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Noise Impact Assessment

+ Acoustic Design Appraisal (Rear Area of Page Lounge)

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Location: Page Lounge 1 Parrock St, Gravesend DA12 1EW

Client: Page Lounge c/o Sadiq Muritala

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1. Introduction

The client is proposing a new structure and acoustic upgrades to the rear area of The Page Lounge. It is understood that Gravesham Council require the submission of a noise impact assessment with respect to the conditions provided. This document details the acoustic design of the new structure and results of this assessment.

The aim of this assessment is to calculate the noise impact originating from the internal ambient levels in the area on nearby residential dwellings, when acoustic design upgrades have been constructed. This will generally be achieved with the following objectives:

- Identify relevant receptors as per current Environment Agency Guidance and local policy.
- Undertake measurements, calculations, and assessments as per relevant guidance such as from British and International Standards to consider the impact and context of the noise within the surrounding area.
- Predict the noise break out from the clients/ contractor's design for the rear extension with consideration to acoustic materials that are proposed.
- Consider mitigation strategies to reduce noise impacts, where required.

At present the rear area has limited acoustic screening and is closed by 23:30. The client is proposing that the new structure with enhanced acoustic performance will provide suitable conditions for use of the area during venue licensed hours.

James Gardner is an associate member of the Institute of Acoustics (AMIOA) and holds the Institute of Acoustics Diploma in Acoustic and Noise Control. He has also completed an MSc in Applied Acoustics from the University of Derby with distinction and an undergraduate degree at the University of Surrey in Music (2009). From 2010 James also operated professionally as a Sound Engineer in the live events and broadcast industry. He has developed significant experience in sound and acoustics for many applications.

2. Relevant Guidance and Criteria

2.1 Planning Requirements

The following planning requirements has been specified by the council for the rear area:

The NIA must include on site noise measurements of both background noise levels at the nearest noise sensitive premises and noise from the existing use of the external area (both amplified music and customer noise) during appropriate times. The measurements must include octave band/frequency analysis due to concerns with the low/bass tones of the music. The replacement of sound insulated roof and acoustic perimeter walls must be designed so that noise from the external area is 5dB below existing background noise levels at the nearest noise sensitive premises. The insulation/sound proofing use must be effective against the breakout of frequencies in the 31.5Hz to 250Hz octave bands (bass frequencies). All details of the acoustic insulation materials need to be provided, including their noise mitigation qualities. The noise assessment should be carried out with reference to the planning guidance on noise, the WHO's Guidelines for Community Noise 1999 and BS8233:2014 (the latter 2 providing guidance on acceptable internal noise levels in residential premises.

The report should include a psychoacoustic assessment of the noise. This is the assessment of the psychological perception of a noise and its impact. Any mitigation measures contained in the assessment can then be required to be put in place prior to permission being granted. It is likely that we will also require completion testing and reporting once the scheme has been installed. This can be addressed by way of a suitably worded condition.

2.2 British Standard BS 4142:2014+A1:2019

While the above requirement does not strictly specify BS4142, a relative type of assessment akin to this standard shall be performed. Leisure or entertainment noise (such as patron or music noise levels) do not strictly fall within the scope of BS 4142 and its rating method (for commercial industrial type noise) however its methodology can be followed, in order to determine an impact relative to background levels as is required by the council.

The noise rating level of the new source is compared against the prevailing 'background sound level' (or $L_{A90,T}$) at the noise-sensitive receptor considering the following guidance:

- Typically, the greater the difference, the greater the magnitude of the impact;
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- The lower the rating 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. When 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.

2.3 British Standard BS 8233:2014 + WHO Community Noise Guidelines 1999

The World Health Organisation's (WHO) Guidelines for Community Noise (1999) provides relevant ambient noise levels in residential dwellings as summarised below. These guidelines are reflected in BS8233:2014.

