



Architectural & Environmental Acousticians

Noise & Vibration Engineers

Noise Impact Assessment

Albion Road, Marden

Noise Impact Assessment

Project: ALBION ROAD, MARDEN

Report reference: RP01-22391-R1

Client: RYDON HOMES LTD
LUXFORD PLACE, LOWER ROAD
RH18 5HE FOREST ROW
EAST SUSSEX

Our details: CASS ALLEN ASSOCIATES LTD
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Document control:

REVISION	ISSUE DATE	REPORT BY	CHECKED BY	NOTES
0	13 September 2022	William Lewis, BSc, Acoustics Consultant	Tim Ives, PhD BEng CEng FIOA, Technical Director	Initial issue
1	14 June 2023	William Lewis, BSc DipIOA AMIOA, Acoustics Consultant	Tim Ives, PhD BEng CEng FIOA, Technical Director	Revised development layout

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1. EXECUTIVE SUMMARY

- 1.1 Cass Allen has been instructed by Rydon Homes Ltd to assess the noise impact of a proposed new development at Albion Road, Marden.
- 1.2 The assessment was carried out in accordance with relevant local and national planning guidance.
- 1.3 A noise survey was carried out at the site. Noise levels at the site are dictated by road traffic noise emissions from Albion Road/Thorn Road and Copper Lane.
- 1.4 Noise affecting the development has been assessed in accordance with the ProPG guidance. The acoustic design of the development is considered to be acceptable with the use of standard thermal double glazing and 'hit and miss' trickle ventilators.
- 1.5 In summary of the above it is our view that the site is suitable for the development in terms of noise levels and that planning permission should be granted subject to the imposition of suitable planning conditions.

2. INTRODUCTION

- 2.1 The assessment has been carried out in accordance with relevant local and national planning guidance.
- 2.2 The aims of the assessment were:
- To establish the suitability of existing noise levels at the site for the proposed development;
 - Where required, identify appropriate measures to optimise the acoustic design of the development and achieve acceptable noise levels in habitable areas;
- 2.3 This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

3. PROJECT DESCRIPTION

- 3.1 The site currently contains land for agricultural use and is located in a mixed-use area, bounded to the north and west by existing residential development. To the west of the site is Albion Road/Thorn Road, and to the south is Copper Lane. To the east of the site is an existing residential property. The site borders on three sides an existing residential property at the north-west corner of the site.
- 3.2 The site location is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area



- 3.3 The proposal is to develop the site into residential properties. A current drawing of the proposed development layout is shown in Appendix 1.

4. PLANNING POLICY

National Policy

- 4.1 Outline guidance for the assessment of noise affecting new developments is given in the National Planning Policy Framework (NPPF). Relevant sections in this case are highlighted below:

174. Planning policies and decisions should contribute to and enhance the natural and local environment by ... preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of ...noise pollution.

185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

Local Policy

- 4.2 The Maidstone Borough Local Plan (October 2017) provides outline guidance on the assessment of noise affecting new development in the borough.

Policy DM 1: Principles of good design

Proposals which would create high quality design and meet the following criteria will be permitted:

iv. Respect the amenities of occupiers of neighbouring properties and uses and provide adequate residential amenities for future occupiers of the development by ensuring that development does not result in, or is exposed to, excessive noise, vibration, odour, air pollution, activity or vehicular movements, overlooking or visual intrusion, and that the built form would not result in an unacceptable loss of privacy or light enjoyed by the occupiers of nearby properties

- 4.3 To address the requirements of the national and local policies, the following key acoustic matters have been assessed:

- Noise affecting the habitable areas of the proposed development;
- Noise affecting the external amenity spaces within the development.

