



AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Volume 3 – Appendix 24.7 Noise Modelling Results - Operational Converter Station and Landfall Telecommunications Infrastructure

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations
2009 – Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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Appendix 24.7. Noise Modelling Results -
Operational Converter Station and Landfall
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1. NOISE MODELLING RESULTS - OPERATIONAL CONVERTER STATION

1.1. CONVERTER STATION - NOISE MODEL RESULTS

Table 1 - Converter Station noise model results – Option B (i) - with embedded mitigation and without additional mitigation – absolute noise levels, dB

Receptor group	Predicted noise level from converter station - OpB (i)										Night-time internal noise rating ('NR')
	31.5H Z	63H Z	125H Z	250H Z	500H Z	1000H Z	2000H Z	4000H Z	8000H Z	L _{Aeq,T}	
R1 - The Haven and Old Mill Cottage	-16.1	13.0	15.9	16.0	18.6	14.6	8.3	-3.9	-33.7	24.6	NR4
R2 - Hillcrest	-18.1	11.2	14.5	16.4	20.4	15.3	9.0	-2.1	-27.1	24.8	NR5
R3 - Millfield Farm	-18.7	9.1	9.2	10.9	13.8	11.0	5.8	-12.4	-55.1	21.5	NR1
R4 - Kimberley House	-24.1	3.1	4.8	5.9	8.5	5.5	-3.1	-24.2	-79.5	16.0	NR-5
R5 - Little Denmead Farm	-22.6	3.3	7.8	9.4	12.4	8.6	0.8	-19.0	-55.8	18.4	NR-2

R6 - Holme and Highfield Cottages	-24.6	4.7	8.4	9.6	11.7	6.8	-2.8	-26.0	-81.1	16.9	NR-3
R7 - Lower Chapters	-26.2	4.1	8.0	9.2	11.1	5.9	-4.5	-31.6	-81.3	16.1	NR-4
R8 - The Arrows	-28.9	2.0	7.5	8.3	10.0	4.4	-7.2	-40.4	-81.3	15.0	NR-6
R9 - Broadways	-26.0	4.4	9.7	11.4	14.5	12.8	3.7	-29.1	-81.3	19.5	NR3
R10 - Broadway Farm House	-21.7	7.9	12.8	15.0	18.4	17.7	11.0	-15.5	-80.5	23.2	NR8
R11 - Broadway Farm Cottages	-22.2	6.8	12.4	15.2	19.7	18.0	11.1	-15.7	-80.4	23.8	NR8
R12 - Hinton Daubnay	-20.0	12.5	12.6	17.6	23.6	21.6	13.3	-20.4	-81.3	27.0	NR11
R13 - Ludmore Cottages	-27.4	1.9	8.4	12.2	15.8	11.9	1.6	-35.4	-81.3	19.2	NR2
R14 - Old Mill House and The Shieling	-20.6	9.8	13.6	15.6	18.3	13.9	5.8	-16.8	-72.0	22.6	NR4
R15 - The Ranch	-18.9	11.4	14.3	15.3	17.9	14.5	7.2	-11.6	-58.4	22.9	NR4

N.B. Octave band data are A-weighted. Internal NR rating has been derived from linear octave band data and window performance in Table 3.1

Table 2 - Converter Station noise model results – Option B (i) - with embedded mitigation and without additional mitigation – comparison against daytime criteria, dB

Receptor group	Comparison against daytime criteria - OpB (i)									
	31.5H z	63Hz	125H z	250H z	500H z	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L _{Aeq,T}
R1 - The Haven and Old Mill Cottage	-22.7	-4.8	-5.9	-8.1	-8.8	-12.0	-15.6	-26.5	-52.6	-8.4
R2 - Hillcrest	-24.7	-6.6	-7.3	-7.7	-7.0	-11.3	-14.9	-24.7	-46.0	-8.2
R3 - Millfield Farm	-25.3	-8.7	-12.6	-13.2	-13.6	-15.6	-18.1	-35.0	-74.0	-11.5
R4 - Kimberley House	-30.6	-14.9	-18.3	-18.3	-17.9	-21.3	-27.4	-47.3	-97.6	-17.0
R5 - Little Denmead Farm	-29.1	-14.7	-15.3	-14.8	-14.0	-18.2	-23.5	-42.1	-73.9	-14.6
R6 - Holme and Highfield Cottages	-13.3	+0.3	-3.0	-8.2	-13.2	-18.7	-24.3	-44.7	-97.0	-13.1
R7 - Lower Chapters	-14.9	-0.3	-3.4	-8.6	-13.8	-19.6	-26.0	-50.3	-97.2	-13.9
R8 - The Arrows	-17.6	-2.4	-3.9	-9.5	-14.9	-21.1	-28.7	-59.1	-97.2	-15.0
R9 - Broadways	-31.3	-12.1	-18.1	-9.4	-10.0	-11.3	-17.7	-48.6	-97.6	-12.5
R10 - Broadway Farm House	-27.0	-8.6	-15.0	-5.8	-6.1	-6.4	-10.4	-35.0	-96.8	-8.8
R11 - Broadway Farm Cottages	-27.5	-9.7	-15.4	-5.6	-4.8	-6.1	-10.3	-35.2	-96.7	-8.2
R12 - Hinton Daubnay	-25.6	-3.3	-8.6	-6.9	-5.0	-4.4	-10.0	-42.5	-96.7	-6.0

