



Architectural & Environmental Consultants
Acoustics | Air Quality | Overheating

Noise Assessment- Condition 12

Land at Heath Road, Breachwood Green

Noise Assessment- Condition 12

Project: LAND AT HEATH ROAD, BREACHWOOD GREEN

Report reference: RP01-24411-R0

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Document control:

REVISION	ISSUE DATE	REPORT BY	CHECKED BY	NOTES
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1. EXECUTIVE SUMMARY

- 1.1 Cass Allen has been instructed by Blakeney Estates Limited to assess the acoustic design of the approved development at Land at Heath Road, Breachwood Green as required by Planning Condition 12 on the development consent.
- 1.2 The assessment was carried out in line with BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*', which provides suitable acoustic design criteria for new residential buildings and is therefore appropriate in our view for ensuring compliance with the requirements of Planning Condition 12.
- 1.3 A noise survey was carried out at the site. Noise levels at the site are dictated by road traffic emissions from Heath Road, and aircraft movements associated with Luton Airport.
- 1.4 All façade elements of the development (including glazing and ventilation) and their required acoustic performance have been selected to ensure compliance with BS8233:2014.
- 1.5 Noise levels within amenity areas have been assessed. The levels are predicted to exceed guideline values given in BS8233:2014, however, given that the noise is primarily dictated by aircraft which cannot be mitigated (e.g. by fencing/barriers) the site is considered to be designed as far as practical to reduce noise in amenity area and hence is considered to be compliant with Planning Condition 12.
- 1.6 Noise levels within habitable areas are calculated to be compliant with BS8233:2014 recommended acoustic design criteria, and hence compliant with Planning Condition 12, subject to the installation of façade elements in line with the specification in this report.

2. INTRODUCTION

2.1 Cass Allen has been instructed by Blakeney Estates Limited to assess the acoustic design of a new development at Land at Heath Road, Breachwood Green.

2.2 The assessment has been carried out in accordance with the requirements of Planning Condition 12 (from Decision Notice ref 22/02942/OP), which states:

No development shall take place before a scheme of noise mitigation measures has been submitted to and approved in writing by the LPA. The development shall be carried out as approved prior to the occupation of any residential dwellings and the scheme of measures shall be maintained in accordance with the approved details.

2.3 This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

3. DEVELOPMENT DESCRIPTION

- 3.1 The development comprises of 10 dwellings. A current drawing of the development layout is shown in Appendix 1.
- 3.2 The site is in a mixed-use area, bounded to the east by Heath Road and the west by farmland. Approximately 2km to the south-west is Luton Airport. To the south of the site is a residential area. The site location and surrounding area is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area (Red Line Approximate)



- 3.3 To address the requirements of Planning Condition 12, noise affecting the habitable areas of the development, including external amenity areas and the design of the external facades, has been assessed.

4. NOISE AFFECTING THE DEVELOPMENT

- 4.1 The noise levels that will exist within the habitable rooms and external amenity areas of the finished development have been predicted based on the existing noise environment at the site and details for the design of the development. The predicted noise levels have then been compared with appropriate acoustic design criteria for compliance with Planning Condition 12. Suitable mitigation measures have been identified where necessary to achieve compliant noise levels.

Design criteria

- 4.2 BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' (hereafter BS8233:2014) provide appropriate acoustic design criteria for indoor and outdoor noise levels in habitable areas of new residential properties.
- 4.3 The relevant design criteria for habitable rooms are summarised in Table 1 below.

Table 1 BS8233:2014 Internal Noise Criteria

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB LAeq,16hour	-
Dining	Dining room/area	40 dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hour	30 dB LAeq,8hour

- 4.4 It is also considered appropriate in this case to assess the potential impact of noise emissions from individual aircraft movements on the bedrooms of the development during the night-time. This is in line with guidance given in BS8233:2014, which points out that regular individual noise events during the night have the potential to cause sleep disturbance.
- 4.5 Appropriate design criteria for acceptable maximum noise levels in habitable rooms from regular noise events like scheduled aircraft is provided by national guidance within ProPG: '*Planning & Noise*'. ProPG outlines that good acoustic design is achieved when "individual noise events do not normally exceed 45dB LAFmax more than 10 times a night".
- 4.6 BS8233:2014 also recommends that noise levels in external amenity areas (i.e. gardens in this case) should ideally not exceed 50 – 55 dB LAeq,T.
- 4.7 In our view compliance with the acoustic design criteria set out above would be appropriate for achieving compliance with the requirements of Planning Condition 12.

