



ENVIRONMENTAL STATEMENT
VOLUME 2
APPENDIX 8.3 – NOISE MODELLING DETAILS
AND RESULTS

Appendix 8.3 – noise modelling details and results.

Construction predictions

Work Stage	Plant / Equipment Description	Maximum Power (sound power, L _{WA} (dB))	On-Time (%)
Enabling Works	20t Excavator	102	30
	Mobile Cranes	105	5
	Delivery Vehicles	108	5
	Dumper	106	10
	Bulldozer	114	20
Substructure construction	20t Excavator	102	75
	Mobile Cranes	105	50
	Bored piling/pile cast in place	116	75
	Cranes	104	50
	Concrete Pumps	110	50
	Dumper	106	50
Superstructure	Cranes	104	75
	Concrete Pumps	110	75
	MEWPS (Cherry picker)	95	75
	Goods/Passenger Hoists	96	75
Envelope	Cranes	104	75
	MEWPS (Cherry picker)	95	75
	Goods/Passenger Hoists	96	75
Fit out	MEWPS (Cherry picker)	95	50
	Goods/Passenger Hoists	96	50
Infrastructure and Roads	Mini tracked excavator 5t trenching	93	35
	6t Dumper distributing material	97	70
	Roller	97	10
	Delivery Vehicles	108	5
	30 tonne excavator	104	35

Table 1: Construction plant and equipment assumptions (based on BS 5228-1 guidance)

Distance (m)	Enabling Works	Substructure construction	Superstructure	Envelope	Fit out	Infrastructure and Roads
20	74					
50	66					60
70	63					57
100	60	68	62	56	48	54
170	55	63	57	51	43	49
200	54	62	56	50	42	48
300	51	59	53	47	39	45

Table 2: Predicted L_{Aeq} noise levels (dB) over the working day based at different distances (where relevant) for each of the working stages

When considering the results of Table 2 above, it should be noted that distances of 20/50 metres or more are potentially relevant for the residential receptors considered for enabling works and infrastructure works, and 170 m or more for the other activities. For the existing Golf Club, distances of 70 m or more apply for the enabling/infrastructure works, and 100 m for the other construction activities.

2019 baseline survey

Calculated $L_{A10,18\text{ hour}}$

Noise monitoring position	Derived $L_{A10,18\text{ hour}}$ based on measured noise survey, dB	Calculated $L_{A10,18\text{ hour}}$ based on traffic flow data, dB
S1 (M40)	77.2	75.5
S2 (A4095)	63.2	61.3

Table 3: Comparison of $L_{A10,18\text{ hour}}$ noise level based on noise survey results and noise model results using 2019 baseline traffic levels

Comparison: 2037 with Proposed Development – 2022 without Proposed Development

Receiver location	Calculated LA10,18hour for 2037 with Proposed Development, dB	Calculated LA10,18hour for 2022 without Proposed Development, dB	Difference in LA10,18hour (dB)
Stableford House	54.5	54.9	-0.4
Vicarage Farm	58.1	57.3	0.8
Tanora Cottage	60.7	59.1	1.6
Golf Club	54.2	55.7	-1.5

Table 4: Comparison of LA10,18hour for 2037 with Proposed Development and 2022 without

