



TECHNICAL NOTE ACOUSTICS

DATE:	12 November 2024	CONFIDENTIALITY:	Public
SUBJECT:	Land South of Bedwell Road, Ugley - Approval of Reserved Matters Noise Comments		
PROJECT:	UK0033240.2467	AUTHOR:	Toby Lewis
CHECKED:	Robert Colder	APPROVED:	Toby Lewis

INTRODUCTION

The development site is located to the west of the M11 in Elsenham, Essex, in the administrative area of Uttlesford District Council (UDC).

Outline permission was granted for a residential development of up to 50 dwellings by the Planning Inspectorate (PINs) in June 2023 (UDC ref. UTT/20/2908/OP, Appeal ref. APP/C1570/W/22/3311069).

Condition 4 of the outline permission states:

'As part of any Reserved Matters application, a scheme detailing sound insulation measures shall be submitted for approval in writing by the local planning authority and the scheme shall include:

- i) details sufficient to demonstrate that the internal noise levels recommended in BS 8233:2014 will be achieved and for individual noise events to not normally exceed 45 dB $L_{Amax,T}$ during the night-time. The scheme will include the internal configuration of rooms and the specification and reduction calculations for the external building fabric, glazing, mechanical ventilation, and acoustic barriers, and*
- ii) details sufficient to demonstrate that a noise level not exceeding 55 dB $L_{Aeq,16hour}$ in the outdoor amenity areas will be achieved, including the position, design, height and materials of any acoustic barrier proposed, along with calculations of the barrier attenuation.*

The development shall be implemented in accordance with the approved scheme prior to the occupation of any dwelling and retained thereafter.'

The reserved matters application (PINs ref. S62A/2024/0049) was submitted in June 2024 and included a condition discharge acoustic report (WSP report ref. UK0033240.2467, dated 06 June 2024).

UDC was consulted and UDC Environmental Protection Officer (EPO) Sadie Stowell provided a consultation response on behalf of the UDC Environmental Health Department on 25 October 2024.

UDC EPO CONSULTATION RESPONSE

The UDC EPO consultation response acknowledged that the proposed development comprises a good acoustic design. However, it also requested the following additional information prior to permitting the discharge of condition 4.

- 1) Confirmation with respect to data exclusions due to wind speed and precipitation during the WSP May 2024 noise survey.
- 2) A graph or table showing any sound level data excluded prior to analysis.
- 3) Detailed assessments of the internal night-time $L_{Aeq,8h}$ sound levels with windows closed.
- 4) Noise mitigation proposals for all of the proposed building facades.
- 5) Detailed break-in calculation sheets for a small selection of the calculations.

WSP RESPONSE

The UDC EPO comments are addressed, in-order, below.