Existing site noise levels

- 4.8 A noise survey was carried out at the site from 10 to 15 August 2024 to investigate existing noise levels in the area. The full methodology and results of the noise survey are provided in Appendix 2.

- 4.9 Average noise levels (LAeq) across the site were generally dictated by road traffic on the Heath Road and aircraft movements associated with Luton Airport.
- 4.10 The measured levels across the site area as follows:
- Eastern edge of the site:
 - Average noise levels during the daytime - 60 dB LAeq, 0700-2300hrs
 - Average noise levels during the night-time - 54 dB LAeq, 2300-0700hrs
 - Typical maximum noise levels during the night-time – 75 dB LMax
 - Western edge of the site facing the A1184:
 - Average noise levels during the daytime - 57 dB LAeq, 0700-2300hrs
 - Average noise levels during the night-time - 52 dB LAeq, 2300-0700hrs
 - Typical maximum noise levels during the night-time - 73 dB LMax
- 4.11 The eastern edge of site bordering Heath Road is subject to the highest noise levels. The maximum noise levels recorded at the eastern edge are primarily dictated by both vehicle movements on the Heath Road and Aircraft movements. However, given the location and size of the site, and considering the frequency of the aircraft movements, the maximum noise levels across the entire site are dictated by aircraft noise associated with Luton Airport.
- 4.12 The methodology and results of the noise survey are provided in Appendix 2.

Internal noise levels in noise-sensitive rooms

- 4.13 The external walls of the development will be constructed using 102.5mm Brickwork forming 50mm cavity, 9mm OSB, 140mm Timber stud containing 120mm PIR Insulation between studs, 2x12.5mm Gyproc Plasterboard on timber battens.
- 4.14 This construction is calculated to provide an overall sound reduction of 47 dB Rw + Ctr using Insul 10.04 sound insulation calculation software. Due to the density of the external wall, the majority of the noise ingress will be through the ventilators and glazing within the facades
- 4.15 The ventilation strategy for the development will be that of background ventilation will be provided via trickle ventilators in the building façade along with Mechanical Extraction Ventilation (MEV).
- 4.16 Calculations were carried out using facade modelling software in accordance with the “more rigorous” methodology given in BS8233:2014 to verify the suitability of the sound insulation performances of the proposed or intended external walls, glazing and ventilation that have been selected to achieve the internal noise criteria given in given in Table 1.
- 4.17 The results of the calculations are shown in Appendix 3 and are summarised in Table 2 below.

Table 2 Acoustic Requirements for All Habitable Rooms

Habitable Rooms	Glazing Performance Requirements (inc. Frames)	Ventilator Performance Requirements (in Open Position)
Bedrooms	32 dB Rw+Ctr	42 dB Dne,w + Ctr
Living rooms	28 dB Rw+Ctr	31 dB Dne,w + Ctr
Note	The acoustic performance of the glazing systems (including frames) should always be confirmed with the manufacturer before selection for installation.	

- 4.18 We understand that the products showcased in Table 3 below (or similarly approved products) will be used to achieve the required sound insulation performance values in Table 2.

Table 3 Glazing / Ventilator Acoustic Performances

Glazing (in Good Quality Sealed Frames)	Weighted Sound Reduction (Rw + Ctr)
Guardian Glass 4/14/6 Float Glass Glazing	30
Guardian Glass 4/14/6.8 LamiGlass Glazing	32
Ventilators	Acoustic Performance (Dnew + Ctr)
Munster Joinery M335 AV17	35
Greenwood EAR42W 5-35m^3/h	42
Note	The acoustic performance of the glazing systems (including frames) should always be confirmed with the manufacturer before selection for installation on site.

- 4.19 Using the specification shown in Table 2 for noise mitigation, internal noise levels for habitable rooms will meet the design criteria within BS8233:2014 and so meet the requirements for an appropriate scheme of mitigation required by Planning Condition 12.

Noise levels in external amenity areas

- 4.20 Following the requirements of Planning Condition 12 the noise mitigation criteria for external amenity areas in BS8233:2014 are that it is desirable that noise levels in external amenity areas of residential developments do not exceed 50 dB LAeq and that 55 dB LAeq,T should be regarded as an upper guideline value. However, BS8233:2014 recognises that these guideline values will not always be achievable in urban areas adjoining main roads or other transport sources. In these cases, BS8233:2014 states that the development should be designed to achieve the lowest practicable noise levels in the amenity spaces.
- 4.21 Noise levels in gardens across the development are predicted to exceed the 55 dB LAeq,T guideline level by 4-5 dB due to aircraft noise, however whilst this is not ideal it is not uncommon for noise levels in gardens to be higher than the BS8233 recommended levels. For example, gardens in existing residential properties around the site are also predicted to exceed the guideline levels.

