



Architectural & Environmental Consultants
Acoustics | Air Quality | Overheating

Condition 40 Noise Assessment

Phase R11, South Wokingham

Condition 40 Noise Assessment

Project: PHASE R11, SOUTH WOKINGHAM

Report reference: CONDITION 40 NOISE ASSESSMENT-JUNE 2025-91001

Report reference (Cass Allen): RP01-25060-R1

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REVISION	ISSUE DATE	REPORT BY	CHECKED BY	NOTES
0	18 March 2025	Benjamin Briggs, BSc (Hons), Acoustics Consultant	Henry Cox, BEng MIOA, Senior Acoustics Consultant	Initial issue
1	23 June 2025	Henry Cox, BEng MIOA, Senior Acoustics Consultant	-	Minor layout amendment

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1. EXECUTIVE SUMMARY

- 1.1 Cass Allen has been instructed by Kier Property Developments Limited to assess the acoustic design of a new development at Phase R11, South Wokingham.
- 1.2 The assessment was carried out in accordance with the requirements of Planning Condition 40 and informed by relevant acoustics standards and 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 Waterloo Road.
- 1.4 A 3D noise model of the development was constructed based on the results of a site noise survey and predicted traffic flow data for the finished development provided by the design team. The noise model was used to calculate noise levels across the site.
- 1.5 Internal noise levels within habitable areas of the development have been calculated and, where appropriate, noise mitigation has been specified to comply with the relevant criteria set out in BS8233:2014. It is therefore our view that the glazing and ventilation strategies herein are sufficient to comply with the internal noise requirements of Planning Condition 40.
- 1.6 Noise levels within external amenity areas have been predicted using the 3D noise model. The results indicate that levels will comply with the guidance in BS8233:2014, based on the use of 1.8m high closed board timber garden fences.
- 1.7 Guidance has been provided regarding the noise criteria from Part O of the building regulations. Any overheating assessment will need to assume that some bedroom windows facing Waterloo Road will be closed during the night-time to comply with the criteria set out in Part O. A markup showing permissible window openings is provided in Appendix 6. The overheating assessment can rely on open windows in all other bedrooms across the rest of the site regarding noise.
- 1.8 In summary of the above, it is our view that this report contains the information required to discharge Planning Condition 40.

2. INTRODUCTION

- 2.1 Cass Allen has been instructed by Kier Property Developments Limited to assess the acoustic design of a new development at Phase R11, South Wokingham.
- 2.2 The assessment has been carried out in accordance with the requirements of Planning Condition 40 that has been imposed on the development. The condition states the following:

Noise mitigation

40. The reserved matters for any phase of the development which includes noise sensitive premises shall be accompanied by a Noise Mitigation Plan demonstrating how appropriate internal and external noise levels will be achieved. The scheme shall be implemented in full before any noise sensitive premises are occupied and the mitigation measures will be maintained for the duration of the development.

Reason: to ensure that noise does not impact on the amenity of future occupants in accordance with Core Strategy Policy CP1 Sustainable Development, CP3; Managing Development Delivery Local Plan Policy CC06 Noise; and the South Wokingham SDL SPD. Details are required at this stage because measures the layout of the site, internal layout of buildings and construction of buildings all need to be considered.

- 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 residential properties and apartments. A current drawing of the development layout is shown in Appendix 1.
- 3.2 The site forms part of the wider South Wokingham development. It is bounded to northeast by Waterloo Road. To the north of the site is a railway line (South Western Railway) and William Heelas Way, which will be extended to create an access road to the wider development. To the southwest of the site is Easthampsted Road.
- 3.3 The site location and surrounding area is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area



- 3.4 To address the requirements of Planning Condition 40, noise affecting the habitable areas of the development and the design of the external facades have been assessed.

4. NOISE AFFECTING THE DEVELOPMENT

- 4.1 The noise levels that will exist within the habitable 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 design criteria. Suitable mitigation measures have been identified where necessary to comply with the adopted criteria and achieve appropriate internal and external noise levels as required by Planning Condition 40.

Design criteria

- 4.2 Appropriate design criteria for noise levels in acoustically sensitive areas of new developments have been adopted from BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' and WHO guidance. These design criteria are summarised in Table 1 below.

Table 1 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 45 dB L _{Amax} , 10-15 times per night

- 4.3 BS8233:2014 also 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. This has been adopted for the purpose of this assessment.

Existing site noise levels

- 4.4 A noise survey was carried out at the site from 18 to 24 February 2025 to assess existing levels in the area. The full methodology and results of the noise survey are provided in Appendix 2.
- 4.5 Average noise levels (LAeq) across the site were generally dictated by road traffic on Waterloo Road. Average noise levels at the south and western edges of the site were also affected by vehicle movements on Easthampsted Road.
- 4.6 Maximum noise levels (L_{Amax}) at the north of the site were largely dictated by vehicle movements on Waterloo Road. Maximum levels at other areas of the site were very low and do not require further assessment.
- 4.7 Background noise levels (LA90) across the site were dictated by road traffic noise from Waterloo Road.
- 4.8 Noise levels at the site will also be affected by the proposed access road to the northwest of the site. This is discussed further from Paragraph 4.11.

- 4.9 Noise from aircraft was audible but generally insignificant to the measured levels, and therefore no further assessment of this source is required.
- 4.10 There was no significant noise from the railway at the site, and therefore no further assessment of this source is required.

Noise modelling

- 4.11 Based on the results of the site noise survey, a 3D noise model of the development was developed using Cadna/A v2025 environmental noise modelling software to predict and assess the noise levels that will exist across the entire development. Cadna uses the calculation methodologies defined in the Department of Transport Welsh Office - *Calculation of Road Traffic Noise* (CRTN) and ISO 9613:2024 to model the propagation of noise levels from roads.
- 4.12 Further to the existing noise levels at the site, future noise levels due to increased traffic from the wider development (on Waterloo Road) and the proposed new access road (William Heelas Way) have been assessed.
- 4.13 To predict the increase in noise levels from future traffic on Waterloo Road, the measured levels have been adjusted based on the predicted increase in traffic on Waterloo Road that will occur following the full occupation of the finished wider development.
- 4.14 The speed limit on the proposed access road will be the same as on Waterloo Road (30 mph), and the distribution and behaviour of traffic is expected to be very similar. Therefore, to predict the noise levels from the new access road, the measured noise levels from Waterloo Road were used as a baseline and have been adjusted for the predicted traffic on the proposed access road.
- 4.15 The current and predicted future traffic flow volume data has been provided by the design team for this assessment as an annual average weekday traffic count (AAWT). This is shown below in Table 2 and Table 3.

Table 2 Traffic Flow Volume Data for Waterloo Road

Period	Current Traffic Volume (AAWT)	Future Traffic Volume (AAWT)	Change in Traffic Volume (dB)
Daytime (0700-2300)	8477	13494	2.02
Night-time (2300-0700)	432	687	2.01

Table 3 Traffic Flow Volume Data for William Heelas Way

Period	Current Traffic Volume (AAWT) ¹	Future Traffic Volume (AAWT)	Change in Traffic Volume (dB)
Daytime (0700-2300)	8477 ¹	11067	1.16
Night-time (2300-0700)	432 ¹	567	1.18

Note 1 Current flows and noise levels from Waterloo Road have been used as a baseline for the proposed access road.

- 4.16 The model was used to predict the road traffic noise levels across the development. Printouts of the modelling results are shown in Appendix 3. It can be seen from the modelling printouts that road traffic noise levels will be highest on facades of the properties facing Waterloo Road. Noise levels will be significantly lower at other facades in the development that are facing away or acoustically screened from the roads by intervening buildings.
- 4.17 The highest predicted free-field noise levels at facades of the development are as follows:
- Average noise levels during the daytime - 61 dB LAeq,0700-2300hrs
 - Average noise levels during the night-time - 54 dB LAeq,2300-0700hrs
 - Typical maximum noise levels during the night-time - 72 dB L_{Amax}

Internal noise levels in noise-sensitive rooms

- 4.18 The facades of the development will be built using a brick and timber frame construction. The sound insulation performance of an indicative brick and timber frame construction has been predicted using INSUL facade modelling software and has been used for the purpose of this assessment (see Table 4). It is unlikely that minor changes to the external wall construction will affect the resultant internal noise levels.

Table 4 Indicative External Wall Construction

Type	Construction	Predicted Sound Reduction (dB)	
		R _w	R _w + C _{tr}
Typical Brick and Timber Frame Wall	102.5mm brick, 63mm clear cavity, 140mm timber frame, 12.5mm plasterboard	57	51

- 4.19 Background ventilation for the development will be provided by decentralised mechanical extract ventilation (dMEV) systems with trickle ventilators in the building facade. Therefore, internal noise levels will be dictated by noise ingress through the ventilators, glazed areas, and the external wall above.
- 4.20 Calculations were carried out using facade modelling software in accordance with the “more rigorous” methodology given in BS8233:2014 to establish the sound insulation performance required of the glazing and trickle ventilators to comply with the criteria in Table 1 in all habitable rooms across the development.
- 4.21 The calculations were carried out based on the dimensions/details for facade elements taken from project drawings, and we have assumed that up to the following number of trickle ventilators will be used:
- Two ventilators per bedroom,
 - Three ventilators per living room.
- 4.22 The results of the calculations are shown in Appendix 4 and are summarised in Table 5 below.

Table 5 Minimum Acoustic Requirements for All Habitable Rooms

Specification Reference (see Appendix 5)	Glazing Performance Requirements (inc. Frames)	Ventilator Performance Requirements (in Open Position)
FS01	27 dB Rw+Ctr	34 dB Dne,w+Ctr
FS02	27 dB Rw+Ctr	31 dB Dne,w+Ctr

Note The acoustic performance of the glazing systems (including frames) and ventilators should always be confirmed with the manufacturer before selection for installation.