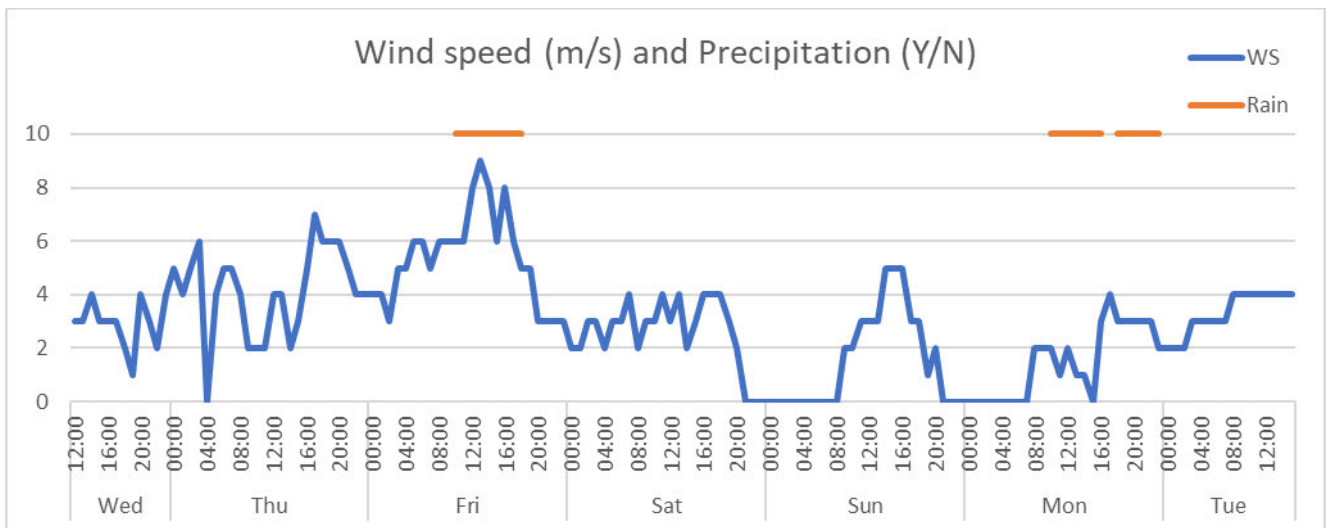
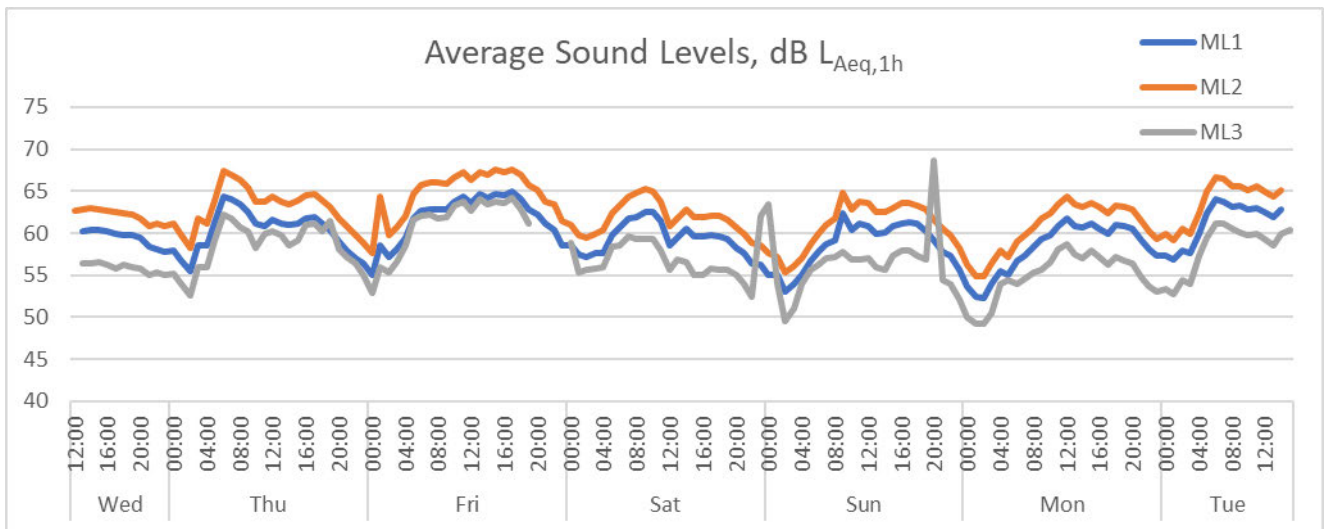
- 1) **Data exclusions.** No data were excluded prior to analysis for the reasons provided in point (2) below.

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2) **Graph of monitoring data.** The first graph below shows the average sound levels (dB $L_{Aeq,1h}$) logged at each of the three monitoring locations used in the May 2024 survey. The second graph shows the average wind speed and periods of precipitation logged at the MET Office observation station at Andrewsfield (around 10 miles to the east of the application site).

It is credible that the higher windspeeds and rainfall evident on the Friday (03 May 2024) led to slightly higher sound levels being logged than would otherwise be the case. However, the retention of these data during analysis could only have led to slightly elevated sound levels which would, in these circumstances, contribute to a precautionary assessment. For that reason, the removal of potentially weather affected data was considered unnecessary.





