9	33.9	33.9	33.9	33.9
Boghead	20.6	24.2	29.4	32.5	32.6	32.6	32.6	32.6	32.6	32.6
Carlisle Road North	19.1	22.7	27.8	30.9	31.0	31.0	31.0	31.0	31.0	31.0
Hurlieburn Lodge	16.6	20.1	25.3	28.4	28.5	28.5	28.5	28.5	28.5	28.5
Carlisle Road South	14.4	18.0	23.2	26.2	26.3	26.3	26.3	26.3	26.3	26.3
Stoneyburn	15.0	18.6	23.7	26.8	26.9	26.9	26.9	26.9	26.9	26.9
Elvanfoot Farm	19.2	22.8	27.9	31.0	31.1	31.1	31.1	31.1	31.1	31.1
Lodge Cottages	18.2	21.8	27.0	30.0	30.1	30.1	30.1	30.1	30.1	30.1
Leadhills Road	19.1	22.7	27.8	30.9	31.0	31.0	31.0	31.0	31.0	31.0
North Shortcleugh (FI)	27.8	31.4	36.6	39.7	39.7	39.7	39.7	39.7	39.7	39.7
South Shortcleugh	25.2	28.8	34.0	37.0	37.1	37.1	37.1	37.1	37.1	37.1
Hass	20.9	24.4	29.5	32.4	32.5	32.5	32.5	32.5	32.5	32.5
Waterhead Toll Cottage	28.9	32.3	37.1	39.2	39.3	39.3	39.3	39.3	39.3	39.3
New Glendorch	28.4	31.9	36.7	39.1	39.2	39.2	39.2	39.2	39.2	39.2
Glengeith	18.3	21.9	27.0	30.1	30.2	30.2	30.2	30.2	30.2	30.2
Leadhills	21.5	25.1	30.2	33.2	33.3	33.3	33.3	33.3	33.3	33.3
Leadhills (south)	19.6	23.2	28.3	31.3	31.4	31.4	31.4	31.4	31.4	31.4
Dentercleuch	19.3	22.9	28.0	31.1	31.2	31.2	31.2	31.2	31.2	31.2
Snar Farm	20.8	24.4	29.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5
Glendouran Farm	20.5	24.0	29.1	32.0	32.1	32.1	32.1	32.1	32.1	32.1
Strancleugh Farm	18.2	21.8	26.9	29.8	29.9	29.9	29.9	29.9	29.9	29.9

5.5.2 Table 12 to Table 15 show predicted noise immission levels at each of the selected assessment locations for each wind speed for the adjacent wind energy developments considered in the cumulative assessment. Again, these are provided over the range of wind speeds where source noise emission level data are available (see Annex B for full details).

Table 13 - Predicted LA90 (dB) wind farm noise immission levels at each of the noise assessment locations as a function of standardised wind speed for the Clyde Windfarm alone.

Property	Standardised 10 m Wind Speed (m/s)									
	3	4	5	6	7	8	9	10	11	12
Lettershaws Farm	8.4	11.8	18.8	23.2	24.8	24.8	24.8	24.8	24.8	24.8
Kirkton	13.4	16.8	23.8	28.2	29.8	29.8	29.8	29.8	29.8	29.8
Glencaple Farm House	10.8	14.2	21.2	25.6	27.2	27.2	27.2	27.2	27.2	27.2
Glencaple	9.8	13.2	20.2	24.6	26.2	26.2	26.2	26.2	26.2	26.2
Boghead	16.3	19.7	26.7	31.1	32.7	32.7	32.7	32.7	32.7	32.7
Carlisle Road North	16.5	19.9	26.9	31.3	32.9	32.9	32.9	32.9	32.9	32.9
Hurlieburn Lodge	20.3	23.7	30.7	35.1	36.7	36.7	36.7	36.7	36.7	36.7
Carlisle Road South	21.3	24.7	31.7	36.1	37.7	37.7	37.7	37.7	37.7	37.7
Stoneyburn	22.9	26.3	33.3	37.7	39.3	39.3	39.3	39.3	39.3	39.3
Elvanfoot Farm	20.2	23.6	30.6	35.0	36.6	36.6	36.6	36.6	36.6	36.6
Lodge Cottages	19.9	23.3	30.3	34.7	36.3	36.3	36.3	36.3	36.3	36.3
Leadhills Road	20.2	23.6	30.6	35.0	36.6	36.6	36.6	36.6	36.6	36.6
North Shortcleugh	15.4	18.8	25.8	30.2	31.8	31.8	31.8	31.8	31.8	31.8
South Shortcleugh	14.4	17.8	24.8	29.2	30.8	30.8	30.8	30.8	30.8	30.8
Hass	7.6	11.0	18.0	22.4	24.0	24.0	24.0	24.0	24.0	24.0
Waterhead Toll Cottage	5.8	9.2	16.2	20.6	22.2	22.2	22.2	22.2	22.2	22.2
New Glendorch	5.8	9.2	16.2	20.6	22.2	22.2	22.2	22.2	22.2	22.2
Glengeith	20.6	24.0	31.0	35.4	37.0	37.0	37.0	37.0	37.0	37.0
Leadhills	5.8	9.2	16.2	20.6	22.2	22.2	22.2	22.2	22.2	22.2
Leadhills (south)	6.5	9.9	16.9	21.3	22.9	22.9	22.9	22.9	22.9	22.9
Dentercleuch	1.3	4.7	11.7	16.1	17.7	17.7	17.7	17.7	17.7	17.7
Snar Farm	2.5	5.9	12.9	17.3	18.9	18.9	18.9	18.9	18.9	18.9
Glendouran Farm	3.6	7.0	14.0	18.4	20.0	20.0	20.0	20.0	20.0	20.0
Strancleugh Farm	2.8	6.2	13.2	17.6	19.2	19.2	19.2	19.2	19.2	19.2