- 4.23 Based on the results of the calculations summarised in Table 5 and the measured noise levels at the site (considering both the day and night-time average and maximum noise levels), a specification has been developed showing the sound insulation performance requirements for all facades of the development. The facade acoustic specification is shown in Appendix 5.
- 4.24 It can be seen from the above that compliance with Planning Condition 40, regarding internal noise levels, is predicted to be achieved via the selection of glazing and ventilation systems to comply with the specification given in Appendix 5.

Part O noise guidance (noise and overheating)

- 4.25 The above assessment is based on internal noise levels with windows closed (assumed to be “normal” circumstances). However, it is anticipated that residents will open their windows at times for thermal comfort (e.g. to prevent overheating in warmer months). Noise levels in the rooms will increase under these circumstances.
- 4.26 Specific requirements relating to noise and overheating are given in Part O of the Building Regulations (Approved Document O), which states the following:

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).

- 4.27 It is important to note that the Part O requirements only apply to bedrooms at night. There are no requirements for other habitable rooms (living rooms, dining rooms, etc).
- 4.28 The noise levels in bedrooms at night with the windows open will vary based on the external night-time noise levels and the size and extent of window opening required to control overheating. The wider the window needs to be open, the lower the sound insulation performance. The following

indicative “outside to inside” reduction values have been adopted for the assessment based on current industry guidance¹:

- ~4 dB when the window is fully open
- ~9 dB when the window is open to around ~0.4m²
- 13 dB when the window is partially open to ~0.2m².

4.29 It is therefore possible to rely on a larger window opening to control overheating on quieter facades. The relationship between external noise levels and window openings for compliance with Part O is summarised in Table 6.

Table 6 External Part O Noise Criteria and Allowable Window Opening for Overheating

External Noise Levels outside Bedrooms at Night		Allowable night-time window opening to control overheating
Average Noise Levels (LAeq,8hrs)	Maximum Noise Levels (L _{Amax}) – see Note 1	
≤44 dB	≤59 dB	Wide open (up to 13% of the floor area, e.g. ~1.3m ² for a 10m ² room). Ventilators fully open.
≤49 dB	≤64 dB	Open (up to 4% of the floor area, e.g. ~0.4m ² for a 10m ² room). Ventilators fully open.
≤53 dB	≤68 dB	Partially open (up to 2% of floor area, e.g. ~0.2m ² for a 10m ² room). Ventilators fully open.
≥54 dB	≥69 dB	Windows to be assumed to be fully closed during the night for the purposes of Part O compliance. Ventilators fully open.

Note 1 Not exceeded more than 10 times per night (between 11pm and 7am)

4.30 The criteria in Table 6 above have been applied to the predicted night-time noise levels from the model to show where open windows can be relied upon for the control of overheating and Part O compliance. The results are shown in Appendix 6.

4.31 It can be seen from Appendix 6 that windows to some bedrooms facing Waterloo Road will need to be assumed to be closed during the night-time for the purposes of the overheating assessment due to the higher external noise levels. Open windows can be used to help address overheating in all other bedrooms across the rest of the site.

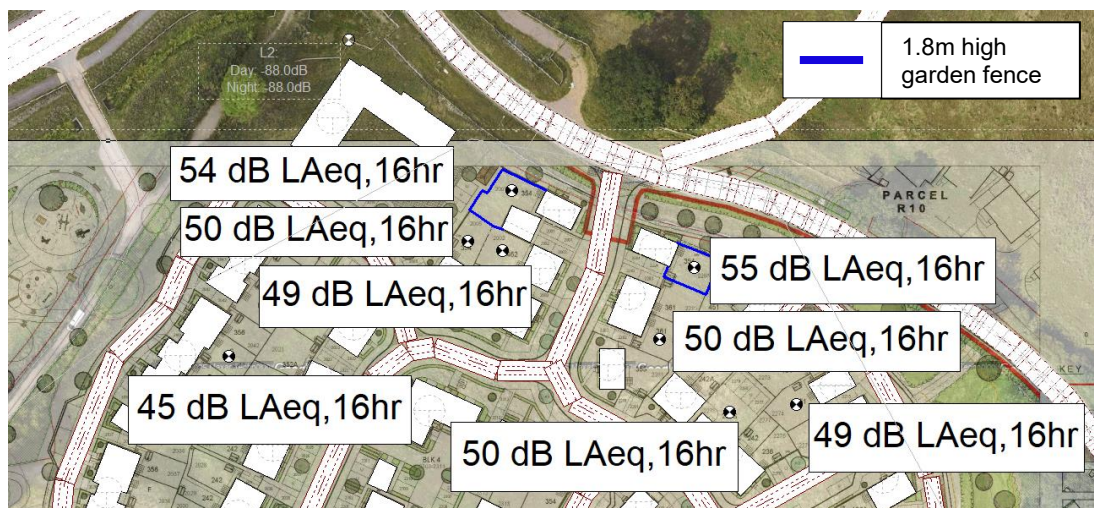
4.32 The information in Appendix 6 can be provided to the project Energy Assessor to inform the overheating assessment and demonstrate compliance with the Part O noise requirements.

¹ These values are taken from guidance published in the document “Approved Document O Noise Guide” Version 1.1 November 2024, by the Association of Noise Consultants and the Institute of Acoustics. The values are based on a floor area of 10m² and a room height of 2.4m.

Noise levels in external amenity areas

- 4.33 Condition 40 requires 'appropriate external noise levels' to be achieved. To satisfy this element of the condition, the design of the development has been reviewed in relation to the BS8233:2014 recommendation that noise levels in external amenity areas should ideally not exceed 50 – 55 dB LAeq,T.
- 4.34 The external noise levels have been predicted using the 3D noise model, the results of which are shown in Appendix 3.
- 4.35 Noise levels in external amenity areas of the development are predicted to comply with the 55 dB LAeq,T upper guideline level provided that 1.8m high close-boarded timber fencing is used around the gardens shown in Figure 2.

Figure 2 Garden noise mitigation requirement



- 4.36 In summary of the above, external amenity noise levels are predicted to comply with the guidance set out in BS8233:2014, provided the use of 1.8m high close-boarded timber fences in the gardens indicated on Figure 2. In our view, this is sufficient to recommend discharging Condition 40 regarding external noise levels.

5. CONCLUSIONS

- 5.1 Cass Allen has been instructed by Kier Property Developments Limited to assess the acoustic design of a new development at Phase R11, South Wokingham.
- 5.2 The assessment was carried out in accordance with the requirements of Planning Condition 40 and informed by relevant acoustics standards and guidance.
- 5.3 A noise survey was carried out at the site. Noise levels at the site are dictated by road traffic noise emissions from Waterloo Road.
- 5.4 A 3D noise model of the development was constructed based on the results of a site noise survey and predicted traffic flow data for the finished development provided by the design team. The noise model was used to calculate noise levels across the site.
- 5.5 Internal noise levels within habitable areas of the development have been calculated and, where appropriate, noise mitigation has been specified to comply with the relevant criteria set out in BS8233:2014. It is therefore our view that the glazing and ventilation strategies herein are sufficient to comply with the internal noise requirements of Planning Condition 40.
- 5.6 Noise levels within external amenity areas have been predicted using the 3D noise model. The results indicate that levels will comply with the guidance in BS8233:2014, based on the use of 1.8m high closed board timber garden fences.
- 5.7 Guidance has been provided regarding the noise criteria from Part O of the building regulations. Any overheating assessment will need to assume that some bedroom windows facing Waterloo Road will be closed during the night-time to comply with the criteria set out in Part O. A markup showing permissible window openings is provided in Appendix 6. The overheating assessment can rely on open windows in all other bedrooms across the rest of the site regarding noise.
- 5.8 In summary of the above, it is our view that this report contains the information required to discharge Planning Condition 40.

Appendix 1 Development 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 Waterloo Road.

Survey Period:

18/02/2025 to 24/02/2025

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	Brüel & Kjær	2250	3029152
Calibrator	01dB	CAL31	83380
Sound level meter ¹ (noise logger)	Rion	NL-32	00530374
Sound level meter ¹ (noise logger)	Rion	NL-32	01182950
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.

Measurement Positions:

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Waterloo Road.
N2	Attended noise monitoring position. 1.5m above ground. Free-field.
N3	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Waterloo Road and railway line.
L1	Unattended noise logging position. 3m above ground level. Free-field.
L2	Unattended noise logging position. 3m above ground level. Free-field. Direct line of sight to Waterloo Road and William Heelas Way

Site Plan showing Measurement Positions:



Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmix, dB	LA90, dB	Observations
18/02/2025	N1	13:00	5 mins	56	72	46	Noise dictated by road traffic from Waterloo Road. Background noise from nature sounds (i.e birdsong), construction machinery moving in adjacent parcel to the north and plane flyovers.
		13:05		55	71	46	
		13:10		57	75	47	
		14:32	6 secs	62	67	50	Car pass on Waterloo Road, 7m from measurement position
		14:33	6 secs	61	67	48	Van pass on Waterloo Road, 7m from measurement position
		14:33	7 secs	62	68	50	Car pass on Waterloo Road, 7m from measurement position
	N2	13:30	5 mins	50	63	43	Noise dictated by road traffic from background noise from East Hampstead Road to the west. Noise from plane flyover and work yard to the north were also identified but not significant.
		13:35		50	65	43	
		13:40		47	57	43	
	N3	14:23	10 secs	59	63	52	Train pass on the South Western railway. Approx. 100m away
		14:26	10 secs	57	61	51	