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3) **Detailed break-in calculations.** These were not undertaken for each and every proposed façade, with windows closed, in the WSP assessment, as these were not necessary. The detailed break-in calculations were undertaken for the most exposed habitable rooms and were sufficient to confirm that ‘standard’ thermal double glazing (with an assumed minimum acoustic performance of 27 dB $R_{W+C_{tr}}$) would be sufficient to achieve the specified internal acoustic criteria in all of the proposed habitable rooms with windows closed.

To allay the concerns of the EPO, however, detailed break-in calculations have been undertaken for a larger sample of the proposed units, to demonstrate the magnitude of the predicted compliance under closed window conditions. The results are set out in Table 1 below.



Table 1 – Break-in Calculation Results

Unit number	Floor	Room	Façade	Period	Calculated noise level at façade (free-field) dB(A)	Internal noise level with window closed, dB(A)	Target criterion, dB(A)	Criterion met dB(A)
Apartment 5	Second	Bedroom	East	Daytime	52	19	35	Yes
	Second	Bedroom	East	Night-time	51	18	30	Yes
Apartment 2	Second	Bedroom	East	Daytime	55	23	35	Yes
	Second	Bedroom	East	Night-time	54	21	30	Yes
Apartment 3	Second	Bedroom	East	Daytime	56	22	35	Yes
	Second	Bedroom	East	Night-time	54	21	30	Yes
Apartment 4	Second	Bedroom	East	Daytime	54	20	35	Yes
	Second	Bedroom	East	Night-time	52	19	30	Yes
Apartment 7	Second	Bedroom	East	Daytime	61	32	35	Yes
	Second	Bedroom	East	Night-time	59	29	30	Yes
	Ground	Living Room	East	Daytime	61	26	35	Yes
	Second	Living Room	East	Night-time	59	23	30	Yes
Apartment 8	Second	Bedroom	East	Daytime	53	19	35	Yes
	Second	Bedroom	East	Night-time	51	18	30	Yes
Unit 18	First	Bedroom	South	Daytime	54	20	35	Yes
	First	Bedroom	South	Night-time	52	19	30	Yes
Unit 30	First	Bedroom	East	Daytime	56	22	35	Yes



Unit number	Floor	Room	Façade	Period	Calculated noise level at façade (free-field) dB(A)	Internal noise level with window closed, dB(A)	Target criterion, dB(A)	Criterion met dB(A)
	First	Bedroom	East	Night-time	54	21	30	Yes
Unit 8	First	Bedroom	East	Daytime	50	16	35	Yes
	First	Bedroom	East	Night-time	49	16	30	Yes
Unit 28	First	Bedroom	South	Daytime	56	22	35	Yes
	First	Bedroom	South	Night-time	54	21	30	Yes
Unit 2	First	Bedroom	South	Daytime	55	21	35	Yes
	First	Bedroom	South	Night-time	53	20	30	Yes



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- 4) **Noise mitigation proposals for all of the proposed building facades.** The noise mitigation measures proposed in the WSP report (specifications at Table 4-3 and Appendix E) are all that are necessary, for the following reasons:
- a) Some building elevations (including the most noise exposed elevations) do not have habitable rooms, so there are no applicable internal acoustic criteria and, therefore, no requirement for mitigation.
 - b) ADF System 1 ventilation is specified for elevations where there are habitable rooms and the free-field night-time sound levels are above 50 dB $L_{Aeq,8h}$. This is appropriate as:
 - i) ADO¹, at paragraph 3.3, only suggests that windows are likely to be closed where external sound levels are above 55 dB $L_{Aeq,8h}$.
 - ii) The AVOG² specifies, at Table B-3, an external noise limit of 53 dB $L_{Aeq,8h}$ is applicable where standard double glazing and trickle vents.
 - iii) The relaxed BS 8233³ criterion (Table 4, Note 7) will be met with windows open.
 - c) Typical external night-time maxima in excess of 60 dB L_{Amax} only occur in proximity to facades with habitable rooms where ADF System 1 ventilation is already specified based on the $L_{Aeq,8h}$.
- 5) **Example detailed break-in calculation sheets.** Four example break-in calculation sheets are presented in Appendix A below.

