

Appendix 9.6 Derivation of cumulative noise limits, evaluation of compliance with Residual Noise Limits (RNLs)

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Correction of measured background levels to account for noise from existing wind turbines.

Table 1 - Measured background noise levels at NMPs									
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1 -Day - Background level, dBL _{A90}	19.8	20.6	22.6	25.3	28.4	31.6	34.4	36.5	37.6
NMP1 -Night - Background level, dBL _{A90}	19.8	21.3	23.2	25.5	27.9	30.5	33.2	35.7	38.2
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP2 -Day - Background level, dBL _{A90}	21.8	24.0	26.4	29.0	31.8	34.7	37.6	40.5	43.3
NMP2 -Night - Background level, dBL _{A90}	20.4	23.0	26.0	29.1	32.3	35.6	38.7	41.7	44.3
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP3 -Day - Background level, dBL _{A90}	20.9	23.2	25.7	28.2	30.8	33.5	36.2	38.9	41.7
NMP3 -Night - Background level, dBL _{A90}	19.1	21.6	24.5	27.6	30.9	34.1	37.1	39.9	42.3

Table 2 - Predicted noise levels at NMPs from cumulative turbines, dBL _{A90}									
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1	22.6	22.6	22.6	22.6	23.3	24.2	24.1	24.1	24.1
NMP2	27.1	27.2	27.4	27.6	28.7	29.8	30.2	30.2	30.2
NMP3	23.8	23.8	23.8	23.8	24.6	25.5	25.5	25.5	25.5

Table 3 - Correction of background level by subtraction of predicted contribution from existing turbines to derive 'background +5', dBL _{A90}									
Daytime period									
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1 – background	-	-	-	21.9	26.8	30.7	34.0	36.3	37.4
NMP1 – background +5	-	-	-	26.9	31.8	35.7	39.0	41.3	42.4
NMP2 – background	-	-	-	23.5	28.9	33.0	36.8	40.1	43.1
NMP2 – background +5	-	-	-	28.5	33.9	38.0	41.8	45.1	48.1
NMP3 – background	-	-	21.1	26.2	29.6	32.7	35.8	38.7	41.6
NMP3 – background +5	-	-	26.1	31.2	34.6	37.7	40.8	43.7	46.6
Night-time period									
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1 – background	-	-	14.5	22.3	26.1	29.4	32.6	35.4	38.0
NMP1 – background +5	-	-	19.5	27.3	31.1	34.4	37.6	40.4	43.0
NMP2 – background	-	-	-	23.8	29.9	34.2	38.1	41.3	44.1
NMP2 – background +5	-	-	-	28.8	34.9	39.2	43.1	46.3	49.1
NMP3 – background	-	-	16.3	25.3	29.7	33.4	36.8	39.8	42.2
NMP3 – background +5	-	-	21.3	30.3	34.7	38.4	41.8	44.8	47.2

- Indicates predicted turbine noise level exceeds measured background level

Background-derived noise limits, considering 35 dB, 38 dB and 40 dB Fixed Minimum Limit (daytime), and 43 dB Fixed Minimum Limit (night-time)

Table 4 - Baseline-derived daytime noise limits - 35 dB FML									
	Daytime period								
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1	35.0	35.0	35.0	35.0	35.0	35.7	39.0	41.3	42.4
NMP2	35.0	35.0	35.0	35.0	35.0	38.0	41.8	45.1	48.1
NMP3	35.0	35.0	35.0	35.0	35.0	37.7	40.8	43.7	46.6

Background-derived noise limits, considering 35 dB and 40 dB Fixed Minimum Limit (daytime), and 43 dB Fixed Minimum Limit (night-time)

Table 5 - Baseline-derived daytime noise limits - 38 dB FML									
	Daytime period								
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1	38.0	38.0	38.0	38.0	38.0	38.0	39.0	41.3	42.4
NMP2	38.0	38.0	38.0	38.0	38.0	38.0	41.8	45.1	48.1
NMP3	38.0	38.0	38.0	38.0	38.0	38.0	40.8	43.7	46.6

Table 6 - Baseline-derived daytime noise limits - 40 dB FML									
	Daytime period								
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1	40.0	40.0	40.0	40.0	40.0	40.0	40.0	41.3	42.4
NMP2	40.0	40.0	40.0	40.0	40.0	40.0	41.8	45.1	48.1
NMP3	40.0	40.0	40.0	40.0	40.0	40.0	40.8	43.7	46.6