R13 - Ludmore Cottages	-33.0	-13.9	-12.8	-12.3	-12.8	-14.1	-21.7	-57.5	-96.7	-13.8
R14 - Old Mill House and The Shieling	-27.2	-8.0	-8.2	-8.5	-9.1	-12.7	-18.1	-39.4	-90.9	-10.4
R15 - The Ranch	-25.5	-6.4	-7.5	-8.8	-9.5	-12.1	-16.7	-34.2	-77.3	-10.1

N.B. If the number is negative the predicted noise level from the converter station is below the criteria.

Table 3 - Converter Station noise model results – Option B (ii) – with embedded mitigation and without additional mitigation, dB

Receptor group	Predicted noise level from converter station - OpB (ii)										Night-time internal noise rating (NR)
	31.5 Hz	63H z	125H z	250H z	500H z	1000H z	2000H z	4000H z	8000H z	L _{Aeq,T}	
R1 - The Haven and Old Mill Cottage	-17.1	12.3	15.7	15.9	18.8	15.2	9.0	-3.1	-31.4	24.8	NR5
R2 - Hillcrest	-18.5	10.2	14.0	16.2	20.1	15.5	9.1	-2.7	-28.1	24.8	NR5
R3 - Millfield Farm	-19.7	8.1	8.4	10.5	13.0	10.4	4.7	-13.5	-55.4	20.9	NR0
R4 - Kimberley House	-24.4	2.8	4.6	5.8	8.4	5.0	-3.9	-25.9	-80.3	15.7	NR-5
R5 - Little Denmead Farm	-23.6	0.7	6.1	8.0	11.3	7.4	0.0	-20.9	-56.0	17.4	NR-3
R6 - Holme and Highfield Cottages	-25.0	4.3	8.0	9.3	11.5	6.7	-3.0	-26.5	-81.2	16.7	NR-4

R7 - Lower Chapters	-26.3	3.9	7.9	9.1	11.0	5.8	-4.8	-32.1	-81.3	16.0	NR-4
R8 - The Arrows	-28.9	2.0	7.5	8.4	10.0	4.2	-7.2	-40.7	-81.3	15.0	NR-6
R9 - Broadways	-26.0	4.5	9.8	12.1	15.2	12.0	2.8	-29.5	-81.3	19.6	NR2
R10 - Broadway Farm House	-21.7	8.2	12.5	14.5	18.1	17.7	11.1	-15.2	-79.9	23.1	NR8
R11 - Broadway Farm Cottages	-22.2	7.0	12.6	14.9	19.0	17.9	11.1	-15.1	-79.5	23.5	NR8
R12 - Hinton Daubnay	-19.3	13.1	13.1	17.9	23.9	22.0	14.0	-18.8	-81.3	27.4	NR12
R13 - Ludmore Cottages	-27.1	2.2	8.8	12.6	16.2	12.2	1.9	-34.3	-81.3	19.6	NR2
R14 - Old Mill House and The Shieling	-20.4	10.0	14.1	16.2	19.0	14.7	6.7	-16.0	-69.5	23.2	NR5
R15 - The Ranch	-18.6	11.6	14.8	15.5	18.8	14.7	7.6	-10.3	-55.1	23.4	NR5

N.B. Octave band data are A-weighted. Internal NR rating has been derived from linear octave band data and window performance in Table 3.1

Table 4 - Converter Station noise model results – Option B (ii) - with embedded mitigation and without additional mitigation – comparison against daytime criteria, dB

Receptor group	Comparison against daytime criteria - OpB (ii)									
	31.5H Z	63H Z	125H Z	250H Z	500H Z	1000H Z	2000H Z	4000H Z	8000H Z	L _{Aeq,T}
R1 - The Haven and Old Mill Cottage	-23.7	-5.5	-6.1	-8.2	-8.6	-11.4	-14.9	-25.7	-50.3	-8.2