Table 14 - Predicted LA90 (dB) wind farm noise immission levels at each of the noise assessment locations as a function of standardised wind speed for the Middle Muir Windfarm alone.

Property	Standardised 10 m Wind Speed (m/s)									
	3	4	5	6	7	8	9	10	11	12
Lettershaws Farm	13.2	15.6	19.3	21.9	22.0	22.0	22.0	22.0	22.0	22.0
Kirkton	9.6	12.0	15.7	18.3	18.4	18.4	18.4	18.4	18.4	18.4
Glencaple Farm House	11.4	13.8	17.5	20.1	20.2	20.2	20.2	20.2	20.2	20.2
Glencaple	11.4	13.8	17.5	20.1	20.2	20.2	20.2	20.2	20.2	20.2
Boghead	8.0	10.4	14.1	16.7	16.8	16.8	16.8	16.8	16.8	16.8
Carlisle Road North	7.7	10.1	13.8	16.4	16.5	16.5	16.5	16.5	16.5	16.5
Hurlieburn Lodge	7.0	9.4	13.1	15.7	15.8	15.8	15.8	15.8	15.8	15.8
Carlisle Road South	6.3	8.7	12.4	15.0	15.1	15.1	15.1	15.1	15.1	15.1
Stoneyburn	5.8	8.2	11.9	14.5	14.6	14.6	14.6	14.6	14.6	14.6
Elvanfoot Farm	5.8	8.2	11.9	14.5	14.6	14.6	14.6	14.6	14.6	14.6
Lodge Cottages	5.5	7.9	11.6	14.2	14.3	14.3	14.3	14.3	14.3	14.3
Leadhills Road	5.6	8.0	11.7	14.3	14.4	14.4	14.4	14.4	14.4	14.4
North Shortcleugh	7.3	9.7	13.4	16.0	16.1	16.1	16.1	16.1	16.1	16.1
South Shortcleugh	6.8	9.2	12.9	15.5	15.6	15.6	15.6	15.6	15.6	15.6
Hass	7.0	9.4	13.1	15.7	15.8	15.8	15.8	15.8	15.8	15.8
Waterhead Toll Cottage	11.1	13.5	17.2	19.8	19.9	19.9	19.9	19.9	19.9	19.9
New Glendorch	10.6	13.0	16.7	19.3	19.4	19.4	19.4	19.4	19.4	19.4
Glengeith	5.2	7.6	11.3	13.9	14.0	14.0	14.0	14.0	14.0	14.0
Leadhills	7.7	10.1	13.8	16.4	16.5	16.5	16.5	16.5	16.5	16.5
Leadhills (south)	6.9	9.3	13.0	15.6	15.7	15.7	15.7	15.7	15.7	15.7
Dentercleuch	8.3	10.7	14.4	17.0	17.1	17.1	17.1	17.1	17.1	17.1
Snar Farm	16.2	18.6	22.3	24.9	25.0	25.0	25.0	25.0	25.0	25.0
Glendouran Farm	19.5	21.9	25.6	28.2	28.3	28.3	28.3	28.3	28.3	28.3
Strancleugh Farm	19.5	21.9	25.6	28.2	28.3	28.3	28.3	28.3	28.3	28.3

Table 15 - Predicted LA90 (dB) wind farm noise immission levels at each of the noise assessment locations as a function of standardised wind speed for the Andershaw Windfarm alone (blanks where predicted levels were negative).