CONCLUSION

This technical note has provided the additional information requested to address the concerns raised by the UDC EPO and the reserved matters application can be approved on noise grounds.

¹ The Building Regulations 2000, Overheating – Approved Document O. 2021.

² Acoustics Ventilation and Overheating - Residential Design Guide. ANC & IoA January 2020.

³ BS 8233:2014. Guidance on sound insulation and reduction in buildings.

APPENDIX A – EXAMPLE BREAK-IN CALC SHEETS

BREAK-IN CALCULATION - APARTMENT 2, BEDROOM 1 2F

Internal Noise Break-in Calculation to BS12354-3:2000												
Project Name		Internal Noise Break-in Calculation to BS12354-3:2000										
Room Name		Bedroom (Vest Corr)										
Client Name		WSP Parsons Brinckerhoff										
Date		12/19/2024										
Room Details												
Width	3.6	m	Height	2.5	m							
Depth	4.6	m	Volume	41.4	m ³							
Facade Area	9	m ²	Surface Area	74.02	m ²							
Additional Facade Area	11.5	m ²	Total Facade Area	20.5	m ²							
Select Glazing												
Area of glaz / SRI	2.2	16	22	20	26	26	29	31	25	31	-4	50 mm / 100 mm
Area of facade / SRI	11.3	34	41	44	40	55	55	55	55	53	-4	Prisk (Standard)
Vent No. off FD _o	2	41	41	31	30	43	43	43	43	30	+3	Replace 100mm Acoustic Absorber with bit and glue
Composite Facade Sound Reduction												
Composite SRI	25	31	30	35	45	40	41	35				
Measured Incident Sound Level (Leq)												
Leq Daytime	63	125	250	500	1000	2000	4000	8000	16000	31500	63	Water
Leq Night	29.0	24.0	41.0	47.0	55.0	59.0	49.0	38.0	29.0	20.0	60	
Leq Max Night	59.0	67.0	74.0	78.0	75.0	73.0	68.0	63.0	58.0	50		
Correction - Leq Daytime	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0		To adjust to 61 dB during daytime at 1.5m high
Correction - Leq Night	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1		To adjust to 59 dB during night at 0m high
Correction - Leq Max Night	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4		
Corrected Incident Sound Level (Leq)												
Leq Daytime	27.0	35.0	42.0	46.0	55.0	45.0	34.0	24.0	16.0	10.0	56	
Leq Night	25.9	22.9	37.9	43.9	51.9	47.9	37.9	30.9	25.9	16.9	54	
Leq Max Night	35.6	43.6	50.6	54.6	51.6	49.6	44.6	41.6	36.6	27.6	57	
Reverberation Time												
Reverberation Time	0.5	1.0	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.5		
Total Absorption A (m ²)	4.62	8.83	10.19	13.25	13.25	13.25	13.25	13.25	13.25	13.25		
Wreq (SFB)	4.91	3.66	3.04	1.90	1.90	1.90	1.90	1.90	1.90	1.90		
Daytime L_{eq} 0700-2300												
L _{eq} Via Vent	-5.7	1.1	16.7	21.2	17.1	7.1	-3.9	-13.9	21			
L _{eq} via Facade (BS12354-3:2014)	9.8	10.4	10.5	15.4	14.6	2.0	-1.7	-5.0	10			
L _{eq} Total	9.9	10.9	20.7	22.2	19.1	8.3	0.4	-5.1	23			
Noise Limit Type	40(A)											
Target Noise Limit	35	52	42	35	29	24	25	25	27	35		
Night Time L_{eq} 2300-0700												
L _{eq} Via Vent	-6.0	-1.0	12.4	19.1	14.0	0.0	-7.0	19				
L _{eq} via Facade (BS12354-3:2014)	0.7	0.3	14.4	13.3	11.5	4.9	2.2	1.1	16			
L _{eq} Total	0.8	0.8	16.6	20.1	16.0	11.2	4.3	1.8	21			
Noise Limit Type	40(A)											
Target Noise Limit	30	47	37	30	24	21	20	20	22	30		
Night Time Maximum 2300-0700												
L _{max} Via Vent	2.9	9.7	25.3	29.0	13.7	11.7	6.7	6.7	27			
L _{max} via Facade (BS12354-3:2014)	10.4	19.9	27.1	24.0	11.2	6.6	0.9	14.0	24			
L _{max} Total	10.5	19.5	29.3	30.0	15.7	12.9	11.0	15.5	29			
Noise Limit Type	40(A)											
Target Noise Limit	45	62	52	45	39	34	35	35	37	45		

