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Architectural & Environmental Consultants

Acoustics | Vibration | Air Quality

Noise Impact Assessment

Lower Broadbridge Farm, Broadbridge Heath

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Noise Impact Assessment

Project: LOWER BROADBRIDGE FARM, BROADBRIDGE HEATH

Report reference: RP01-26012-R3

Client:
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Document control:

REVISION	ISSUE DATE	REPORT BY	CHECKED BY	NOTES
0	24 March 2026	Nathan Hyde, BSc (Hons), Acoustics Consultant	Tim Ives, PhD BEng CEng FIOA, Director	Initial issue
1	26 March 2026	Nathan Hyde, BSc (Hons), Acoustics Consultant	Tim Ives, PhD BEng CEng FIOA, Director	Updated according to comments
2	31 March 2026	Louis Davis, BEng, Acoustics Consultant	Tim Ives, PhD BEng CEng FIOA, Director	Updated Drawings
3	24 June 2026	Nathan Hyde, BSc (Hons), Acoustics Consultant	Tim Ives, PhD BEng CEng FIOA, Director	Added High Resolution Noise Modelling Results

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

2. INTRODUCTION

3. DEVELOPMENT DESCRIPTION

4. NOISE AFFECTING THE DEVELOPMENT

5. CONCLUSIONS

APPENDIX 1 DEVELOPMENT LAYOUT

APPENDIX 2 SURVEY RESULTS

APPENDIX 3 MODELLING RESULTS

APPENDIX 4 FACADE CALCULATIONS

APPENDIX 5 OUTLINE ACOUSTIC FACADE SPECIFICATION

APPENDIX 6 PART O ACOUSTIC REQUIREMENTS FOR BEDROOMS AT NIGHT

APPENDIX 7 GARDEN FENCE HEIGHT MARKUP

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1. EXECUTIVE SUMMARY

1.1 Cass Allen has been instructed by Taylor Wimpey UK Ltd to assess the acoustic design of a reserved matters application for 133 dwellings on the site pursuant to outline planning permission (DC/25/1886) at Lower Broadbridge Farm, Broadbridge Heath.

1.2 The assessment was carried out in accordance with relevant local and national planning guidance and acoustics standards.

1.3 A noise survey was carried out at the site. Noise levels at the site are dictated by road traffic noise emissions from the A281 and the A264.

1.4 A 3D noise model of the development was constructed based on the results of a site noise survey. The noise model was used to calculate road traffic noise levels at all facades of the development.

1.5 Noise affecting habitable rooms has been assessed and designed in line with Planning Condition 17.

1.6 The layout has been designed to ensure noise levels within external amenity areas are acceptable and the noise barriers have been designed in line with Planning Condition 13.

1.7 Compliance with noise criteria in Building Regulations Part O has also been assessed. Some bedrooms will need to be designed so that windows can remain closed at night without the rooms overheating.

1.8 It is our view that this report contains the information required to demonstrate the proposed development is acceptable regarding noise impacts and is sufficient to discharge the noise-related planning conditions on the development.

2. INTRODUCTION

2.1 Cass Allen has been instructed by Taylor Wimpey UK Ltd to assess the acoustic design of a new development at Lower Broadbridge Farm, Broadbridge Heath.

2.2 The assessment has been carried out in accordance with the requirements of Planning Conditions 13 and 17 that have been imposed on the development. The conditions are:

> *13) Prior to the commencement of development full details of the acoustic fence, which shall be located and dimensioned broadly in accordance with Appendix 1 to the Noise Impact Assessment (Cass Allen Associated Ltd, Revision 3, dated 11th July 2023), shall be submitted to and approved by the council in writing. The acoustic fence shall subsequently be installed in accordance with the approved details in advance of the first occupation of any approved dwelling, and thereafter maintained for the lifetime of development.*
>
> *17) No development shall commence, above ground floor slab level, until full details of the glazing specification and means of mechanical ventilation have been submitted to and approved by the Local Planning Authority. The measures to be submitted shall have regard to the recommended mitigations set out within the submitted Noise Impact Assessment (Cass Allen Associated Ltd, Revision 3, dated 11th July 2023) approved under planning decision notice DC/22/1052,*
>
> *The approved sound attenuation works shall be completed before the dwellings are occupied and be retained thereafter.*

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

2.4 During the outline stage, it was agreed that 57 dBA within external gardens across the development would be acceptable. Therefore, the external amenity across the development have been designed to meet this level through the use of the layout and localised increased garden fence heights.

3. DEVELOPMENT DESCRIPTION

3.1 The development comprises construction of up to 133 dwellings including new vehicular access, public open space, landscape planting, surface water attenuation and associated infrastructure. A current drawing of the development layout is shown in Appendix 1.

3.2 Reserved matters application pursuant to Condition 4 attached to Planning Permission ref. DC/25/1886, for the erection of 133 dwellings with appearance, landscaping, layout and scale to be considered.

3.3 The site is located in a mixed-use area, bounded to the east by The A281 and to the south by Five Oaks Road and The A264. To the north of the site is Premium Topsoil Suppliers (Landscaping Supply Shop), To the south of the site is The Newbridge Nurseries Garden Centre. To the east and west of the site is a residential area.

3.4 The site location and surrounding area is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area

3.5 To address the requirements of the noise related planning conditions, the following matters have been assessed:

- noise affecting the habitable areas of the development and the design of the external facades (as per Planning Condition 17)

- noise affecting external amenity of the development and the mitigation required (as per Planning Condition 13)

3.6 The above matters are discussed in turn in the following sections of this report.

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 achieve acceptable noise levels.

Design criteria – Internal noise levels

4.2 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*'.

4.3 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

4.4 BS8233 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. BS8233 recognises however 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 practical noise levels in the amenity spaces.

4.5 During the outline stage, it was agreed with the planning officer that it would be acceptable for garden noise levels to be up to 57 dBA subject to suitable mitigation being implemented. This is the criteria that has been used for the design of the development.

Existing site noise levels

4.6 A noise survey was carried out at the site on 3 - 9 February 2026 to assess existing noise levels in the area. Cass Allen has previously carried out noise surveys of the site in January and February of 2022 and the most recent survey confirms that noise levels have not changed. The full methodology and results of the noise survey are provided in Appendix 2.

4.7 Average noise levels (LAeq) across the site were generally dictated by road traffic on the A281, Five Oaks Road and A264.

4.8 Maximum noise levels (LAmax) at the north of the site were largely dictated by fast car passes along the A281, Five Oaks Road and A264.

4.9 Background noise levels (LA90) across the site were dictated by constant road traffic noise from the A281, Five Oaks Road and A264.

4.10 Areas of the development at the eastern and southern edge of the site will be subject to the highest noise levels. The noise survey results show that noise levels at these positions are as follows:

- Eastern edge of the site facing A281:
  - Average noise levels during the daytime - 72 dB LAeq,0700-2300hrs
  - Average noise levels during the night-time - 63 dB LAeq,2300-0700hrs
  - Typical maximum noise levels during the night-time - 82 dB LAmax

4.11 Based on the results of the site noise survey, a 3D computer noise model was developed to predict and assess the noise levels that will exist across the entire development.

4.12 The 3D noise model was developed using Cadna/A v2026 environmental noise modelling software. Cadna/A incorporates the calculation methodology outlined in the Department of Transport Welsh Office - Calculation of Road Traffic Noise (CRTN) for the assessment of road traffic noise propagation.

4.13 The layout of the development and surrounding area was input into the model. To calculate the spread of noise levels around the site, day-time average noise levels were input for the surrounding roads (e.g. A281, Five, Oaks Road and A264) and calibrated to the results of the on-site noise measurements.

4.14 The methodology and results of the noise modelling are provided in Appendix 3. It can be seen from the modelling results that road traffic noise levels will be highest on facades of the development facing A281 and lowest on facades at the rear of the site.

Internal noise levels in noise-sensitive rooms

4.15 The external walls of the development will be constructed using a standard masonry construction (e.g. 102mm brick, 100mm insulated cavity, 100mm concrete block). Consequently, internal noise levels will be dictated by external noise ingress via glazing and ventilators.

4.16 The units will be ventilated via trickle ventilators in the external facades with openable windows for the provision of purge ventilation.

4.17 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 ventilation to achieve the nominated internal noise criteria in all habitable rooms across the development. The calculations included a 3 dBA design margin.