Property	Standardised 10 m Wind Speed (m/s)									
	3	4	5	6	7	8	9	10	11	12
Lettershaws Farm	5.6	8.9	13.6	17.5	19.8	20.0	20.0	20.0	20.0	20.0
Kirkton	1.8	5.1	9.8	13.7	16.0	16.2	16.2	16.2	16.2	16.2
Glencaple Farm House	3.6	6.9	11.6	15.5	17.8	18.0	18.0	18.0	18.0	18.0
Glencaple	3.6	6.9	11.6	15.5	17.8	18.0	18.0	18.0	18.0	18.0
Boghead	0.3	3.6	8.3	12.2	14.5	14.7	14.7	14.7	14.7	14.7
Carlisle Road North		3.2	7.9	11.8	14.1	14.3	14.3	14.3	14.3	14.3
Hurlieburn Lodge		2.5	7.2	11.1	13.4	13.6	13.6	13.6	13.6	13.6
Carlisle Road South		1.8	6.5	10.4	12.7	12.9	12.9	12.9	12.9	12.9
Stoneyburn		1.3	6.0	9.9	12.2	12.4	12.4	12.4	12.4	12.4
Elvanfoot Farm		1.4	6.1	10.0	12.3	12.5	12.5	12.5	12.5	12.5
Lodge Cottages		1.1	5.8	9.7	12.0	12.2	12.2	12.2	12.2	12.2
Leadhills Road		1.2	5.9	9.8	12.1	12.3	12.3	12.3	12.3	12.3
North Shortcleugh		3.1	7.8	11.7	14.0	14.2	14.2	14.2	14.2	14.2
South Shortcleugh		2.6	7.3	11.2	13.5	13.7	13.7	13.7	13.7	13.7
Hass		3.1	7.8	11.7	14.0	14.2	14.2	14.2	14.2	14.2
Waterhead Toll Cottage	3.9	7.2	11.9	15.8	18.1	18.3	18.3	18.3	18.3	18.3
New Glendorch	3.5	6.8	11.5	15.4	17.7	17.9	17.9	17.9	17.9	17.9
Glengeith		0.8	5.5	9.4	11.7	11.9	11.9	11.9	11.9	11.9
Leadhills	0.6	3.9	8.6	12.5	14.8	15.0	15.0	15.0	15.0	15.0
Leadhills (south)		3.2	7.9	11.8	14.1	14.3	14.3	14.3	14.3	14.3
Dentercleuch	1.7	5.0	9.7	13.6	15.9	16.1	16.1	16.1	16.1	16.1
Snar Farm	9.6	12.9	17.6	21.5	23.8	24.0	24.0	24.0	24.0	24.0
Glendouran Farm	13.2	16.5	21.2	25.1	27.4	27.6	27.6	27.6	27.6	27.6
Strancleugh Farm	13.6	16.9	21.6	25.5	27.8	28.0	28.0	28.0	28.0	28.0

Table 16 - Predicted LA90 (dB) wind farm noise immission levels at each of the noise assessment locations as a function of standardised wind speed for the M74 West Renewables Energy Park alone (blanks where predicted levels were negative).

