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Acoustics | Vibration | Air Quality

Noise Impact Assessment

Padnell Grange, Waterlooville

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Noise Impact Assessment

Project: PADNELL GRANGE, WATERLOOVILLE

Report reference: RP02-25488-R1

Client:
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0	13 March 2026	Louis Davis, BEng, Acoustics Consultant	Anthony Coraci, MSc DipIOA MIOA, Senior Acoustics Consultant	Initial issue
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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

2. INTRODUCTION

3. PROJECT DESCRIPTION

4. PLANNING POLICY

5. NOISE AFFECTING THE DEVELOPMENT

6. PLANT NOISE IMPACT ASSESSMENT

7. CONCLUSIONS

APPENDIX 1 PROPOSED SITE LAYOUT

APPENDIX 2 SURVEY RESULTS

APPENDIX 3 FACADE CALCULATIONS

1. EXECUTIVE SUMMARY

1.1 Cass Allen has been instructed by Stonebond Properties (Guildford) Limited and the Borrow Foundation to assess noise affecting a proposed new development at Padnell Grange, Waterlooville.

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

1.3 A noise survey was carried out at the site. Noise levels at the site are dictated by road traffic noise emissions from the A3(M).

1.4 Noise affecting the development has been assessed in accordance with ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of the glazing and ventilation strategy set out in this report.

1.5 Compliance with noise criteria in Building Regulations Part O has also been assessed. Some bedrooms will need to be designed so that windows cannot be fully open at night without the rooms overheating. This can be assessed further in due course.

1.6 Noise limits for mechanical plant that will serve the proposed development have been set out in this report, in line with BS4142.

1.7 In summary, it is our view that the site is suitable for the development in terms of noise levels, subject to the adoption of the acoustic design strategy set out in this report.

2. INTRODUCTION

2.1 Cass Allen has been instructed by Stonebond Properties (Guildford) Limited and the Borrow Foundation to assess noise affecting a proposed new development at Padnell Grange, Waterlooville.

2.2 The assessment has been carried out in accordance with relevant local and national planning guidance.

2.3 The aims of the assessment were:

- to establish the suitability of existing noise levels at the site for the proposed development
- where required, identify appropriate measures to optimise the acoustic design of the development and achieve acceptable noise levels in habitable areas

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

3. PROJECT DESCRIPTION

3.1 The site currently consists of a single residential unit, disused barn buildings and 140 sqm of office used by the Borrow Foundation. There is an access route to the site via Padnell Road. The site is bounded by Greenfield Crescent and Padnell Cut Woods to the north, residential properties along Cherry Tree Avenue to the west and south, and Waterlooville Golf Course to the east. The A3(M) is approximately 450m to the east of the site.

3.2 The site location is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area

3.3 The proposal is to submit a full planning application for the development of 90 residential properties at the site. A current drawing of the proposed development layout is shown in Appendix 1.

4. PLANNING POLICY

National Policy

4.1 Outline guidance for the assessment of noise affecting new developments is given in the National Planning Policy Framework (NPPF) (December 2024). Relevant sections in this case are highlighted below:

> *187. Planning policies and decisions should contribute to and enhance the natural and local environment by … preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of …noise pollution.*
>
> *198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

Local Policy

4.2 Havant Borough Council's Adopted Local Plan contains The Core Strategy (2011) which provides outline guidance on the assessment of noise affecting new development in the borough. The Core Strategy (2011) also references PPG24 Planning and Noise as a method of "*minimising the adverse effects of noise without being unduly restrictive".*

Design

Policy CS16 High Quality Design

Planning permission will be granted for development that is designed to a high standard, which helps to create places where people want to live, work and relax. All development should demonstrate that its design:

1. *Responds to, draws inspiration from and respects local contexts and:*

…e) The development does not cause unacceptable harm to the amenity of neighbours through… noise.

Pre-Application Advice

4.3 Havant Borough Council's Environmental Health (Pollution) department provided the below comments, in relation to noise, as part of pre-application advice for the proposed development:

> *The following supporting information would be expected, should a full application be received:*
>
> *A detailed noise impact assessment should be undertaken to assess noise from traffic on the A3(M) and to identify an appropriate mitigation scheme for the proposed dwellings. The assessment must also consider existing background noise levels to inform suitable noise limits for domestic building services plant, including (but not limited to) air source heat pumps.*

4.4 To address the requirements of the national and local policies, the noise affecting the habitable areas of the proposed development has been assessed.