Options

Include 63 Hz and 8 kHz

Vents

Dynamic Link

Night Time Link

Night Time Link

Show Composite SRI

Calculate Reverberation Time

Daytime Period: 0700-2300

Night Time Period: 2300-0700

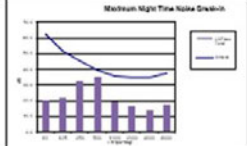
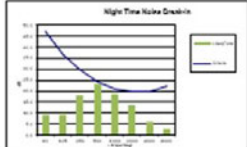
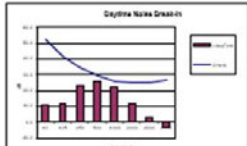
Daytime Noise Graph

Night Time Noise Graph

Maximum Night Time Noise Graph

BREAK-IN CALCULATION - APARTMENT 7, LIVING ROOM 2F

WSP PARSONS BRINCKERHOFF										Internal Noise Break-in Calculation to BS12354-3:2009										Options									
Project Name: Living Room, Water Care										Client: Aron, Yonker										<input checked="" type="checkbox"/> Includes EQ and EIR <input checked="" type="checkbox"/> Vents <input checked="" type="checkbox"/> Daytime Limit <input checked="" type="checkbox"/> Night Time Limit <input checked="" type="checkbox"/> Show Composite SRI <input checked="" type="checkbox"/> Calculate Soundation Time									
Project No.:										Date: 12/19/2024										Daytime Period: 0700-2300									
Room Name: Living Room, Water Care																				Night Time Period: 2300-0700									
Room Details																													
Width	3.0	m	Height	2.5	m					Select Glazing																			
Depth	6.2	m	Volume	59.9	m ³																								
Facade Area	9.5	m ²	Surface Area	97.12	m ²																								
Additional Facade Area	0	m ²	Total Facade Area	9.5	m ²																								
Area of glaz / SRI	1.1	16	22	20	26	34	39	31	25	31	-4	35 feet/10m/ten																	
Area of facade / SRI	0.4	24	41	44	40	55	55	55	55	52	-4	Break (11m/36ft)																	
Vent No. off / D _o	2	41	41	31	30	42	42	42	42	30	-2	Replace Glass Windows with IGU and also																	
Composite Facade Sound Reduction																													
Composite SRI	25	31	29	35	45	40	40	40	34																				
Measured Incident Sound Level (Free field)																													
L _{eq,Outside}	63	125	250	500	1000	2000	4000	8000	4000	40	Meter																		
L _{eq,Night Time}	21.0	24.0	46.0	50.0	59.0	49.0	38.0	23.0	40																				
L _{eq,Day Time}	29.0	34.0	41.0	47.0	55.0	51.0	41.0	34.0	57																				
L _{eq,Evening Time}	59.0	67.0	74.0	78.0	75.0	72.0	68.0	68.0	60																				
Correction - L _{eq,Outside}	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	To adjust to 51 dB during daytime at 1.5m high																			
Correction - L _{eq,Night Time}	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	To adjust to 59 dB during night at 1m high																			
Correction - L _{eq,Evening Time}	-17.2	-17.2	-17.2	-17.2	-17.2	-17.2	-17.2	-17.2	-17.2																				
Corrected Incident Sound Level (Free field)																													
L _{eq,Outside}	32.4	40.4	47.4	51.4	60.4	50.4	39.4	29.4	61																				
L _{eq,Night Time}	30.9	37.9	42.9	48.9	56.9	52.9	42.9	35.9	59																				
L _{eq,Day Time}	41.8	49.8	56.8	60.8	67.8	63.8	53.8	46.8	62																				
Reverberation Time																													
Reverberation Time	0.5	0.0	0.7	0.5	0.5	0.5	0.5	0.5	0.5																				
Total Absorption A (m ²)	9.42	12.57	14.50	10.05	10.05	10.05	10.05	10.05	10.05																				
W(eq)(SRA)	0.02	-1.21	-1.04	-2.99	-2.99	-2.99	-2.99	-2.99	-2.99																				
Maximum L_{eq}																													
L _p Via Vent	-1.0	5.0	20.5	25.1	21.0	11.0	0.0	-10.0	25																				
L _p via Facade (BS12354-3:2014)	10.6	11.2	19.3	16.3	15.5	2.0	-0.0	-4.9	19																				
L_{eq} Total	10.0	12.1	23.9	25.6	22.1	11.6	2.6	-3.7	26																				
Noise Limit Type	40(A)																												
Target Noise Limit	35	52	42	35	29	26	25	27	35																				
Exceed																													
Night Time L_{eq}																													
L _p Via Vent	-3.4	2.4	15.9	22.5	17.4	12.4	3.4	-2.4	22																				
L _p via Facade (BS12354-3:2014)	9.0	0.6	14.7	13.7	11.9	5.2	2.6	1.5	16																				
L_{eq} Total	9.2	9.5	18.4	23.0	18.5	14.0	6.0	2.7	23																				
Noise Limit Type	40(A)																												
Target Noise Limit	30	47	37	30	24	21	20	22	30																				
Exceed																													
Night Time Maximum																													
L _p Via Vent	7.6	14.4	29.9	34.5	30.4	16.4	11.4	15.4	32																				
L _p via Facade (BS12354-3:2014)	20.0	20.6	21.7	25.7	12.9	3.2	10.6	16.9	26																				
L_{eq} Total	20.2	21.5	32.4	35.0	19.5	17.0	14.0	17.7	33																				
Noise Limit Type	40(A)																												
Target Noise Limit	45	62	52	45	39	36	35	37	45																				
Exceed																													



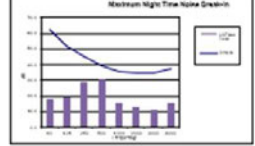
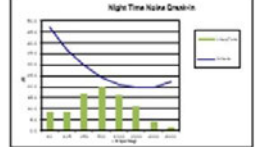
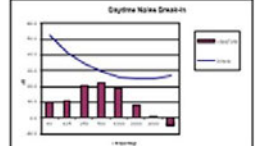
BREAK-IN CALCULATION - HOUSE C, BEDROOM NORTH ELEVATION