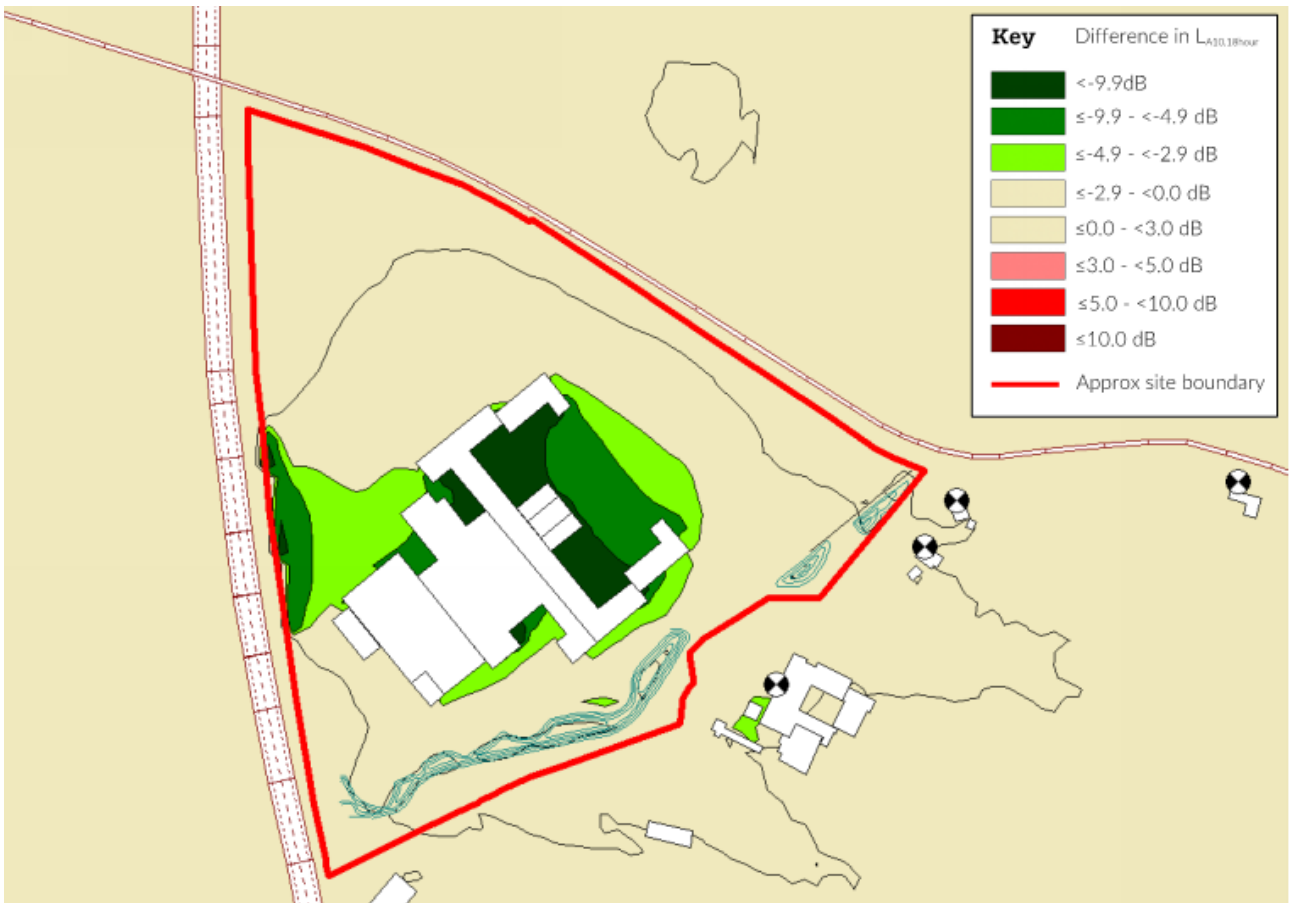


Figure 1: noise map showing comparison of LA10,18hour for 2037 with Proposed Development and 2022 without

Comparison: 2037 with Proposed Development – 2037 without Proposed Development

Table of results at receiver locations

Receiver location	Calculated LA _{10,18hour} for 2037 with proposed development, dB	Calculated LA _{10,18hour} for 2037 without proposed development, dB	Difference in LA _{10,18hour} (dB)
Stableford House	54.5	55.7	-1.2
Vicarage Farm	58.1	58	0.1
Tanora Cottage	60.7	59.9	0.8
Golf Club	54.2	56.4	-2.2

Table 5: Comparison of LA_{10,18hour} for 2037 with Proposed Development and 2037 without

