

Detailed Third Octave Band Predictions out of CadnaA - in dB LAeq

Scenario S1 - 100% fan speed

Name	Overall	1/3 Octave Frequency (Hz)																										
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
NAL01-Glenview	29.3	-19.6	-18.4	-11.8	-6.4	-1.4	3.9	0.9	5	21.4	11.4	12.7	19.7	18.7	19.3	18.8	19.8	18.4	19	17.6	13.8	9.8	2.7	-9	-23.9	-47.5	-79.4	-82.7
NAL02-Corriemoille Farm	28	-21.5	-20.3	-13.6	-8	-2.9	2.6	-1.1	3.1	19.6	9.9	11.2	18.3	17.7	18.4	18	18.9	17.5	17.9	16.1	11.7	6.4	-2.5	-17.4	-37.2	-68.1	-81.3	-82.7
NAL03-North of Loch Luichart Lodge	28.9	-20.1	-18.9	-12.3	-6.9	-2	3.4	-0.4	3.7	20.1	10.5	11.7	18.8	18.4	19.1	18.8	19.8	18.5	19.2	17.7	13.8	9.3	1.5	-11.5	-28.6	-55.6	-81.2	-82.7
NAL04-Loch Luichart Lodge	28.3	-20.1	-18.9	-12.4	-6.8	-1.8	3.6	0.1	4.2	20.7	10.4	11.6	18.6	17.8	18.5	17.9	18.9	17.5	18	16.3	12.3	7.6	-0.3	-13.5	-30.7	-57.7	-81.2	-82.7

Scenario S2 - 80% fan speed (~35°C ambient temperature)

Name	Overall	1/3 Octave Frequency (Hz)																										
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
NAL01-Glenview	24.2	-24	-19	-13	-7.5	-4.3	0.3	-3.1	15.9	7	3.5	14.4	9.6	14.7	12.6	14.3	14.4	13.7	14.3	12.1	8.7	4.5	-3.1	-14.6	-29.7	-54.2	-80.9	-82.7
NAL02-Corriemoille Farm	23	-26	-21	-15	-9.2	-5.8	-1.1	-5.1	14	5.2	1.9	12.9	8.1	13.7	11.7	13.4	13.6	12.7	13.1	10.6	6.5	1.1	-8.4	-23	-43.1	-74.1	-81.3	-82.7
NAL03-North of Loch Luichart Lodge	23.9	-24.5	-19.5	-13.5	-8	-4.8	-0.2	-4.3	14.6	5.8	2.6	13.5	8.7	14.4	12.4	14.2	14.5	13.8	14.4	12.2	8.6	4	-4.4	-17.1	-34.5	-62.5	-81.3	-82.7
NAL04-Loch Luichart Lodge	23.3	-24.5	-19.6	-13.7	-8.1	-4.7	-0.1	-3.8	15.2	6.3	2.4	13.4	8.5	13.8	11.8	13.4	13.6	12.7	13.2	10.9	7.1	2.3	-6.2	-19.1	-36.6	-64.6	-81.3	-82.7

Scenario S3 - 60% fan speed (~25°C ambient temperature)

Name	Overall	1/3 Octave Frequency (Hz)																										
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
NAL01-Glenview	18.4	-21.6	-18.4	-13.8	-9.9	-6.6	-0.7	9.7	-0.4	0.5	2.3	3.1	5.1	8.4	6.6	8.6	9.4	9.1	8.4	6	2.2	-1.6	-9.9	-22.2	-37.5	-64.9	-81.3	-82.7
NAL02-Corriemoille Farm	17.1	-23.5	-20.3	-15.7	-11.6	-8.2	-2.1	7.8	-2.3	-1.4	0.7	1.5	3.6	7.4	5.7	7.7	8.5	8.1	7.2	4.5	0	-5	-15.2	-30.8	-51.2	-79.3	-81.3	-82.7
NAL03-North of Loch Luichart Lodge	18.1	-22	-18.9	-14.3	-10.4	-7.1	-1.2	8.5	-1.6	-0.8	1.4	2.1	4.2	8.1	6.4	8.6	9.4	9.2	8.5	6.1	2.1	-2.1	-11.2	-25	-42.7	-72.5	-81.3	-82.7
NAL04-Loch Luichart Lodge	17.4	-22	-19	-14.4	-10.5	-7.1	-1.2	9	-1.1	-0.3	1.2	2	4	7.5	5.7	7.7	8.5	8.1	7.3	4.7	0.5	-3.8	-13	-27	-44.9	-74.3	-81.3	-82.7

Detailed Third Octave Band Predictions in dB(Z) and BS4142 Tonal analysis (Informative)

Correction dB(A) values from CadnaA to dB(Z)->

44.8	39.5	34.5	30.3	26.2	22.4	19.1	16.2	13.2	10.8	8.7	6.6	4.8	3.2	1.9	0.8	0	-0.6	-1	-1.2	-1.3	-1.2	-1	-0.6	0.1	1.1	2.5
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Scenario S1 - 100% fan speed