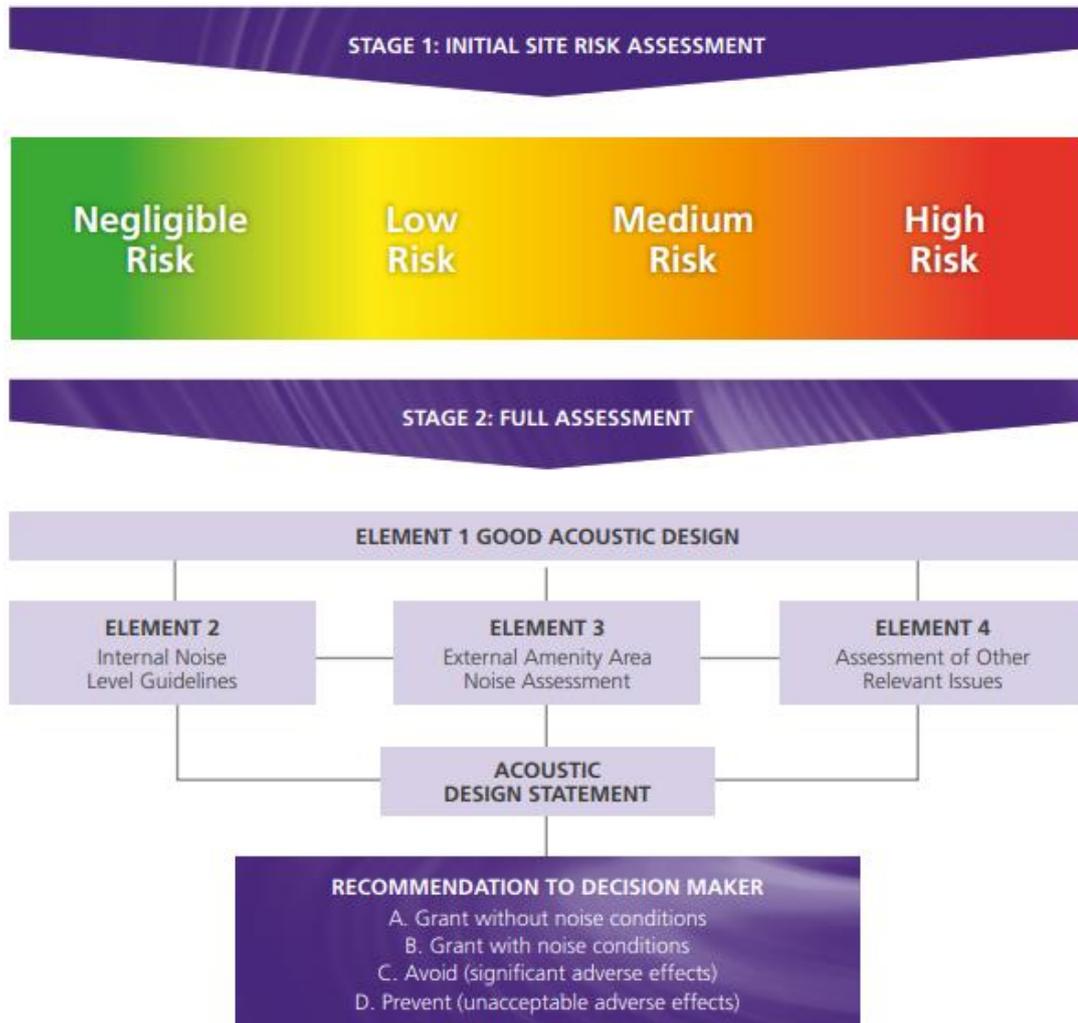
5. NOISE AFFECTING THE DEVELOPMENT

5.1 Specific guidance on the assessment of noise affecting new residential development is given in ProPG: Planning and Noise for New Residential Development, May 2017 (ProPG). The process within the ProPG guidance for the appraisal of noise levels affecting new residential development is considered to be current 'best practice' and has, therefore, been followed for the assessment. The assessment process can be summarised as follows:

- Stage 1 – measure noise levels at the site and carry out an initial noise risk assessment of the proposed development site based on the measured levels.
- Stage 2 – where a higher noise risk is identified, carry out a detailed assessment including the following four considerations:
 - Element 1 – the overall acoustic design and layout of the site
 - Element 2 – internal noise levels in habitable areas
 - Element 3 – noise levels in external amenity areas
 - Element 4 – consideration of other relevant issues
- Based on the results of the Stage assessment, provide a recommendation to the decision maker on whether planning permission can and should be granted.

5.2 The process is shown visually in Figure 2 below:

Figure 2 ProPG Assessment Process



5.3 It should be noted that the guidance in ProPG relates primarily to noise from transportation sources, i.e. road traffic, aircraft, rail etc. Any significant noise from other sources (e.g. industrial, commercial or entertainment sources) is outside the scope of the ProPG guidance and, therefore, requires separate consideration.

Stage 1 – Noise survey and initial assessment

5.4 A noise survey was carried out at the site from 25th August to 1st September 2022 to assess existing noise levels in the area. The full methodology and results of the noise survey are provided in Appendix 2.

5.5 Average noise levels across the site were generally dictated by road traffic on Albion Road/Thorn Road. Average noise levels at the south edge of the site were also affected by sporadic vehicle movements on Copper Lane.

- 5.6 Maximum noise levels across the site were largely dictated by road traffic passes on the surrounding roads.
- 5.7 Background noise levels (LA90) across the site were dictated by environmental noise and road traffic on surrounding roads.
- 5.8 Areas of the development at the north-western corner will be subject to the highest noise levels. The noise survey results show that noise levels at the position of the ‘worst case’ dwelling in this area of the site are as follows:
- Average noise levels during the daytime - 53 dB LAeq,0700-2300hrs;
 - Average noise levels during the night-time - 44 dB LAeq,2300-0700hrs;
 - Typical maximum noise levels during the night-time - 68 dB LMax.
- 5.9 The measured noise levels can be compared with Figure 3 below to assess the ‘noise risk’ of the site. Where the noise risk is high, significant acoustic design measures may be required to achieve acceptable noise levels in the development. Where the noise risk is low, acceptable noise levels may be achievable with no specific acoustic design measures.

Figure 3 Noise Risk Assessment (Adaption of Figure 1 from ProPG)



- 5.10 It can be seen from a comparison of the measured noise levels in paragraph 5.8 above with Figure 3 that the site is ‘Low’ risk in relation to daytime noise levels and ‘Low’ risk in relation to night-time noise levels. Therefore, ProPG requires that a more detailed ‘Stage 2’ assessment is carried out.

Stage 2 – Element 1 – Overall acoustic design of the site

- 5.11 The acoustic design of the development is such that acceptable internal and external noise levels can be achieved at the positions of the ‘worst case’ dwellings within the site without the imposition of acoustic upgrades above standard facade constructions. The detailed requirements of the facade elements are discussed further below.
- 5.12 The layout of the development is also good in our view as the public open spaces across the development are not adjoined to external roads; therefore, all residents have access to quiet central amenity areas.