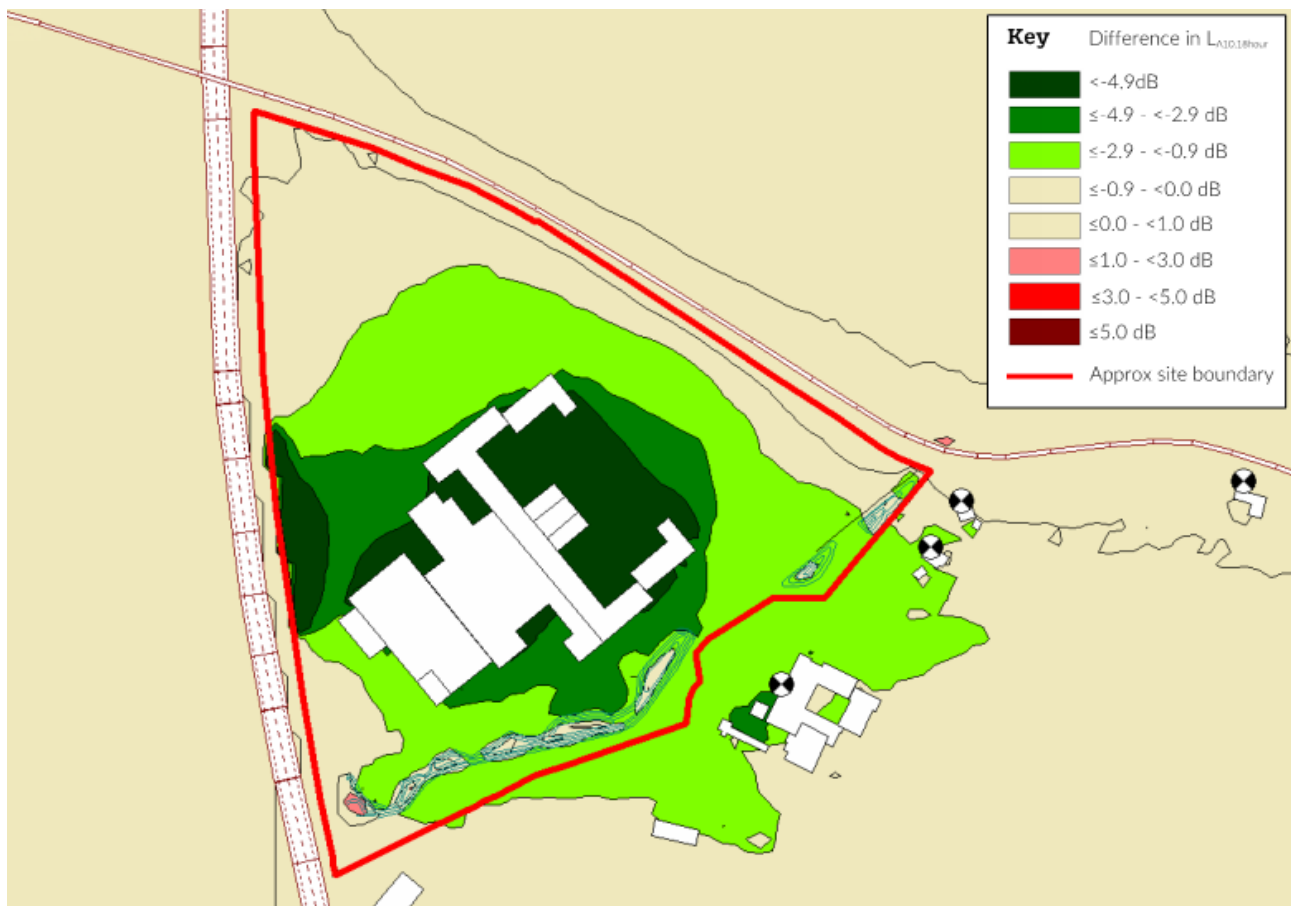


Figure 2: Noise map showing comparison of LA_{10,18hour} for 2037 with Proposed Development and 2037 without