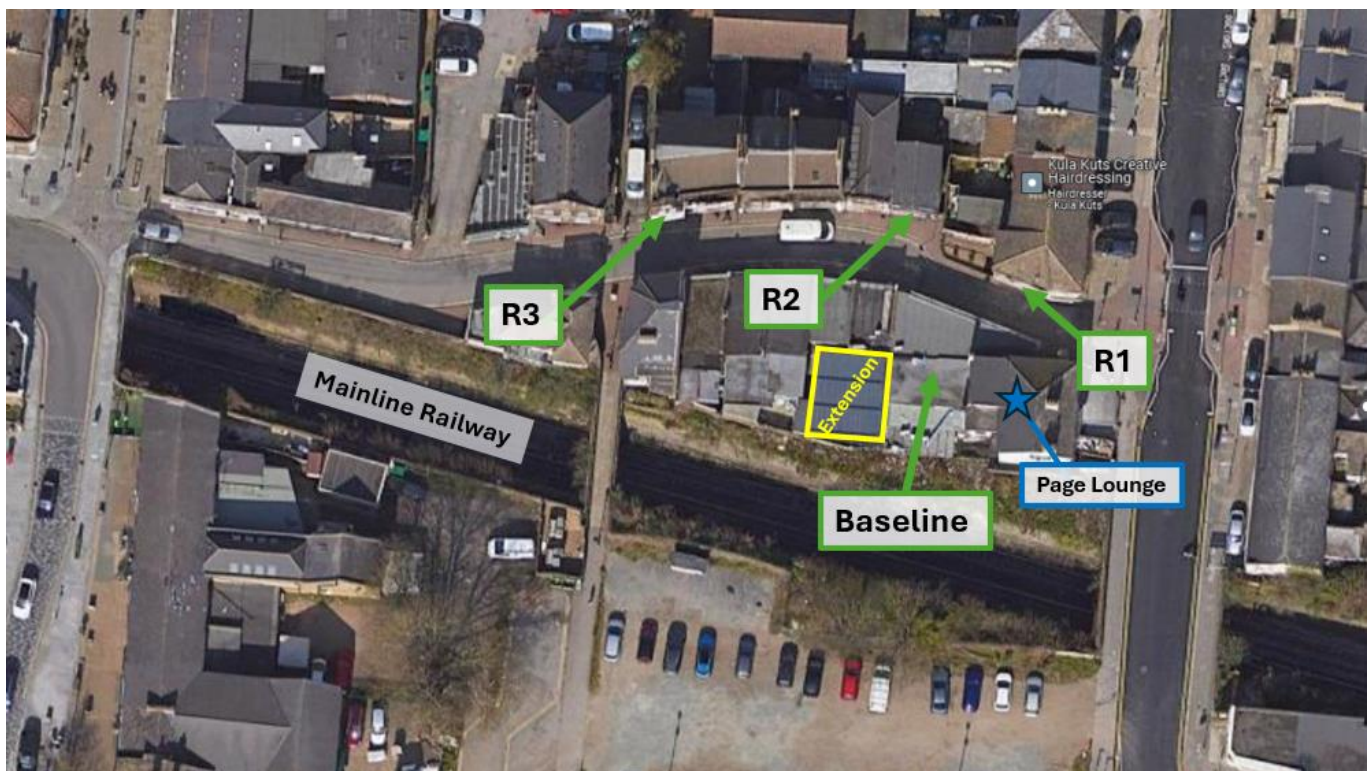
Table 1 - WHO (1999) and BS8233 criteria.

Location	LAeq	Time Base (Hours)	LAmx
Outdoor Living Area (Daytime/ Evening)	55	16 (Daytime / Evening)	-
	50	16 (Daytime / Evening)	-
Dwellings Indoors (Daytime/ Evening)	35	16 (Daytime / Evening)	-
Inside Bedrooms - Night	30	8 (Night-Time)	45 (WHO)
Outside Bedrooms (Window Open) Night	45	8 (Night-Time)	60 (WHO)

As requested by the local authority, the acoustic design shall consider the contribution of the proposed noise source with respect of the above criteria.

The Page Lounge is a restaurant and bar within Gravesend Town Centre. In the immediate area are other commercial properties, kitchens and restaurants and some residential flats on upper floors on Manor Rise. There are no hospitals, or schools identified within its immediate area. The premises is adjacent to Parrock Road and Manor Road and is also next to the main line railway connecting Gravesend to London. It is therefore impacted by road, rail and air noise which were observed to be dominant in the surrounding noise climate.