Stage 2 – Element 2 - Internal noise levels

- 5.13 Appropriate design criteria for acceptable noise levels in acoustically sensitive areas of new developments are given in BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'.
- 5.14 Relevant BS8233 design criteria 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

- 5.15 Therefore, the following acoustic design criteria have been adopted for the development:
- Average noise levels in living rooms and dining rooms during the day should not exceed 35 dB LAeq,0700-2300hrs and 40 dB LAeq,0700-2300hrs respectively;
 - Average noise levels in bedrooms should not exceed 35 dB LAeq,0700-2300hrs during the day and 30 dB LAeq,2300-0700hrs during the night;
 - Maximum noise levels should not regularly exceed 45 dB LAmax in bedrooms during the night.
- 5.16 Full construction details for the development have not been finalised as the project is at an early design stage. It has therefore been assumed that the external walls of the development will be constructed using a standard masonry construction (e.g. 102mm brick, 100mm insulated cavity, 100mm concrete block) or a light-weight construction designed to achieve a similar level of sound insulation (this is technically achievable subject to detailed design). Consequently, internal noise levels would be dictated by external noise ingress via glazing and ventilators.
- 5.17 The ventilation scheme for the project has not yet been decided and therefore, for the purpose of the assessment, it has been assumed that units will be ventilated via trickle ventilators in the external facades with openable windows for the provision of purge ventilation (as per System 1 or System 3 from Building Regulations Part F) as this represents a 'worst case' scenario in terms of noise ingress.
- 5.18 Calculations were carried out using facade modelling software in accordance with the methodology given in BS8233:2014 to calculate the sound insulation performance required of the glazing and ventilation to achieve the nominated internal noise criteria in the 'worst-case' habitable rooms of the development (i.e. the habitable rooms that will be subject to the highest external noise levels).
- 5.19 If acceptable internal noise levels can be achieved in 'worst case' habitable rooms then it follows that acceptable internal noise levels can be achieved in all other habitable rooms of the development using similar glazing and ventilator types.

5.20 The calculations were carried out based on the following typical dimensions/details for facade elements:

- Glazing – 1.5m² for bedrooms and 2m² for living rooms;
- External walls – 8m² for bedrooms and 15m² for living rooms; and
- 2 in-frame trickle ventilators in bedrooms and 3 in-frame trickle ventilators in living rooms.

5.21 The results of the calculations are shown in Appendix 3 and are summarised in Table 2 below.

Table 2 Acoustic Requirements for ‘Worst Case’ Habitable Rooms

‘Worst Case’ Rooms	Glazing Performance Requirements (inc. Frames)	Ventilator Performance Requirements (in Open Position)
Bedrooms at north west corner of development	27 dB Rw+Ctr	31 dB Dne,w + Ctr
Living rooms at north west corner of development	27 dB Rw+Ctr	31 dB Dne,w + Ctr

Note The requirements given are approximate only and should be confirmed at the detailed design stage when full design details are available.

5.22 The required sound insulation performance values in Table 2 could typically be achieved by the use of standard thermal double glazing and ‘hit & miss’ in-frame trickle ventilators. However, the acoustic performance of the glazing systems (including frames) should always be confirmed with the manufacturer before selection for installation on site.

5.23 It can be seen from the above that acceptable internal noise levels will be achievable in the development subject to the specification of suitable glazing and ventilation systems at the detailed design stage. It is our view therefore that the proposed development is, in principle, acceptable with regard to the noise levels that will exist within the habitable rooms.

5.24 The development will be subject to the recently published Part O of the Building Regulations (Approved Document O), which came into effect on 15 June 2022 and states:

In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).

b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am).

- 5.25 The results of the noise survey indicate that habitable areas of the development are unlikely to exceed the noise limits provided in Approved Document O when the windows are opened. The overheating assessment is, therefore, likely to be able to rely solely on open windows. This will need to be confirmed as part of the overheating assessment during the detailed design stage.

Stage 2 – Element 3 – Noise levels in external amenity areas

- 5.26 BS8233 states 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 recognises that these guideline values will not always be achievable in city centres or urban areas adjoining main roads or other transport sources. In these cases, BS8233 states that the development should be designed to achieve the lowest practicable noise levels in the amenity spaces.
- 5.27 The noise survey results indicate that noise levels in external amenity areas are predicted to generally achieve the BS8233 recommended levels. The proposed development is therefore also considered to be acceptable based on noise levels in external amenity areas.

Stage 2 – Element 4 – Other relevant issues

- 5.28 In our view the design and acoustic approach outlined above is in line with both local and national noise policy. In keeping with the Maidstone Borough Local Plan (October 2017), residents of the proposed development will not be exposed to excessive amounts of noise.

Recommendation to decision maker

- 5.29 It is our view that planning permission should be granted with regards to noise affecting habitable areas of the development subject to the imposition of suitable planning conditions to ensure that acceptable noise levels are achieved in the finished development.

6. CONCLUSIONS

- 6.1 It is our view that the site is suitable for the development in terms of noise levels and that planning permission should be granted subject to the imposition of suitable planning conditions.

Appendix 1 Development Layout

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KEY

- Site boundary
- ➔ Site access
- Affordable Homes
- ◆ Focal Building
- ✦ Gateway Building
- LAP Local Area of Play
- SS Sub Station
- Car Barn
- Brickwork Walls



ACCESS TO THE HOWLANDS
RE-PROVIDED FROM THE
SITE ACCESS ROAD

EXISTING TREES /
PERIMETER HEDGEROW

SILVER BIRCH TREELINE

SILVER BIRCH TREELINE

EXISTING TREES /
PERIMETER HEDGEROW

THORN ROAD

COPPER LANE

LANDSCAPED
ATTENUATION
POND

LINKAGE - AS EMERGENCY ACCESS
SHARED WITH PEDESTRIAN /
CYCLE ACCESS FROM ALBION ROAD
TO COPPER LANE



Coloured Site Layout
Land East of Albion Road
& North of Copper Lane, Marden
22037 / SK25J
Scale 1:500 @ A0 August 2023

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.

Survey Period:

25/08/2022 to 01/09/2022

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-15506-E0
Calibrator	NTi Audio	600 000 388	15011
Sound level meter ¹ (noise logger)	Rion	NL-32	01213688
Calibrator	Rion	NC-74	34551703
Sound level meter ¹	Rion	NL-52	00965090

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.