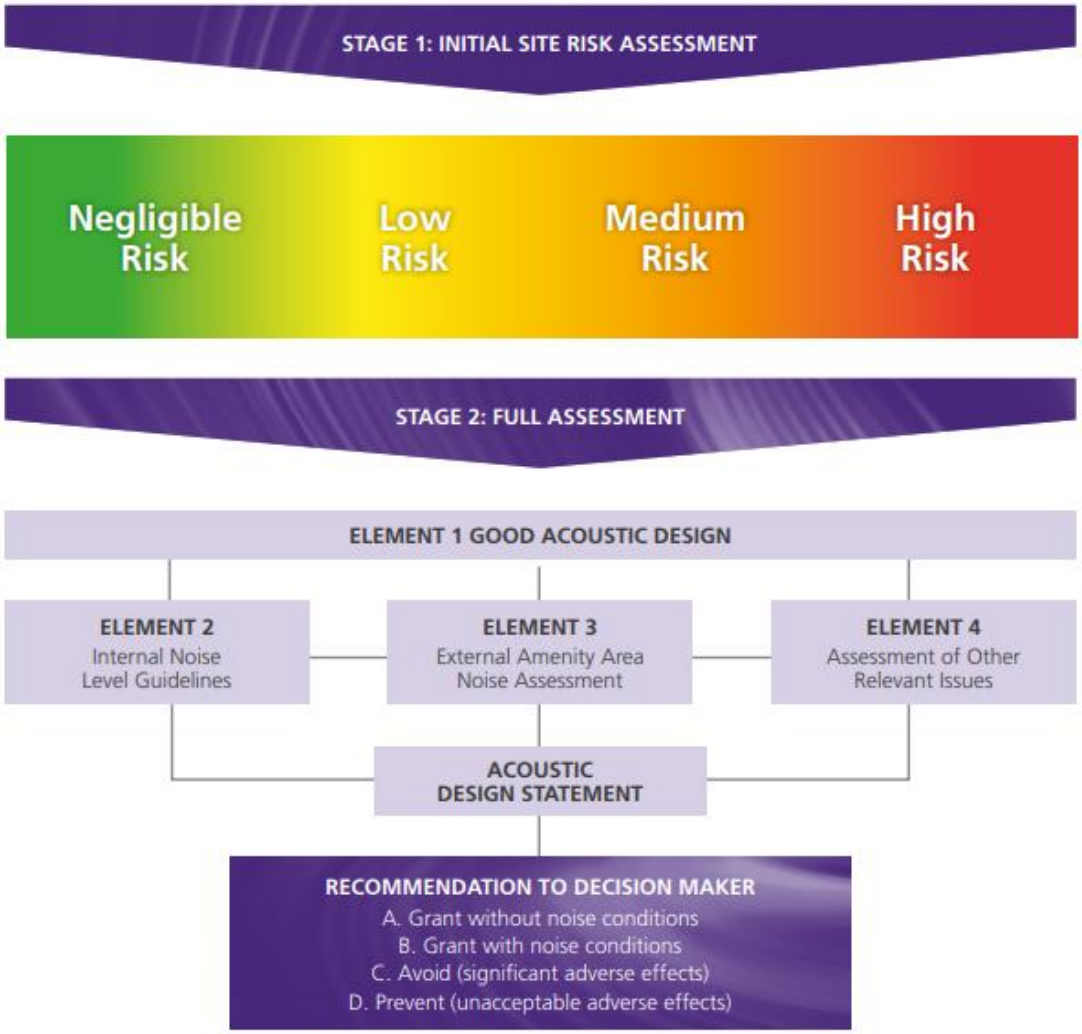
5. NOISE AFFECTING THE DEVELOPMENT

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

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

5.2 The process is shown visually in Figure 2 below.

Figure 2 ProPG Assessment Process



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

Stage 1 – Noise survey and initial assessment

5.4 A noise survey was carried out at the site from 16 – 21 January 2026 to assess existing noise levels in the area. The full methodology and results of the noise survey are provided in Appendix 2.

5.5 Average (LAeq) and background (LA90) noise levels across the site were generally dictated by road traffic on the A3(M).