Internal Noise Break-in Calculation to BS12234-3:2008																																																					
Project Name		Aranyongker																																																			
Project No.		S2H2024																																																			
Room Name		Bedroom North Core																																																			
Room Details																																																					
Width	2.6	m	Height	2.5	m																																																
Depth	4.5	m	Volume	41.4	m ³																																																
Facade Area	9	m ²	Surface Area	74.12	m ²																																																
Addition of Facade Area	11.5	m ²	Total Facade Area	28.5	m ²																																																
<table border="1"> <thead> <tr> <th></th> <th>63</th> <th>125</th> <th>250</th> <th>500</th> <th>1000</th> <th>2000</th> <th>4000</th> <th>8000</th> <th>f.d.</th> <th>Co.</th> </tr> </thead> <tbody> <tr> <td>Area of glass / SRI</td> <td>2.2</td> <td>16</td> <td>22</td> <td>20</td> <td>26</td> <td>36</td> <td>39</td> <td>31</td> <td>25</td> <td>-4</td> </tr> <tr> <td>Area of Facade / SRI</td> <td>10.3</td> <td>34</td> <td>41</td> <td>44</td> <td>40</td> <td>55</td> <td>55</td> <td>55</td> <td>53</td> <td>-4</td> </tr> <tr> <td>Vent No. off / FD_u</td> <td>2</td> <td>41</td> <td>41</td> <td>31</td> <td>30</td> <td>43</td> <td>43</td> <td>43</td> <td>38</td> <td>-3</td> </tr> </tbody> </table>											63	125	250	500	1000	2000	4000	8000	f.d.	Co.	Area of glass / SRI	2.2	16	22	20	26	36	39	31	25	-4	Area of Facade / SRI	10.3	34	41	44	40	55	55	55	53	-4	Vent No. off / FD _u	2	41	41	31	30	43	43	43	38	-3
	63	125	250	500	1000	2000	4000	8000	f.d.	Co.																																											
Area of glass / SRI	2.2	16	22	20	26	36	39	31	25	-4																																											
Area of Facade / SRI	10.3	34	41	44	40	55	55	55	53	-4																																											
Vent No. off / FD _u	2	41	41	31	30	43	43	43	38	-3																																											
Composite Facade Sound Reduction																																																					
Composite SRI	25	31	30	35	45	41	41	35																																													
Measured Incident Sound Level (Leq)																																																					
Leq Daytime	63	125	250	500	1000	2000	4000	8000	dB(A)	Note																																											
Leq Night	21.0	29.0	46.0	59.0	59.0	49.0	39.0	29.0	60																																												
Leq Night T1	29.0	34.0	41.0	47.0	55.0	51.0	41.0	34.0	57																																												
Leq Night T2	59.0	67.0	74.0	78.0	75.0	72.0	69.0	66.0	80																																												
<table border="1"> <thead> <tr> <th></th> <th>63</th> <th>125</th> <th>250</th> <th>500</th> <th>1000</th> <th>2000</th> <th>4000</th> <th>8000</th> <th></th> </tr> </thead> <tbody> <tr> <td>Correction - Leq Daytime</td> <td>-4.3</td> <td>-4.3</td> <td>-4.3</td> <td>-4.3</td> <td>-4.3</td> <td>-4.3</td> <td>-4.3</td> <td>-4.3</td> <td>To adjust to 61 dB during daytime at 1.5m high</td> </tr> <tr> <td>Correction - Leq Night T1</td> <td>-3.1</td> <td>-3.1</td> <td>-3.1</td> <td>-3.1</td> <td>-3.1</td> <td>-3.1</td> <td>-3.1</td> <td>-3.1</td> <td>To adjust to 59 dB during night at 1.5m high</td> </tr> <tr> <td>Correction - Leq Night T2</td> <td>-23.4</td> <td>-23.4</td> <td>-23.4</td> <td>-23.4</td> <td>-23.4</td> <td>-23.4</td> <td>-23.4</td> <td>-23.4</td> <td></td> </tr> </tbody> </table>											63	125	250	500	1000	2000	4000	8000		Correction - Leq Daytime	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	To adjust to 61 dB during daytime at 1.5m high	Correction - Leq Night T1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	To adjust to 59 dB during night at 1.5m high	Correction - Leq Night T2	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4					