Site suitability – 2037 with Proposed Development

Day-time periods

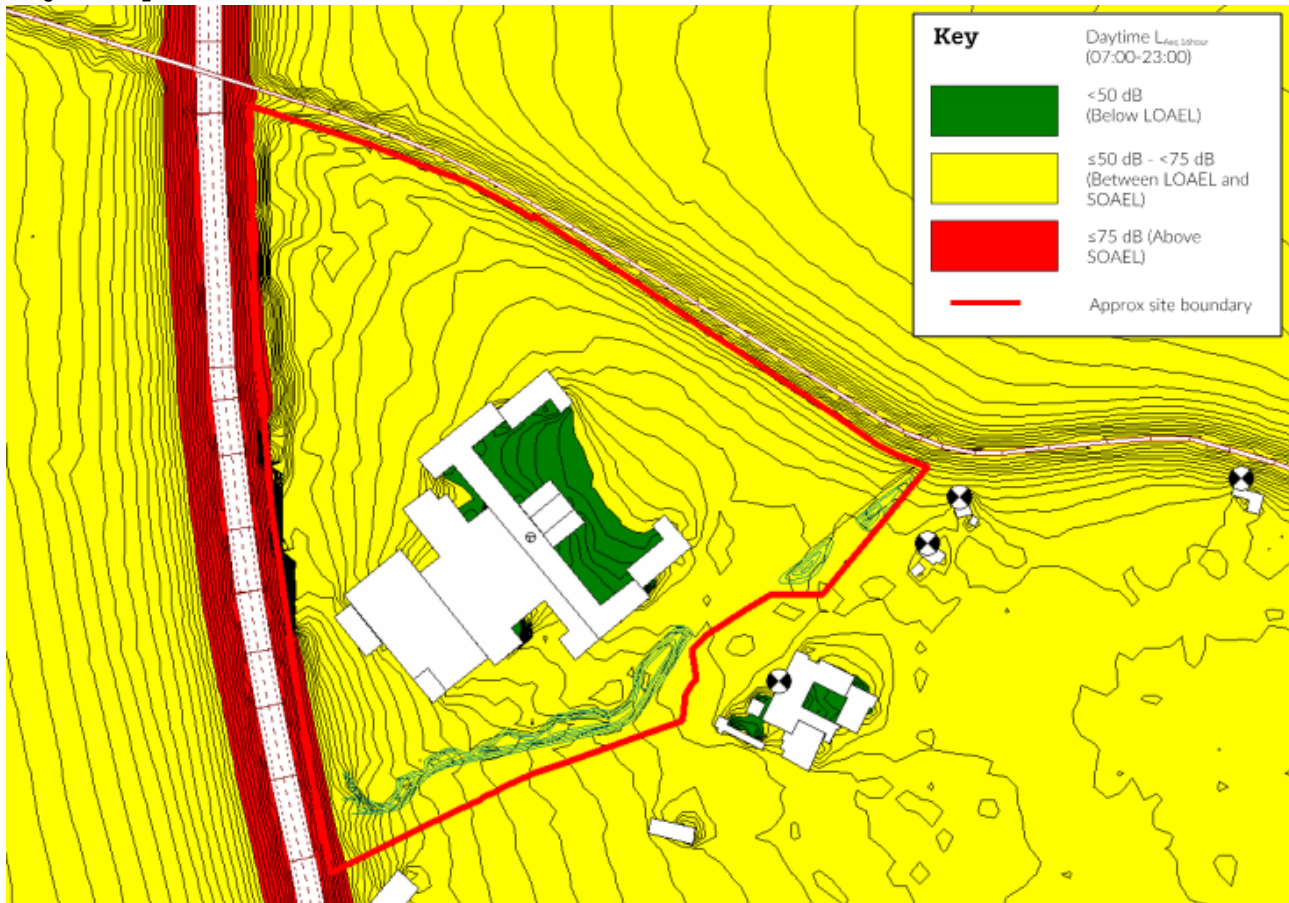


Figure 3: Site suitability - noise map showing day-time ambient $L_{Aeq,16hour}$ noise levels (dB) – 2037 with Proposed Development