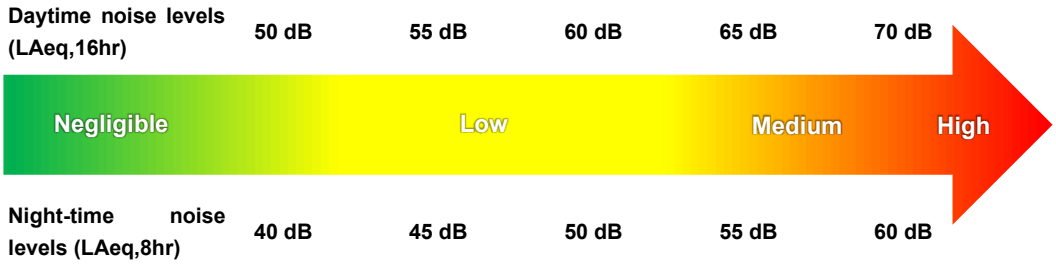
5.6 Maximum noise levels (LAmax) at the site were dictated by nearby pedestrians during daytime hours and distant vehicle passes from the A3(M) during night-time hours.

5.7 Areas of the development at the eastern 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 the A3(M):
  - Average noise levels during the daytime - 56 dB LAeq,0700-2300hrs
  - Average noise levels during the night-time - 48 dB LAeq,2300-0700hrs
  - Typical maximum noise levels during the night-time - 61 dB LAmax

5.8 The measured noise levels can be compared with Figure 3 below to assess the 'noise risk' of the site. Where the noise risk is high, significant acoustic design measures may be required to achieve acceptable noise levels in the development. Where the noise risk is low, acceptable noise levels may be achievable with no specific acoustic design measures.

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



5.9 It can be seen from a comparison of the measured noise levels in paragraph 5.7 above with Figure 3 that the site is 'Low' risk in relation to daytime noise levels and 'Low' risk in relation to night-time noise levels. However, a more detailed 'Stage 2' assessment has been carried out.

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

5.10 The acoustic design of development has been reviewed in relation to the measured noise levels at the site. The layout of the development is considered to represent good acoustic design, particularly for the following reasons:

- The nearest part of the site to the A3(M) is located at a distance of approximately 450–500 metres. This separation distance provides a buffer that helps mitigate road traffic noise from the A3(M).
- Residential dwellings along the east site boundary screen most other residential dwellings in the development from noise from the A3(M).
- Residential dwellings along the west site boundary are screened by existing residential properties from noise from Cherry Tree Avenue.

Stage 2 – Element 2 - Internal noise levels

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

5.12 Relevant BS8233 design criteria are summarised in Table 1 below.

Table 1 BS8233:2014 Internal Noise Criteria

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

5.13 Full construction details for the development have not been finalised. It has, therefore, been assumed that the external walls of the development will be constructed using a standard masonry construction (e.g. 102mm brick, 100mm insulated cavity, 100mm concrete block) or a light-weight construction designed to achieve a similar level of sound insulation (this is technically achievable subject to detailed design).

5.14 The ventilation strategy for the development has not yet been confirmed and therefore it is assumed that background ventilation will be provided via trickle ventilators in the building facade. This is a 'worst case' assumption from an acoustic perspective as trickle ventilators are often an acoustic weak point in the facade.

5.15 Calculations were carried out using facade modelling software in accordance with the methodology given in BS8233:2014 to calculate the sound insulation performance required of the glazing and ventilation to achieve the nominated internal noise criteria in the 'worst-case' habitable rooms of the development (i.e. the habitable rooms that will be subject to the highest external noise levels). The calculations included a 3 dBA design margin.

5.16 If acceptable internal noise levels can be achieved in 'worst case' habitable rooms then it follows that acceptable internal noise levels can be achieved in all other habitable rooms of the development using similar glazing and ventilator types.

5.17 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

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

Table 2 Acoustic Requirements for 'Worst Case' Habitable Rooms

'Worst Case' Rooms	Glazing Performance Requirements (inc. Frames)	Ventilator Performance Requirements (in Open Position)
Bedrooms nearest to the A3(M)	27 dB Rw+Ctr	31 dB Dne,w + Ctr

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

5.19 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
Ventilators	**Typical Acoustic Performance (Dnew + Ctr)**
Standard 'hit & miss' in-frame trickle ventilator	31

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

5.20 It can be seen from the above that acceptable internal noise levels will be achievable in the development subject to the adoption of standard thermal double glazing and hit & miss trickle ventilators. It is our view, therefore, that the proposed development is, in principle, acceptable with regards to the noise levels that will exist within the habitable rooms.