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

- glazing – 1.5m^2 for bedrooms and 2.5m^2 for living rooms
- external walls – 8m^2 for bedrooms and 15m^2 for living rooms

- 2 in-frame trickle ventilators in bedrooms and 3 in-frame trickle ventilators in living rooms

These calculations will be updated once drawings have been produced by the project architect, however, we do not expect the specifications to change significantly.

4.19 The results of the calculations are shown in Appendix 4 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)
Habitable rooms facing the A281 and A264	33 dB Rw+Ctr	52 dB Dne,w + Ctr
Habitable rooms further away from the A281 and A264	30 dB Rw+Ctr	38 dB Dne,w + Ctr
Habitable rooms at the rear of development	27 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.

4.20 Based on the results of the calculations summarised in Table 2 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 façade specification is shown in Appendix 5.

4.21 The required sound insulation performance values in Table 2 could typically be achieved by the glazing and ventilator types shown in Table 3.

Table 3 Typical Glazing / Ventilator Acoustic Performances

Glazing (in Good Quality Sealed Frames)	Typical Weighted Sound Reduction (Rw + Ctr)
4/16/4mm standard thermal double glazing	27
6/16/6.4mm thermal double glazing	30
8.8mm/16/4mm acoustically upgraded thermal double glazing	33
Ventilators	**Typical Acoustic Performance (Dnew + Ctr)**
Standard 'hit & miss' in-frame trickle ventilator	31
Greenwood 5000EAW.AC2 (Vent + 2 Acoustic Modules – External & Internal)	38
Greenwood Airvac MA3051 Acoustic Wall Ventilator	52

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

4.22 It can be seen from the above that compliance with Planning Condition 17 is predicted to be achieved via the selection of glazing and ventilation systems to achieve the specification given in Appendix 5.

Part O Compliance (noise and overheating)

4.23 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.

4.24 Specific requirements relating to noise and overheating are given in 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).*

4.25 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).

4.26 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 guidance[1]:

- ~4 dB when the window is fully open
- ~9 dB when the window is open to around ~0.4m^2
- 13 dB when the window is partially open to ~0.2m^2.

4.27 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 4.

[1] These values are taken from guidance published in the document *"Guide to Demonstrating Compliance with the Noise Requirements of Approved Document O"* Version 1.1 November 2024, by the Association of Noise Consultants. The values are based on a floor area of 10m^2 and a room height of 2.4m.

Table 4 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 (LAmax) – see Note 1**	
≤44 dB	≤59 dB	Fully open (to achieve 13% of the floor area which is typically ~1.3m^2). Ventilators fully open.
≤49 dB	≤64 dB	Open (~4% of floor area e.g. ~0.4m^2) – see Note 2. Ventilators fully open.
≤53 dB	≤68 dB	Partially open (~2% of floor area e.g. ~0.2m^2). 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)

4.28 The criteria in Table 4 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.

4.29 It can be seen from Appendix 6 that windows to bedrooms facing the A281 and A264 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.

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

Noise levels in external amenity areas

4.31 The design of the development has also been reviewed in relation to the BS8233 recommendation that noise levels in external amenity areas should ideally not exceed 50 – 55 dB LAeq,T.

4.32 Noise levels in some gardens are predicted to exceed the 55 dB LAeq,T limit, however whilst this is not ideal, it is not uncommon for noise levels in gardens in urban areas to be higher than the BS8233 recommended levels. Indeed the modelling indicates that noise levels in the gardens of the existing residential properties to the south and east of the site would be higher than the BS8233 recommended levels.

4.33 To reduce noise levels in these gardens as far as practicable and not to compromise the layout or visual appearance and character of the area, 1.8m and localised 2.4m high close-boarded timber fencing are used around the gardens where levels are predicted to be higher than the BS8233 recommended levels. This will be in conjunction with a 3m high noise barrier along the eastern

edge of the site. A markup showing the locations of the 2.4m high garden fences and the 3m high noise barrier is shown in Appendix 7.

4.34 This mitigation will result in noise levels in external amenities of some gardens being no higher than 57 dBA. This is a 2 dB exceedance of the upper limit for external amenity areas provided within BS8233. This is regarded as a small exceedance and a difference of 2 dB is generally imperceptible to human hearing outside of laboratory conditions. Noise levels of up to 57 dBA was also accepted in the Appeal Statement of Common Ground (Cass Allen Associated Ltd, Revision 3, dated 11th July 2023) for the outline application. Therefore, the noise levels in external amenities in these gardens are seen as acceptable.

5. CONCLUSIONS

5.1 Cass Allen was instructed by Taylor Wimpey UK Ltd to assess the acoustic design of the development proposed through the reserved matters application and to address Planning Conditions 13 and 17 of planning permission DC/25/1886.

5.2 The assessment was carried out in accordance with relevant local and national planning guidance and acoustics standards.

5.3 Noise levels at the site are dictated by road traffic noise emissions from The A281, Five Oaks Road and the A264

5.4 A 3D noise model of the development was used to predict road traffic noise levels at all facades of the development.

5.5 Noise affecting habitable rooms has been assessed and designed in line with Planning Condition 17.

5.6 The layout has been designed to ensure noise levels within external amenity areas are acceptable and the noise barriers have been designed in line with Planning Condition 13.

5.7 Compliance with noise criteria in Building Regulations Part O has also been assessed. Some bedrooms will need to be designed so that windows can remain closed at night without the rooms overheating.

5.8 It is our view that this report contains the information required to inform the layout of the proposed development and to discharge the noise-related planning conditions on the development.

Appendix 1 Development Layout

CDM 2015 Health & Safety Information

This information relates only to 'Significant Hazards' identified on this drawing and is to be read in conjunction with the Designer's Hazard Register.

N

Mill House

The Bungal

Pond

Lower Broadbridge Farm

Cattle Grid

Cattle Grid

High Pressure Gas Main with 6m easement either side

Pond

Millmead

L.E.A.P.

FW Pump Station

Sub Station

Attenuation Basin

5.0m SHARED SURFACE

5.5m MAIN ACCESS

5.0m SECONDARY STREET

4.1m PRIVATE DRIVE

NEWBRIDGE CLOSE

Acoustic fence with landscaping

A 281

The Paddocks

Ecological Enhancement Area

Arun House

Attenuation Basin

Attenuation Basin

Sewer with 3m easement either side

EDWARDS CLOSE

Acoustic fence with landscaping

A 281

FIVE OAKS ROAD

A 264

Drain

3m High brick wall

Sewer with 6m easement either side (not traced)

Roundabout / Junction redesigned to facilitate access (as approved drawing)

Rev	Date	Revision Details	Dr	Ch
E	27.03.26	Red Line Amended	MC	KE
D	27.03.26	Landscape Updated	MC	KE
C	17.03.26	95 rotated and parking for 86-94 amended	KE	AK
B	16.03.26	Site Layout Updated	KE	AK
A	06.03.26	Colour Updated to Layout Changes	MC	AK

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Customer Director		

Client's Name
Taylor Wimpey South Thames

Job Title
Lower Broadbridge Farm, Broadbridge Heath

Drawing Title
Proposed Site Layout

Scale
1:500 @ A0 / 1:1000 @ A2

metres 10 20 30 40 50

Drawn	Checked	Date
KE	AK	20.02.26

Job No	Drawing No	Rev
7564	PL-03	E

Status
APPROVAL

CAD Plot date: 27/03/2026 - 14:12:32 7564 - site.dwg

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:

03/02/2026 to 09/02/2026

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]	01 dB	Fusion	12082
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. 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	
N3	
N4	
N5	
L1	Unattended noise logging position. 3m above ground level. Free-field. Direct line of sight to nearby roads
L2	

Site Plan showing Measurement Positions:

Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmax, dB	LA90, dB	Observations
09/02/2026	N1	11:17	20 mins	56	62	54	Noise dictated by Road traffic noise along the A264 and A281
	N2	11:40	22 mins	57	63	55	
	N3	12:04	24 mins	61	67	56	
	N4	12:31	23 mins	63	80	58	
	N5	13:00	3 mins	59	74	50	
	L1	13:46	14 secs	67	74	63	Noise Dictated by car pass
		13:46	12 secs	69	72	64	
		13:47	19 secs	68	71	64	
09/02/2026	L2	13:55	17 secs	70	76	61	Noise Dictated by car pass
			5 secs	68	71	65	
			16 secs	72	75	64	

Unattended Noise Monitoring Results:

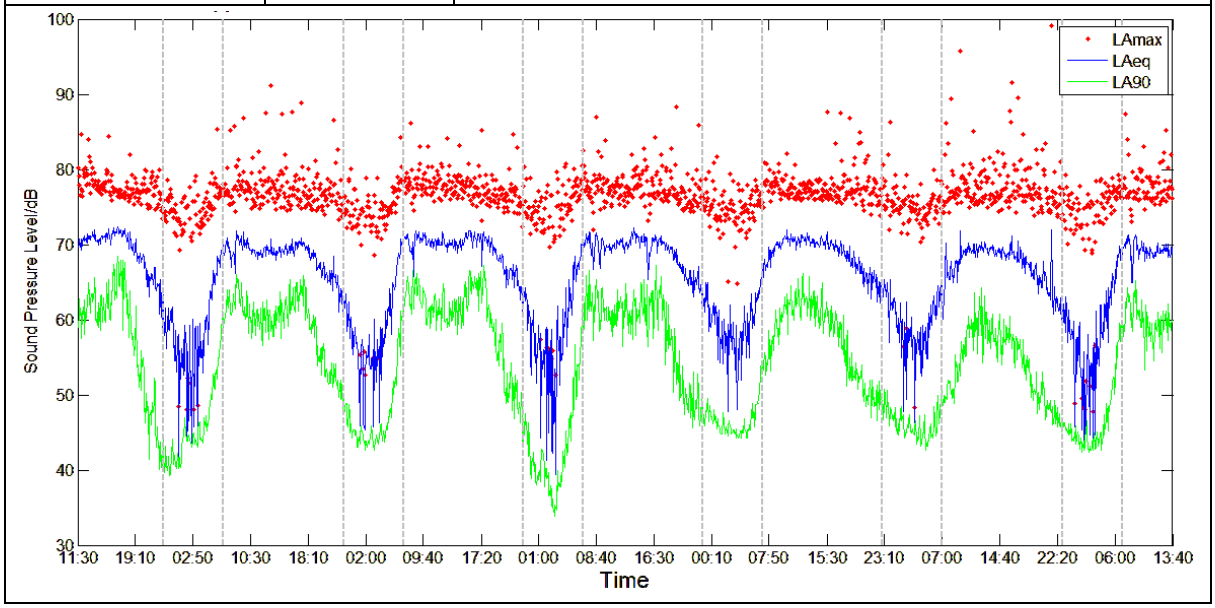
Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB[1]	LAeq,8hr, dB	LA90,5mins, dB[1]	LAmax, dB[2]
03/02/2026 to 09/02/2026	L1	69	59	62	44	78
	L2	72	53	63	33	81-82

Note 1: Typical lowest measured during the period shown.

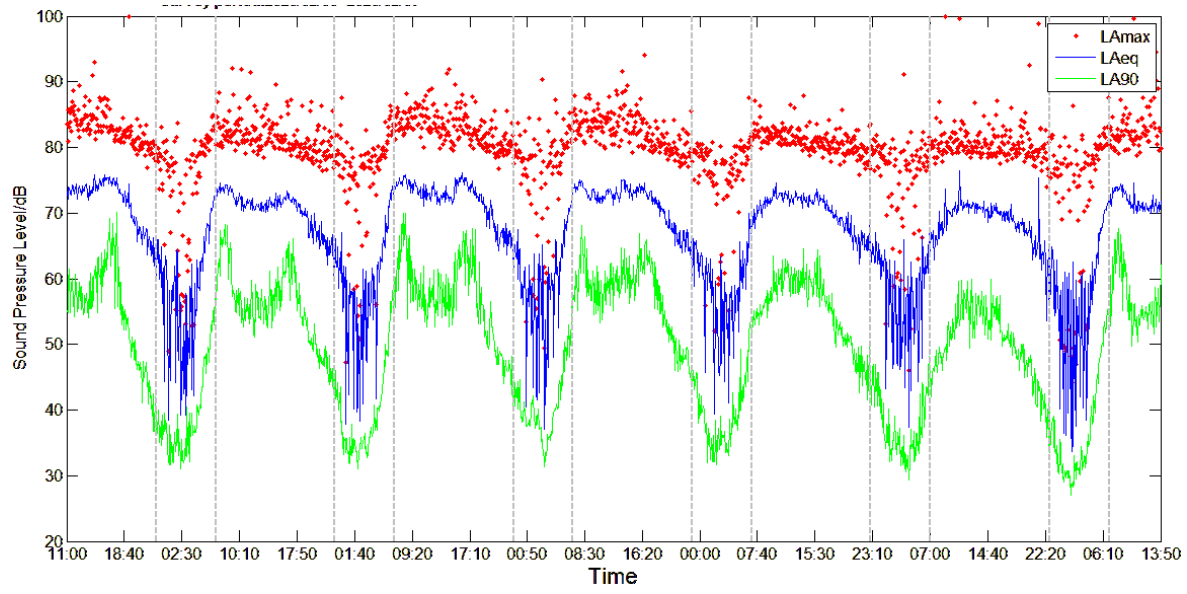
Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

Unattended Noise Monitoring Results:

Meas. Period	Position	
03/02/2026 to 09/02/2026	L1	



Meas. Period	Position	
03/02/2026 to 09/02/2026	L2	



Appendix 3 Modelling Results

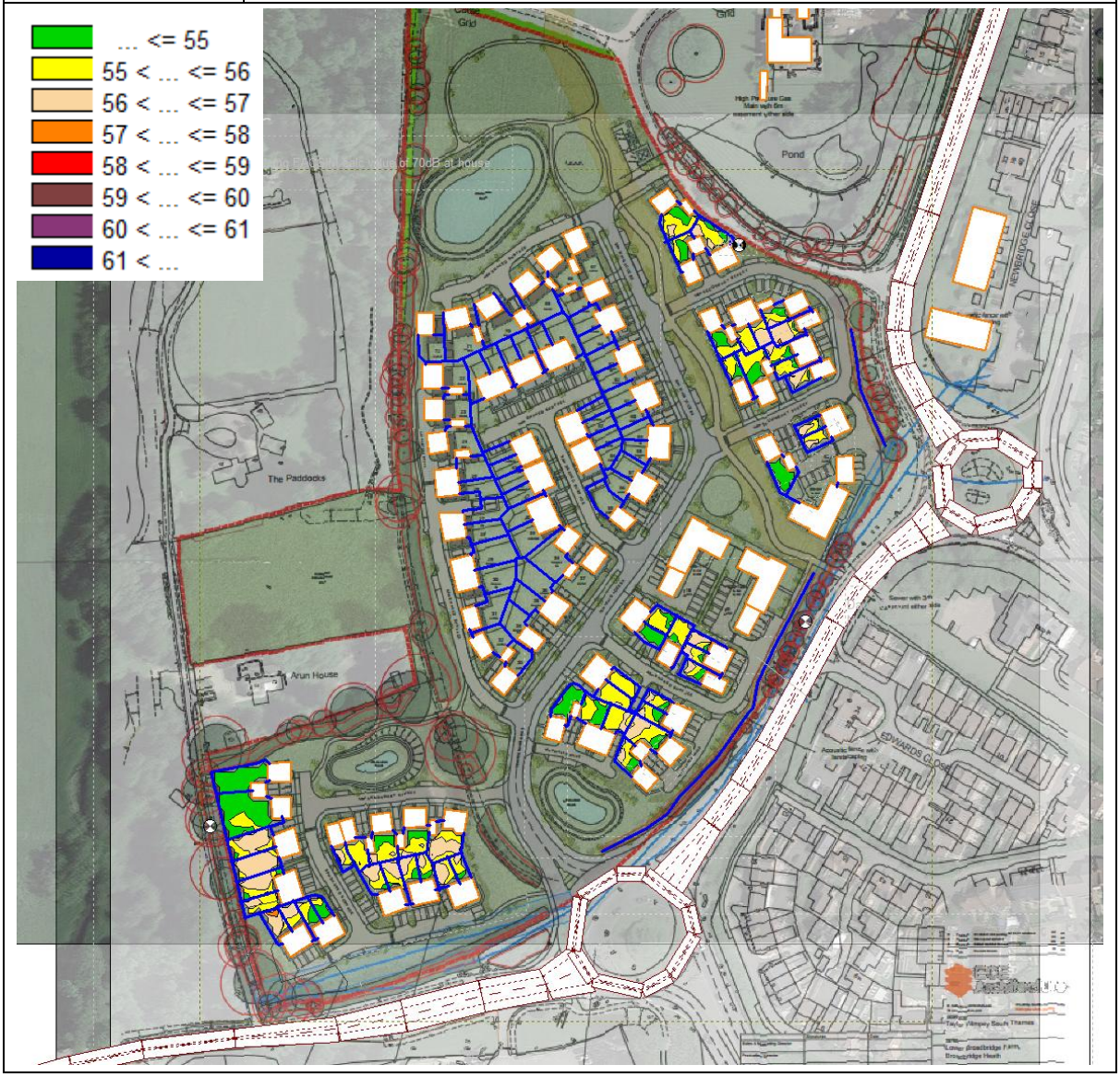
Modelling Software:	CADNA/A Version 2026
Modelled Scenarios:	Day and night-time average noise levels across the site
Data inputs:	• Noise survey results • Topographical data for the site • Development layout
Calculation Algorithms Used:	• Calculation of Road Traffic Noise 1988 – Department of Transport • 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:

Scenario	Daytime noise levels (LAeq,16hr) at 1.5m above ground level

Scenario	Nighttime noise levels (LAeq,8hr) at 1.5m above ground level

Scenario	Daytime external amenity noise levels (LAeq,16hr) at 1.5m above ground level



Appendix 4 Facade Calculations

FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

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

Room Dimensions [m]	W		L		H
	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 >>>

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)	69.0								
		50.8	54.9	58.4	61.8	65.0	62.2	57.0	**Reference spectrum**

REVERBERATION TIME

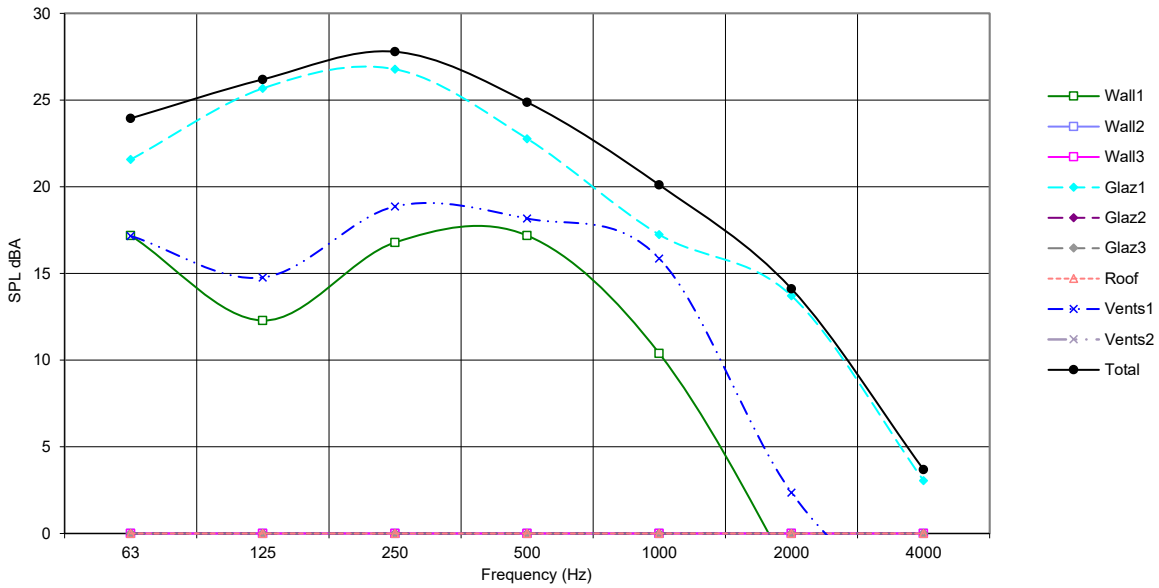
DIRECT INPUT ----->								**No data**
EQUAL RT for all bands ----->								
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	11%	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	33 dB Rw + Ctr - High Acoustic Performance Double Glazing	1.5	24	24	27	34	43	44	49	74%	33 (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		31	32	34	41	50	52	57				
	Resultant SPL inside room excluding ventilators dB	31.6	23	26	27	24	18	14	3	84%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood Airvac MA3051 Acoustic Wall Ventilator	2	40	47	46	50	56	66	69	16%	55	-1	-3
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	24.2	17	15	19	18	16	2	-5	16%			
	Total SPL inside room	**32.3**	24	26	28	25	20	14	4				

NOTE 2 - The selected vents are THROUGH WALL and therefore the aesthetic implications should be considered as an alternative ventilation strategy may be preferable

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

		W	L	H
PROJECT:		Room Dimensions [m]	3.0 X	4.0 X	2.4
ROOM:	Bedroom			
VARIANT:	Worst-Case Average Noise Level (LAeq)			
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.			

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)	62.0								
		43.8	47.9	51.4	54.8	58.0	55.2	50.0	**Reference spectrum**

REVERBERATION TIME

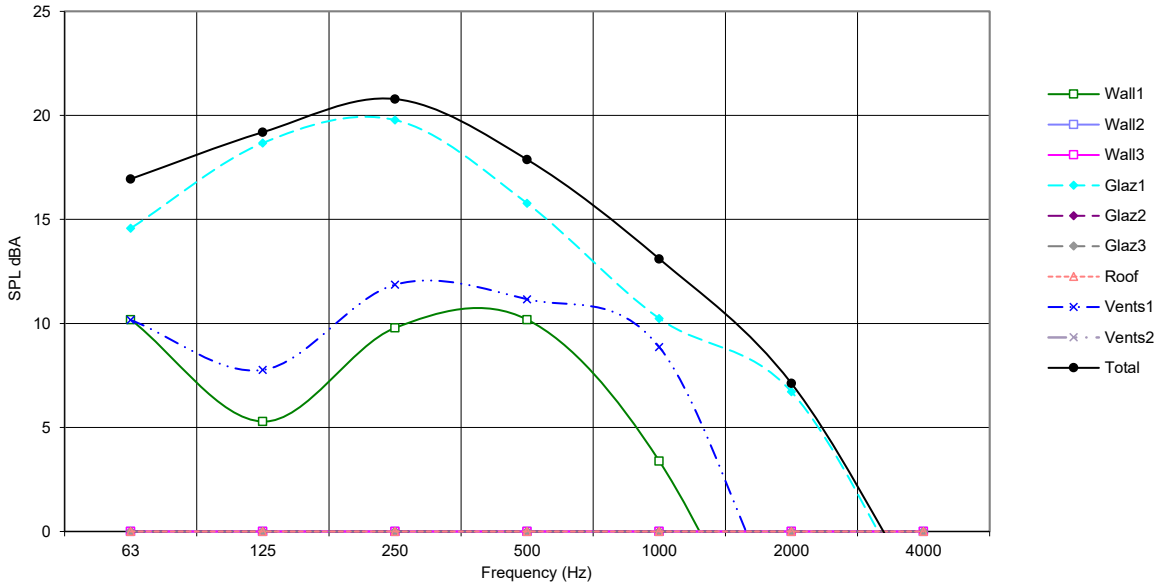
DIRECT INPUT ----->								**No data**
EQUAL RT for all bands ----->								
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	10%	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	33 dB Rw + Ctr - High Acoustic Performance Double Glazing	1.5	24	24	27	34	43	44	49	73%	33 (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		31	32	34	41	50	52	57				
	Resultant SPL inside room excluding ventilators dB	24.6	16	19	20	17	11	7	-4	84%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood Airvac MA3051 Acoustic Wall Ventilator	2	40	47	46	50	56	66	69	15%	55	-1	-3
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	17.2	10	8	12	11	9	-5	-12	16%			
	Total SPL inside room	**25.3**	17	19	21	18	13	7	-3				

NOTE 2 - The selected vents are THROUGH WALL and therefore the aesthetic implications should be considered as an alternative ventilation strategy may be preferable

Element contribution to total internal noise level



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

Room Dimensions [m]	W		L		H
	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 >>>

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)	75.0								
		56.8	60.9	64.4	67.8	71.0	68.2	63.0	**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**