Table 7 - Baseline-derived night-time noise limits - 43 dB FML									
	Night-time period								
	Wind speed m/s								
	4	5	6	7	8	9	10	11	12
NMP1	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
NMP2	43.0	43.0	43.0	43.0	43.0	43.0	43.1	46.3	49.1
NMP3	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	47.2

Table 8 - Derivation of residual site-specific daytime noise limit (RNL), 35 dB FML

DAYTIME - DERIVED RESIDUAL NOISE LIMITS Derived limit, assuming "cautious prediction" (+2 dB added to existing levels) / 10 dB below overall limit where no headroom available	Wind Speed m/s										Notes
	NSR ID	4	5	6	7	8	9	10	11	12	
	Level, dBL _{A90}										
Rysa Mill	NSR1	34.7	34.7	34.7	34.7	34.7	35.3	38.8	41.2	42.4	Limit derived using available headroom across full range of wind speeds
The Noddle	NSR2	34.7	34.7	34.7	34.7	34.6	35.3	38.8	41.2	42.4	
Scews	NSR3	34.6	34.6	34.6	34.6	34.5	35.1	38.7	41.1	42.3	
Little Scews	NSR4	34.4	34.4	34.4	34.4	34.2	34.9	38.6	41.1	42.3	
Summer Cleary	NSR5	34.4	34.4	34.4	34.4	34.3	34.9	38.6	41.1	42.3	
Moorlands	NSR6	33.5	33.5	33.5	33.5	33.0	33.5	38.1	40.8	42.1	
Thurvoe	NSR7	33.2	33.2	33.2	33.2	32.6	33.1	37.9	40.7	42.0	
Haybrake Farm	NSR8	33.8	33.8	33.8	33.8	33.5	34.1	38.3	40.9	42.1	
Treetops bungalow	NSR9	33.8	33.8	33.8	33.8	33.4	34.0	38.3	40.9	42.1	
Lyness Hotel	NSR10	33.6	33.6	33.6	33.6	33.2	33.8	38.2	40.8	42.1	
Unknown property	NSR11	33.6	33.6	33.6	33.6	33.2	33.8	38.2	40.8	42.1	
2 Chalet	NSR12	33.1	33.1	33.1	33.0	32.3	32.9	37.9	40.7	42.0	
1 Chalet	NSR13	32.9	32.9	32.9	32.9	32.0	25.7	37.7	40.6	41.9	
Ore Farm	NSR14	25.0	25.0	25.0	25.0	25.0	28.0	40.0	44.4	47.7	Limit derived using available headroom/set at 10 dB below overall limit where no headroom exists
Halla	NSR15	25.0	25.0	25.0	25.0	25.0	28.0	40.0	44.4	47.7	
Old Kirk	NSR16	25.0	25.0	25.0	25.0	25.0	28.0	40.1	44.4	47.7	
Old School House	NSR17	32.2	32.0	25.0	25.0	25.0	28.0	40.3	44.5	47.8	
North Walls Schoolhouse	NSR18	32.6	32.3	25.0	25.0	25.0	28.0	40.2	44.4	47.8	
Dunfarmin	NSR19	34.3	34.3	34.3	34.3	34.1	37.1	40.5	43.6	46.5	Limit derived using available headroom across full range of wind speeds
Upper Seatter	NSR20	34.3	34.3	34.3	34.3	34.1	37.2	40.5	43.6	46.5	

Table 9 - Derivation of residual site-specific daytime noise limit (RNL), 38 dB FML