Name	Overall	1/3 Octave Frequency (Hz)																										
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
NAL01-Glenview	38.0	25.2	21.1	22.7	23.9	24.8	26.3	20	21.2	34.6	22.2	21.4	26.3	23.5	22.5	20.7	20.6	18.4	18.4	16.6	12.6	8.5	1.5	-10	-24.5	-47.4	-78.3	-80.2
NAL02-Corriemoille Farm	36.4	23.3	19.2	20.9	22.3	23.3	25	18	19.3	32.8	20.7	19.9	24.9	22.5	21.6	19.9	19.7	17.5	17.3	15.1	10.5	5.1	-3.7	-18.4	-37.8	-68	-80.2	-80.2
NAL03-North of Loch Luichart Lodge	37.1	24.7	20.6	22.2	23.4	24.2	25.8	18.7	19.9	33.3	21.3	20.4	25.4	23.2	22.3	20.7	20.6	18.5	18.6	16.7	12.6	8	0.3	-12.5	-29.2	-55.5	-80.1	-80.2
NAL04-Loch Luichart Lodge	37.3	24.7	20.6	22.1	23.5	24.4	26	19.2	20.4	33.9	21.2	20.3	25.2	22.6	21.7	19.8	19.7	17.5	17.4	15.3	11.1	6.3	-1.5	-14.5	-31.3	-57.6	-80.1	-80.2

Scenario S2 - 80% fan speed (~35°C ambient temperature)

Name	Overall	1/3 Octave Frequency (Hz)																										
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
NAL01-Glenview	24.2	20.8	20.5	21.5	22.8	21.9	22.7	16	32.1	20.2	14.3	23.1	16.2	19.5	15.8	16.2	15.2	13.7	13.7	11.1	7.5	3.2	-4.3	-15.6	-30.3	-54.1	-79.8	-80.2
NAL02-Corriemoille Farm	23	18.8	18.5	19.5	21.1	20.4	21.3	14	30.2	18.4	12.7	21.6	14.7	18.5	14.9	15.3	14.4	12.7	12.5	9.6	5.3	-0.2	-9.6	-24	-43.7	-74	-80.2	-80.2
NAL03-North of Loch Luichart Lodge	23.9	20.3	20	21	22.3	21.4	22.2	14.8	30.8	19	13.4	22.2	15.3	19.2	15.6	16.1	15.3	13.8	13.8	11.2	7.4	2.7	-5.6	-18.1	-35.1	-62.4	-80.2	-80.2
NAL04-Loch Luichart Lodge	23.3	20.3	19.9	20.8	22.2	21.5	22.3	15.3	31.4	19.5	13.2	22.1	15.1	18.6	15	15.3	14.4	12.7	12.6	9.9	5.9	1	-7.4	-20.1	-37.2	-64.5	-80.2	-80.2

Scenario S3 - 60% fan speed (~25°C ambient temperature)

Name	Overall	1/3 Octave Frequency (Hz)																										
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
NAL01-Glenview	18.4	23.2	21.1	20.7	20.4	19.6	21.7	28.8	15.8	13.7	13.1	11.8	11.7	13.2	9.8	10.5	10.2	9.1	7.8	5	1	-2.9	-11.1	-23.2	-38.1	-64.8	-80.2	-80.2
NAL02-Corriemoille Farm	17.1	21.3	19.2	18.8	18.7	18	20.3	26.9	13.9	11.8	11.5	10.2	10.2	12.2	8.9	9.6	9.3	8.1	6.6	3.5	-1.2	-6.3	-16.4	-31.8	-51.8	-79.2	-80.2	-80.2
NAL03-North of Loch Luichart Lodge	18.1	22.8	20.6	20.2	19.9	19.1	21.2	27.6	14.6	12.4	12.2	10.8	10.8	12.9	9.6	10.5	10.2	9.2	7.9	5.1	0.9	-3.4	-12.4	-26	-43.3	-72.4	-80.2	-80.2
NAL04-Loch Luichart Lodge	17.4	22.8	20.5	20.1	19.8	19.1	21.2	28.1	15.1	12.9	12	10.7	10.6	12.3	8.9	9.6	9.3	8.1	6.7	3.7	-0.7	-5.1	-14.2	-28	-45.5	-74.2	-80.2	-80.2

Tonality - BS 4142 Annex C(Informative) One-third octave objective method analysis

The values in red show the data where the BS4142 objective 1/3 octave band method indicate a potential tone from the CSES SolBank 3.0 Battery Chiller (fan noise) at 160 Hz when in Scenario S1 operating at 100% fan speed. The same method does not detect tones for scenarios S2 & S3 which are most realistic scenarios. Of the three scenarios, Scenario S3 is the most realistic for a site in the Highlands (and possibly still worst-case) and overall predictions at receptors are at the most 18 dB LAeq. The typical residual noise levels (existing levels at receptors without the development) are estimated at 40 dB LAeq at night (the quietest time period), so noise from the development is not anticipated to be audible at receptors when considering these values. Even in the very worst-case Scenario S1, with predictions up to 29 dB this is well below 40 dB residual and tones would not be expected to be notable against the existing noise environment. Chillers (fan noise) are also not usually expected to generate notable tonal noise.

There is no expected tonality from the CSES chiller unit at receptor locations.