5.21 The above ProPG assessment for planning purposes 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.

5.22 The development will be subject to Part O of the Building Regulations (Approved Document O), which came into effect on 15 June 2022. Section 3.2 of Approved Document O (ADO) states:

> *In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*
>
> *Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.*
>
> *a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).*
>
> *b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am).*

5.23 The results of the noise survey indicate that sensitive receptors near to the eastern site boundary facing the A3(M) may exceed the noise limits provided in ADO when the windows are fully opened. The overheating assessment is, therefore, not likely to be able to rely solely on fully open windows. This will need to be confirmed as part of the overheating assessment during the detailed design stage.

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

5.24 BS8233 states that it is desirable that noise levels in external amenity areas of residential developments do not exceed 50 dB LAeq and that 55 dB LAeq,T should be regarded as an upper guideline value. However, BS8233 recognises that these guideline values will not always be achievable in city centres or urban areas adjoining main roads or other transport sources. In these cases, BS8233 states that the development should be designed to achieve the lowest practicable noise levels in the amenity spaces.

5.25 It is noted from the site layout provided in Appendix 1 that 1.8m timber fencing will be installed around the gardens of the proposed dwellings. Subject to the adoption of this fencing, it is expected that garden noise levels will be below the BS8233 upper guideline value. All garden fencing should be of an imperforate construction and have a minimum surface mass of 10 kg/m^2. On this basis, noise levels in external amenity areas are acceptable with regards to noise.

Stage 2 – Element 4 – Other relevant issues

5.26 In our view the design and acoustic approach outlined above is in line with both local and national noise policy. The proposed development is located near to existing residential dwellings and this is an acceptable scenario, subject to the adoption of the glazing and ventilation strategy set out in this report.

6. PLANT NOISE IMPACT ASSESSMENT

Design criteria – Mechanical plant noise

6.1 BS4142:2014+A1:2019 – *Methods for rating and assessing industrial and commercial sound* (hereafter BS4142) can be used to assess the impact of noise from external industrial and/or commercial noise sources on nearby sensitive receptors.

6.2 The BS4142 assessment methodology can be summarised as follows:

1. Measure the existing background noise levels (LA90,T dB) at the locations of nearby noise sensitive receptors during the quietest periods when the noise source(s) under investigation will operate
2. Predict or measure the noise emissions (LAeq,T dB) from the noise source(s) under investigation at the location(s) of the nearby sensitive receptors, and add corrections for any distinguishable acoustic features (e.g. tones, whines, screeches, hisses etc)
3. Subtract the measured background noise levels (Item 1 above) with the measured or predicted rating noise levels (Item 2 above) at each sensitive receptor. BS4142 states that:

   a) Typically, the greater this difference, the greater the magnitude of the impact.

   b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

   c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

   d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

   NOTE Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

6.3 Background noise levels (LA90) at the site were measured as part of the site noise survey outlined in Appendix 2. The measured background noise levels have been used to develop limits for plant noise emissions from the new development at the positions of the surrounding residential properties in accordance with the BS4142 assessment methodology.

6.4 Given that the Havant Borough Council's Local Plan 2011 does not give specific criteria for limits for mechanical plant, noise limits of equal to measured background have been adopted for this assessment. The limits are shown in Table 4 below.

Table 4 BS4142 Noise Limits - Free-field Levels

Location	Period	
	Daytime/Evening (0700-2300hrs)	Night-time (2300-0700hrs)
Nearest residential properties to the proposed development	52 dB LAr,Tr	41 dB LAr,Tr

Note 1 The above limits are 'rated' noise levels. Any mechanical plant noise emissions should have appropriate corrections for the character of the noise applied and still meet these limits.

Proposed mechanical plant design

6.5 Detailed design information is not yet available for external mechanical plant for the development; therefore, noise emissions from external mechanical plant cannot be accurately predicted at this stage.

6.6 The selection and design of external mechanical plant will be reviewed as project information becomes available to ensure that the project BS4142:2014 noise limits given in Table 4 are achieved.

7. CONCLUSIONS

7.1 Cass Allen was instructed by Stonebond Properties (Guildford) Limited and the Borrow Foundation to assess noise affecting the development.

7.2 The assessment was carried out in accordance with relevant local and national planning guidance.

7.3 Noise levels at the site are dictated by road traffic noise emissions from the A3(M).

7.4 Noise affecting the development has been assessed in accordance with ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of the glazing and ventilation strategy set out in this report.