DAYTIME - DERIVED RESIDUAL NOISE LIMITS Derived limit, assuming "cautious prediction" (+2 dB added to existing levels) / 10 dB below overall limit where no headroom available	Wind Speed m/s										Notes
	NSR ID	4	5	6	7	8	9	10	11	12	
	Level, dBL _{A90}										
Rysa Mill	NSR1	37.9	37.9	37.9	37.9	37.8	37.8	38.8	41.2	42.4	Limit derived using available headroom across full range of wind speeds
The Noddle	NSR2	37.9	37.9	37.9	37.9	37.8	37.8	38.8	41.2	42.4	
Scews	NSR3	37.8	37.8	37.8	37.8	37.7	37.7	38.7	41.1	42.3	
Little Scews	NSR4	37.7	37.7	37.7	37.7	37.6	37.5	38.6	41.1	42.3	
Summer Cleary	NSR5	37.7	37.7	37.7	37.7	37.7	37.6	38.6	41.1	42.3	
Moorlands	NSR6	37.3	37.3	37.3	37.3	37.1	36.9	38.1	40.8	42.1	
Thurvoe	NSR7	37.2	37.2	37.2	37.2	37.0	36.7	37.9	40.7	42.0	
Haybrake Farm	NSR8	37.5	37.5	37.5	37.5	37.3	37.1	38.3	40.9	42.1	
Treetops bungalow	NSR9	37.4	37.4	37.4	37.4	37.3	37.1	38.3	40.9	42.1	
Lyness Hotel	NSR10	37.4	37.4	37.4	37.4	37.2	37.0	38.2	40.8	42.1	
Unknown property	NSR11	37.4	37.4	37.4	37.4	37.2	37.0	38.2	40.8	42.1	
2 Chalet	NSR12	37.1	37.1	37.1	37.1	36.9	36.6	37.9	40.7	42.0	
1 Chalet	NSR13	37.1	37.1	37.1	37.1	36.7	36.4	37.7	40.6	41.9	
Ore Farm	NSR14	28.0	28.0	28.0	28.0	28.0	28.0	40.0	44.4	47.7	Limit derived using available headroom/set at 10 dB below overall limit where no headroom exists
Halla	NSR15	36.6	36.4	36.3	36.0	35.0	28.0	40.0	44.4	47.7	
Old Kirk	NSR16	36.7	36.6	36.4	36.2	35.2	28.0	40.1	44.4	47.7	
Old School House	NSR17	36.8	36.7	36.6	36.4	35.6	28.0	40.3	44.5	47.8	
North Walls Schoolhouse	NSR18	37.0	36.8	36.7	36.4	35.5	28.0	40.2	44.4	47.8	Limit derived using available headroom across full range of wind speeds
Dunfarmin	NSR19	37.7	37.7	37.6	37.6	37.6	37.4	40.5	43.6	46.5	
Upper Seatter	NSR20	37.7	37.7	37.7	37.7	37.6	37.5	40.5	43.6	46.5	

Table 10 - Derivation of residual site-specific daytime noise limit (RNL), 40 dB FML

DAYTIME - DERIVED RESIDUAL NOISE LIMITS Derived limit, assuming "cautious prediction" (+2 dB added to existing levels) / 10 dB below overall limit where no headroom available	Wind Speed m/s										Notes
	NSR ID	4	5	6	7	8	9	10	11	12	
	Level, dBL _{A90}										
Rysa Mill	NSR1	39.9	39.9	39.9	39.9	39.9	39.9	39.9	41.2	42.4	Limit derived using available headroom across full range of wind speeds
The Noddle	NSR2	39.9	39.9	39.9	39.9	39.9	39.9	39.9	41.2	42.4	
Scews	NSR3	39.9	39.9	39.9	39.9	39.8	39.8	39.8	41.1	42.3	
Little Scews	NSR4	39.8	39.8	39.8	39.8	39.8	39.7	39.7	41.1	42.3	
Summer Cleary	NSR5	39.8	39.8	39.8	39.8	39.8	39.7	39.7	41.1	42.3	
Moorlands	NSR6	39.6	39.6	39.6	39.6	39.5	39.3	39.3	40.8	42.1	
Thurvoe	NSR7	39.5	39.5	39.5	39.5	39.4	39.2	39.2	40.7	42.0	
Haybrake Farm	NSR8	39.7	39.7	39.7	39.7	39.6	39.5	39.5	40.9	42.1	
Treetops bungalow	NSR9	39.7	39.7	39.7	39.7	39.6	39.5	39.4	40.9	42.1	
Lyness Hotel	NSR10	39.6	39.6	39.6	39.6	39.5	39.4	39.4	40.8	42.1	
Unknown property	NSR11	39.6	39.6	39.6	39.6	39.5	39.4	39.4	40.8	42.1	
2 Chalet	NSR12	39.5	39.5	39.5	39.5	39.3	39.1	39.1	40.7	42.0	
1 Chalet	NSR13	39.4	39.4	39.4	39.4	39.3	39.1	39.1	40.6	41.9	
Ore Farm	NSR14	37.0	37.0	37.0	37.0	37.0	37.0	40.0	44.4	47.7	
Halla	NSR15	39.1	39.1	39.0	38.9	38.3	37.6	40.0	44.4	47.7	
Old Kirk	NSR16	39.2	39.2	39.1	39.0	38.4	37.8	40.1	44.4	47.7	
Old School House	NSR17	39.3	39.3	39.2	39.1	38.6	38.1	40.3	44.5	47.8	
North Walls Schoolhouse	NSR18	39.4	39.3	39.2	39.1	38.6	38.0	40.2	44.4	47.8	
Dunfarmin	NSR19	39.8	39.8	39.8	39.8	39.7	39.6	40.5	43.6	46.5	
Upper Seatter	NSR20	39.8	39.8	39.8	39.8	39.7	39.7	40.5	43.6	46.5	