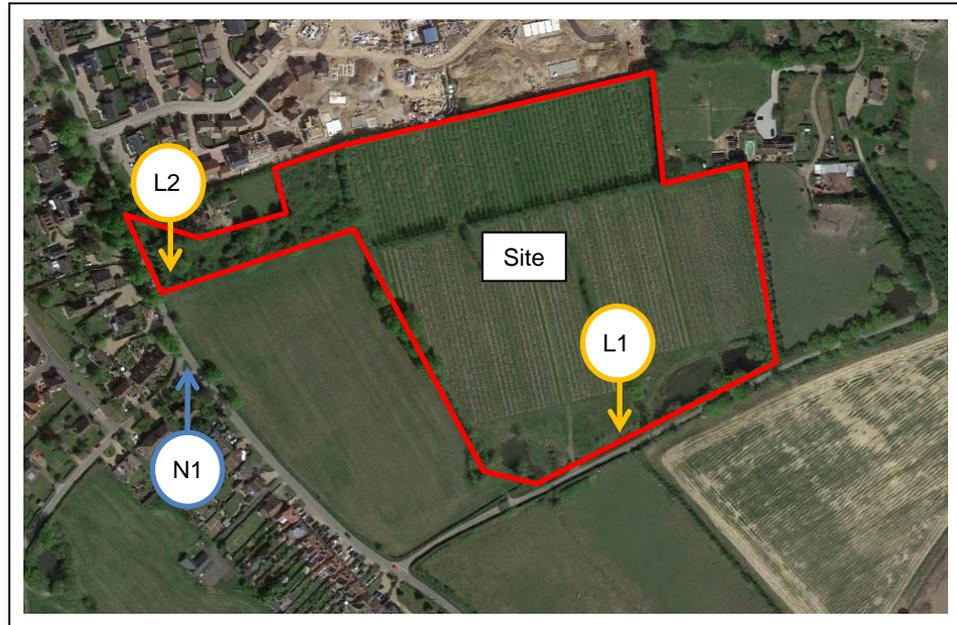
Weather Conditions:

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.

Measurement Positions:

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Albion Road/Thorn Road (1m away).
L1	Unattended noise logging position. 2m above ground level. Free-field. In close proximity to Albion Road/Thorn Road.
L2	Unattended noise logging position. 2m above ground level. Free-field. In close proximity to Copper Lane.

Site Plan showing Measurement Positions:



Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmix, dB	LA90, dB	Observations
01/09/2022	N1	13:38	30 secs	56	63	50	Measurement of road traffic passes on Albion Road/Thorn Road.
		13:39	19 secs	64	73	46	
		13:41	6 secs	67	72	60	
		13:42	8 secs	68	73	61	
		13:43	11 secs	67	74	53	

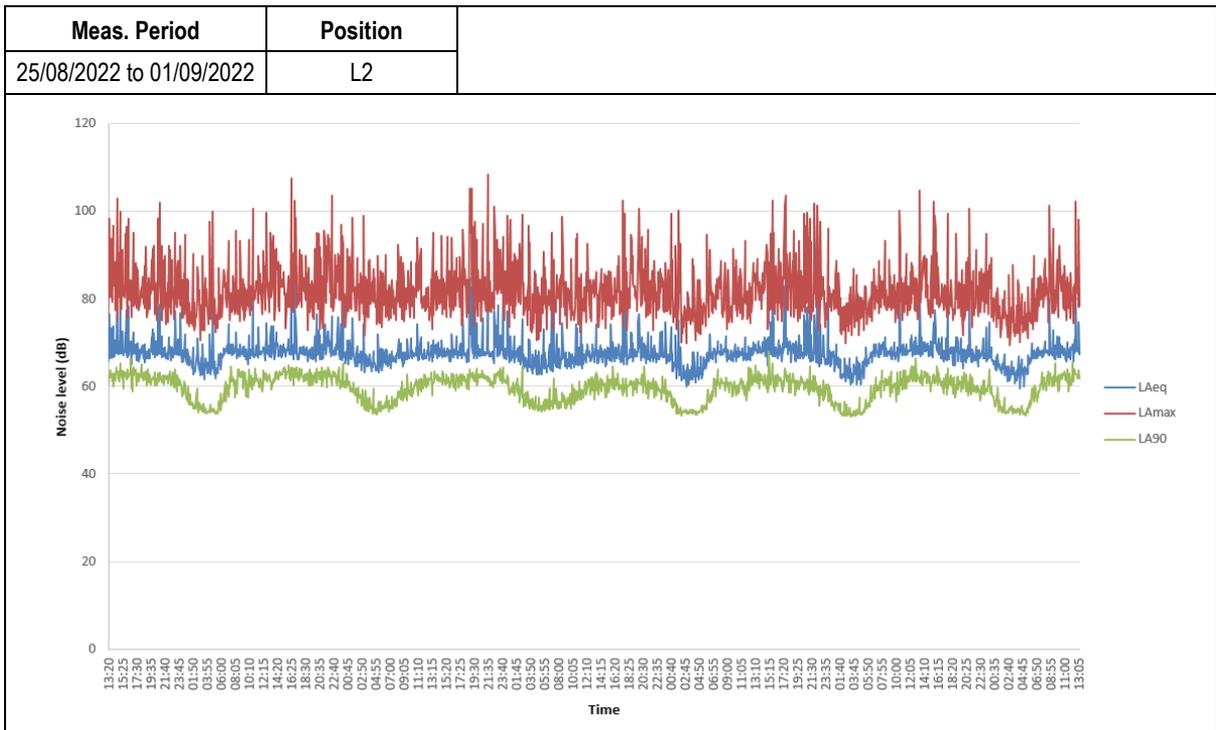
Unattended Noise Monitoring Results:

Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB ¹	LAeq,8hr, dB	LA90,5mins, dB ¹	LAmix, dB ²
25/08/2022 to 01/09/2022	L1	46	32	37	24	57
	L2	53	36	44	21	68

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).