7.5 Compliance with noise criteria in Building Regulations Part O has also been assessed. Some bedrooms will need to be designed so that windows cannot be fully open at night without the rooms overheating. This can be assessed further in due course.

7.6 Noise limits for mechanical plant that will serve the proposed development have been set out in this report, in line with BS4142.

7.7 In summary, it is our view that the site is suitable for the development in terms of noise levels, subject to the adoption of the acoustic design strategy set out in this report.

Appendix 1 Proposed Site Layout

N
W
E
S

0 10m 20m

Boundary Details
Application Site Boundary Line

KEY
PRoW - 108/127/1
Proposed Realigned PRoW - 108/127/1
Affordable Dwellings
CAT 'A' RPA
CAT 'B' RPA
CAT 'C' RPA
CAT 'U' Canopy
Area '*not to undertake, permit or suffer any development on the land*'
M3.11 Dwelling Reference (Example Shown)
Plot 01 Plot Number
V Visitor Parking
1.8m Brick Wall
1.8m Timber Fence
Footpath
M4(2) parking space

Surgery
Posts
Padnell Cuts Wood
Primary Route
Secondary Route
Building 1
Plots 5-15
Building 2
Plots 82-90
Grave
Turning head
BCP
LAP
Protective netting
Pond
Waterlooville Golf Club
CHERRY TREE AVENUE
FAIRY CROSSWAY
ESS

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CLIENT:	Stonebond Properties (Guildford) Ltd		PROJECT:	Padnell Grange Waterlooville
SCALE:	1:500	(A1 ORIGINAL)	DRAWING:	Proposed Site Layout
DRAWN: BH DATE: Jan.'26	24143		SK11	H

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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 the A3(M).

Survey Period:

16/01/2026 to 21/01/2026

Survey Objectives:

- To identify noise sources that contribute to ambient noise levels at the site;

Equipment Used:

Type	Manufacturer	Model	Serial Number
Sound level meter[1]	NTi Audio	XL2	A2A-15506-E0
Calibrator	Larson Davis	Type CAL200	15011
Sound level meter[1] (noise logger)	Rion	NL-32	01213688
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. 1.8m above ground. Free-field. 2m from Cherry Tree Avenue.
N2	Attended noise monitoring position. 1.8m above ground. Free-field. 2m from Greenfield Crescent.
L1	Unattended noise logging position. 3m above ground level. Free-field. Direct line of sight to Waterlooville Golf Course. 450m from A3(M).

Site Plan showing Measurement Positions:

Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmax, dB	LA90, dB	Observations
16/01/2026	N1	13:47	5 mins	57	72	49	Lots of cars/vans using Cherry Tree Avenue as a through-route. On-street parking slows cars down.
		14:10		58	74	48	
		14:28		59	71	48	
	N2	14:01		58	75	45	1-2 cars/vans per 5 minutes. Not much traffic at all.
		14:20		59	77	45	
		14:37		52	69	45	

Unattended Noise Monitoring Results:

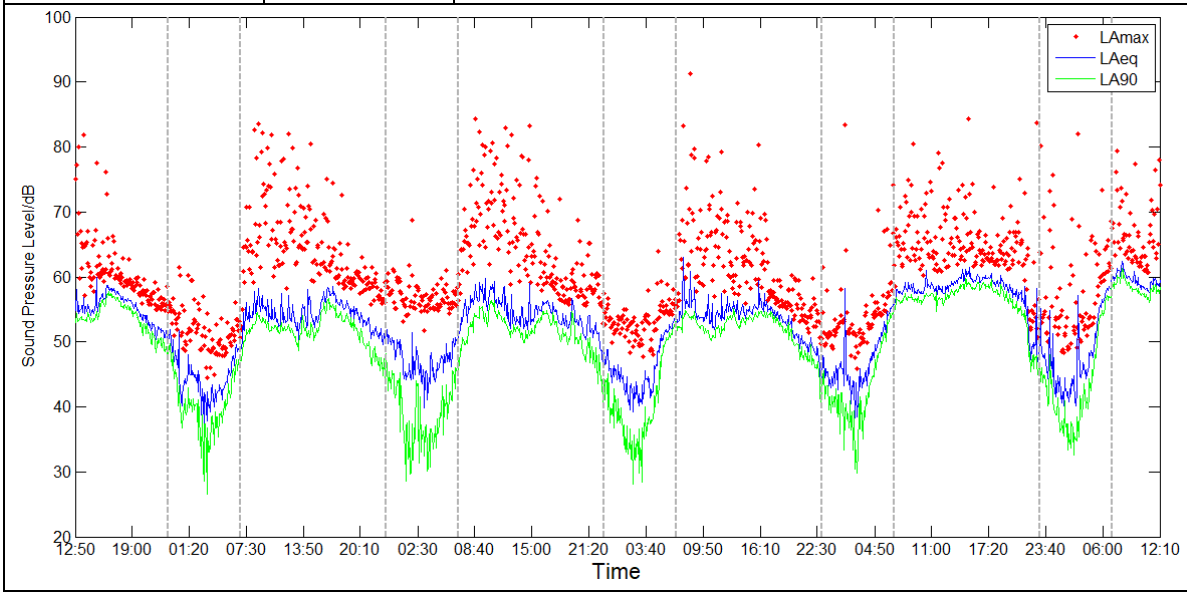
Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB[1]	LAeq,8hr, dB	LA90,5mins, dB[1]	LAmax, dB[2]
16/01/2026 to 21/01/2026	L1	56	52	48	41	61