Table 11 - Derivation of residual site-specific night-time noise limit (RNL)

NIGHT-TIME - DERIVED RESIDUAL NOISE LIMITS	NSR ID	Wind Speed									Notes
		4	5	6	7	8	9	10	11	12	
		Level, dBL _{A90}									
Derived limit, assuming "cautious prediction" (+2 dB added to existing levels)											
Rysa Mill	NSR1	43.0	43.0	43.0	43.0	43.0	42.9	42.9	42.9	42.9	Limit derived using available headroom across full range of wind speeds
The Noddle	NSR2	43.0	43.0	43.0	43.0	42.9	42.9	42.9	42.9	42.9	
Scews	NSR3	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	
Little Scews	NSR4	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	
Summer Cleary	NSR5	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	
Moorlands	NSR6	42.8	42.8	42.8	42.8	42.7	42.7	42.7	42.7	42.7	
Thurvoe	NSR7	42.8	42.8	42.8	42.8	42.7	42.6	42.6	42.6	42.6	
Haybrake Farm	NSR8	42.8	42.8	42.8	42.8	42.8	42.7	42.7	42.7	42.7	
Treetops bungalow	NSR9	42.8	42.8	42.8	42.8	42.8	42.7	42.7	42.7	42.7	
Lyness Hotel	NSR10	42.8	42.8	42.8	42.8	42.8	42.7	42.7	42.7	42.7	
Unknown property	NSR11	42.8	42.8	42.8	42.8	42.8	42.7	42.7	42.7	42.7	
2 Chalet	NSR12	42.7	42.7	42.7	42.7	42.7	42.6	42.6	42.6	42.6	
1 Chalet	NSR13	42.7	42.7	42.7	42.7	42.6	42.6	42.6	42.6	42.6	
Ore Farm	NSR14	41.7	41.7	41.7	41.7	41.7	41.7	41.8	45.8	48.9	
Halla	NSR15	42.6	42.6	42.5	42.5	42.3	42.0	41.8	45.8	48.9	
Old Kirk	NSR16	42.6	42.6	42.6	42.5	42.3	42.0	41.8	45.8	48.9	
Old School House	NSR17	42.7	42.6	42.6	42.6	42.4	42.1	42.0	45.9	48.9	
North Walls Schoolhouse	NSR18	42.7	42.7	42.6	42.6	42.4	42.1	41.9	45.8	48.9	
Dunfarmin	NSR19	42.9	42.9	42.9	42.9	42.9	42.8	42.8	44.7	47.2	
Upper Seatter	NSR20	42.9	42.9	42.9	42.9	42.9	42.8	42.8	44.7	47.2	

Table 12 - Evaluation against RNLs derived using 35 dB ONL, daytime period – No mitigation