The equipment consisting of a Svantek 307 Class 1 noise monitor was field calibrated before and after use with no significant drifts reported. The Svantek 307 was positioned 5m from nearest façade (free field) at a height of 1.5m above the flat roof surface. This was in line with the propagation path to the nearest receptors on Manor Road, as shown in the image (figure 2). The distance to these receptors was measured with a laser and google maps. 100ms LAeq logging with a Fast response time was selected along with a contiguous 15 min interval for post processing to highlight any erroneous data.



7

BS4142 is not descriptive in the methods to be used to determine a representative figure. In the context of this data, averages and numerical range, table 1 below shows the representative levels obtained from the baseline.

Table 1- Background noise level survey results.

	Residual Level (LAeq dB)	Representative Background Level LA90 dB
Day, 1 hour 07:00-18:00	56	51
Night, 15 min 23:00-07:00	53	40

Further information including logging charts and meteorological conditions are included in Appendix A of this report.

4. Acoustic Design and Assessment

5.1 Typical Noise Levels

Noise levels within areas of pubs and clubs can vary. Unattended noise measurements were performed in the existing external area over a busy weekend (13-16th December 2024). The area was in use both evenings between approx. 19:00 and 23:00.

The Svantek 971a Class 1 sound level meter was field calibrated before and after with no drifts reported. The equipment was installed at an area where the tables were roped off and above head height to diffuse sound levels, and so it was unlikely to be tampered with by patrons. Further analysis was performed to validate this data including playback of audio to confirm its content. This was noted in the representative example to consist of patron noise and music from the small sound system and break-out from the main bar area through the acoustic lobby.



Figure 2- Measurement position of existing ambient/ source levels in external area over a busy weekend.

Representative source levels were analysed in 15-minute intervals in 1/1 Octave bands to inform the requirements of the acoustic attenuation in the design. The typical worst-case scenario of noise levels was selected in table 2 below for a robust assessment.

Table 2- Reference source levels for activity noise within the room.

Start date & time	Duration	LAeq [dB]	1/1 Oct Leq [dB]									
			16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
14/12/2024 21:00:00	15:00.0	84	62	64	68	78	78	82	82	74	68	69

The reverberant RT60 was also measured in the rear area. This have been considered in the calculation and standardised to 0.5s for analysis. Full measurement data is shown in Appendix C.

5.2 Acoustic Design Appraisal

Appendix B details the acoustic specifications as per the client's drawings. Further conversations took place over the phone with the clients building contractor as to the proposed construction method and design. The acoustic specifications of the proposed walls and ceilings were calculated based on lab data in INSUL. It is understood the existing acoustic lobby and wall into the main venue shall be retained, as shown in figure 3. No external doors or windows are to be fitted in the new structure.

- [Client] *Description of job – The construction of a timber frame building to the rear of the premises with an emphasis on sound insulation. Utilizing the current UPVC walls as an outer skin.*

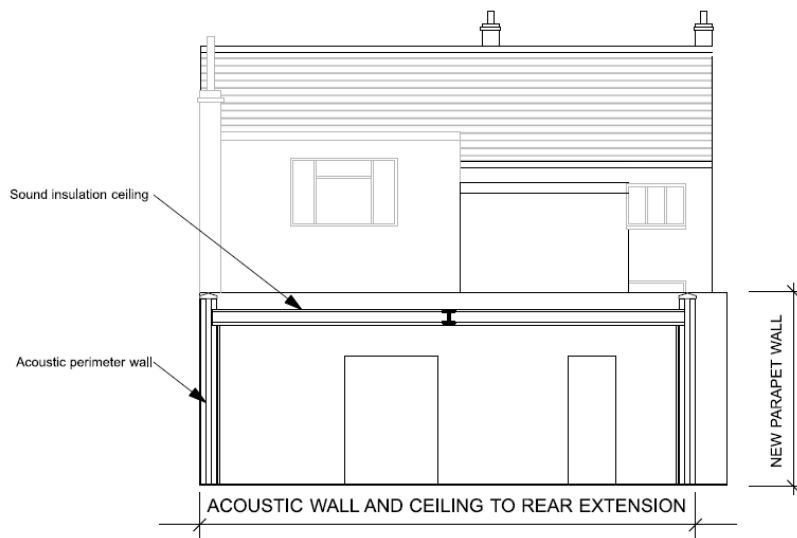


Figure 3- Client drawing of rear area.