Unattended Noise Monitoring Results:



Appendix 3 FACSIM Modelling Calculations

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PROJECT: 22391 - Albion Road, Marden
 ROOM: Typical Bedroom - Plot 121
 VARIANT: Average daytime levels
 NOTES:

Room Dimensions [m] W 3.0 X L 4.0 X H 2.4

Room Volume = 28.8 m³
 Partition Area = 9.5 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)

dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-							No data
Road traffic spectrum (according to BS 8233:1999 section 6)	53.0							
	34.8	38.9	42.4	45.8	49.0	46.2	41.0	Reference spectrum

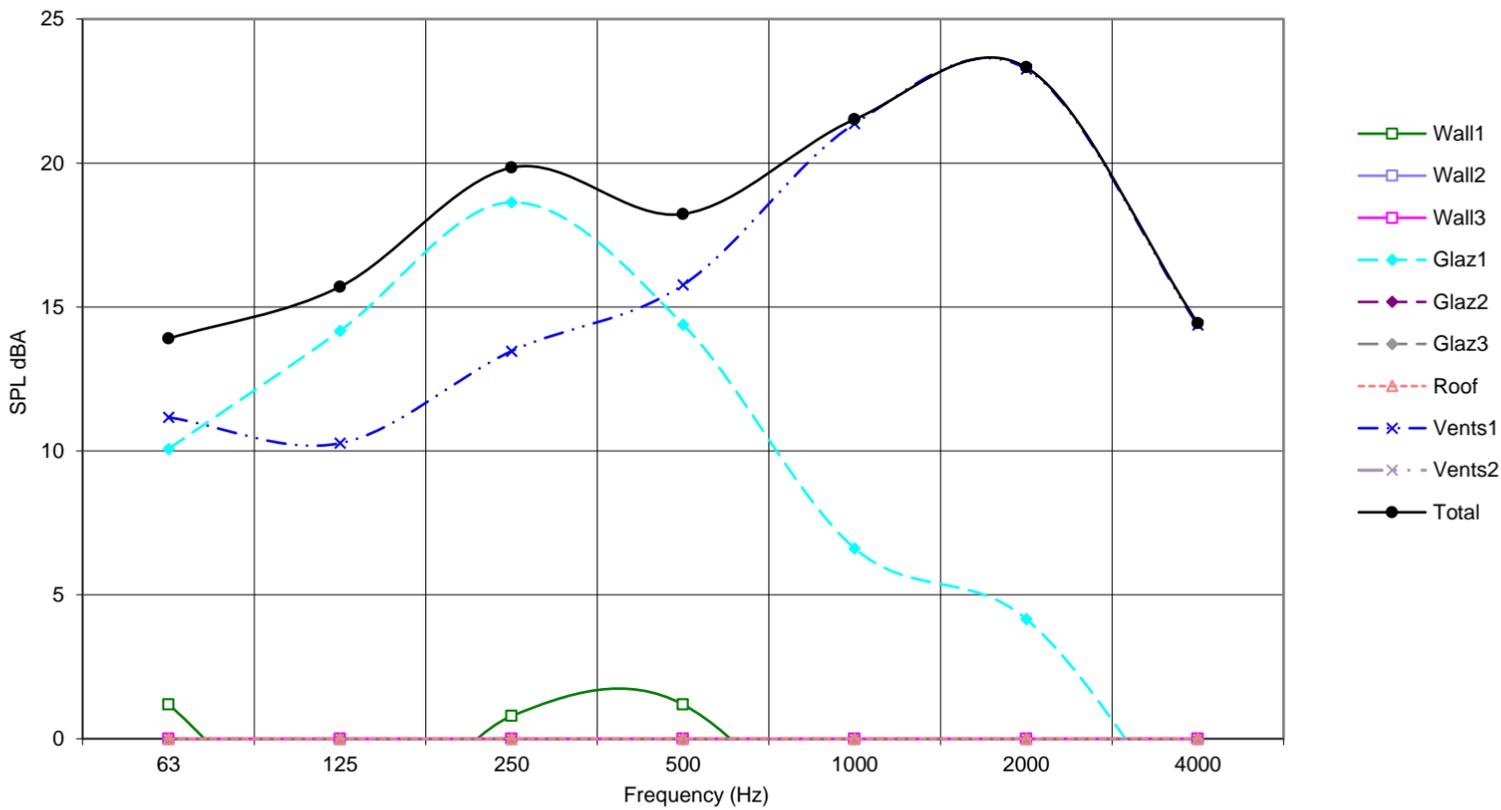
REVERBERATION TIME

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 [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical - 102mm brick/50mm cavity/100mm block ATTENUATION	8.0	36	45	44	47	57	67	77	0%	54	0	-4
Wall 2 WALLS ATTENUATION		0	0	0	0	0	0	0	0%			
Wall 3 WALLS ATTENUATION		0	0	0	0	0	0	0	0%			
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing ATTENUATION	1.5	20	20	19	27	38	37	40	24%	27 (inc Ctr)	-	-
Glazing 2 GLAZING ATTENUATION		0	0	0	0	0	0	0	0%			
Glazing 3 GLAZING ATTENUATION		0	0	0	0	0	0	0	0%			
Roof ROOF / FLOOR ATTENUATION		0	0	0	0	0	0	0	0%			
Resultant composite Façade SRI		27	28	27	34	45	45	48				
Resultant SPL inside room excluding ventilators dB		21.7	11	14	19	15	7	4	-3	24%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13 ATTENUATION	2	30	35	35	36	34	29	33	75%	32	0	-1
Ventilation VENTS ATTENUATION		0	0	0	0	0	0	0	0%			
Resultant SPL inside room through ventilators dB		26.6	11	10	13	16	21	23	14	76%		
Total SPL inside room		27.8	14	16	20	18	22	23	14			