NSR Name	NSR ID	Wind Speed								
		4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
		Day LA90 (dB)								
Rysa Mill	NSR1	-11.8	-7.0	-3.2	-2.6	-2.6	-3.2	-6.7	-9.1	-10.3
The Noddle	NSR2	-11.6	-6.8	-3.0	-2.4	-2.3	-3.0	-6.5	-8.9	-10.1
Scews	NSR3	-10.4	-5.6	-1.8	-1.2	-1.1	-1.7	-5.3	-7.7	-8.9
Little Scews	NSR4	-9.4	-4.6	-0.8	-0.2	0.0	-0.7	-4.4	-6.9	-8.1
Summer Cleary	NSR5	-11.4	-6.6	-2.8	-2.1	-2.1	-2.7	-6.4	-8.9	-10.1
Moorlands	NSR6	-7.7	-2.8	1.0	1.6	2.1	1.5	-3.0	-5.7	-7.0
Thurvoe	NSR7	-7.0	-2.1	1.7	2.3	2.9	2.3	-2.5	-5.3	-6.5
Haybrake Farm	NSR8	-11.0	-6.2	-2.4	-1.8	-1.5	-2.1	-6.3	-8.9	-10.1
Treetops bungalow	NSR9	-10.5	-5.7	-1.9	-1.3	-0.9	-1.5	-5.8	-8.4	-9.6
Lyness Hotel	NSR10	-10.3	-5.4	-1.6	-1.0	-0.6	-1.2	-5.6	-8.2	-9.5
Unknown property	NSR11	-10.9	-6.1	-2.3	-1.7	-1.3	-1.9	-6.3	-8.9	-10.2
2 Chalet	NSR12	-9.8	-4.9	-1.1	-0.4	0.3	-0.4	-5.3	-8.1	-9.4
1 Chalet	NSR13	-9.5	-4.7	-0.9	-0.3	0.6	6.9	-5.1	-8.0	-9.3
Ore Farm	NSR14	0.2	5.0	8.8	9.5	9.4	6.4	-5.6	-9.9	-13.3
Halla	NSR15	-2.0	2.8	6.6	7.3	7.3	4.2	-7.8	-12.1	-15.4
Old Kirk	NSR16	-2.1	2.7	6.5	7.1	7.1	4.1	-8.0	-12.3	-15.6
Old School House	NSR17	-9.4	-4.4	6.4	7.0	7.0	4.0	-8.3	-12.5	-15.8
North Walls Schoolhouse	NSR18	-10.1	-4.9	6.2	6.8	6.8	3.8	-8.4	-12.6	-16.0
Dunfarmin	NSR19	-13.3	-8.5	-4.7	-4.1	-3.9	-6.9	-10.3	-13.4	-16.3
Upper Seatter	NSR20	-11.1	-6.3	-2.5	-1.9	-1.7	-4.8	-8.1	-11.2	-14.1

Table 13 - Evaluation against RNLs derived using 35 dB ONL, daytime period – With mitigation

NSR Name	NSR ID	Wind Speed								
		4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
		Day LA90 (dB)								
Rysa Mill	NSR1	-11.8	-13.1	-11.1	-14.9	-14.9	-11.1	-6.7	-9.1	-10.3
The Noddle	NSR2	-11.6	-13.0	-11.0	-14.8	-14.7	-11.0	-6.5	-8.9	-10.1
Scews	NSR3	-10.4	-12.1	-10.2	-14.1	-14.0	-10.1	-5.3	-7.7	-8.9
Little Scews	NSR4	-9.4	-11.4	-9.6	-13.4	-13.3	-9.5	-4.4	-6.9	-8.1
Summer Cleary	NSR5	-11.4	-12.7	-11.0	-14.6	-14.5	-10.9	-6.4	-8.9	-10.1
Moorlands	NSR6	-7.7	-9.7	-8.1	-11.8	-11.3	-7.5	-3.0	-5.7	-7.0
Thurvoe	NSR7	-7.0	-9.1	-7.5	-11.3	-10.7	-6.8	-2.5	-5.3	-6.5
Haybrake Farm	NSR8	-11.0	-12.1	-10.5	-13.9	-13.6	-10.2	-6.3	-8.9	-10.1
Treetops bungalow	NSR9	-10.5	-11.8	-10.1	-13.6	-13.2	-9.7	-5.8	-8.4	-9.6
Lyness Hotel	NSR10	-10.3	-11.5	-9.9	-13.4	-13.0	-9.5	-5.6	-8.2	-9.5
Unknown property	NSR11	-10.9	-11.9	-10.3	-13.7	-13.3	-9.9	-6.3	-8.9	-10.2
2 Chalet	NSR12	-9.8	-10.9	-9.3	-12.7	-12.0	-1.3	-5.3	-8.1	-9.4
1 Chalet	NSR13	-9.5	-10.6	-9.1	-12.5	-11.6	-1.3	-5.1	-8.0	-9.3
Ore Farm	NSR14	-1.4	-0.4	-0.3	-1.3	-1.3	-2.2	-5.6	-9.9	-13.3
Halla	NSR15	-2.0	-1.3	0.0	-2.6	-2.6	-2.3	-7.8	-12.1	-15.4
Old Kirk	NSR16	-2.1	-1.4	0.0	-2.7	-2.7	-2.4	-8.0	-12.3	-15.6
Old School House	NSR17	-9.4	-8.5	-0.1	-2.7	-2.7	-2.5	-8.3	-12.5	-15.8
North Walls Schoolhouse	NSR18	-10.1	-9.0	-0.3	-2.9	-2.9	-2.7	-8.4	-12.6	-16.0
Dunfarmin	NSR19	-13.3	-12.1	-10.7	-13.1	-12.9	-12.8	-10.3	-13.4	-16.3
Upper Seatter	NSR20	-11.1	-9.4	-8.2	-10.3	-10.1	-10.5	-8.1	-11.2	-14.1
		Mitigation required to meet noise limits:								
Turbines of proposed development switched off/operating in sound optimised (SO) modes		T2 Off	T2, T3, T5 off	T1, T2, T3, T5, T6 OFF	T1, T2, T3, T5, T6 OFF	T1, T2, T3, T5, T6 OFF	T1, T2, T3, T5, T6 OFF	Not required	Not required	Not required