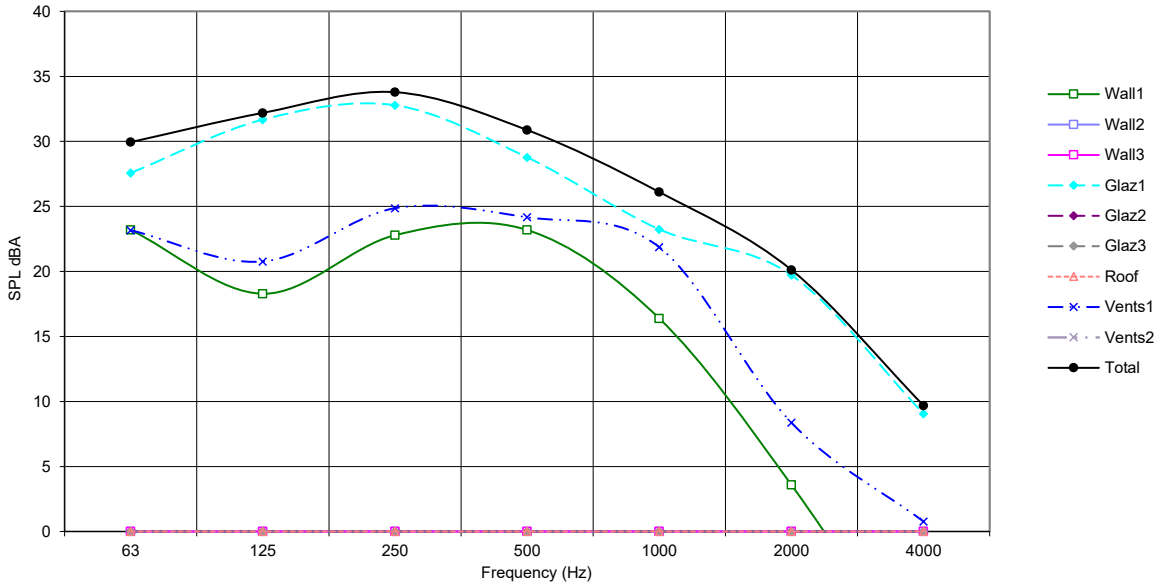
Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	11%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	33 dB Rw + Ctr - High Acoustic Performance Double Glazing	1.5	24	24	27	34	43	44	49	74%	33 (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		31	32	34	41	50	52	57				
	Resultant SPL inside room excluding ventilators dB	37.6	29	32	33	30	24	20	9	84%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood Airvac MA3051 Acoustic Wall Ventilator	2	40	47	46	50	56	66	69	16%	55	-1	-3
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	30.2	23	21	25	24	22	8	1	16%			

Total SPL inside room	**38.3**	30	32	34	31	26	20	10

NOTE 2 - The selected vents are THROUGH WALL and therefore the aesthetic implications should be considered as an alternative ventilation strategy may be preferable

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

		W		L		H
PROJECT:		Room Dimensions [m]	4.0	X	5.0	X	2.4
ROOM:	Living Room					
VARIANT:	Worst-Case Average Noise Level (LAeq)					
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.					

Room Volume =	48.0	m3
Partition Area =	17.5	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)	69.0								
		50.8	54.9	58.4	61.8	65.0	62.2	57.0	**Reference spectrum**

REVERBERATION TIME

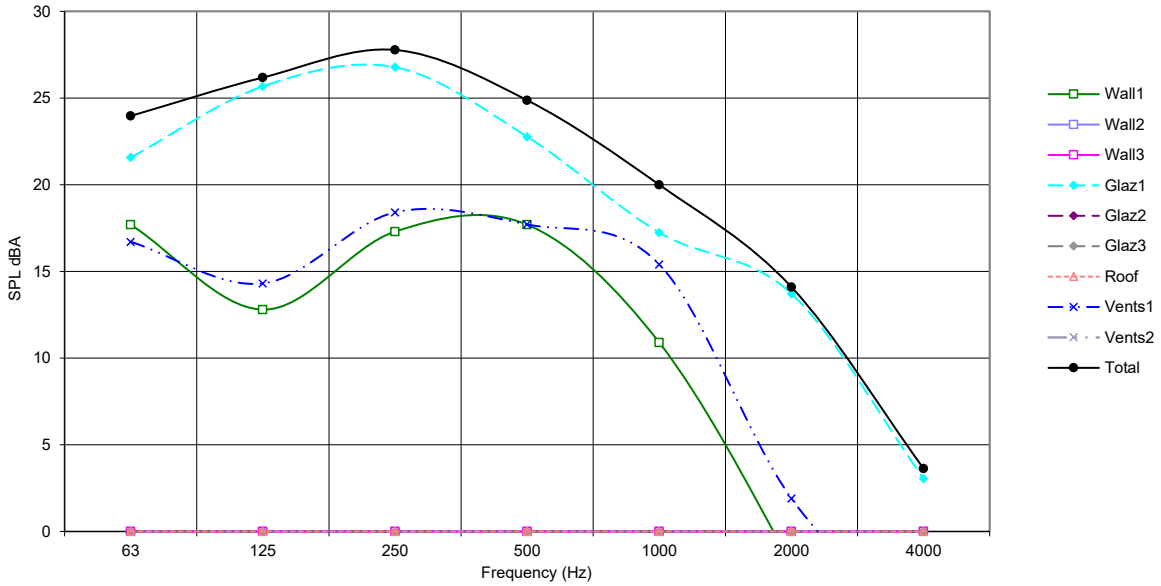
DIRECT INPUT ----->								**No data**
EQUAL RT for all bands ----->								
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	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	12%	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	33 dB Rw + Ctr - High Acoustic Performance Double Glazing	2.5	24	24	27	34	43	44	49	74%	33 (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		31	33	35	41	50	52	57				
	Resultant SPL inside room excluding ventilators dB	31.6	23	26	27	24	18	14	3	86%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood Airvac MA3051 Acoustic Wall Ventilator	3	40	47	46	50	56	66	69	14%	55	-1	-3
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	23.8	17	14	18	18	15	2	-6	14%			
	Total SPL inside room	**32.3**	24	26	28	25	20	14	4				

NOTE 2 - The selected vents are THROUGH WALL and therefore the aesthetic implications should be considered as an alternative ventilation strategy may be preferable

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

		W		L		H
PROJECT:		Room Dimensions [m]	3.0	X	4.0	X	2.4
ROOM:	Bedroom					
VARIANT:	Worst-Case Average Noise Level (LAeq)					
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.					

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)	63.0								
		44.8	48.9	52.4	55.8	59.0	56.2	51.0	**Reference spectrum**

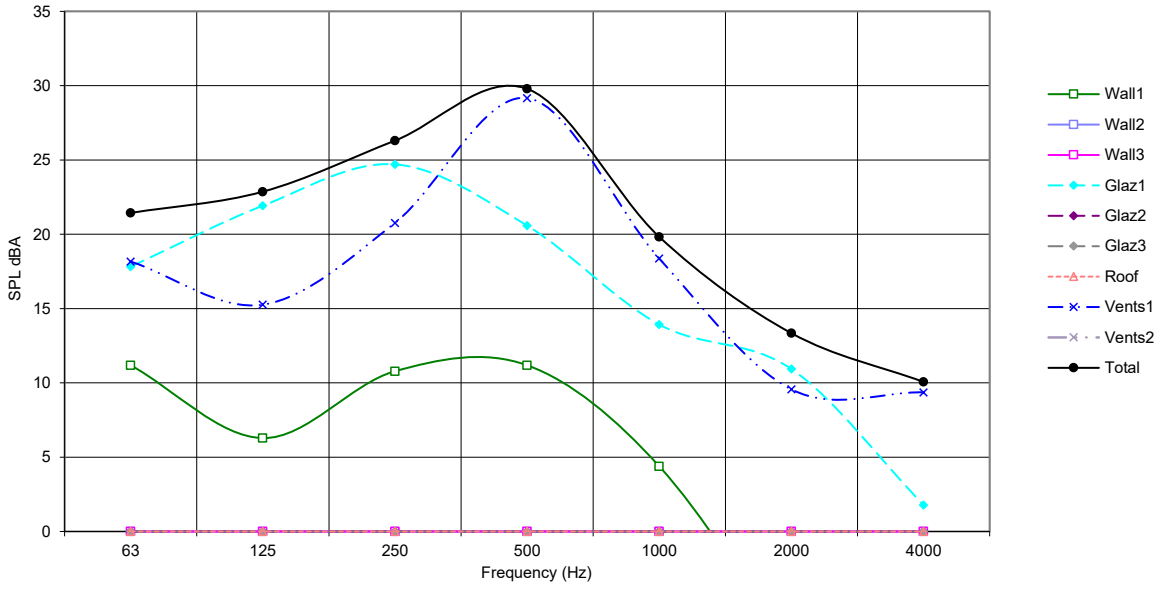
REVERBERATION TIME

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	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	2%	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	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	1.5	22	22	23	30	40	40	44	36%	30 (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		29	30	31	38	48	48	52				
	Resultant SPL inside room excluding ventilators dB	28.5	19	22	25	21	14	11	2	39%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood 5000EAW.AC2 (Vent + 2 Acoustic Modules - External & Inte	2	33	40	38	33	47	53	48	61%	42	-2	-4
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	30.5	18	15	21	29	18	10	9	61%			
	Total SPL inside room	**32.6**	21	23	26	30	20	13	10				

Element contribution to total internal noise level



		W	L	H
PROJECT:		Room Dimensions [m]	3.0 X	4.0 X 2.4
ROOM:	Bedroom			
VARIANT:	Worst-Case Average Noise Level (LAeq)			
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.			