- 4.22 It is considered that noise levels within gardens have been designed to achieve the lowest practicable noise levels in line with BS8233:2014 guidance due to the 15m buffer region maintained between the gardens and the road which reduces further the road traffic noise as far as practically possible.
- 4.23 The remaining noise is generated from aircraft passing overhead and, as such, their noise impact within open gardens is unchanged by barriers or fencing etc.
- 4.24 Based on the above it is considered that the noise levels within gardens are in-line with the spirit of BS8233:2014 guidance.
- 4.25 It is hence our view that compliance with the façade specification will ensure compliance with Planning Condition 12.

5. CONCLUSIONS

- 5.1 Cass Allen was instructed by Blakeney Estates Limited to assess the acoustic design of the development as required by Planning Condition 12.
- 5.2 Noise levels at the site are dictated by road traffic noise emissions from Heath Road, and aircraft movements associated with Luton Airport. Data from the noise survey was used to calculate the propagation of noise levels across the development due to the identified sources.
- 5.3 All façade elements of the development (including glazing and ventilation) and their required acoustic performance have been selected to ensure compliance with BS8233:2014.
- 5.4 Noise levels within amenity areas have been assessed. The levels are predicted to exceed guideline values given in BS8233:2014, however, given that the noise is primarily dictated by aircraft which cannot be mitigated (e.g. by fencing/barriers) the site is considered to be designed as far as practical to reduce noise in amenity area and hence is considered to be compliant with Planning Condition 12.
- 5.5 In summary of the above, it is our view that this report contains the information required to demonstrate compliance with the requirements of Planning Condition 12.

Appendix 1 Site Layout



Appendix 2 Survey Results

Survey Summary:

The survey comprised short-term operator attended noise measurements and longer-term unattended noise monitoring at the site. Noise levels at the site were generally dictated by road traffic on surrounding roads and noise from aircraft movement associated with Luton Airport.

Survey Period:

01/10/2024 to 08/10/2024

Survey Objectives:

- To identify noise sources that contribute to ambient noise levels at the site;
- To measure noise levels around the site over a typical day and night-time period.

Equipment Used:

Type	Manufacturer	Model	Serial Number
Sound level meter ¹	NTi Audio	XL2	A2A-24252-E1
Calibrator	Larson Davis	Type CAL200	15011
Sound level meter ¹	Rion	NL-52	00965090
Sound level meter ¹ (noise logger)	Rion	NL-32	01213688
Sound level meter ¹ (noise logger)	Rion	NL-32	00482672
Calibrator	Rion	NC-74	34551703

Note 1: All sound level meters were calibrated before and after measurement periods and no significant drift in calibration was found to have occurred. The results of the measurements are therefore considered to be representative.

Weather Conditions:

The observed weather conditions were acceptable for acoustic measurement throughout the attended survey periods (low-medium wind speeds and no rain). Weather records for the area confirmed that weather conditions were also generally acceptable for acoustic measurement during the unattended monitoring. Any periods of unattended monitoring that may have been adversely affected by weather conditions have been excluded from the data analysis.

Measurement Positions:

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to nearby roads
N2	Attended noise monitoring position. 1.5m above ground. Free-field.
N3	Attended noise monitoring position. 1.5m above ground. Free-field.

Measurement Positions:

Position (refer plan below)	Description
N4	Attended noise monitoring position. 1.5m above ground. Free-field.
N5	Attended noise monitoring position. 1.5m above ground. Free-field.
L1	Unattended noise logging position. 3m above ground level. Free-field. Direct line of sight to nearby roads
L2	Unattended noise logging position. 3m above ground level. Free-field.