Table 14 - Evaluation against RNLs derived using 38 dB ONL, daytime period – no mitigation

Receiver Name	NSR ID	Wind Speed								
		4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
Day LA90 (dB)										
Rysa Mill	NSR1	-15.0	-10.2	-6.4	-5.8	-5.7	-5.7	-6.7	-9.1	-10.3
The Noddle	NSR2	-14.8	-10.0	-6.2	-5.6	-5.5	-5.5	-6.5	-8.9	-10.1
Scews	NSR3	-13.6	-8.8	-5.0	-4.4	-4.3	-4.3	-5.3	-7.7	-8.9
Little Scews	NSR4	-12.7	-7.9	-4.1	-3.5	-3.4	-3.3	-4.4	-6.9	-8.1
Summer Cleary	NSR5	-14.7	-9.9	-6.1	-5.4	-5.5	-5.4	-6.4	-8.9	-10.1
Moorlands	NSR6	-11.5	-6.6	-2.8	-2.2	-2.0	-1.9	-3.0	-5.7	-7.0
Thurvoe	NSR7	-11.0	-6.1	-2.3	-1.7	-1.5	-1.3	-2.5	-5.3	-6.5
Haybrake Farm	NSR8	-14.7	-9.9	-6.1	-5.5	-5.3	-5.1	-6.3	-8.9	-10.1
Treetops bungalow	NSR9	-14.1	-9.3	-5.5	-4.9	-4.8	-4.6	-5.8	-8.4	-9.6
Lyness Hotel	NSR10	-14.1	-9.2	-5.4	-4.8	-4.6	-4.4	-5.6	-8.2	-9.5
Unknown property	NSR11	-14.7	-9.9	-6.1	-5.5	-5.3	-5.1	-6.3	-8.9	-10.2
2 Chalet	NSR12	-13.8	-8.9	-5.1	-4.5	-4.3	-4.1	-5.3	-8.1	-9.4
1 Chalet	NSR13	-13.7	-8.9	-5.1	-4.5	-4.1	-3.8	-5.1	-8.0	-9.3
Ore Farm	NSR14	-2.8	2.0	5.8	6.5	6.4	6.4	-5.6	-9.9	-13.3
Halla	NSR15	-13.6	-8.6	-4.7	-3.7	-2.7	4.2	-7.8	-12.1	-15.4
Old Kirk	NSR16	-13.8	-8.9	-4.9	-4.1	-3.1	4.1	-8.0	-12.3	-15.6
Old School House	NSR17	-14.0	-9.1	-5.2	-4.4	-3.6	4.0	-8.3	-12.5	-15.8
North Walls Schoolhouse	NSR18	-14.5	-9.4	-5.5	-4.6	-3.7	3.8	-8.4	-12.6	-16.0
Dunfarmin	NSR19	-16.7	-11.9	-8.0	-7.4	-7.4	-7.2	-10.3	-13.4	-16.3
Upper Seatter	NSR20	-14.5	-9.7	-5.9	-5.3	-5.2	-5.1	-8.1	-11.2	-14.1

Table 15 - Evaluation against RNLs derived using 38 dB ONL, daytime period – with mitigation