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	
16/01/2026 to 21/01/2026	L1	



Appendix 3 Facade Calculations

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

		W		L		H
PROJECT:	Padnell Grange, Waterlooville	Room Dimensions [m]	3.0	X	4.0	X	2.4
ROOM:	Bedroom Closest to the A3(M)					
VARIANT:	Worst-Case Day-time 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)	56.0								
		37.8	41.9	45.4	48.8	52.0	49.2	44.0	**Reference spectrum**

REVERBERATION TIME

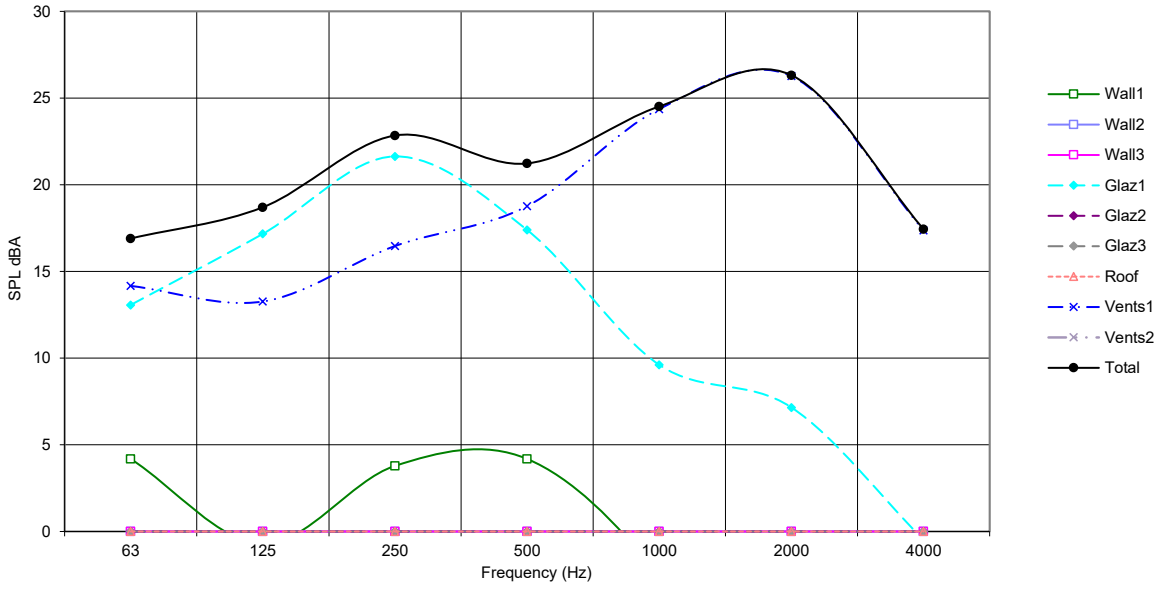
DIRECT INPUT ----->								**No data**
EQUAL RT for all bands ----->								
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [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	24.7	14	17	22	18	10	7	0	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	29.6	14	13	16	19	24	26	17	76%			