R2 - Hillcrest	-25.1	-7.6	-7.8	-7.9	-7.3	-11.1	-14.8	-25.3	-47.0	-8.2
R3 - Millfield Farm	-26.3	-9.7	-13.4	-13.6	-14.4	-16.2	-19.2	-36.1	-74.3	-12.1
R4 - Kimberley House	-30.9	- 15.2	-18.5	-18.4	-18.0	-21.8	-28.2	-49.0	-98.4	-17.3
R5 - Little Denmead Farm	-30.1	- 17.3	-17.0	-16.2	-15.1	-19.4	-24.3	-44.0	-74.1	-15.6
R6 - Holme and Highfield Cottages	-13.7	-0.1	-3.4	-8.5	-13.4	-18.8	-24.5	-45.2	-97.1	-13.3
R7 - Lower Chapters	-15.0	-0.5	-3.5	-8.7	-13.9	-19.7	-26.3	-50.8	-97.2	-14.0
R8 - The Arrows	-17.6	-2.4	-3.9	-9.4	-14.9	-21.3	-28.7	-59.4	-97.2	-15.0
R9 - Broadways	-31.3	- 12.0	-18.0	-8.7	-9.3	-12.1	-18.6	-49.0	-97.6	-12.4
R10 - Broadway Farm House	-27.0	-8.3	-15.3	-6.3	-6.4	-6.4	-10.3	-34.7	-96.2	-8.9
R11 - Broadway Farm Cottages	-27.5	-9.5	-15.2	-5.9	-5.5	-6.2	-10.3	-34.6	-95.8	-8.5
R12 - Hinton Daubnay	-24.9	-2.7	-8.1	-6.6	-4.7	-4.0	-9.3	-40.9	-96.7	-5.6
R13 - Ludmore Cottages	-32.7	- 13.6	-12.4	-11.9	-12.4	-13.8	-21.4	-56.4	-96.7	-13.4
R14 - Old Mill House and The Shieling	-27.0	-7.8	-7.7	-7.9	-8.4	-11.9	-17.2	-38.6	-88.4	-9.8
R15 - The Ranch	-25.2	-6.2	-7.0	-8.6	-8.6	-11.9	-16.3	-32.9	-74.0	-9.6

N.B. If the number is negative the predicted noise level from the converter station is below the criteria

2. NOISE MODELLING RESULTS – LANDFALL TELECOMMUNICATIONS INFRASTRUCTURE

2.1. LANDFALL TELECOMMUNICATIONS INFRASTRUCTURE - NOISE MODEL RESULTS

Table 5 - Telecommunications infrastructure at Landfall - noise model results, dB

Receptor group	Predicted noise level from telecommunications infrastructure at landfall										Night-time internal noise rating (NR)
	L _{Aeq,T}	31.5H z	63H z	125H z	250H z	500H z	1000 Hz	2000 Hz	4000 Hz	8000H z	
R16 – Southsea Leisure Park (Caravans)	28.9	-7.2	6.0	13.2	19.3	22.1	25.2	21.3	16.2	3.6	NR15
R17 – 41-51 Fort Cumberland Road	17.7	-11.2	0.6	6.1	11.2	12.0	12.5	7.3	0.8	-14.2	NR2

N.B. Octave band data are A-weighted. Internal NR rating has been derived from linear octave band data and window performance in Table 3.1

Table 6 - Telecommunications infrastructure at landfall - noise model results - comparison against daytime criteria, dB

Receptor group	Comparison against daytime criteria									
	L _{Aeq,T}	31.5H Z	63H Z	125H Z	250H Z	500H Z	1000H Z	2000H Z	4000H Z	8000H Z
R16 – Southsea Leisure Park (Caravans)	-25.3	-23.0	- 16.5	-12.7	-10.7	-13.2	-13.4	-15.1	-14.9	-18.4
R17 – 41-51 Fort Cumberland Road	-14.1	-27.0	- 21.9	-19.8	-18.8	-23.3	-26.1	-29.1	-30.3	-36.2

N.B. If the number is negative the predicted noise level from the converter station is below the criteria

3. OCTAVE BAND PERFORMANCE OF AN OPEN WINDOW

Table 7 - Assumed sound reduction for an open window

Window type	dB D _{n,e} Octave band centre frequency (Hz)								
	31.5Hz	63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Opening D-2	23.1	23.1	14.6	11.5	20.6	10.2	14.9	14.2	14.2

- 3.1.1.1. Data are taken from the research paper submitted to DEFRA published in April 2007 by the School of the Built Environment at Napier University, titled ‘*Nanr116: ‘Open/Closed Window Research’ Sound Insulation Through Ventilated Domestic Windows*’.
- 3.1.1.2. Opening D-2 is based on a siding sash window which is the lowest performing window tested because it provides an unobstructed path from external to internal environments. The window opening is 200,000mm².
- 3.1.1.3. In the absence of available data for 31.5Hz and 8000Hz, the value for the adjacent octave band has been used.
- 3.1.1.4. Data have been used to determine the internal noise levels across the octave band spectrum from the external predicted noise levels (see Tables 1.1,1.3 and 2.1). The internal noise levels have been used to derive an internal Noise Rating (NR) at each receptor.