Room Volume = 28.8 m3
Partition Area = 9.5 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>> Free Field SPL K = 3 dB

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)	57.0								
		38.8	42.9	46.4	49.8	53.0	50.2	45.0	**Reference spectrum**

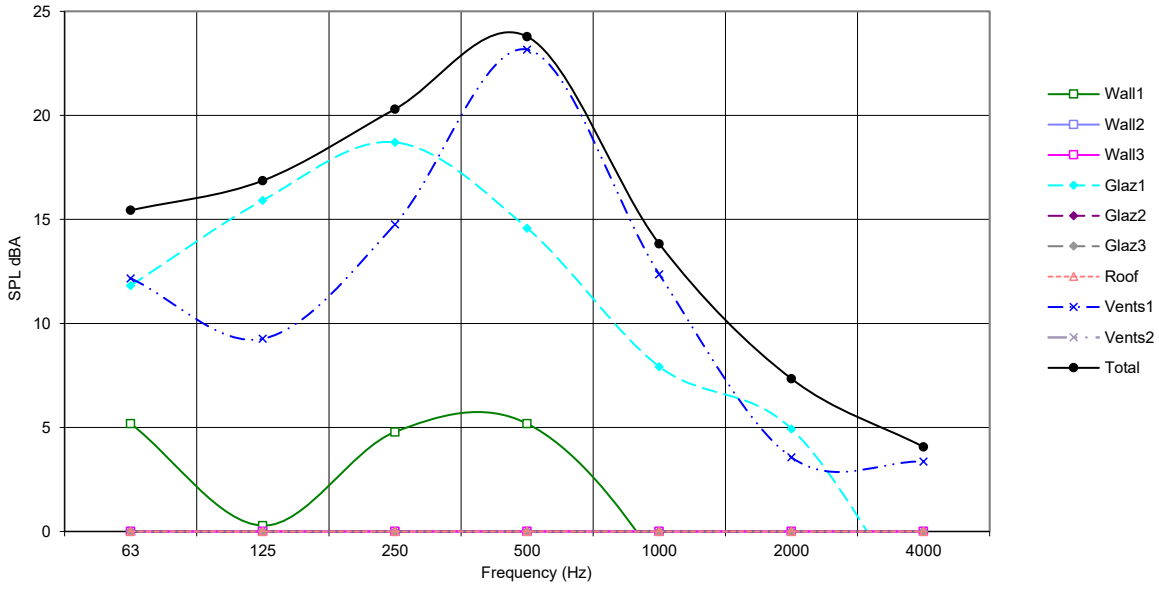
REVERBERATION TIME

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	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	2%	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	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	1.5	22	22	23	30	40	40	44	36%	30 (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		29	30	31	38	48	48	52				
	Resultant SPL inside room excluding ventilators dB	22.5	13	16	19	15	8	5	-4	39%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood 5000EAW.AC2 (Vent + 2 Acoustic Modules - External & Inte	2	33	40	38	33	47	53	48	61%	42	-2	-4
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	24.5	12	9	15	23	12	4	3	61%			
	Total SPL inside room	**26.6**	15	17	20	24	14	7	4				

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
PROJECT:		Room Dimensions [m]	3.0	X	4.0	X	2.4
ROOM:	Bedroom						
VARIANT:	Worst-Case Maximum Noise Level (LAmax)						
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.						

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)	70.0								
		51.8	55.9	59.4	62.8	66.0	63.2	58.0	**Reference spectrum**

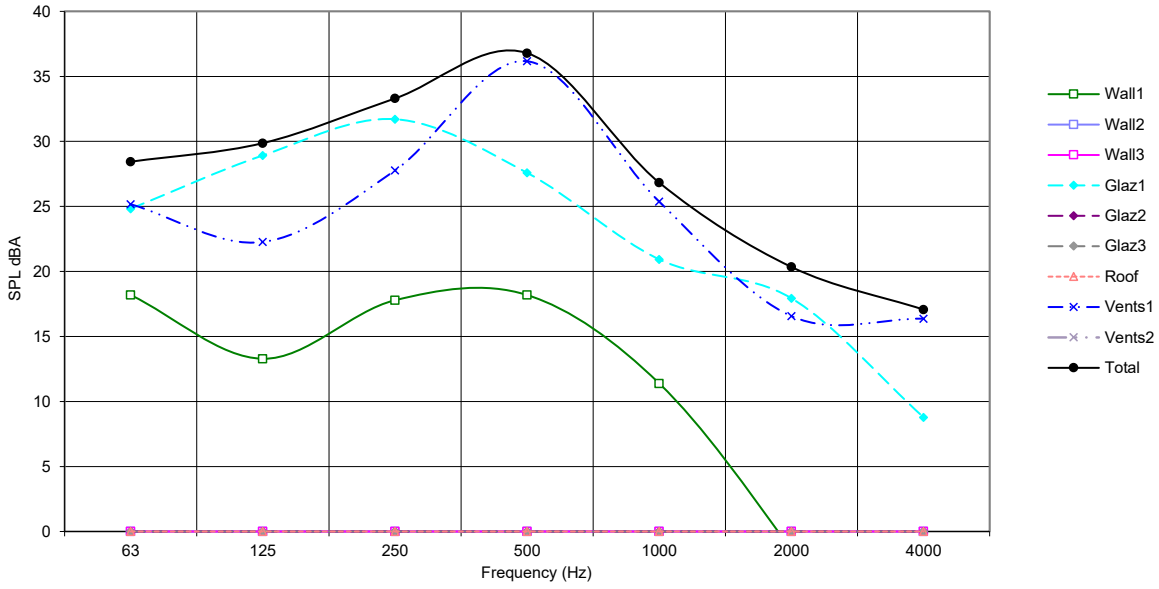
REVERBERATION TIME

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	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	2%	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	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	1.5	22	22	23	30	40	40	44	36%	30 (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		29	30	31	38	48	48	52				
	Resultant SPL inside room excluding ventilators dB	35.5	26	29	32	28	21	18	9	39%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood 5000EAW.AC2 (Vent + 2 Acoustic Modules - External & Inte	2	33	40	38	33	47	53	48	61%	42	-2	-4
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	37.5	25	22	28	36	25	17	16	61%			
	Total SPL inside room	**39.6**	28	30	33	37	27	20	17				

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
PROJECT:		Room Dimensions [m]	4.0	X	5.0	X	2.4
ROOM:	Living Room						
VARIANT:	Worst-Case Average Noise Level (LAeq)						
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.						

Room Volume =	48.0	m3
Partition Area =	17.5	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)	63.0								
		44.8	48.9	52.4	55.8	59.0	56.2	51.0	**Reference spectrum**