The walls have been designed to be isolated with an air gap from the outside layer and existing cladding. Likewise, the contractor has specified a 'Posi Joist' for the ceiling to isolate the two leaves as best as is practicable. An image with detailed specifications of this from INSUL are provided in appendix B to inform the client and contractor during the building phase. Lab based acoustic values that are specified for each layer/ material are to be considered minimum values recommended based upon the manufacturers data.

5.1 Predicted Noise Break-Out

Appendix D details the full calculation of the wall and ceiling sound propagation outdoors to receptors R1,2,3. It was noted from measured distances to receptors that the radiating surfaces were unlikely to propagate as a point source. Rather the method carried uncertainty due to the screening in close proximity from neighbouring properties, limiting reliable estimation of propagation characteristics (planar to point source) at distances. It was therefore considered reasonable to calculate to a 15log base over hard ground, with a conservative estimate of screening performance (from existing structures) and further corrections for angle of incidence (where relevant).

The contribution of the ceiling and two walls facing towards manor road were assumed dominant points for breakout. The wall facing the railway was considered structurally screened by Page Lounge itself to not have any material impact on levels towards receptors.

The resulting predicted cumulative levels from all walls/ ceilings outdoors (free field) incident on the receptors are shown below in table 3.

Table 3 - Predicted cumulative noise levels from rear area through proposed wall/ ceiling design.

Combined Outside Levels from Each Element	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	L _{Aeq} , 15min dB
R1	35	32	6	-20	-32	-42	-43	17
R2	36	33	6	-20	-32	-41	-42	18
R3	33	30	3	-23	-35	-44	-45	15

5.2 Relative Assessment Result

Table 4 below shows the predicted relative impact level at night-time at each receptor.

Table 4 - Relative assessment result of cumulative noise levels (Walls/ Ceiling).

Relative Assessment Prediction of Break-Out Ambient Noise Levels from Extension Only			
Parameter	dBA	Value	Description
Background Noise Level (Night 23:00-07:00)	40.0	LA90	Venue closed. Free field. Representative 15min
Specific Level at R1, 15min	17.0	Ls	Free Field
Specific Level at R2, 15min	18.0	Ls	Free Field
Specific Level at R3, 15min	15	Ls	Free Field
On Time	100%		No % Corrections Applied Tr/To
Estimated Impact Outside Flat R1 (Night 23:00-07:00)	-23		Low Impact and Compliant with -5 dB Condition
Estimated Impact Outside Flat R2 (Night 23:00-07:00)	-22		Low Impact and Compliant with -5 dB Condition
Estimated Impact Outside Flat R3 (Night 23:00-07:00)	-25		Low Impact and Compliant with -5 dB Condition

The result indicates that the specific noise levels through the proposed acoustic design would meet the local authority's requirements at each receptor.

5.3 BS 8233 and WHO Assessment Result

Table 5 below shows the predicted noise break-in from the specific source level outdoors into habitable rooms at the receptors.

An attenuation of -13 dB has been considered to estimate the worst-case scenario through a partially open window for ventilation purposes, as per the AVOG guidance published by the Association of Noise Consultants (ANC). It is further noted that BS 8233 advises a higher attenuation value of -15 dB, however the more conservative value of -13 dB is now typically used for design purposes.

Table 5- Predicted internal levels from specific source in habitable rooms at each receptor.