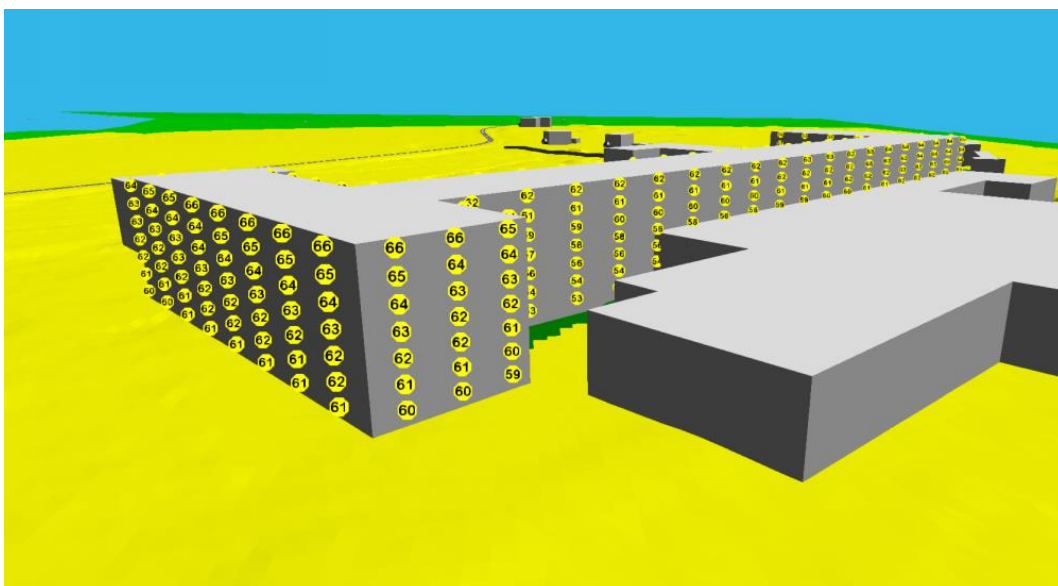


Figure 4: 3D view of noise model showing maximum daytime ($L_{Aeq,16hour}$) façade noise levels for guestrooms