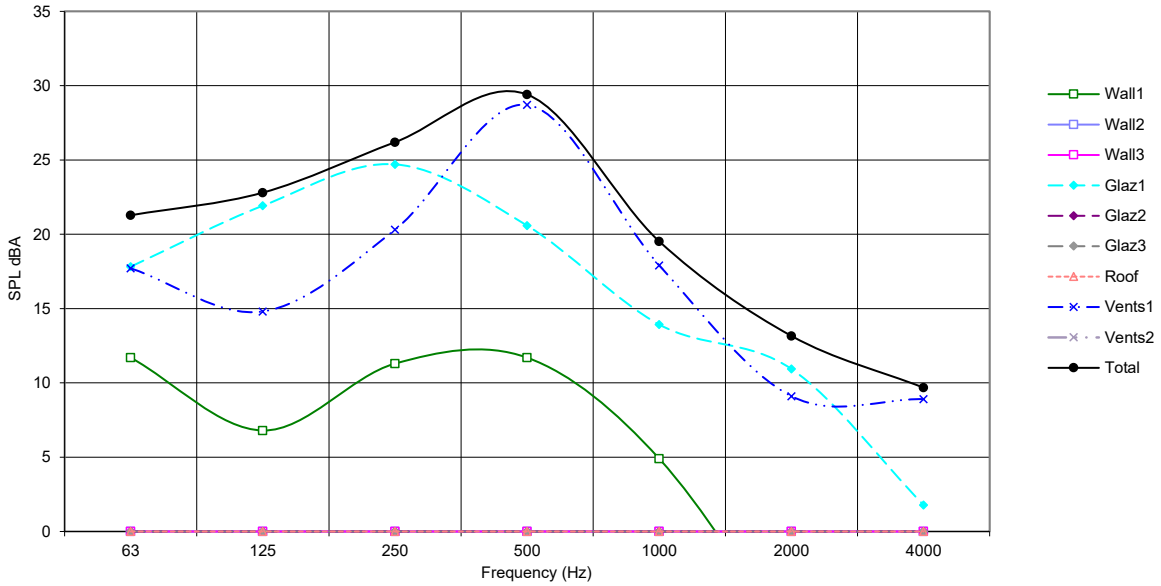
REVERBERATION TIME

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	Typical - 102mm brick/50mm cavity/100mm block	15.0	36	45	44	47	57	67	77	3%	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	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	2.5	22	22	23	30	40	40	44	38%	30 (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		30	30	31	38	48	49	53				
	Resultant SPL inside room excluding ventilators dB	28.5	19	22	25	21	14	11	2	41%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	Greenwood 5000EAW.AC2 (Vent + 2 Acoustic Modules - External & Inte	3	33	40	38	33	47	53	48	59%	42	-2	-4
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	30.1	18	15	20	29	18	9	9	59%			
	Total SPL inside room	**32.4**	21	23	26	29	20	13	10				

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
PROJECT:		Room Dimensions [m]	3.0	X	4.0	X	2.4
ROOM:	Bedroom						
VARIANT:	Worst-Case Average Noise Level (LAeq)						
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.						

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)	57.0								
		38.8	42.9	46.4	49.8	53.0	50.2	45.0	**Reference spectrum**

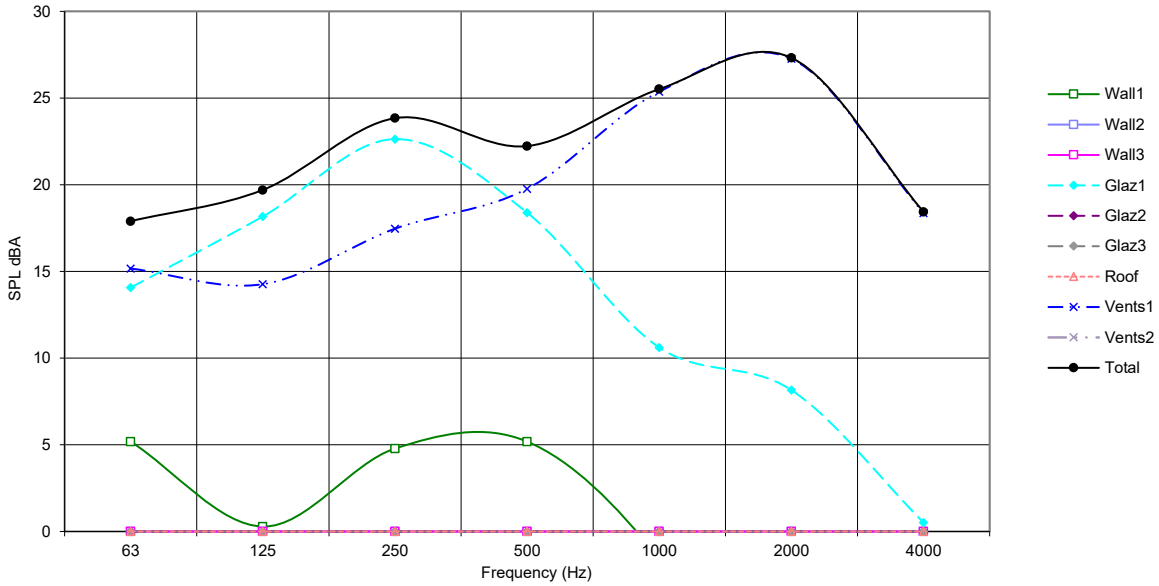
REVERBERATION TIME

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	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	1%	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	1.5	20	20	19	27	38	37	40	24%	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	34	45	45	48				
	Resultant SPL inside room excluding ventilators dB	25.7	15	18	23	19	11	8	1	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	2	30	35	35	36	34	29	33	75%	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	76%			
	Total SPL inside room	**31.8**	18	20	24	22	26	27	18				

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
PROJECT:		Room Dimensions [m]	3.0	X	4.0	X	2.4
ROOM:	Bedroom						
VARIANT:	Worst-Case Average Noise Level (LAeq)						
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.						

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)	52.0								
		33.8	37.9	41.4	44.8	48.0	45.2	40.0	**Reference spectrum**

REVERBERATION TIME

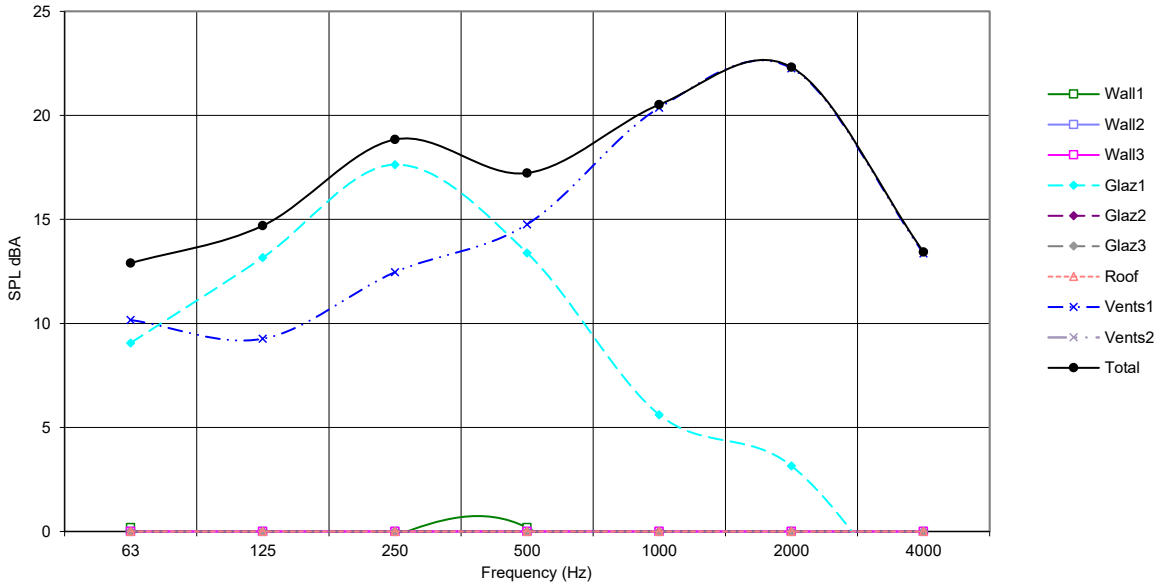
DIRECT INPUT ----->								**No data**
EQUAL RT for all bands ----->								
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	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	1.5	20	20	19	27	38	37	40	24%	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	34	45	45	48				
	Resultant SPL inside room excluding ventilators dB	20.7	10	13	18	14	6	3	-4	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	2	30	35	35	36	34	29	33	75%	32	0	-1
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	25.6	10	9	12	15	20	22	13	76%			

Total SPL inside room	**26.8**	13	15	19	17	21	22	13

Element contribution to total internal noise level



FACSIM V2.7.13 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

		W	L	H
PROJECT:		Room Dimensions [m]	4.0 X	5.0 X 2.4
ROOM:	Living Room			
VARIANT:	Worst-Case Average Noise Level (LAeq)			
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.			