	63	125	250	500	1000	2000	4000	8000																																													
Correction - Leq Daytime	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	To adjust to 61 dB during daytime at 1.5m high																																												
Correction - Leq Night T1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	To adjust to 59 dB during night at 1.5m high																																												
Correction - Leq Night T2	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4																																													
Corrected Incident Sound Level (Leq (field))																																																					
Leq Daytime	26.7	34.7	41.7	45.7	54.7	44.7	34.7	24.7	56																																												
Leq Night T1	25.9	32.9	37.9	43.9	51.9	47.9	37.9	30.9	54																																												
Leq Night T2	35.6	43.6	50.6	54.6	51.6	48.6	44.6	41.6	57																																												
Reverberation Time																																																					
Reverberation Time	0.5	1.0	0.5	0.7	0.5	0.5	0.5	0.5																																													
Total Absorption A (m ²)	6.62	8.03	10.19	13.25	13.25	13.25	13.25	13.25																																													
Wlang (SFA)	4.91	3.64	3.04	1.90	1.90	1.90	1.90	1.90																																													
Daytime L_{eq}																																																					
L _{eq} via Vent	-6.0	0.8	16.4	20.9	16.0	6.8	-4.2	-14.2	21																																												
L _{eq} via Facade (BS1223:2014)	9.5	10.1	10.2	15.1	14.3	1.7	-2.0	-6.1	17																																												
L _{eq} Total	9.4	10.6	20.4	21.9	18.8	8.0	0.1	-5.4	22																																												
Noise Limit Type	4B(A)																																																				
Target Noise Limit	35	52	42	38	29	26	25	27	35																																												
Exceed																																																					
Night Time L_{eq}																																																					
L _{eq} via Vent	-6.0	-1.0	12.6	19.1	14.0	10.0	0.0	-7.0	19																																												
L _{eq} via Facade (BS1223:2014)	0.7	0.3	14.4	13.3	11.5	4.9	2.2	1.1	16																																												
L _{eq} Total	8.8	8.8	16.6	20.1	16.0	11.2	4.3	1.8	21																																												
Noise Limit Type	4B(A)																																																				
Target Noise Limit	30	47	37	30	24	21	20	22	30																																												
Exceed																																																					
Night Time Maximum																																																					
L _{max} via Vent	2.9	9.7	25.3	29.8	13.7	11.7	4.7	4.7	27																																												
L _{max} via Facade (BS1223:2014)	10.4	19.0	27.1	24.0	11.2	6.4	3.9	14.0	24																																												
L _{max} Total	10.5	19.5	29.3	30.8	15.7	12.9	11.0	15.5	29																																												
Noise Limit Type	4B(A)																																																				
Target Noise Limit	45	62	48	39	34	35	35	37	45																																												
Exceed																																																					