Site Plan showing Measurement Positions:



Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmix, dB	LA90, dB	Observations
01/10/2024	N1	10:55	5 mins	61	75	41	Noise dictated by road traffic from Heath Road.
		11:00	5 mins	57	74	41	LAmix dictated by car passes.
		11:07	9 secs	52	60	-	Measurement used to determine spectrum of individual car pass
		11:08	7 secs	70	75	-	Measurement used to determine spectrum of individual truck passes

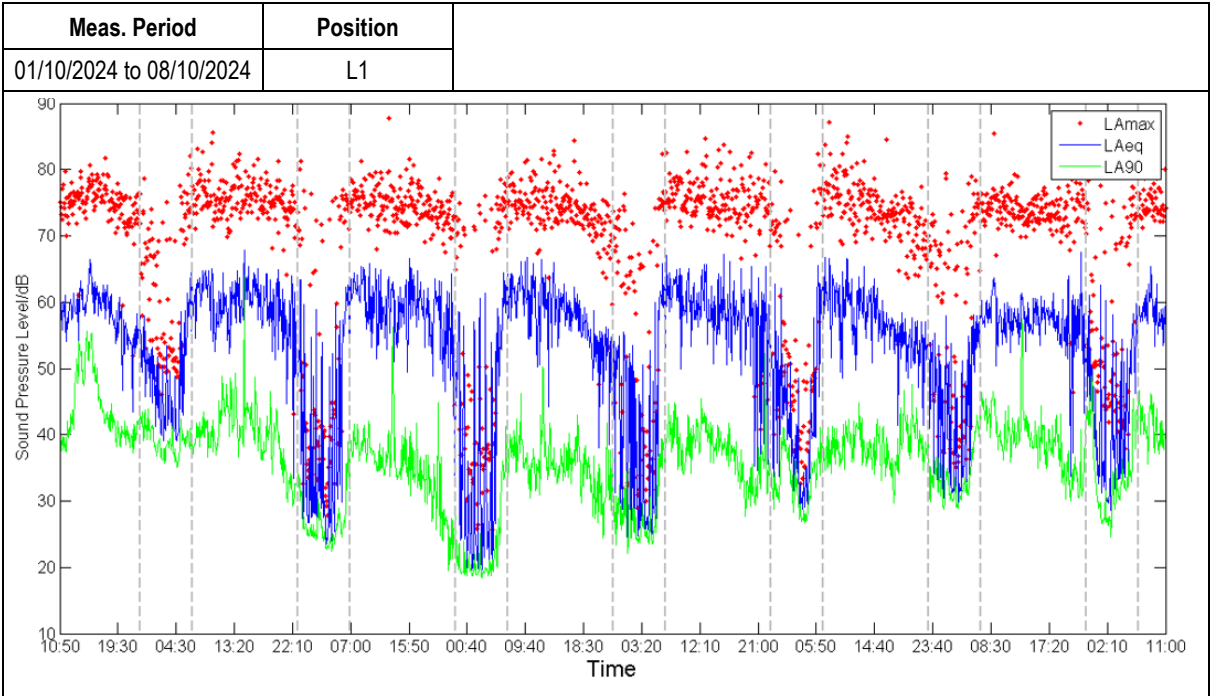
		11:45	4 secs	73	76	-	Measurement used to determine spectrum of individual car pass
	N2	11:14	5 mins	48	65	41	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by aircraft.
		11:19	40 seconds	56	67	-	Measurement used to determine spectrum of individual aircraft movement
		11:20	5 mins	45	56	41	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by aircraft descending.
		11:28	28 seconds	56	64	-	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by aircraft ascending.
	N3	11:32	4 mins	44	55	39	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by aircraft descending.
		11:35	31 seconds	52	62	-	
		11:36	5 mins	42	55	39	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by car passes
	08/10/2024	N3	9:56	5 mins	39	54	36
10:02			3 mins	42	57	37	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by aircraft descending
10:05			37 Seconds	52	66	-	Measurement used to determine spectrum of individual aircraft movement above
10:06			43 seconds	54	65	-	Measurement used to determine spectrum of individual aircraft movement above descending
10:07			4 mins	42	56	38	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by car passes
10:11			26 seconds	54	68	-	Measurement used to determine spectrum of individual aircraft movement above descending
N4		10:35	4 mins	50	61	43	Noise dictated by commercial noise from Luton Airport. LAmax dictated by aircraft movement.
		10:38	1 min	56	61	50	Measurement used to determine spectrum of individual aircraft taking off.
		10:40	3 mins	46	56	39	Noise dictated by commercial noise from Luton Airport. LAmax dictated by aircraft movement.
N5		10:55	5 mins	45	69	40	Noise dictated by road traffic from Heath Road and aircraft movement. LAmax dictated by car passes