Total SPL inside room	**30.8**	17	19	23	21	25	26	17

Element contribution to total internal noise level



			W		L		H
PROJECT:	Padnell Grange, Waterlooville	Room Dimensions [m]	3.0	X	4.0	X	2.4
ROOM:	Bedroom Closest to the A3(M)						
VARIANT:	Worst-Case Night-time 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)	48.0								
		29.8	33.9	37.4	40.8	44.0	41.2	36.0	**Reference spectrum**

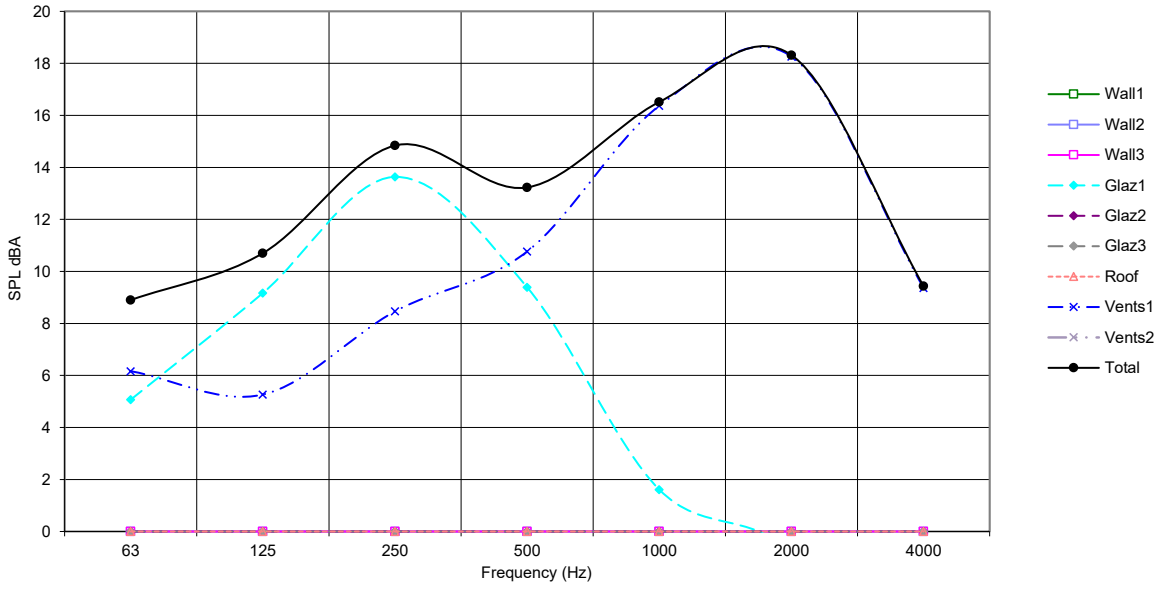
REVERBERATION TIME

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	23%	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	16.7	6	9	14	10	2	-1	-8	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	74%	32	0	-1
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	21.6	6	5	8	11	16	18	9	76%			
	Total SPL inside room	**22.8**	9	11	15	13	17	18	9				

Element contribution to total internal noise level



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

		W	L	H
PROJECT:	Padnell Grange, Waterlooville	Room Dimensions [m]	3.0 X	4.0 X	2.4
ROOM:	Bedroom Closest to the A3(M)			
VARIANT:	Worst-Case Night-time Maximum Noise Level (LAmax)	Room Volume =	28.8	m3
NOTES:	Typical assumptions used for ext. wall & glazing dimensions, and no. ventilators.	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)	61.0								
		42.8	46.9	50.4	53.8	57.0	54.2	49.0	**Reference spectrum**