Element contribution to total internal noise level



PROJECT: 22391 - Albion Road, Marden
 ROOM: Typical Bedroom - Plot 121
 VARIANT: Average night time levels
 NOTES:

Room Dimensions [m] W 3.0 X L 4.0 X H 2.4

Room Volume = 28.8 m³
 Partition Area = 9.5 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)

dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-							No data
Road traffic spectrum (according to BS 8233:1999 section 6)	44.0							
	25.8	29.9	33.4	36.8	40.0	37.2	32.0	Reference spectrum

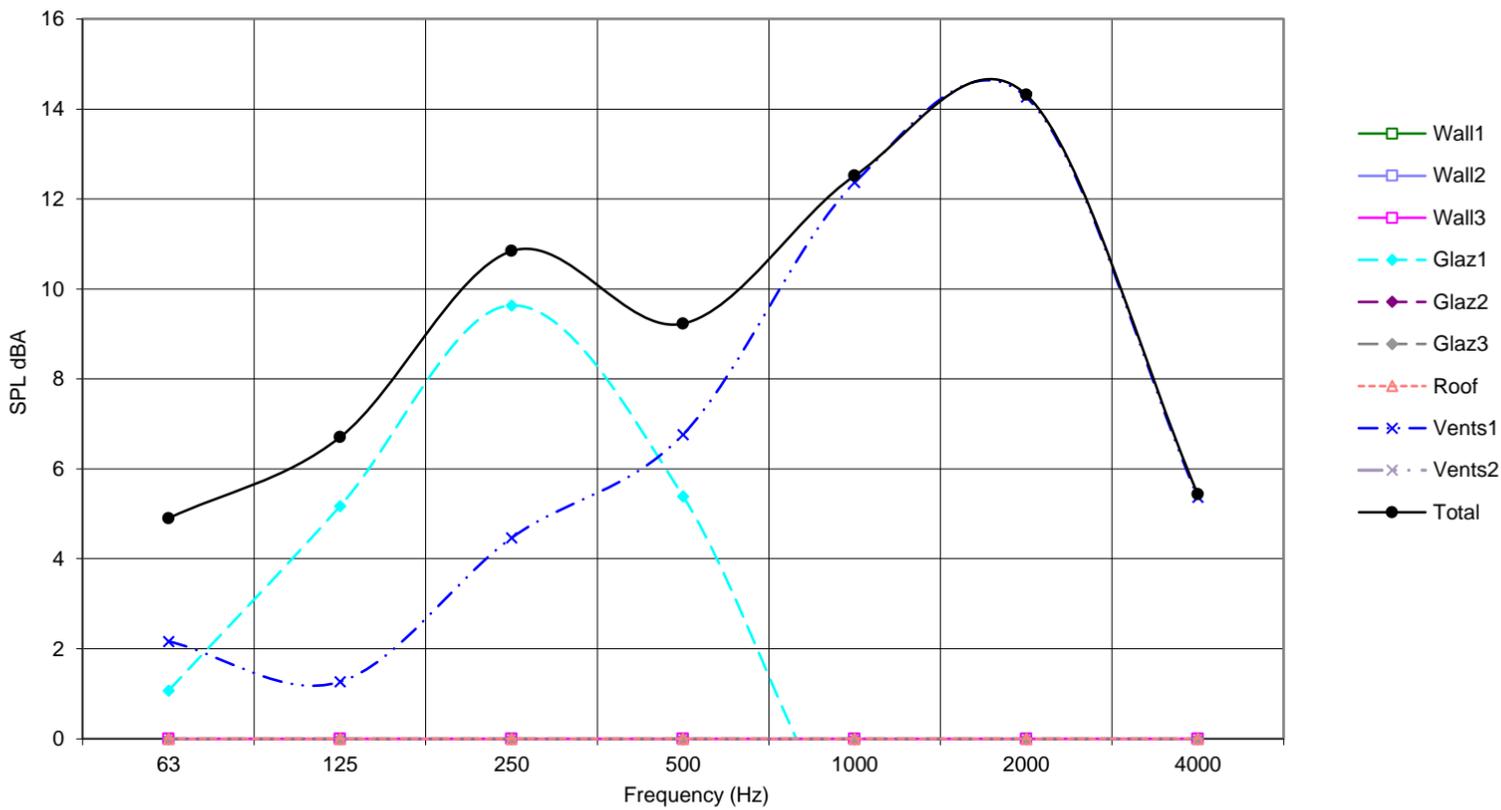
REVERBERATION TIME

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 [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical - 102mm brick/50mm cavity/100mm block ATTENUATION	8.0	36	45	44	47	57	67	77	1%	54	0	-4
Wall 2 WALLS ATTENUATION		0	0	0	0	0	0	0	0%			
Wall 3 WALLS ATTENUATION		0	0	0	0	0	0	0	0%			
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing ATTENUATION	1.5	20	20	19	27	38	37	40	22%	27 (inc Ctr)	-	-
Glazing 2 GLAZING ATTENUATION		0	0	0	0	0	0	0	0%			
Glazing 3 GLAZING ATTENUATION		0	0	0	0	0	0	0	0%			
Roof ROOF / FLOOR ATTENUATION		0	0	0	0	0	0	0	0%			
Resultant composite Façade SRI		27	28	27	34	45	45	48				
Resultant SPL inside room excluding ventilators dB		12.7	2	5	10	6	-2	-5	-12	24%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13 ATTENUATION	2	30	35	35	36	34	29	33	71%	32	0	-1
Ventilation VENTS ATTENUATION		0	0	0	0	0	0	0	0%			
Resultant SPL inside room through ventilators dB		17.6	2	1	4	7	12	14	5	76%		
Total SPL inside room		18.8	5	7	11	9	13	14	5			