Outline

- Includes ISO and ISO
- Views
- Daytime Leq
- Night Time Leq
- Night Time L10
- Show Composite SRI
- Calculate Reverberation Time

Daytime Period: 0700-2300
Night Time Period: 2300-0700



BREAK-IN CALCULATION - HOUSE B, BEDROOM EAST ELEVATION

Internal Noise Break-in Calculation to BS12333-2:2014									
Room Details Width: 3.6 m, Height: 2.5 m Depth: 4.6 m, Volume: 41.4 m ³ Façade Area: 9 m ² , Surface Area: 74.52 m ² Additional Façade Area: 11.5 m ² , Total Façade Area: 20.5 m ²									
Comparison SRI 25, 31, 30, 35, 45, 40, 41, 35									
Measured Incident Sound Level (Leq) 63, 125, 250, 500, 1000, 2000, 4000, 8000, 40(A)									
Correction - Leq, Daytime -10.3, -10.3, -10.3, -10.3, -10.3, -10.3, -10.3, -10.3									
Corrected Incident Sound Level (Leq) 52.7, 52.7, 52.7, 52.7, 52.7, 52.7, 52.7, 52.7									
Reverberation Time 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5									
Daytime L_{eq} 12.0, 5.2, 10.4, 14.9, 10.0, 0.0, -10.2, -20.2, 15									
Night Time L_{eq} -11.0, -6.0, 7.6, 14.1, 9.0, 5.0, -5.0, -12.0, 14									
Night Time Maximum -3.1, 3.7, 19.3, 23.8, 7.7, 5.7, 0.7, 0.7, 21									

Options

- Include EIR and EIRs
- Vents
- Daytime Limit
- Night Time Limit
- Show Graphs (EIR)
- Calculate Reverberation Time

Daytime Period: 0700-2300
Night Time Period: 2300-0700