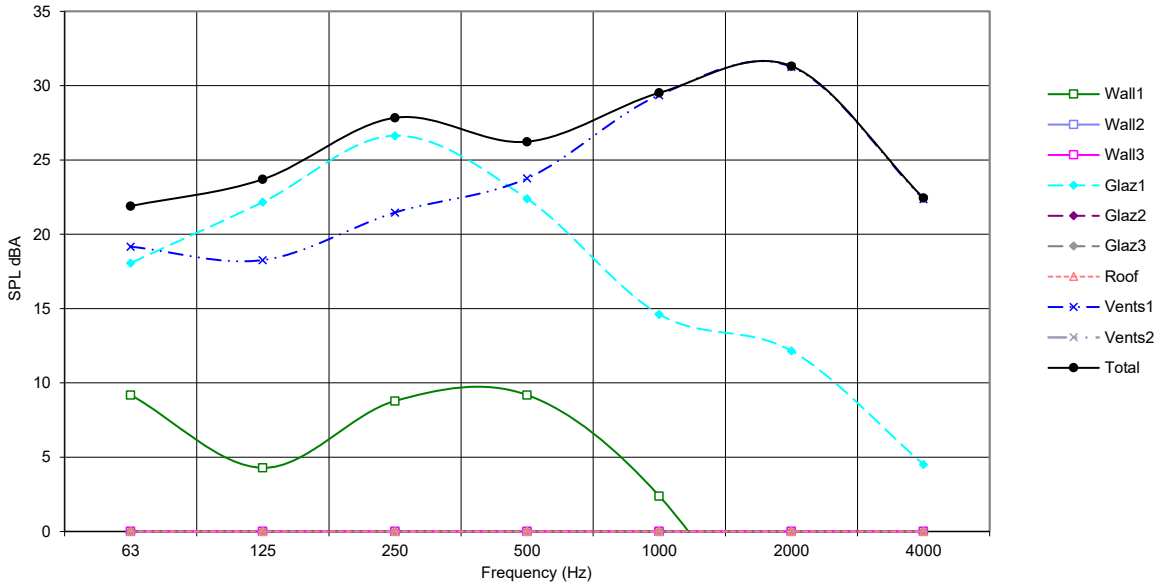
REVERBERATION TIME

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 [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	29.7	19	22	27	23	15	12	5	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	34.6	19	18	21	24	29	31	22	76%			
	Total SPL inside room	**35.8**	22	24	28	26	30	31	22				

Element contribution to total internal noise level



			W		L		H
PROJECT:	Padnell Grange, Waterlooville	Room Dimensions [m]	4.0	X	5.0	X	2.4
ROOM:	Living Room Closest to the A3(M)						
VARIANT:	Worst-Case Day-time 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)	56.0								
		37.8	41.9	45.4	48.8	52.0	49.2	44.0	**Reference spectrum**

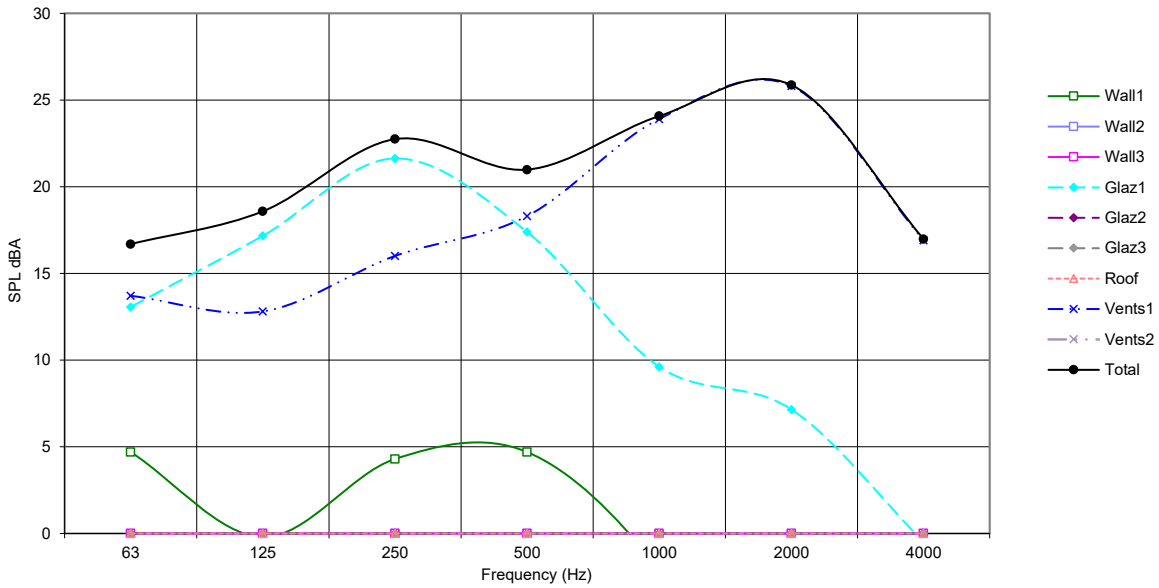
REVERBERATION TIME

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 [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	24.7	14	17	22	18	10	7	0	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	29.2	14	13	16	18	24	26	17	73%			
	Total SPL inside room	**30.5**	17	19	23	21	24	26	17				

Element contribution to total internal noise level



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