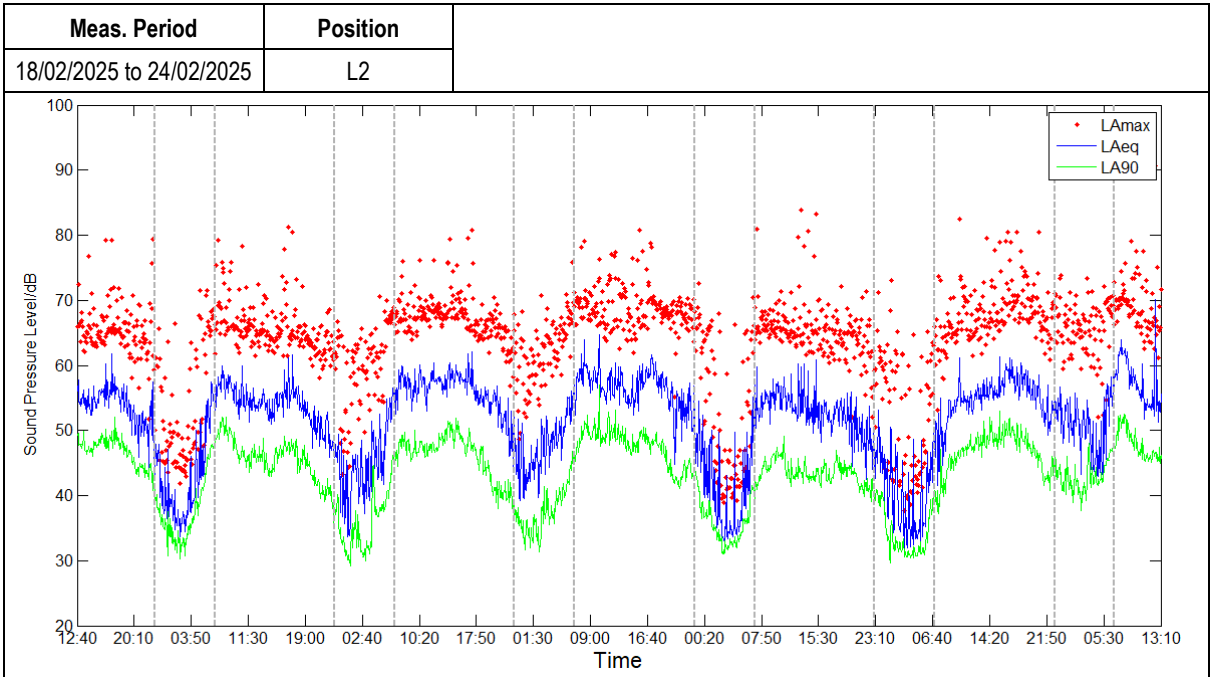
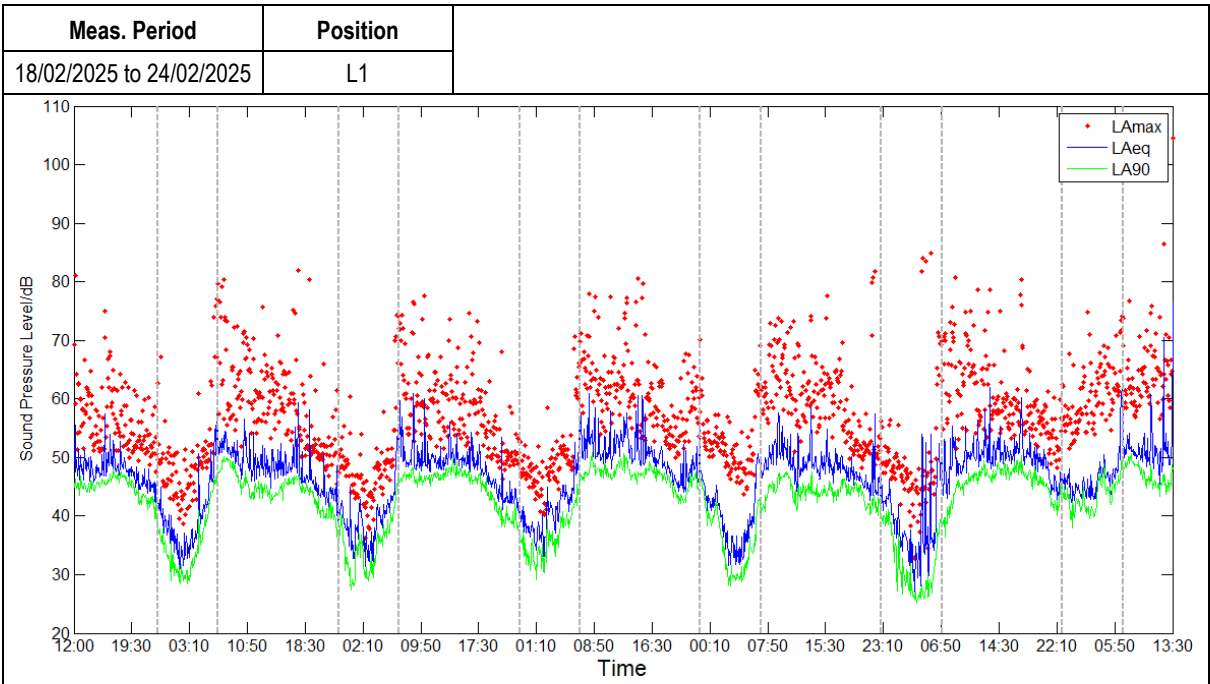
Unattended Noise Monitoring Results:

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
18/02/2025 to 24/02/2025	L1	50	47	44	30	64
18/02/2025 to 24/02/2025	L2	56	48	48	33	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 Modelling Results

Modelling Software:

CADNA/A Version v2025 MR1

Modelled Scenarios:

Day and night-time average noise levels across the site
Night-time maximum noise levels

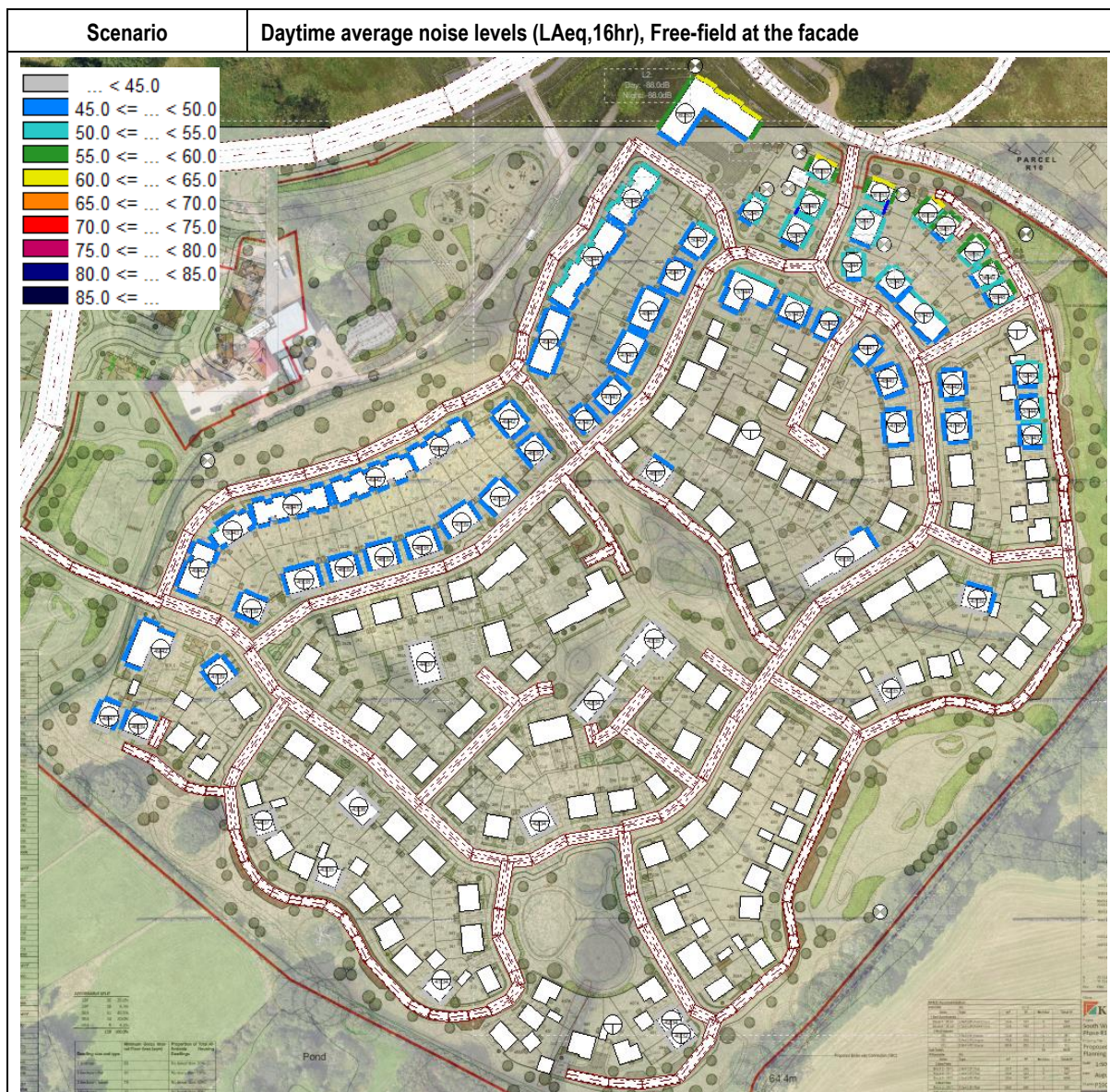
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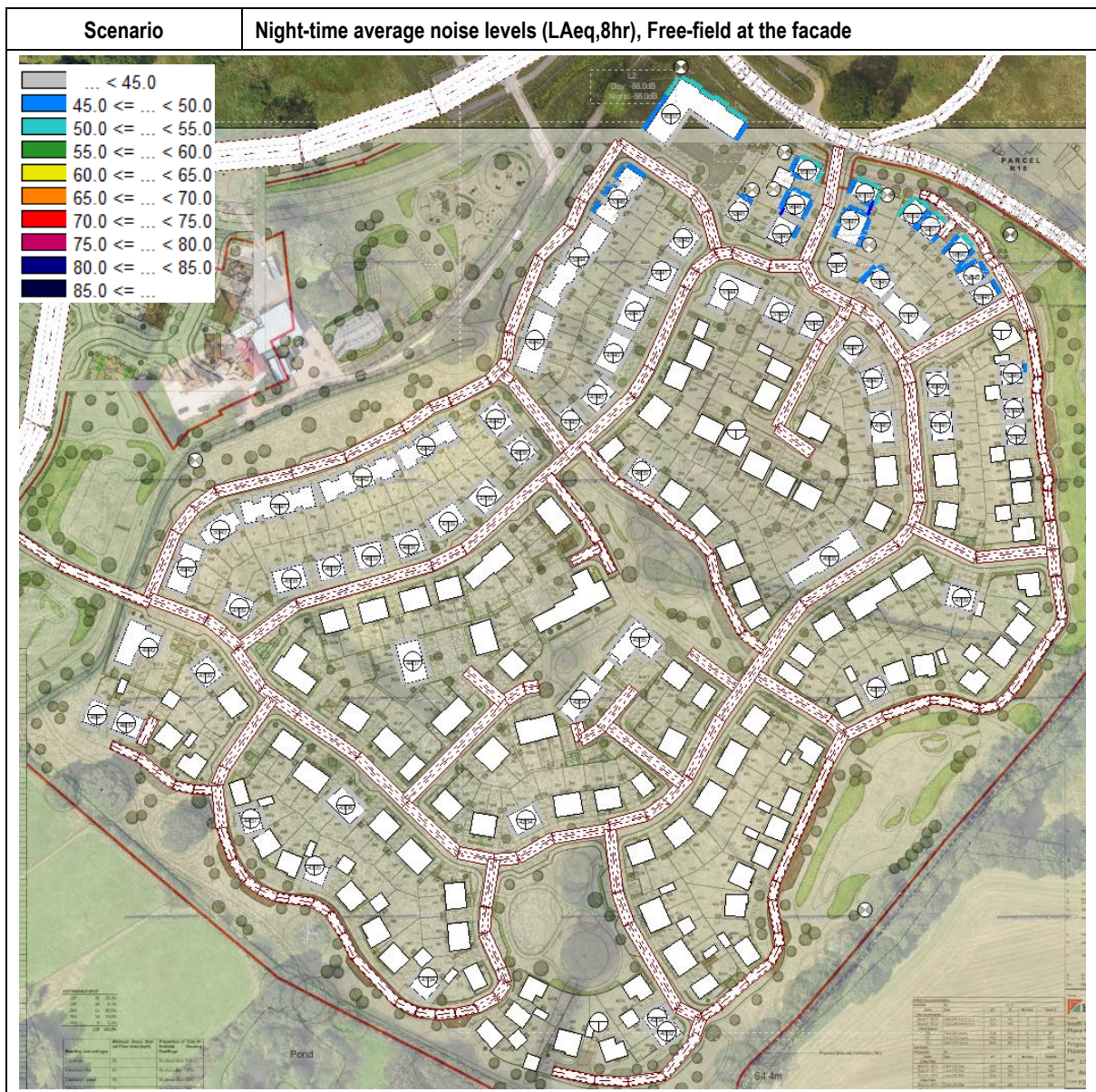
- Noise survey results
- Topographical data for the site
- Development layout
- Traffic flow volume data