Property	Standardised 10 m Wind Speed (m/s)									
	3	4	5	6	7	8	9	10	11	12
Lettershaws Farm	8.8	14.1	18.9	20.6	20.6	20.6	20.6	20.6	20.6	20.6
Kirkton	7.4	12.6	17.4	19.2	19.2	19.2	19.2	19.2	19.2	19.2
Glencaple Farm House	9.1	14.3	19.1	20.9	20.9	20.9	20.9	20.9	20.9	20.9
Glencaple	9.3	14.5	19.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1
Boghead	5.8	11.1	15.8	17.6	17.6	17.6	17.6	17.6	17.6	17.6
Carlisle Road North	5.1	10.3	15.1	16.9	16.9	16.9	16.9	16.9	16.9	16.9
Hurlieburn Lodge	4.2	9.4	14.2	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Carlisle Road South	3.2	8.4	13.2	14.9	14.9	14.9	14.9	14.9	14.9	14.9
Stoneyburn	2.3	7.5	12.3	14.1	14.1	14.1	14.1	14.1	14.1	14.1
Elvanfoot Farm	1.3	6.5	11.3	13.1	13.1	13.1	13.1	13.1	13.1	13.1
Lodge Cottages	0.9	6.1	10.9	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Leadhills Road	0.8	6.0	10.8	12.6	12.6	12.6	12.6	12.6	12.6	12.6
North Shortcleugh	2.1	7.3	12.1	13.9	13.9	13.9	13.9	13.9	13.9	13.9
South Shortcleugh	1.3	6.5	11.3	13.1	13.1	13.1	13.1	13.1	13.1	13.1
Hass		5.2	10.0	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Waterhead Toll Cottage	4.0	9.2	14.0	15.8	15.8	15.8	15.8	15.8	15.8	15.8
New Glendorch	3.4	8.6	13.4	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Glengeith	0.2	5.4	10.2	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Leadhills	0.1	5.3	10.1	11.9	11.9	11.9	11.9	11.9	11.9	11.9
Leadhills (south)	0.2	5.4	10.2	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Dentercleuch		4.3	9.0	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Snar Farm	8.1	13.3	18.1	19.9	19.9	19.9	19.9	19.9	19.9	19.9
Glendouran Farm	11.6	16.8	21.6	23.4	23.4	23.4	23.4	23.4	23.4	23.4
Strancleugh Farm	9.8	15.1	19.9	21.6	21.6	21.6	21.6	21.6	21.6	21.6

5.5.3 Table 17 shows predicted cumulative noise immission levels at each of the selected assessment locations. These predictions are cumulative assuming all other wind farms are operating as set out in paragraph 5.3.5 and that all receptors are downwind of all wind turbines at the same time. These cumulative noise levels are therefore unlikely to fully occur in practice.

Table 17 - Predicted cumulative L_{A90} (dB) wind farm noise immission levels at each of the noise assessment locations as a function of standardised wind speed

Property	Standardised 10 m Wind Speed (m/s)									
	3	4	5	6	7	8	9	10	11	12
Lettershaws Farm	23.8	27.3	32.4	35.4	35.6	35.6	35.6	35.6	35.6	35.6
Kirkton	23.7	27.3	32.7	35.9	36.3	36.3	36.3	36.3	36.3	36.3
Glencaple Farm House	23.2	26.8	32.0	35.2	35.5	35.5	35.5	35.5	35.5	35.5
Glencaple	22.8	26.4	31.6	34.7	35.0	35.0	35.0	35.0	35.0	35.0
Boghead	22.3	25.9	31.5	35.0	35.8	35.8	35.8	35.8	35.8	35.8
Carlisle Road North	21.3	24.8	30.6	34.3	35.2	35.2	35.2	35.2	35.2	35.2
Hurlieburn Lodge	22.1	25.5	31.9	36.0	37.4	37.4	37.4	37.4	37.4	37.4
Carlisle Road South	22.3	25.7	32.4	36.6	38.0	38.0	38.0	38.0	38.0	38.0
Stoneyburn	23.7	27.1	33.9	38.1	39.6	39.6	39.6	39.6	39.6	39.6
Elvanfoot Farm	22.9	26.3	32.6	36.5	37.7	37.7	37.7	37.7	37.7	37.7
Lodge Cottages	22.3	25.8	32.1	36.0	37.3	37.3	37.3	37.3	37.3	37.3
Leadhills Road	22.8	26.3	32.5	36.5	37.7	37.7	37.7	37.7	37.7	37.7
North Shortcleugh	28.1	31.7	37.0	40.1	40.4	40.4	40.4	40.4	40.4	40.4
South Shortcleugh	25.6	29.2	34.5	37.7	38.1	38.1	38.1	38.1	38.1	38.1
Hass	21.3	24.8	30.0	33.0	33.2	33.2	33.2	33.2	33.2	33.2
Waterhead Toll Cottage	29.0	32.5	37.2	39.4	39.5	39.5	39.5	39.5	39.5	39.5
New Glendorch	28.5	32.0	36.8	39.2	39.3	39.3	39.3	39.3	39.3	39.3
Glengeith	22.7	26.2	32.5	36.6	37.9	37.9	37.9	37.9	37.9	37.9
Leadhills	21.9	25.4	30.6	33.6	33.8	33.8	33.8	33.8	33.8	33.8
Leadhills (south)	20.1	23.7	28.8	31.9	32.2	32.2	32.2	32.2	32.2	32.2
Dentercleuch	19.8	23.3	28.4	31.5	31.7	31.7	31.7	31.7	31.7	31.7
Snar Farm	22.6	26.0	30.8	33.7	34.0	34.1	34.1	34.1	34.1	34.1
Glendouran Farm	23.8	27.0	31.7	34.6	35.0	35.0	35.0	35.0	35.0	35.0
Strancleugh Farm	22.8	25.9	30.5	33.4	33.9	34.0	34.0	34.0	34.0	34.0