Receiver Name	NSR ID	Wind Speed								
		4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
Day LA90 (dB)										
Rysa Mill	NSR1	-15.0	-14.3	-6.4	-5.8	-12.7	-12.6	-6.7	-9.1	-10.3
The Noddle	NSR2	-14.8	-14.2	-6.2	-5.6	-12.6	-12.5	-6.5	-8.9	-10.1
Scews	NSR3	-13.6	-13.2	-5.0	-4.4	-11.6	-11.5	-5.3	-7.7	-8.9
Little Scews	NSR4	-12.7	-12.5	-4.1	-3.5	-10.9	-10.7	-4.4	-6.9	-8.1
Summer Cleary	NSR5	-14.7	-14.0	-6.1	-5.4	-12.6	-12.4	-6.4	-8.9	-10.1
Moorlands	NSR6	-11.5	-11.3	-2.8	-2.2	-9.6	-9.3	-3.0	-5.7	-7.0
Thurvoe	NSR7	-11.0	-10.9	-2.3	-1.7	-9.1	-8.7	-2.5	-5.3	-6.5
Haybrake Farm	NSR8	-14.7	-13.9	-6.1	-5.5	-12.2	-11.9	-6.3	-8.9	-10.1
Treetops bungalow	NSR9	-14.1	-13.4	-5.5	-4.9	-11.8	-11.5	-5.8	-8.4	-9.6
Lyness Hotel	NSR10	-14.1	-13.3	-5.4	-4.8	-11.6	-11.3	-5.6	-8.2	-9.5
Unknown property	NSR11	-14.7	-13.8	-6.1	-5.5	-12.2	-11.9	-6.3	-8.9	-10.2
2 Chalet	NSR12	-13.8	-12.9	-5.1	-4.5	-11.3	-10.9	-5.3	-8.1	-9.4
1 Chalet	NSR13	-13.7	-12.9	-5.1	-4.5	-11.0	-10.6	-5.1	-8.0	-9.3
Ore Farm	NSR14	-5.6	-1.4	0.0	-0.2	0.0	0.0	-5.6	-9.9	-13.3
Halla	NSR15	-13.6	-11.3	-4.7	-3.7	-8.6	-1.6	-7.8	-12.1	-15.4
Old Kirk	NSR16	-13.8	-11.6	-4.9	-4.1	-9.0	-1.7	-8.0	-12.3	-15.6
Old School House	NSR17	-14.0	-11.7	-5.2	-4.4	-9.4	-1.8	-8.3	-12.5	-15.8
North Walls Schoolhouse	NSR18	-14.5	-12.1	-5.5	-4.6	-9.6	-2.1	-8.4	-12.6	-16.0
Dunfarmin	NSR19	-16.7	-14.2	-8.0	-7.4	-13.0	-12.8	-10.3	-13.4	-16.3
Upper Seatter	NSR20	-14.5	-11.7	-5.9	-5.3	-10.6	-10.5	-8.1	-11.2	-14.1
Mitigation required to meet noise limits:										
Turbines of proposed development switched off/operating in sound optimised (SO) modes		Not required	T2 off. T3, T5 - SO11	T2 off. T3, T5 - SO11	T2 off. T1, T3, T4, T5, T6 - SO11	T2 off. T1, T4, T6 - SO2 T3, T5 - SO11	T2 off. T1, T3, T4, T5, T6 - SO11	Not required	Not required	Not required

Table 16 - Evaluation against RNLs derived using 40 dB ONL, daytime period

Receiver Name	NSR ID	Wind Speed								
		4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
		Day LA90 (dB)								
Rysa Mill	NSR1	-17.0	-12.2	-8.4	-7.8	-7.8	-7.8	-7.8	-9.1	-10.3
The Noddle	NSR2	-16.8	-12.0	-8.2	-7.6	-7.6	-7.6	-7.6	-8.9	-10.1
Scews	NSR3	-15.7	-10.9	-7.1	-6.5	-6.4	-6.4	-6.4	-7.7	-8.9
Little Scews	NSR4	-14.8	-10.0	-6.2	-5.6	-5.6	-5.5	-5.5	-6.9	-8.1
Summer Cleary	NSR5	-16.8	-12.0	-8.2	-7.5	-7.6	-7.5	-7.5	-8.9	-10.1
Moorlands	NSR6	-13.8	-8.9	-5.1	-4.5	-4.4	-4.3	-4.2	-5.7	-7.0
Thurvoe	NSR7	-13.3	-8.4	-4.6	-4.0	-3.9	-3.8	-3.8	-5.3	-6.5
Haybrake Farm	NSR8	-16.9	-12.1	-8.3	-7.7	-7.6	-7.5	-7.5	-8.9	-10.1
Treetops bungalow	NSR9	-16.4	-11.6	-7.8	-7.2	-7.1	-7.0	-6.9	-8.4	-9.6
Lyness Hotel	NSR10	-16.3	-11.4	-7.6	-7.0	-6.9	-6.8	-6.8	-8.2	-9.5
Unknown property	NSR11	-16.9	-12.1	-8.3	-7.7	-7.6	-7.5	-7.5	-8.9	-10.2
2 Chalet	NSR12	-16.2	-11.3	-7.5	-6.9	-6.7	-6.6	-6.5	-8.1	-9.4
1 Chalet	NSR13	-16.0	-11.2	-7.4	-6.8	-6.7	-6.5	-6.5	-8.0	-9.3
Ore Farm	NSR14	-11.8	-6.9	-3.1	-2.5	-2.5	-2.5	-5.6	-9.9	-13.3
Halla	NSR15	-16.1	-11.3	-7.4	-6.6	-6.0	-5.4	-7.8	-12.1	-15.4
Old Kirk	NSR16	-16.3	-11.5	-7.6	-6.9	-6.3	-5.7	-8.0	-12.3	-15.6
Old School House	NSR17	-16.5	-11.7	-7.8	-7.1	-6.6	-6.1	-8.3	-12.5	-15.8
North Walls Schoolhouse	NSR18	-16.9	-11.9	-8.0	-7.3	-6.8	-6.2	-8.4	-12.6	-16.0
Dunfarmin	NSR19	-18.8	-14.0	-10.2	-9.6	-9.5	-9.4	-10.3	-13.4	-16.3
Upper Seatter	NSR20	-16.6	-11.8	-8.0	-7.4	-7.3	-7.3	-8.1	-11.2	-14.1