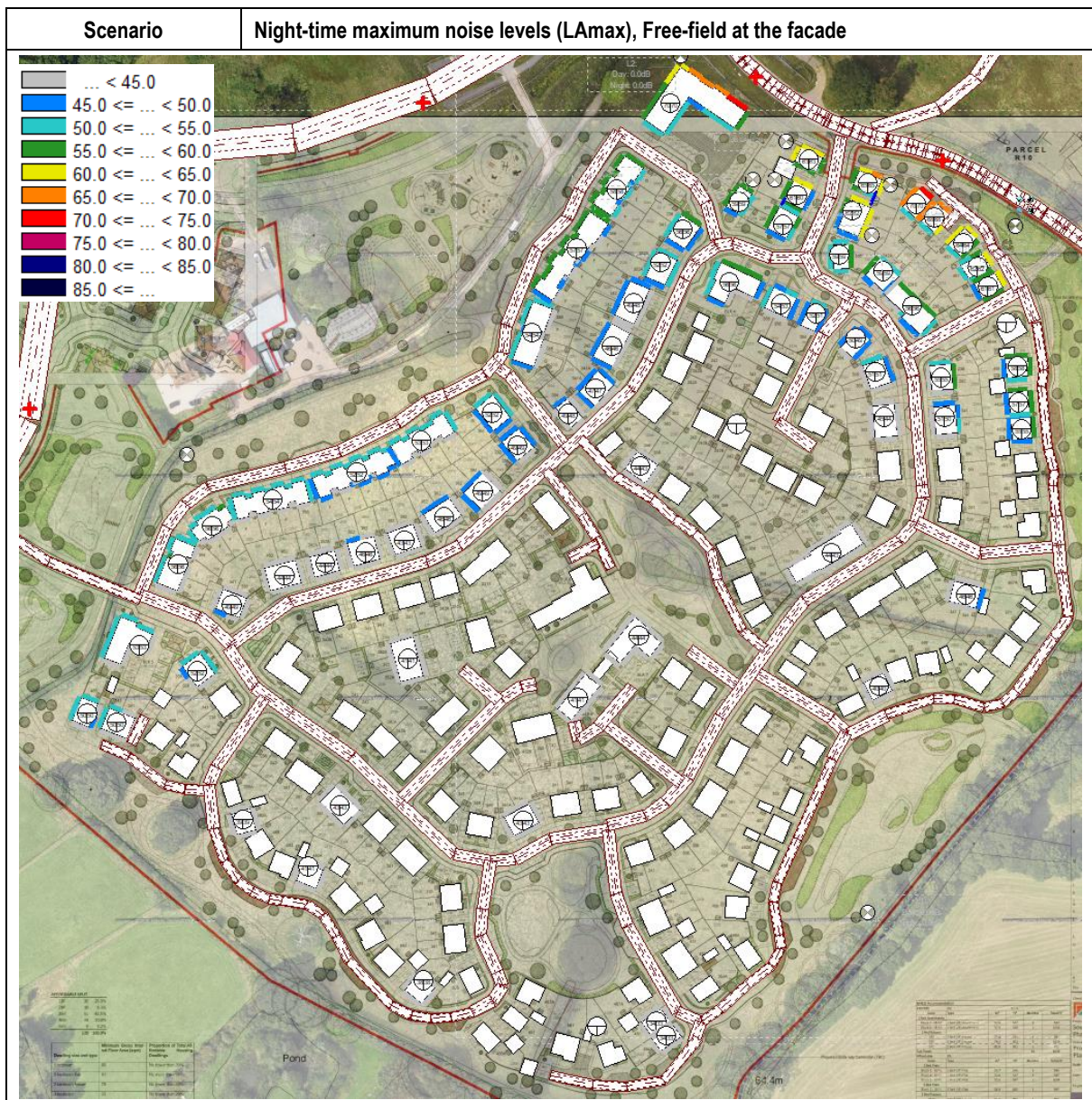
**Calculation
Algorithms Used:**

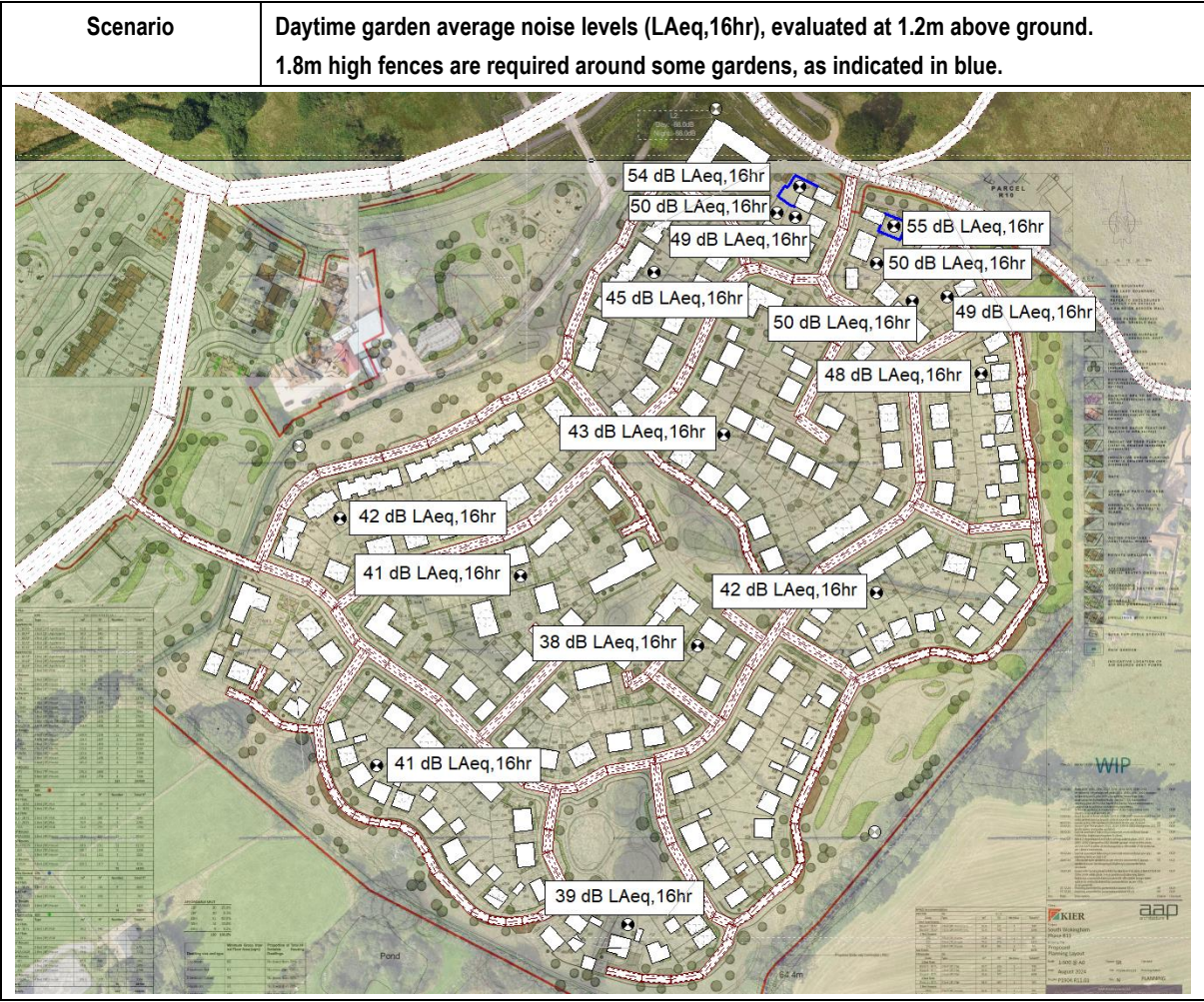
- Calculation of Road Traffic Noise 1988 – Department of Transport
- ISO 9613-1:1993 Acoustics-Attenuation of sound during propagation outdoors – Part 1: Calculation of the absorption of sound by the atmosphere
- ISO 9613-2:2024 Acoustics-Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors

Modelling Printout:









Appendix 4 Acoustic Facade Calculations

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PROJECT: R11 South Wokingham
 ROOM: Bedroom Block 1
 VARIANT: Day Average Noise Level (LAeq) FS01
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

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)		60.0								
			41.8	45.9	49.4	52.8	56.0	53.2	48.0	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

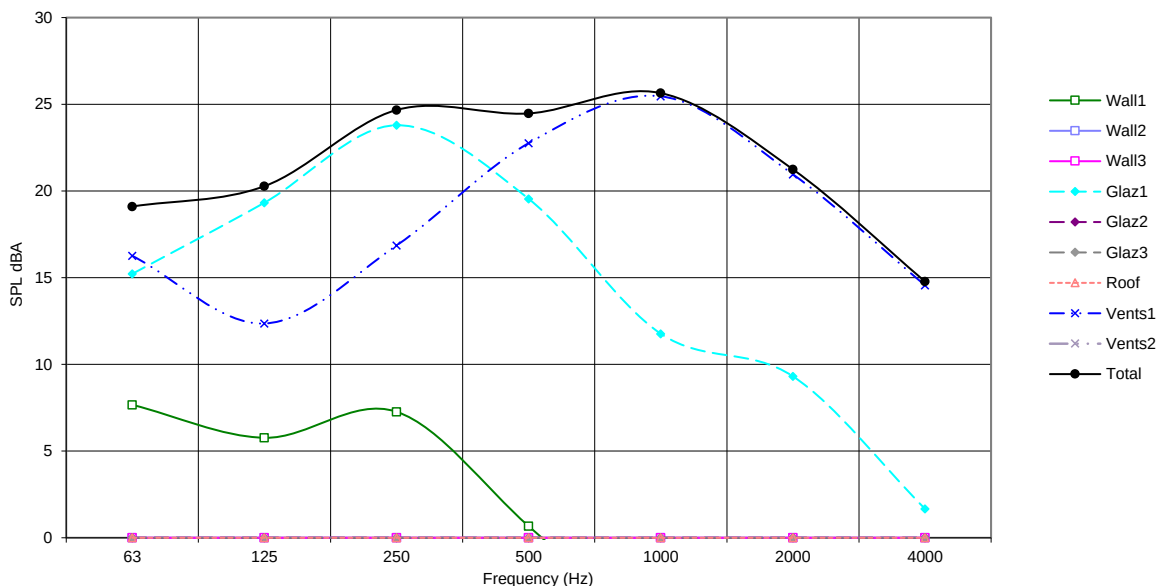
Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical Timber Frame External Wall	5.5	35	41	43	53	63	68	65	1%	57	-2	-6
ATTENUATION												
Wall 2 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing	1.0	20	20	19	27	38	37	40	37%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		26.9	16	20	24	20	12	9	2	38%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	2	32	40	39	37	37	39	40	62%	37	-1	-3
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		29.0	16	12	17	23	25	21	15	62%		

Total SPL inside room

31.1	19	20	25	24	26	21	15
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Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom Block 1
 VARIANT: Night Average Noise Level (LAeq) FS01
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

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

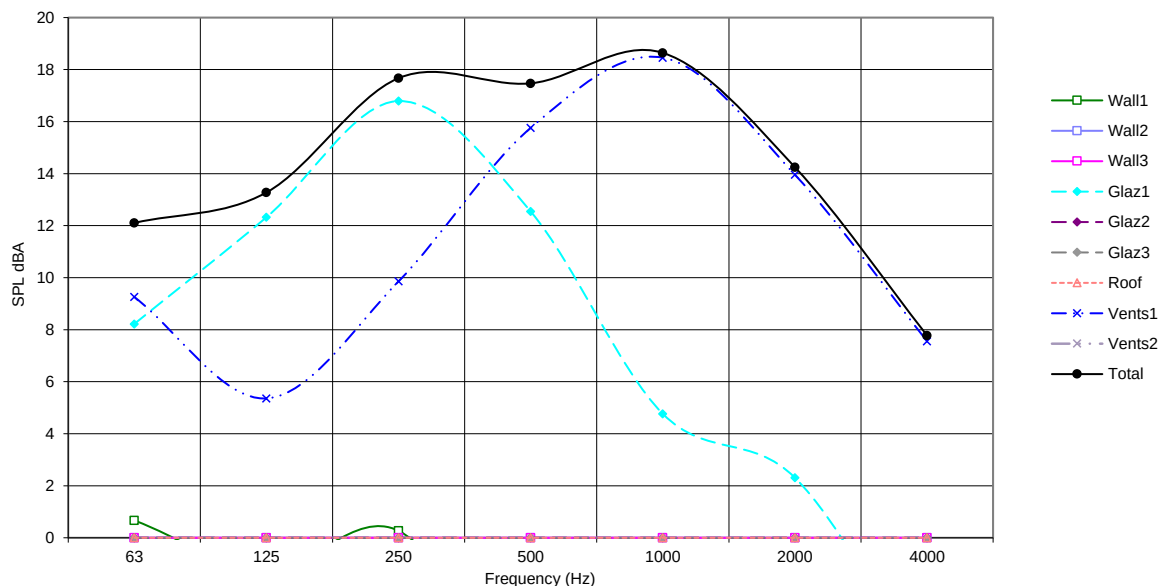
Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical Timber Frame External Wall	5.5	35	41	43	53	63	68	65	0%	57	-2	-6
ATTENUATION												
Wall 2 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing	1.0	20	20	19	27	38	37	40	36%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		19.9	9	13	17	13	5	2	-5	38%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	2	32	40	39	37	37	39	40	61%	37	-1	-3
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		22.0	9	5	10	16	18	14	8	62%		

Total SPL inside room

24.1	12	13	18	17	19	14	8
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Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom Block 1
 VARIANT: Worst-Case Maximum Noise Level (LAmax) FS01
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

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)	72.0							
	53.8	57.9	61.4	64.8	68.0	65.2	60.0	Reference spectrum

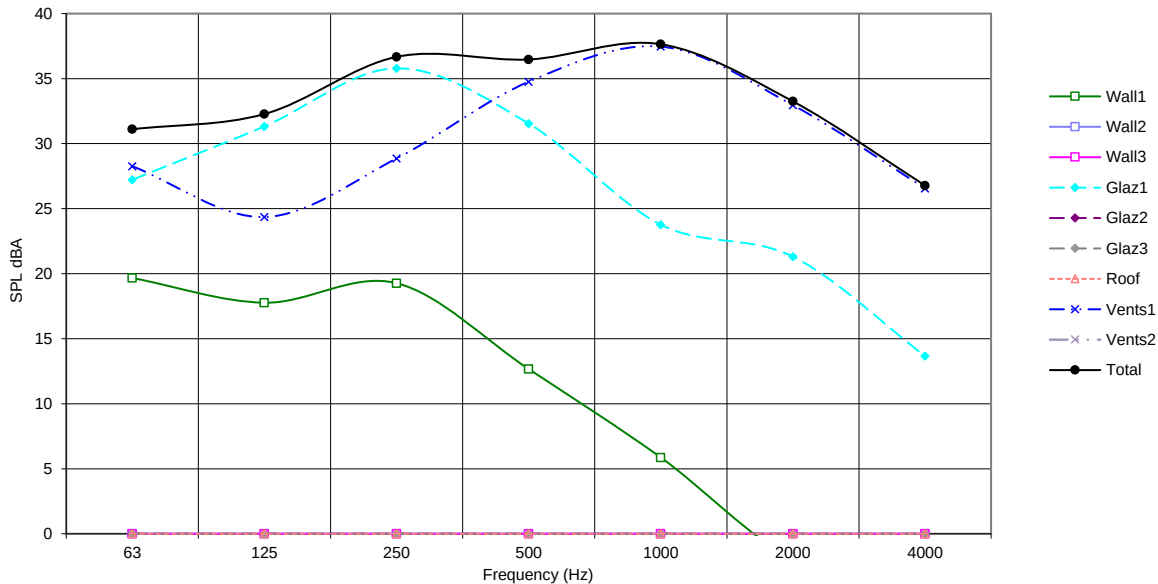
REVERBERATION TIME

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 Timber Frame External Wall	5.5	35	41	43	53	63	68	65	1%	57	-2	-6
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	1.0	20	20	19	27	38	37	40	37%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		38.9	28	32	36	32	24	21	14	38%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	2	32	40	39	37	37	39	40	62%	37	-1	-3
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		41.0	28	24	29	35	37	33	27	62%		
Total SPL inside room		43.1	31	32	37	36	38	33	27			

Element contribution to total internal noise level



PROJECT: R11 South Wokingham
ROOM: Bedroom Block 1
VARIANT: Worst-Case Average Noise Level (LAeq) FS01
NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] W 3.4 x L 7.5 x H 2.4
Room Volume = 61.3 m³
Partition Area = 16.3 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)	61.0							
	42.8	46.9	50.4	53.8	57.0	54.2	49.0	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