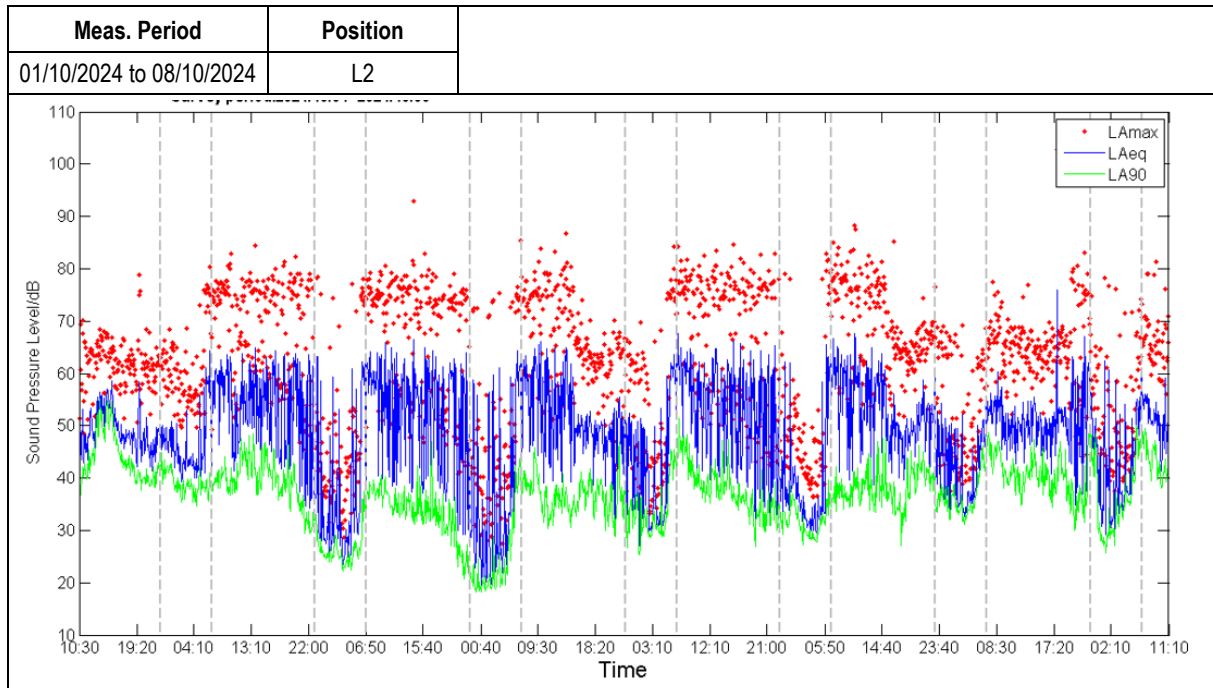
Unattended Noise Monitoring Results:

Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB ¹	LAeq,8hr, dB	LA90,5mins, dB ¹	LAm _{ax} , dB ²
01/10/2024 to 08/10/2024	L1	60	40	54	27	75
	L2	57	39	52	35	73

Note 1: Typical lowest measured during the period shown.

Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).





Appendix 3 Façade Acoustic Calculations

FACSIM V2.7.10 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT: Land at Heath Road
ROOM: Bedroom
VARIANT: Worst-Case Day Average Noise Level (LAeq, 16 hr)
NOTES: Based on Bed 4 from Proposed Type A

Room Dimensions [m] W 3.0 X L 2.7 X H 2.6
Room Volume = 20.3 m3
Partition Area = 14.6 m2
Ventilation ref area = 10.0 m2
Free Field SPL K = 3 dB

SELECT Free Field or Façade SPL for model input >>> [Free Field]

NOTES:

EXTERNAL SPECTRUM (A weighted)

Direct input - Free Field SPL (A weighted octave bands) dB -----> [No data]
Road traffic spectrum (according to BS 8233:1999 section 6) 57.0