Night-time periods

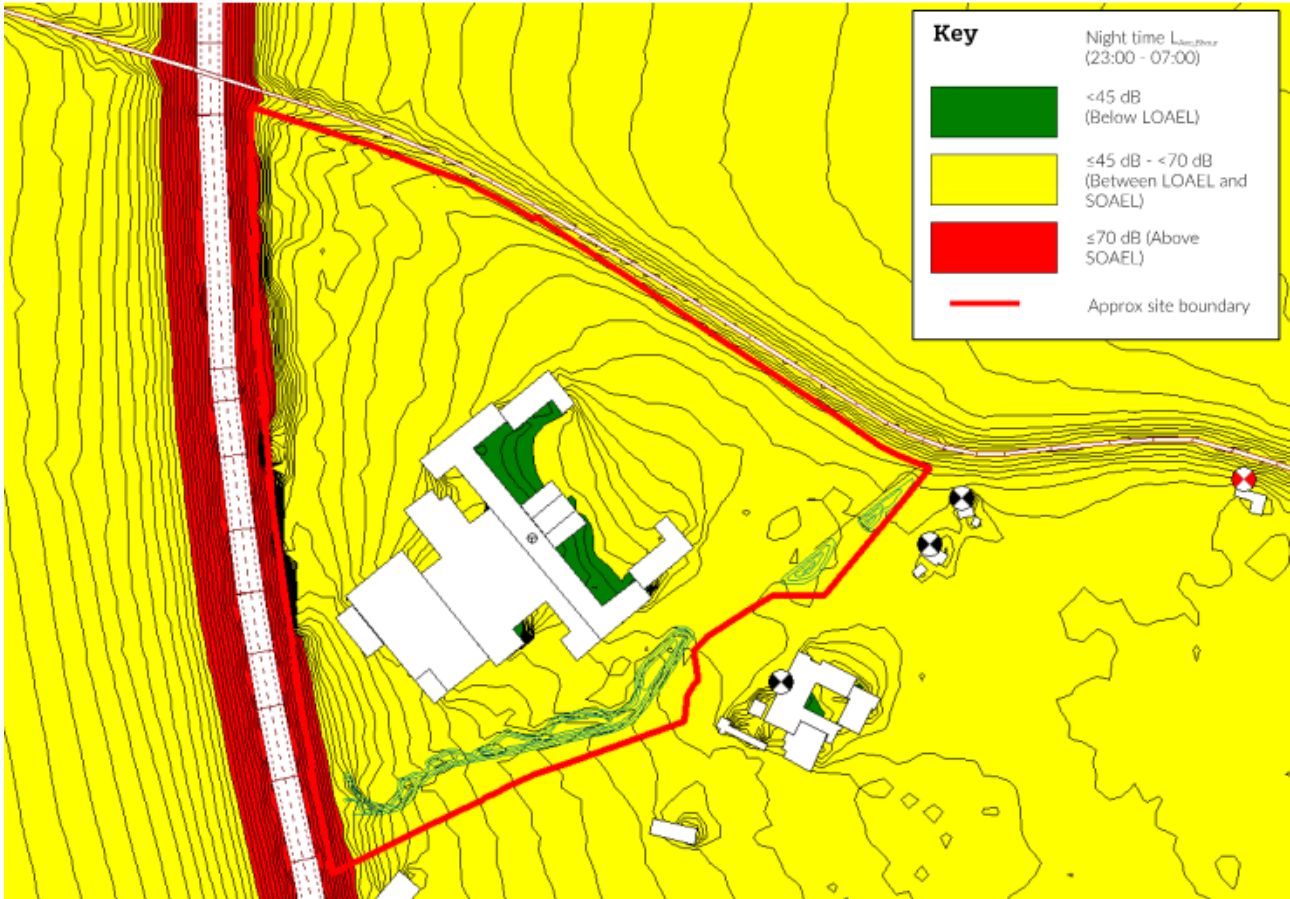


Figure 5: Site suitability - noise map showing night-time ambient $L_{Aeq,8hour}$ noise levels (dB) - 2037 with Proposed Development

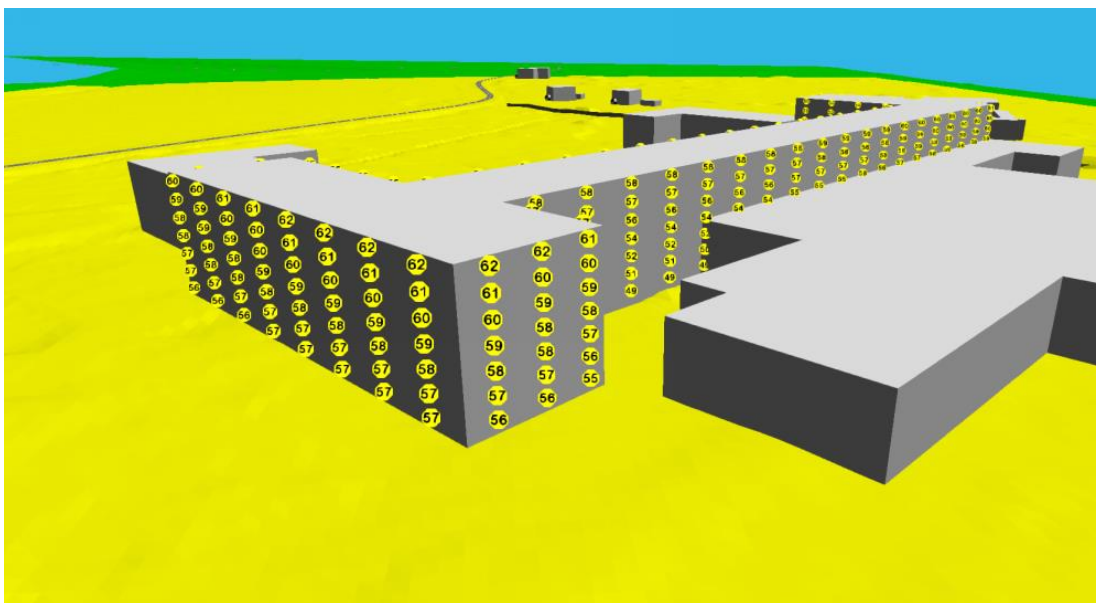


Figure 6: 3D view of noise model showing maximum night time ($L_{Aeq,8hour}$) façade noise levels for guestrooms

Comparison between baseline and with construction traffic flow (2021)

Receiver location	Baseline scenario	With construction traffic scenario	Comparison
Stableford House	54.8	55.1	0.3
Vicarage Farm	57.1	57.7	0.6
Tanora Cottage	59.1	59.5	0.4
Golf Club	55.5	55.5	0.0

Table 6: Calculated $L_{A10,18\text{hour}}$ noise levels (dB) and comparison for 2021 year (with and without construction traffic)