5.5.4 Comparing predicted noise immission levels from the Proposed Development (Table 12) with those from adjacent wind farms (Table 13, Table 14, Table 15, and Table 16) indicates that for most assessment locations, except Waterhead Toll Cottage and New Glendorch, noise immission levels from the other wind farms considered (when combined) are acoustically important, i.e., within 10 dB of noise levels from the Proposed Development²⁸. The cumulative predictions include contributions

28 The IOA GPG suggests that cumulative noise effects need not be considered where differences between existing and proposed wind farm noise levels are 10 dB(A) or more. This would also mean that cumulative effects also need not be considered at receptor locations where noise levels from the proposed wind farm are 10 dB(A) or more below those of existing wind farm noise levels.

from all wind developments considered in this assessment at all assessed receptors, even when they are individually more than 10 dB below the derived noise limits or the predicted contribution from Ravengill Energy Park and therefore would have been considered to have cumulative contributions which are not acoustically important (according to the IOA GPG) in isolation. This therefore represents a precautionary approach.

- 5.6 ETSU-R-97 assessment
- 5.6.1 Figures E1 to E16 (Annex E) show the calculated wind farm noise immission levels at relevant noise assessment locations, which correspond to those already presented in Table 12 to Table 17 plotted as a function of standardised wind speed. For each noise measurement location, the corresponding noise assessment locations having the highest predicted noise levels are shown and so these charts represent assessment locations with the greatest impacts. The calculated noise immission levels are shown overlaid on the day-time and night-time noise limit curves.
- 5.6.2 Table 7 and Table 8 set out the applicable noise limits derived according to ETSU-R-97. These limits have been set either at the prevailing measured background level plus 5 dB or at the relevant fixed lower limit whichever is the greater.
- 5.6.3 The ETSU-R-97 noise limits assume that the wind turbine noise contains no audible tones. Where tones are present a correction is added to the measured or predicted noise level before comparison with the recommended limits. The audibility of any tones can be assessed by comparing the narrow band level of such tones with the masking level contained in a band of frequencies around the tone called the critical band. The ETSU-R-97 recommendations suggest a tone correction which depends on the amount by which the tone exceeds the audibility threshold and should be included as part of the consent conditions. The turbines to be used for this site will be chosen to ensure that the noise emitted will comply with the requirements of ETSU-R-97 including any relevant tonality corrections.
- 5.6.4 The ETSU-R-97 fixed part of the limit during the day-time should lie within the range from 35 dB(A) to 40 dB(A). A lower fixed limit within the range of 35-40 dB for the Proposed Development considered appropriate has therefore been adopted for the assessment. The neighbouring Clyde Wind farm was consented (and operates) to the 40 dB(A) lower fixed limit. The factors used to determine where in this range have been discussed in the report at paragraph 3.2.3. These are discussed in turn below:
 - **Number of properties:** The nearby area of the Proposed Development and its surroundings is generally of low population density, with a limited number of surrounding properties; the exception is east of the Site along the A74(M) and south which has the Leadhills settlement. The latter area, containing a larger number of properties, is however upwind of the windfarm under the prevailing south and south-westerly wind direction.
 - **Duration and level of exposure:** The charts of Annex E show that predicted noise levels from the Proposed Development is notable lower than most background derived limits at most receptors. The level of exposure in terms of comparing the turbine noise (from the Proposed Development) relative to background noise is therefore low at most receptor with proposed development being comparable or lower than quiet-daytime background levels at most locations with the exception of some of the nearest receptors such as Waterhead Toll Cottage and South Shortcleuch. The predictions are based on downwind conditions (wind blowing from source to receiver), and the actual levels which occur in practice will be considerably lower (10 dB(A) to 15 dB(A)) under upwind conditions. Bearing in mind the prevailing south to south-westerly wind direction of the UK further reduces the portion of the time for which the benefit of an increased lower limit is required.
 - **Generation capacity:** The effect that having a limit at the lower end of this range would have on the number of turbines installed would be extensive, e.g., eight turbines dropped, or several