38.8 42.9 46.4 49.8 53.0 50.2 45.0 Reference spectrum

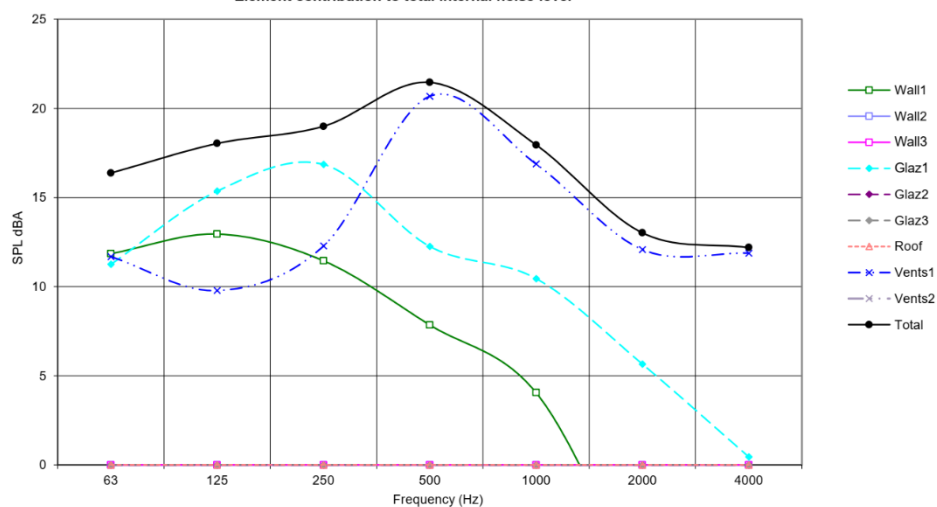
REVERBERATION TIME

DIRECT INPUT -----> [No data]
EQUAL RT for all bands -----> 0.5 0.5 0.5 0.5 0.5 0.5 0.5 Default - RT set to 0.5s

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995									Rw	C	Ctr
Wall 1	Timber frame wall	▼	13.1	33	36	41	48	55	63	66	13%	53	-2	-6
	ATTENUATION													
Wall 2		▼		0	0	0	0	0	0	0	0%			
	ATTENUATION													
Wall 3		▼		0	0	0	0	0	0	0	0%			
	ATTENUATION													
Glazing 1	Guardian Glass 32 dB 4/14/6.8	▼	1.4	24	24	26	34	39	41	41	30%	36	-1	-4
	ATTENUATION													
Glazing 2		▼		0	0	0	0	0	0	0	0%			
	ATTENUATION													
Glazing 3		▼		0	0	0	0	0	0	0	0%			
	ATTENUATION													
Roof		▼		0	0	0	0	0	0	0	0%			
	ATTENUATION													
Resultant composite Façade SRI				31	32	35	43	48	51	51				
Resultant SPL inside room excluding ventilators dB				22.7	15	17	18	14	11	6	1	44%		

Ventilator Type		Num	D _{RA} dB to BS EN 20140-10:1992									Dnew	C	Ctr
Ventilation	Greenwood EAR42W 5-35m³/h	2	35	41	42	37	44	46	41	55%	42	0	0	
	ATTENUATION													
Ventilation			0	0	0	0	0	0	0	0%				
	ATTENUATION													
Resultant SPL inside room through ventilators dB			23.8	12	10	12	21	17	12	12	56%			
Total SPL inside room			26.3	16	18	19	21	18	13	12				

Element contribution to total internal noise level



FACSIM V2.7.10 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT: Land at Heath Road
 ROOM: Bedroom
 VARIANT: Worst-Case Nigt Average Noise Level (LAeq, 8 hr)
 NOTES: Based on Bed 4 from Proposed Type A

Room Dimensions [m] W 3.0 X L 2.7 X H 2.6

Room Volume = 20.3 m3
 Partition Area = 14.6 m2
 Ventilation ref area = 10.0 m2
 Free Field SPL K = 3 dB

SELECT Free Field or Façade SPL for model input >>>

NOTES:

EXTERNAL SPECTRUM (A weighted)

Direct input - Free Field SPL (A weighted octave bands) dB -----> No data

Road traffic spectrum (according to BS 8233:1999 section 6) 52.0

Reference spectrum

dBA	63	125	250	500	1000	2000	4000
33.8	37.9	41.4	44.8	48.0	45.2	40.0	

REVERBERATION TIME

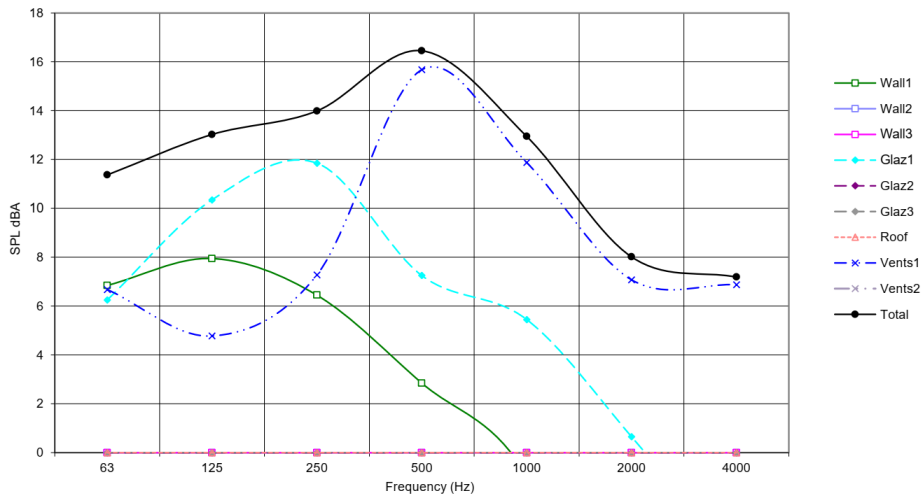
DIRECT INPUT -----> No data

EQUAL RT for all bands -----> 0.5 0.5 0.5 0.5 0.5 0.5 0.5 Default - RT set to 0.5s