Element contribution to total internal noise level



PROJECT: 22391 - Albion Road, Marden
 ROOM: Typical Bedroom - Plot 121
 VARIANT: Night time maximum levels
 NOTES:

Room Dimensions [m] **3.0** X **4.0** X **2.4**
 Room Volume = **28.8** m3
 Partition Area = **9.5** 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)

dBA	63	125	250	500	1000	2000	4000
Direct input - Free Field SPL (A weighted octave bands) dB ----->	68.0	37.3	44.2	50.4	61.2	65.7	60.3
Road traffic spectrum (according to BS 8233:1999 section 6)							
	37.3	44.2	50.4	61.2	65.7	60.3	50.8

REVERBERATION TIME

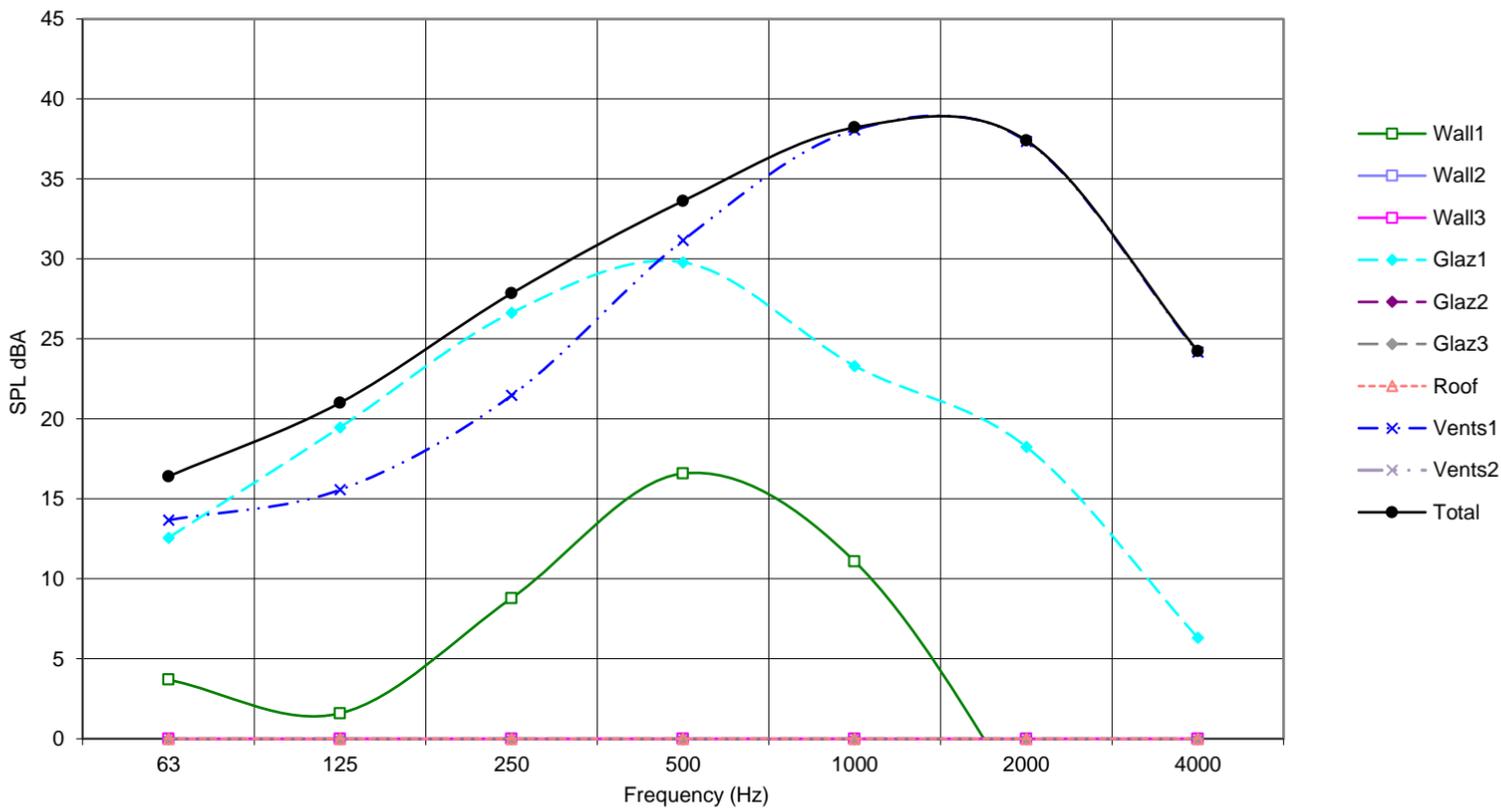
DIRECT INPUT -----> No data
 EQUAL RT for all bands -----> Default - RT set to 0.5s

NOTES:

Façade Element	Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical - 102mm brick/50mm cavity/100mm block ATTENUATION	8.0	36	45	44	47	57	67	77	0%	54	0	-4
Wall 2 WALLS ATTENUATION		0	0	0	0	0	0	0	0%			
Wall 3 WALLS ATTENUATION		0	0	0	0	0	0	0	0%			
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing ATTENUATION	1.5	20	20	19	27	38	37	40	12%	27 (inc Ctr)	-	-
Glazing 2 GLAZING ATTENUATION		0	0	0	0	0	0	0	0%			
Glazing 3 GLAZING ATTENUATION		0	0	0	0	0	0	0	0%			
Roof ROOF / FLOOR ATTENUATION		0	0	0	0	0	0	0	0%			
Resultant composite Façade SRI		27	28	27	34	45	45	48				
Resultant SPL inside room excluding ventilators dB		32.7	13	20	27	30	24	18	6	12%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13 ATTENUATION	2	30	35	35	36	34	29	33	88%	32	0	-1
Ventilation VENTS ATTENUATION		0	0	0	0	0	0	0	0%			
Resultant SPL inside room through ventilators dB		41.3	14	16	21	31	38	37	24	88%		
Total SPL inside room		41.9	16	21	28	34	38	37	24			