Table 17 - Evaluation against RNL, night-time period (no mitigation required)

Receiver Name	NSR ID	Wind Speed								
		4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
		Day LA90 (dB)								
Rysa Mill	NSR1	-20.1	-15.3	-11.5	-10.9	-10.9	-10.8	-10.8	-10.8	-10.8
The Noddle	NSR2	-19.9	-15.1	-11.3	-10.7	-10.6	-10.6	-10.6	-10.6	-10.6
Scews	NSR3	-18.7	-13.9	-10.1	-9.5	-9.5	-9.5	-9.5	-9.5	-9.5
Little Scews	NSR4	-17.9	-13.1	-9.3	-8.7	-8.7	-8.7	-8.7	-8.7	-8.7
Summer Cleary	NSR5	-19.9	-15.1	-11.3	-10.6	-10.7	-10.7	-10.7	-10.7	-10.7
Moorlands	NSR6	-17.0	-12.1	-8.3	-7.7	-7.6	-7.7	-7.6	-7.6	-7.6
Thurvoe	NSR7	-16.6	-11.7	-7.9	-7.3	-7.2	-7.2	-7.2	-7.2	-7.1
Haybrake Farm	NSR8	-20.0	-15.2	-11.4	-10.8	-10.8	-10.7	-10.7	-10.7	-10.7
Treetops bungalow	NSR9	-19.5	-14.7	-10.9	-10.3	-10.3	-10.2	-10.2	-10.2	-10.2
Lyness Hotel	NSR10	-19.5	-14.6	-10.8	-10.2	-10.2	-10.1	-10.1	-10.1	-10.1
Unknown property	NSR11	-20.1	-15.3	-11.5	-10.9	-10.9	-10.8	-10.8	-10.8	-10.8
2 Chalet	NSR12	-19.4	-14.5	-10.7	-10.1	-10.1	-10.1	-10.0	-10.0	-10.0
1 Chalet	NSR13	-19.3	-14.5	-10.7	-10.1	-10.0	-10.0	-10.0	-10.0	-10.0
Ore Farm	NSR14	-16.6	-11.7	-7.9	-7.3	-7.3	-7.3	-7.4	-11.4	-14.4
Halla	NSR15	-19.6	-14.8	-10.9	-10.2	-10.0	-9.8	-9.6	-13.5	-16.6
Old Kirk	NSR16	-19.7	-14.9	-11.1	-10.4	-10.2	-9.9	-9.7	-13.7	-16.8
Old School House	NSR17	-19.9	-15.0	-11.2	-10.6	-10.4	-10.1	-10.0	-13.9	-16.9
North Walls Schoolhouse	NSR18	-20.2	-15.3	-11.4	-10.8	-10.6	-10.3	-10.1	-14.0	-17.1
Dunfarmin	NSR19	-21.9	-17.1	-13.3	-12.7	-12.7	-12.6	-12.6	-14.5	-17.0
Upper Seatter	NSR20	-19.7	-14.9	-11.1	-10.5	-10.5	-10.4	-10.4	-12.3	-14.8