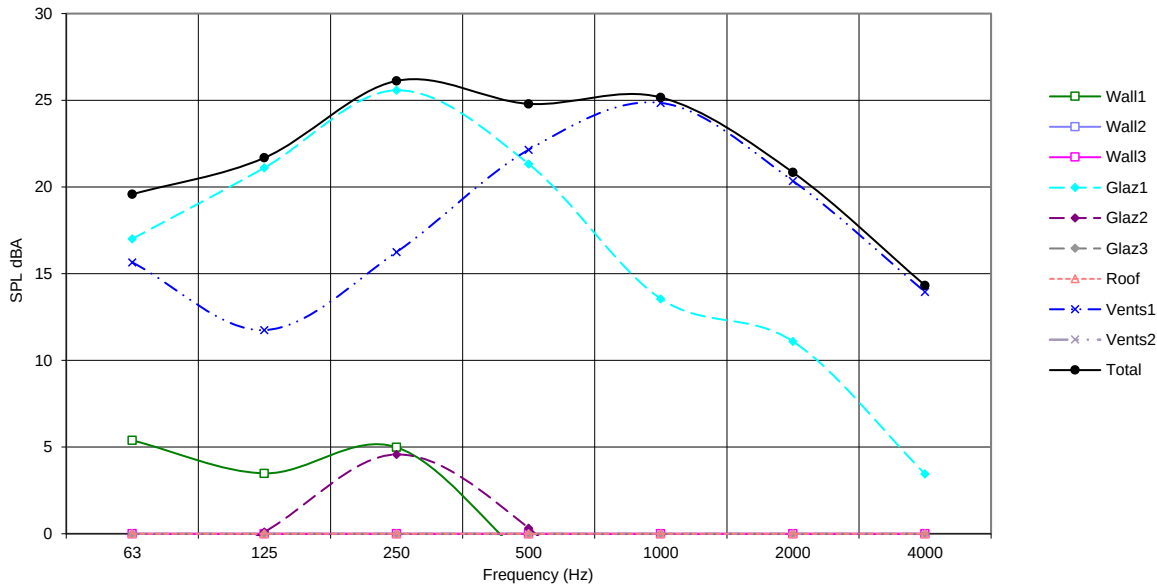
Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical Timber Frame External Wall	5.6	35	41	43	53	63	68	65	1%	57	-2	-6
ATTENUATION												
Wall 2 Typical Timber Frame External Wall	5.6	35	41	43	53	63	68	65	0%	57	-2	-6
ATTENUATION		21	21	21	21	21	21	21				
Wall 3 WALLS	0	0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing	2.5	20	20	19	27	38	37	40	50%	27 (inc Ctr)	-	-
ATTENUATION												
Glazing 2 27 dB Rw + Ctr - Standard Thermal Double Glazing	2.5	20	20	19	27	38	37	40	0%	27 (inc Ctr)	-	-
ATTENUATION		21	21	21	21	21	21	21				
Glazing 3 GLAZING	0	0	0	0	0	0	0	0	0%			
ATTENUATION												
Roof ROOF / FLOOR	0	0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant composite Façade SRI		28	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		28.6	17	21	26	21	14	11	4	51%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	3	32	40	39	37	37	39	40	49%	37	-1	-3
ATTENUATION												
Ventilation VENTS	0	0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		28.4	16	12	16	22	25	20	14	49%		

Total SPL inside room

31.5	20	22	26	25	25	21	14
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Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom 2284
 VARIANT: Day Average Noise Level (LAeq)FS01
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

Direct input - Free Field SPL (A weighted octave bands) dB ----->	-							No data
Road traffic spectrum (according to BS 8233:1999 section 6)	61.0							
		42.8	46.9	50.4	53.8	57.0	54.2	49.0
								Reference spectrum

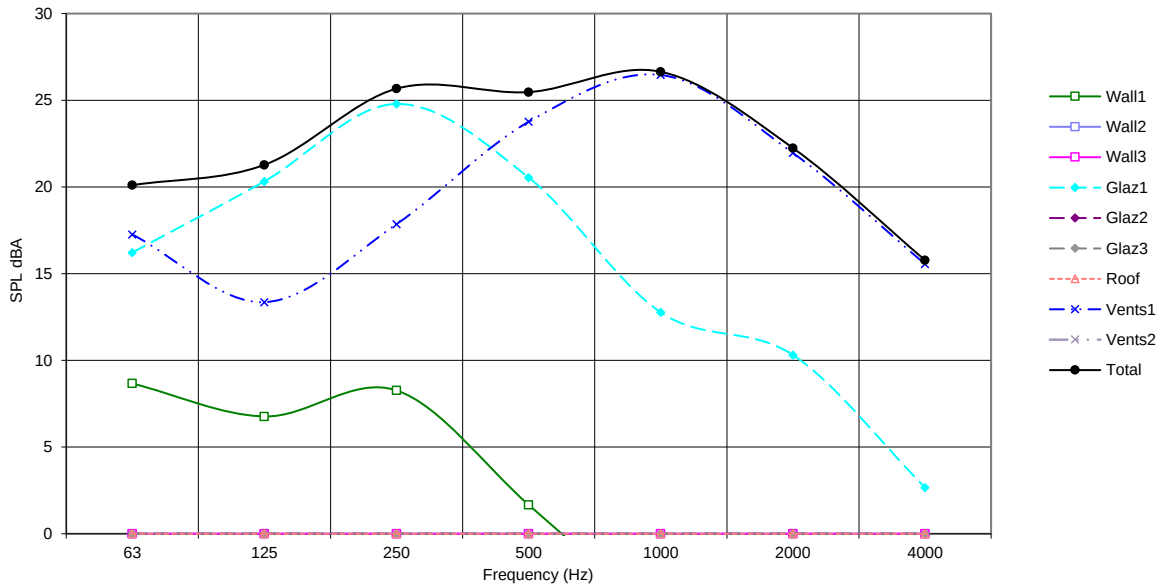
REVERBERATION TIME

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 Timber Frame External Wall	5.5	35	41	43	53	63	68	65	1%	57	-2	-6
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	1.0	20	20	19	27	38	37	40	37%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		27.9	17	21	25	21	13	10	3	38%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	2	32	40	39	37	37	39	40	62%	37	-1	-3
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		30.0	17	13	18	24	26	22	16	62%		
Total SPL inside room		32.1	20	21	26	25	27	22	16			

Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom 2284
 VARIANT: Night Average Noise Level (LAeq)FS01
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix}$ x $\begin{matrix} L \\ 2.7 \end{matrix}$ x $\begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

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)	54.0							
	35.8	39.9	43.4	46.8	50.0	47.2	42.0	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

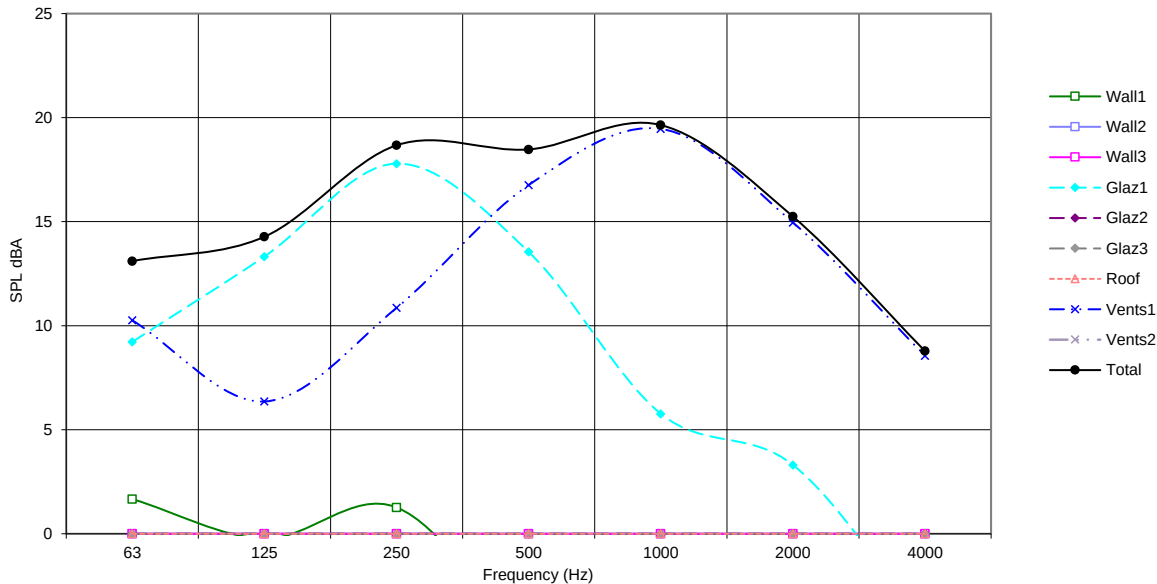
Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical Timber Frame External Wall	5.5	35	41	43	53	63	68	65	0%	57	-2	-6
ATTENUATION												
Wall 2 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing	1.0	20	20	19	27	38	37	40	36%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		20.9	10	14	18	14	6	3	-4	38%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	2	32	40	39	37	37	39	40	62%	37	-1	-3
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		23.0	10	6	11	17	19	15	9	62%		

Total SPL inside room

25.1	13	14	19	18	20	15	9
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Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom 2284
 VARIANT: Worst-Case Maximum Noise Level (LAMax) FS01
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

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)	72.0							
	53.8	57.9	61.4	64.8	68.0	65.2	60.0	Reference spectrum