Room Volume = 48.0 m3
Partition Area = 17.5 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>> Free Field SPL K = 3 dB

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)	57.0								
		38.8	42.9	46.4	49.8	53.0	50.2	45.0	**Reference spectrum**

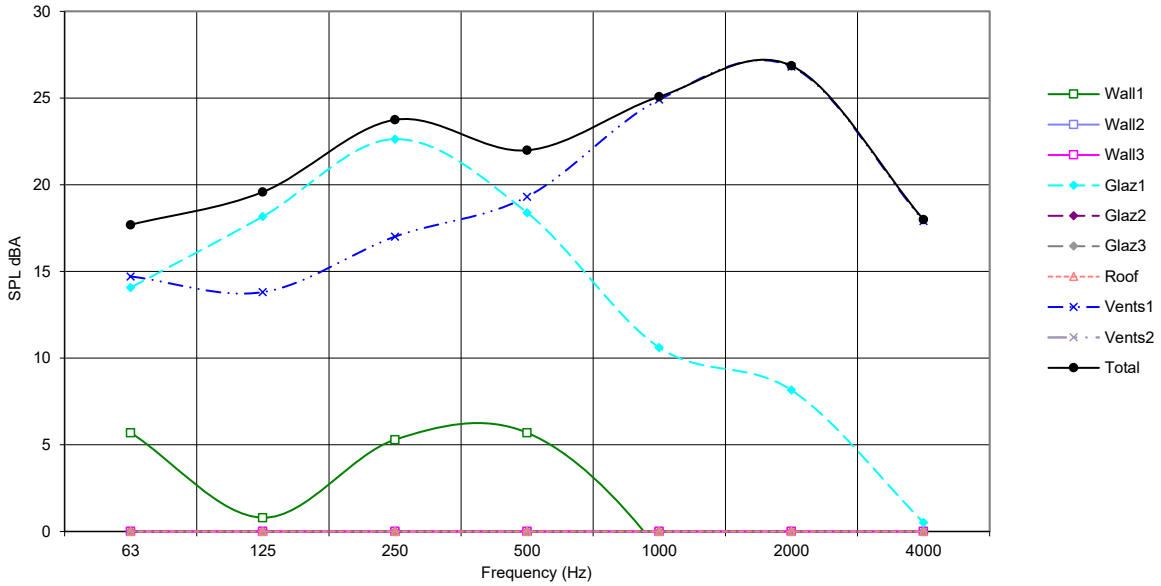
REVERBERATION TIME

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	Typical - 102mm brick/50mm cavity/100mm block	15.0	36	45	44	47	57	67	77	1%	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	2.5	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		28	28	27	35	46	46	48				
	Resultant SPL inside room excluding ventilators dB	25.7	15	18	23	19	11	8	1	27%			

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	73%	32	0	-1
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	30.2	15	14	17	19	25	27	18	73%			
	Total SPL inside room	**31.5**	18	20	24	22	25	27	18				

Element contribution to total internal noise level



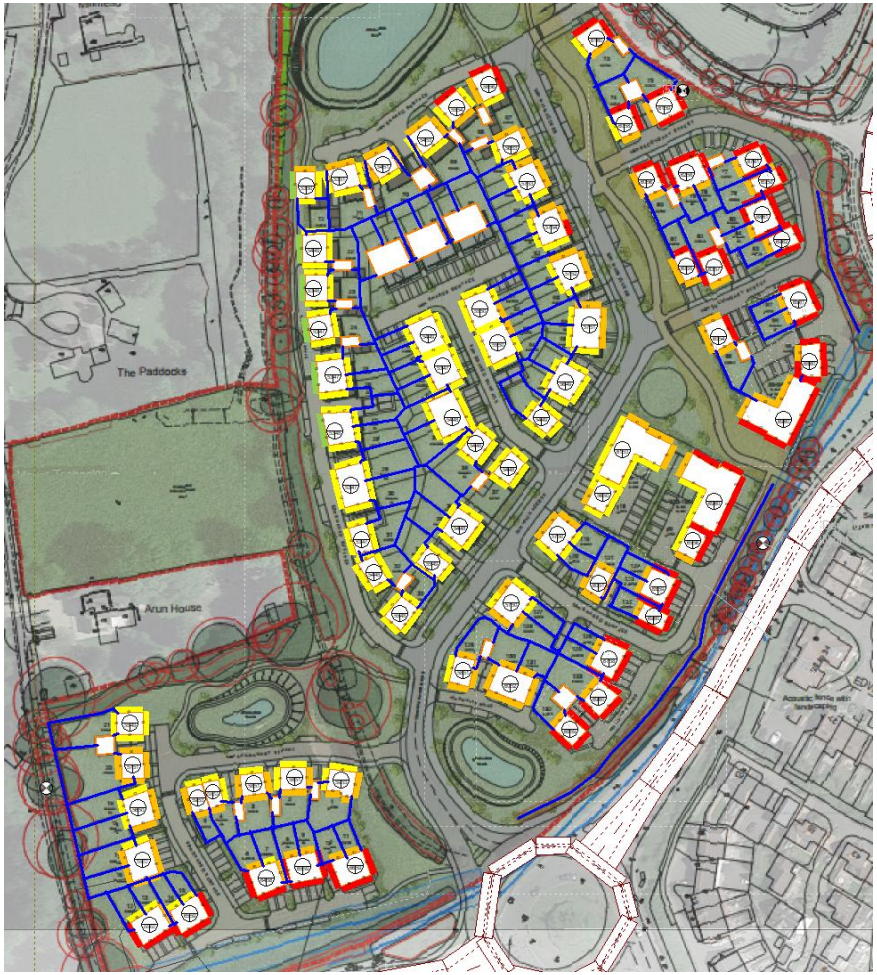
Appendix 5 Outline Acoustic Facade Specification

Reference	Colour	Glazing Specification	Ventilator Specification
FC01		27 dB Rw+Ctr	31 dB Dnew+Ctr
FC02		30 dB Rw+Ctr	38 dB Dnew+Ctr
FC03		33 dB Rw+Ctr	52 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 should be in the open position.

All floors:

Appendix 6 Part O Acoustic Requirements for Bedrooms at Night



Ref.	Colour	Outside-to-inside noise reduction requirement	Part O Requirement for Bedrooms
ADO01		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.

Appendix 7 Garden Fence Height and noise barrier Markup

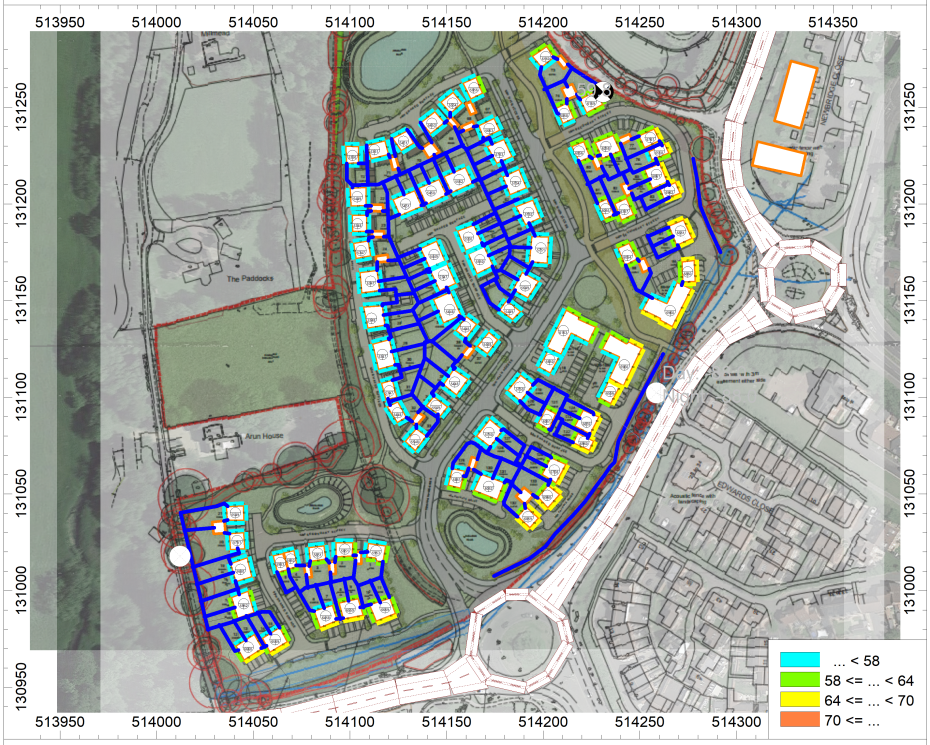
Reference	Colour	Fence Height
FH01		2.4m
FH02		3m

Note 1: Any garden fences that are not marked up above will have a height of 1.8m

Appendix 8 Higher resolution Noise Modelling Results

Daytime:

LOWER BROADBRIDGE FARM SOUTH - 230710



Night-time:

LOWER BROADBRIDGE FARM SOUTH - 230710

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