Façade Element	Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Timber frame wall	13.1	33	36	41	48	55	63	66	13%	53	-2	-6
ATTENUATION												
Wall 2		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 Guardian Glass 32 dB 4/14/6.8	1.4	24	24	26	34	39	41	41	29%	36	-1	-4
ATTENUATION												
Glazing 2		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 3		0	0	0	0	0	0	0	0%			
ATTENUATION												
Roof		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant composite Façade SRI		31	32	35	43	48	51	51				
Resultant SPL inside room excluding ventilators dB		17.7	10	12	13	9	6	1	-4	44%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood EAR42W 5-35m³/h	2	35	41	42	37	44	46	41	54%	42	0	0
ATTENUATION												
Ventilation		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		18.8	7	5	7	16	12	7	7	56%		
Total SPL inside room		21.3	11	13	14	16	13	8	7			

Element contribution to total internal noise level



FACSIM V2.7.10 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT: Land at Heath Road
ROOM: Bedroom
VARIANT: Worst-Case Maximum Noise Level (LAmax)
NOTES: Based on Bed 4 from Proposed Type A

Room Dimensions [m] W 3.0 X L 2.7 X H 2.6
Room Volume = 20.3 m³
Partition Area = 14.6 m²
Ventilation ref area = 10.0 m²
Free Field SPL K = 3 dB

SELECT Free Field or Façade SPL for model input >>> ☐ Free Field ☒ Façade

EXTERNAL SPECTRUM (A weighted)

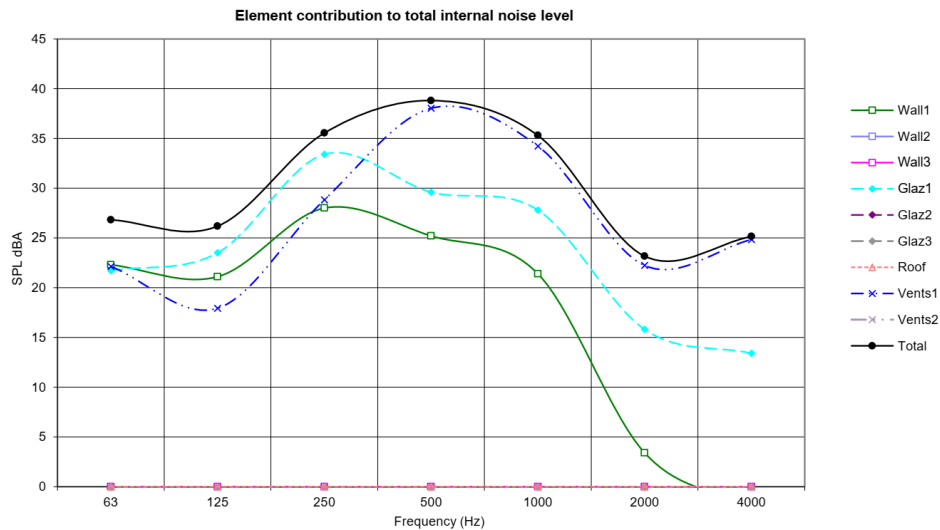
dBA	63	125	250	500	1000	2000	4000
Direct input - Free Field SPL (A weighted octave bands) dB ----->	73.0	49	51	63	67	70	60
Road traffic spectrum (according to BS 8233:1999 section 6)							
	49.3	51.1	63.0	67.2	70.4	60.4	58.0

REVERBERATION TIME

DIRECT INPUT ----->								No data
EQUAL RT for all bands ----->								Default - RT set to 0.5s
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	

Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Timber frame wall	13.1	33	36	41	48	55	63	66	9%	53	-2	-6
ATTENUATION												
Wall 2		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 Guardian Glass 32 dB 4/14/6.8	1.4	24	24	26	34	39	41	41	26%	36	-1	-4
ATTENUATION												
Glazing 2		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 3		0	0	0	0	0	0	0	0%			
ATTENUATION												
Roof		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant composite Façade SRI		31	32	35	43	48	51	51				
Resultant SPL inside room excluding ventilators dB		37.4	25	25	35	31	29	16	14	35%		

Ventilator Type	Num	D _{wp} dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation Greenwood EAR42W 5-35m ³ /h	2	35	41	42	37	44	46	41	65%	42	0	0
ATTENUATION												
Ventilation		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		40.2	22	18	29	38	34	22	25	65%		
Total SPL inside room		42.0	27	26	36	39	35	23	25			



FACSIM V2.7.10 - MODELLING OF FAÇADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT: Land at Heath Road
 ROOM: Living Room
 VARIANT: Worst-case Day Average Noise Level (LAeq, 16 hr)
 NOTES: Based on Lounge Drawings From Proposed Type A

Room Dimensions [m] W 3.6 X L 5.6 X H 2.6

Room Volume = 52.4 m³
 Partition Area = 23.9 m²
 Ventilation ref area = 10.0 m²
 Free Field SPL K = 3 dB

SELECT Free Field or Façade SPL for model input >>>

EXTERNAL SPECTRUM (A weighted)

Direct input - Free Field SPL (A weighted octave bands) dB -----> No data

Road traffic spectrum (according to BS 8233:1999 section 6)

dBA	63	125	250	500	1000	2000	4000
57.0							

Reference spectrum

	63	125	250	500	1000	2000	4000
	38.8	42.9	46.4	49.8	53.0	50.2	45.0

REVERBERATION TIME

DIRECT INPUT -----> No data

EQUAL RT for all bands ----->

	63	125	250	500	1000	2000	4000
	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Default - RT set to 0.5s

Façade Element		Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Timber frame wall	16.8	33	36	41	48	55	63	66	3%	53	-2	-6
	ATTENUATION												
Wall 2			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	Guardian Glass 30 Db 4/14/6	7.1	24	27	24	29	41	39	42	36%	35	-2	-5
	ATTENUATION												
Glazing 2			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof			0	0	0	0	0	0	0	0%			
	ATTENUATION												

Resultant composite Façade SRI

	63	125	250	500	1000	2000	4000
	25.6	15	16	22	20	12	11

Resultant SPL inside room excluding ventilators dB

Ventilator Type		Num	D _{in} dB to BS EN 10140-10:1992								Dnew	C	Ctr
Ventilation	Munster Joinery M335 AV17	3	29	29	39	36	34	38	43	61%	36	0	-1
	ATTENUATION												
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												

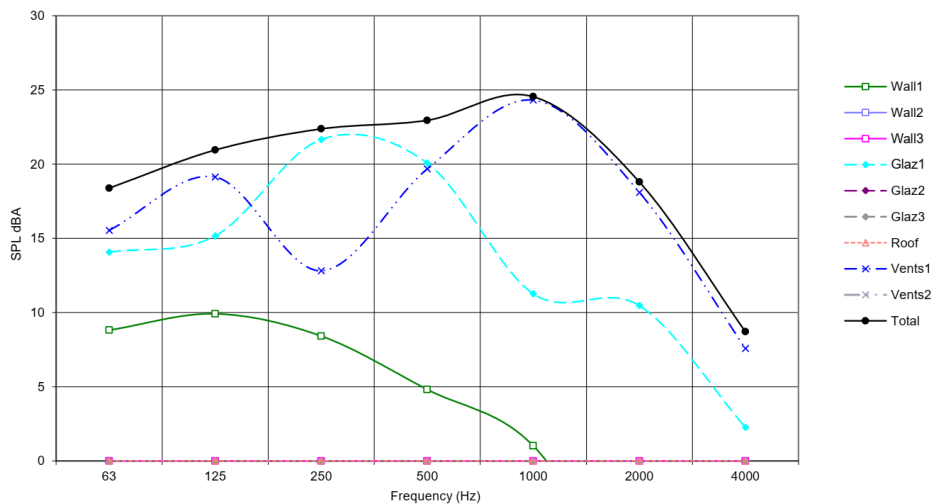
Resultant SPL inside room through ventilators dB

	63	125	250	500	1000	2000	4000
	27.6	16	19	13	20	24	18

Total SPL inside room

	63	125	250	500	1000	2000	4000
	29.7	18	21	22	23	25	19

Element contribution to total internal noise level





Architectural & Environmental Consultants

Acoustics | Air Quality | Overheating

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