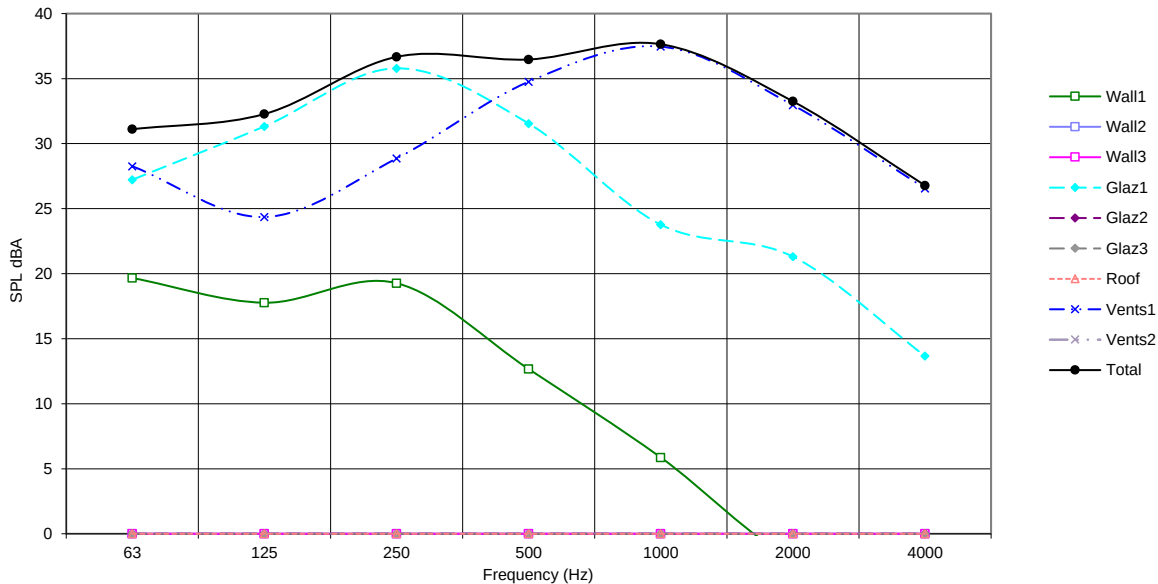
REVERBERATION TIME

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 Timber Frame External Wall	5.5	35	41	43	53	63	68	65	1%	57	-2	-6
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	1.0	20	20	19	27	38	37	40	37%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		38.9	28	32	36	32	24	21	14	38%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	2	32	40	39	37	37	39	40	62%	37	-1	-3
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		41.0	28	24	29	35	37	33	27	62%		
Total SPL inside room		43.1	31	32	37	36	38	33	27			

Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Living Room
 VARIANT: Worst-Case Average Noise Level (LAeq) FS01
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 3.4 \end{matrix} \times \begin{matrix} L \\ 4.3 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 34.7 m³
 Partition Area = 8.2 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)	59.0							
		40.8	44.9	48.4	51.8	55.0	52.2	47.0
								Reference spectrum

REVERBERATION TIME

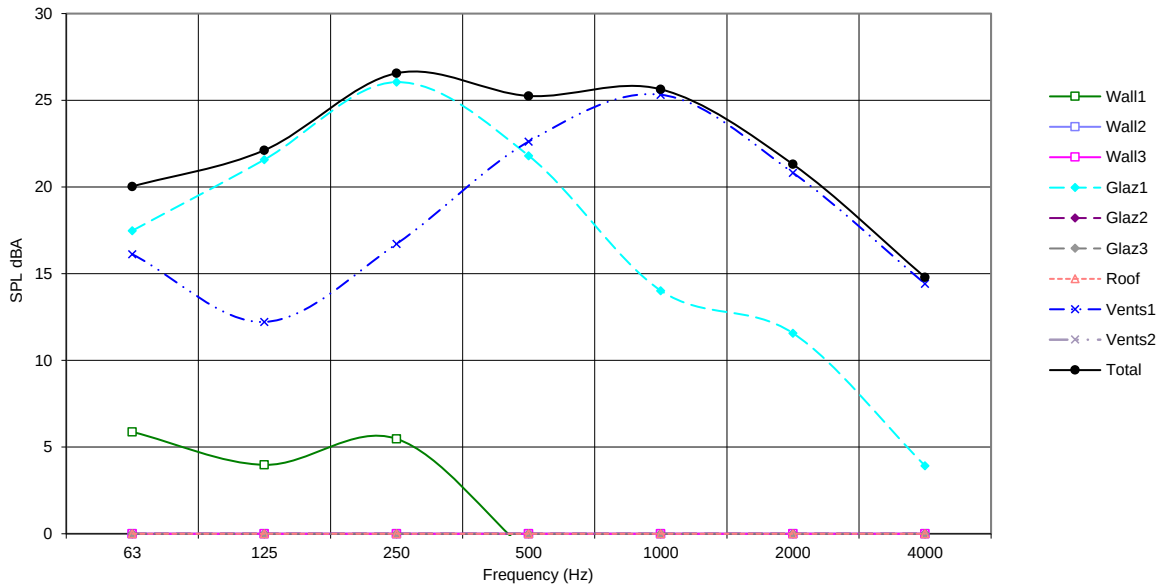
DIRECT INPUT ----->								No data
EQUAL RT for all bands ----->								
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Default - RT set to 0.5s

Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical Timber Frame External Wall	5.7	35	41	43	53	63	68	65	1%	57	-2	-6
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	2.5	20	20	19	27	38	37	40	50%	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		25	25	24	32	43	42	45				
Resultant SPL inside room excluding ventilators dB		29.1	18	22	26	22	14	12	4	51%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Greenwood 1600DNFW Acoustic Through Frame Slotvent	3	32	40	39	37	37	39	40	49%	37	-1	-3
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		28.9	16	12	17	23	25	21	14	49%		

Total SPL inside room **32.0 20 22 27 25 26 21 15**

Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom 2272
 VARIANT: Day Average Noise Level (LAeq)FS02
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

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)	58.0							
	39.8	43.9	47.4	50.8	54.0	51.2	46.0	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

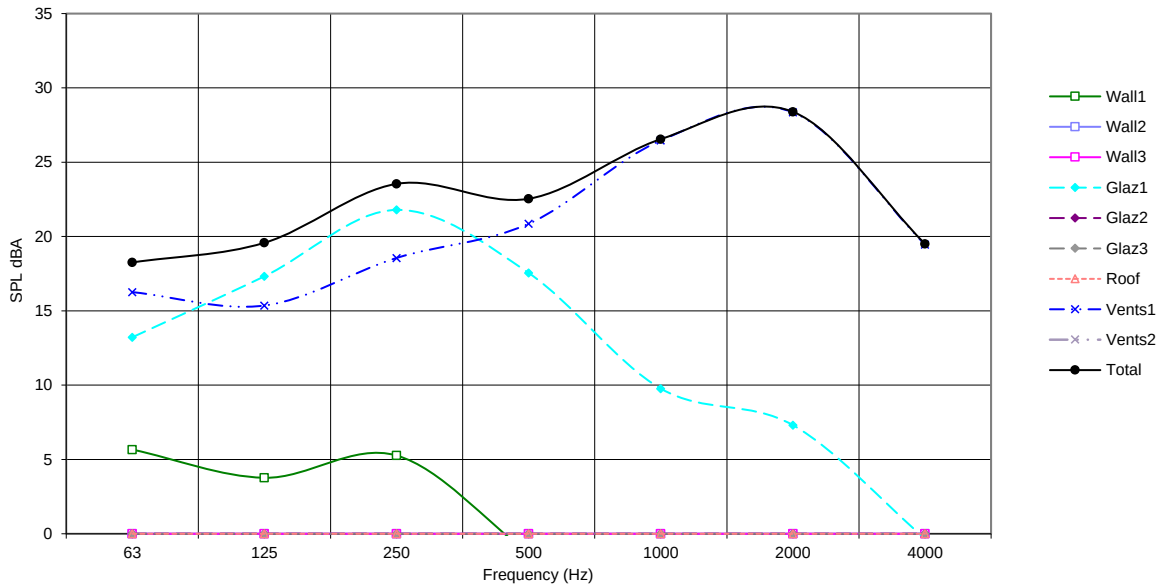
Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical Timber Frame External Wall	5.5	35	41	43	53	63	68	65	1%	57	-2	-6
ATTENUATION												
Wall 2 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing	1.0	20	20	19	27	38	37	40	17%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		24.9	14	18	22	18	10	7	17%			

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13	2	30	35	35	36	34	29	33	83%	32	0	-1
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		31.7	16	15	19	21	26	28	19	83%		

Total SPL inside room

32.5	18	20	24	23	27	28	20
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Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom 2272
 VARIANT: Night Average Noise Level (LAeq)FS02
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

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)	51.0								
		32.8	36.9	40.4	43.8	47.0	44.2	39.0	Reference spectrum

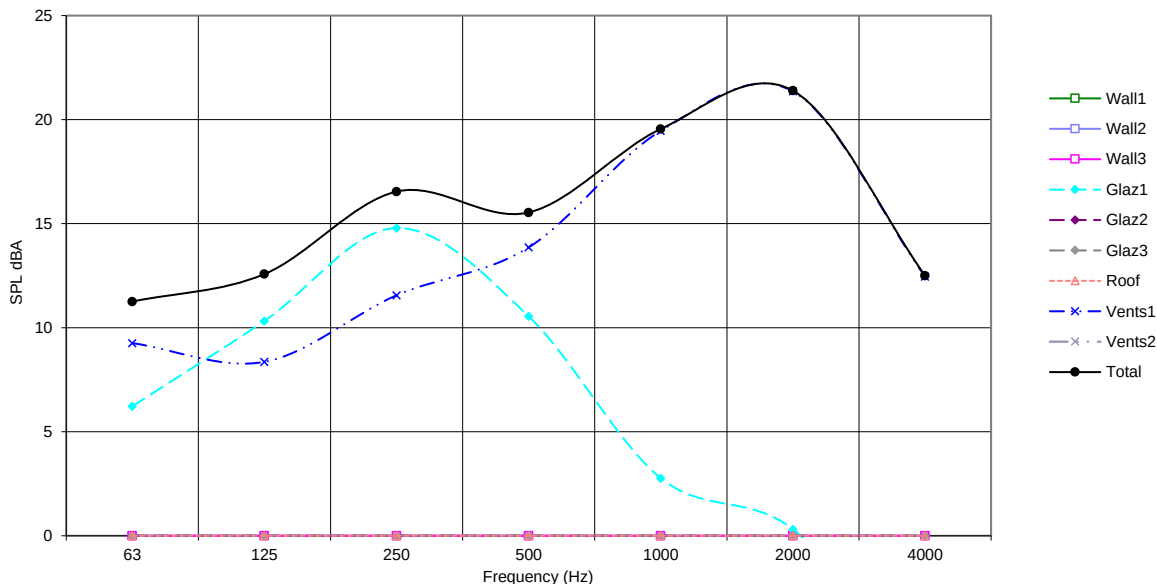
REVERBERATION TIME

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 Timber Frame External Wall	5.5	35	41	43	53	63	68	65	0%	57	-2	-6
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	1.0	20	20	19	27	38	37	40	16%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		17.9	7	11	15	11	3	0	-7	17%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13	2	30	35	35	36	34	29	33	82%	32	0	-1
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		24.7	9	8	12	14	19	21	12	83%		
Total SPL inside room		25.5	11	13	17	16	20	21	13			