Element contribution to total internal noise level



PROJECT: 22391 - Albion Road, Marden
 ROOM: Typical living room - Plot 121
 VARIANT: Daytime average levels
 NOTES:

Room Dimensions [m] W 4.0 X L 5.0 X H 2.4

Room Volume = 48.0 m³
 Partition Area = 17.0 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)

dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB	-							No data
Road traffic spectrum (according to BS 8233:1999 section 6)	53.0							
	34.8	38.9	42.4	45.8	49.0	46.2	41.0	Reference spectrum

REVERBERATION TIME

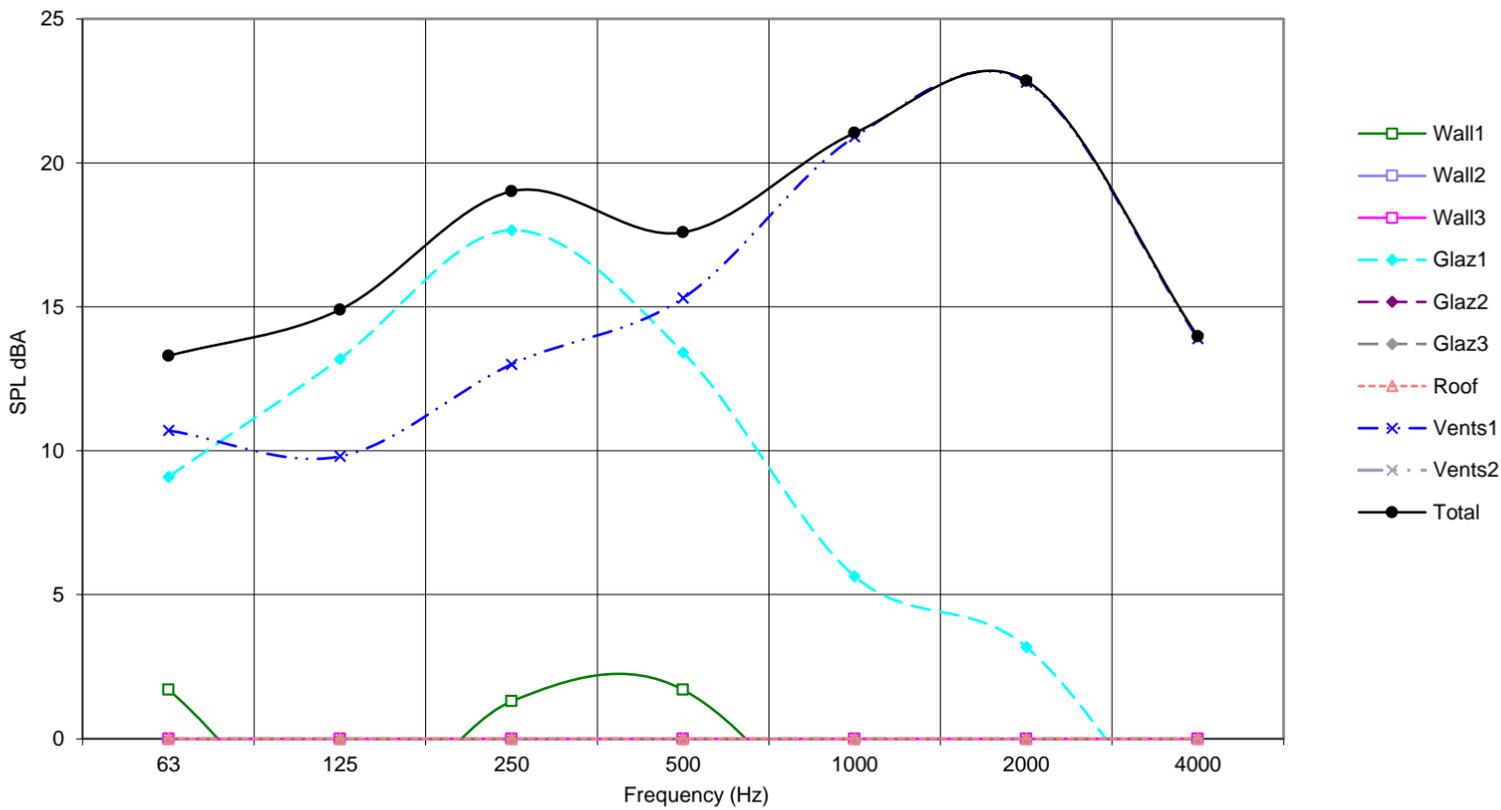
DIRECT INPUT								No data
EQUAL RT for all bands	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Default - RT set to 0.5s

NOTES:

Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical - 102mm brick/50mm cavity/100mm block	15.0	36	45	44	47	57	67	77	0%	54	0	-4
ATTENUATION												
Wall 2 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing	2.0	20	20	19	27	38	37	40	22%	27 (inc Ctr)	-	-
ATTENUATION												
Glazing 2 GLAZING		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 3 GLAZING		0	0	0	0	0	0	0	0%			
ATTENUATION												
Roof ROOF / FLOOR		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant composite Façade SRI		28	29	28	36	46	46	49				
Resultant SPL inside room excluding ventilators dB		20.8	10	13	18	14	6	3	-4	23%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13	3	30	35	35	36	34	29	33	77%	32	0	-1
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		26.2	11	10	13	15	21	23	14	77%		
Total SPL inside room		27.3	13	15	19	18	21	23	14			

Element contribution to total internal noise level





Architectural & Environmental Acousticians Noise & Vibration Engineers

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