Element contribution to total internal noise level



PROJECT: R11 South Wokingham
 ROOM: Bedroom 2272
 VARIANT: Worst-Case Maximum Noise Level (LAmax) FS02
 NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 4.4 \end{matrix} \times \begin{matrix} L \\ 2.7 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$
 Room Volume = 28.2 m³
 Partition Area = 6.5 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)

Direct input - Free Field SPL (A weighted octave bands) dB ----->	-							No data
Road traffic spectrum (according to BS 8233:1999 section 6)	69.0							
		50.8	54.9	58.4	61.8	65.0	62.2	57.0
								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

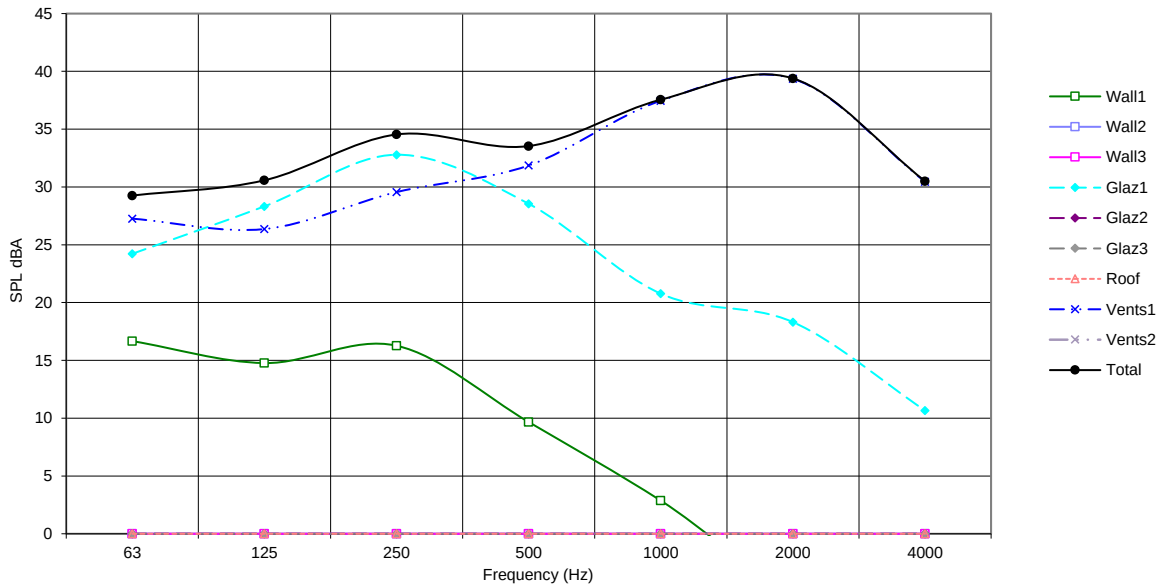
Façade Element	Area [m ²]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1 Typical Timber Frame External Wall	5.5	35	41	43	53	63	68	65	1%	57	-2	-6
ATTENUATION												
Wall 2 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Wall 3 WALLS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Glazing 1 27 dB Rw + Ctr - Standard Thermal Double Glazing	1.0	20	20	19	27	38	37	40	17%	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		27	28	27	35	46	45	48				
Resultant SPL inside room excluding ventilators dB		35.9	25	29	33	29	21	18	11	17%		

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13	2	30	35	35	36	34	29	33	83%	32	0	-1
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB		42.7	27	26	30	32	37	39	30	83%		

Total SPL inside room

43.5	29	31	35	34	38	39	31
------	----	----	----	----	----	----	----

Element contribution to total internal noise level



PROJECT: R11 South Wokingham
ROOM: Living Room 2272
VARIANT: Worst-Case Average Noise Level (LAeq) FS02
NOTES: Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.

Room Dimensions [m] $\begin{matrix} W \\ 3.4 \end{matrix} \times \begin{matrix} L \\ 4.3 \end{matrix} \times \begin{matrix} H \\ 2.4 \end{matrix}$

Room Volume = 34.7 m³
Partition Area = 8.2 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)	56.0							
		37.8	41.9	45.4	48.8	52.0	49.2	44.0
								Reference spectrum

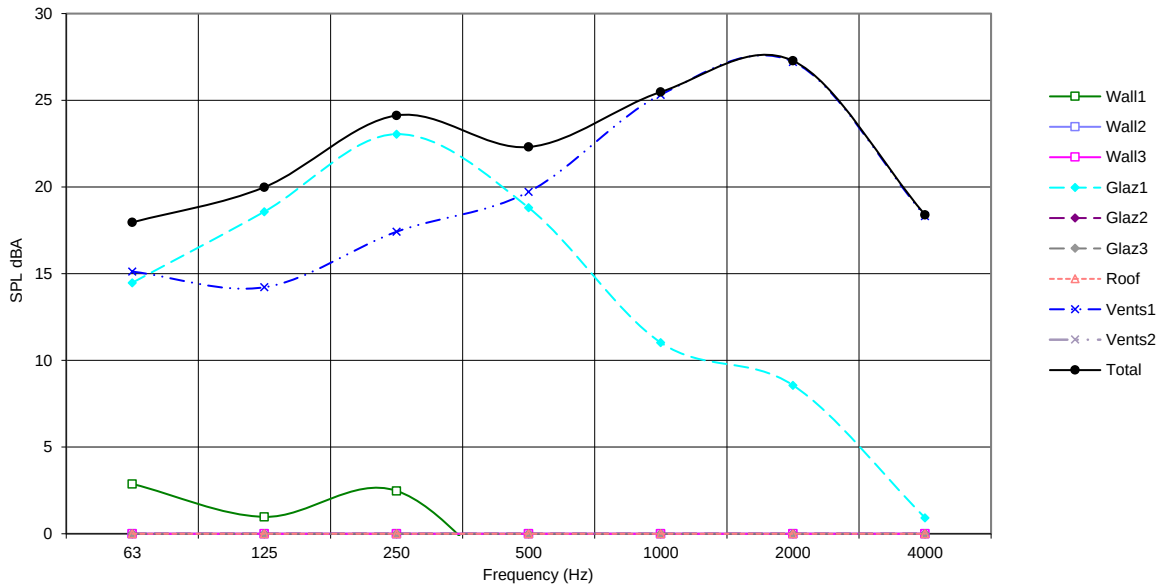
REVERBERATION TIME

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 Timber Frame External Wall	5.7	35	41	43	53	63	68	65	0%	57	-2	-6
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	2.5	20	20	19	27	38	37	40	26%	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		25	25	24	32	43	42	45				
Resultant SPL inside room excluding ventilators dB	26.1	15	19	23	19	11	9	1	26%			

Ventilator Type	Num	D _{n,e} dB to BS EN 20140-10:1992								D _{nw}	C	Ctr
Ventilation Hit and miss trickle (4000mm ²) e.g. Titon Trimvent XS13	3	30	35	35	36	34	29	33	74%	32	0	-1
ATTENUATION												
Ventilation VENTS		0	0	0	0	0	0	0	0%			
ATTENUATION												
Resultant SPL inside room through ventilators dB	30.6	15	14	17	20	25	27	18	74%			
Total SPL inside room	31.9	18	20	24	22	25	27	18				

Element contribution to total internal noise level



NOTES:

Appendix 5 Acoustic Facade Specification

Reference	Colour	Glazing Specification	Ventilator Specification
FS01	 	27 dB Rw+Ctr	34 dB Dnew+Ctr
FS02	 	27 dB Rw+Ctr	31 dB Dnew+Ctr

NOTES:

Values must include the Ctr correction. Manufacturers or suppliers should provide laboratory test data demonstrating that the proposed systems are capable of achieving the values given. Windows should be tested as complete systems (rather than just the glazing in isolation) and trickle ventilators must comply with the above specification when in the open position.

All floors:



Appendix 6 Part O Acoustic Requirements for Bedrooms at Night

All floors:



Ref.	Colour	Outside-to-inside noise reduction requirement	Part O Requirement for Bedrooms
ADO01	No markup	4 dB	Energy assessment (e.g. TM59) to show that bedrooms will not overheat at night with windows fully open (e.g. 13% of floor area, which is typically around 1.3m ²) and ventilators fully open.
ADO02		9 dB	Energy assessment (e.g. TM59) to show that bedrooms will not overheat at night with windows open (e.g. 4% of floor area, which is typically around 0.4m ²) and ventilators fully open.
ADO03		13 dB	Energy assessment (e.g. TM59) to show that bedrooms will not overheat at night with windows partially open (e.g. ~2% of floor area, which is typically around 0.2m ²) and ventilators fully open.
ADO04		>13 dB	Energy assessment (e.g. TM59) to show that bedrooms on these facades will not overheat at night with windows fully closed and ventilators fully open.

- Note 1
- ADO requirements only apply to bedrooms during night-time hours (23:00-07:00).
- Note 2
- The window open area is specified above as an actual open area, not 'equivalent open area' and the values may therefore need to be converted as part of the overheating assessment.



Architectural & Environmental Consultants
Acoustics | Air Quality | Overheating

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