Combined Inside Levels from Each Element	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	L _{Aeq} , 15min dB
Partially Open Window	-13	-13	-13	-13	-13	-13	-13	-13
R1 Predicted Internal Level	22	19	-7	-33	-45	-55	-56	4
R2 Predicted Internal Level	23	20	-7	-33	-45	-54	-55	5
R3 Predicted Internal Level	20	17	-10	-36	-48	-57	-58	2

With consideration to BS 8233 and WHO criteria, the predicted noise break-in through a partially open window would not materially contribute to any exceedances of night time criteria inside habitable rooms. At these low estimated levels (5 dBA and below) noise break-in to these habitable rooms from the rear area would likely be indiscernible.

No requirements are provided for a NR rating in habitable rooms, however resulting levels from the prediction are provided for reference. It is estimated from the specific noise break-in through the partially open window that the NR value of this contribution would be below NR 5.

It is noted that no outdoor amenity areas were identified, yet with outdoor levels anticipated to be below 20 dB the proposed rear area noise would not contribute to any exceedances in the L_{Aeq} 50-55 dB ambient level required for gardens/ outdoor amenity. With consideration to LAF_{Max}, this parameter will remain dominated by existing road and rail noise at the receptor and are also anticipated to be unchanged with this source contribution.

5.4 Discussion

Noise break-out from the proposed design and typical worst case noise levels were assessed and shown to provide a low impact rating at the nearest residential receptors. Compliance to the local authority condition of -5 dB below the background level is anticipated with the design. The likelihood of an adverse comment from the noise emission through this part of the proposed building envelope during night hours is anticipated to be low.

Compliance can further be also assured against all 15-minute integration periods during the night hours (23:00-07:00) to ensure a very robust low impact rating under the prevailing time-periods in the baseline measurement data.

Prediction is not reliably performed in the 1/1 Octave 31.5Hz frequency band due to high uncertainty. 63Hz values have been provided as per INSUL and lab data specifications. Low frequency (LF) noise emissions from the whole venue have already been measured and assessed. This was previously advised upon in the client Noise Management Plan (NMP) prepared by JG Acoustics in June 2024. LF (or bass) sound primarily comes from the subwoofer installed in the main venue and is controlled by a specifications of limits in the NMP.

The rear extension area does not have any subwoofers and it is not proposed at any time LF drivers are added in this area. Small loudspeakers are installed in the rear extended area and are provided for background level music. Small speakers at this size do not typically have coverage in the low frequency range and would typically roll off significantly at around 80Hz. Second to this, patron noise (human voices) dominates in the 500-2KHz range not within range of LF bands.

Context is relevant as must be considered under BS4142-type assessment, and this can relate to the psychoacoustic impact of the noise. It was noted given the existing noise climate, commercial nature of the area and use of the premises, that the new design would be an improvement on current noise breakout from sources of noise in this rear area, and the main venue contribution through this pathway. With the current NMP in place and such improvements proposed, it can be reasoned that the likelihood of an adverse comment is also reduced.

With this assessment outcome, no further mitigation is currently required. The following recommendations however are to be considered by the client:

- The rear extension is to be constructed as best as is practicable to the specification, with materials included in the calculation and as shown in Appendix B. The materials and values presented are to be considered the minimum specification required.
- Any necessary alteration made in the build phase must be considered for its acoustic implications. JG Acoustics has been in contact with the building contractor to confirm the design materials fit with their requirements for construction. Compliance to any regulations beyond the scope of acoustic performance (such as structural performance or other factors such as fire) are not within the expertise of JG Acoustics. It is recommended if any such alterations are required for any purpose to

consult with JG Acoustics at that time to check the impact on the predicted sound insulation performance of the structure.

- Significant care should be considered in the construction to ensure all materials completely cover all surface areas of the wall/ ceiling and any small gaps are sufficiently sealed with acoustically graded sealants. Building services that may have not been considered at this design stage should be installed as to not bridge any partitions and be mounted on resilient materials if they are essential. This is to reduce addition flanking contributions to noise levels. The calculation in this report considers lab-based *R* data (from INSUL) with reasonable contributions considered for flanking/ uncertainty/ field performance with good construction practice in mind.
- It is recommended that the client continues to manage noise levels as previously advised in a noise management plan. Further review of the Noise Management Plan can be considered post completion of this rear area, with the client's instruction.

6. Conclusion

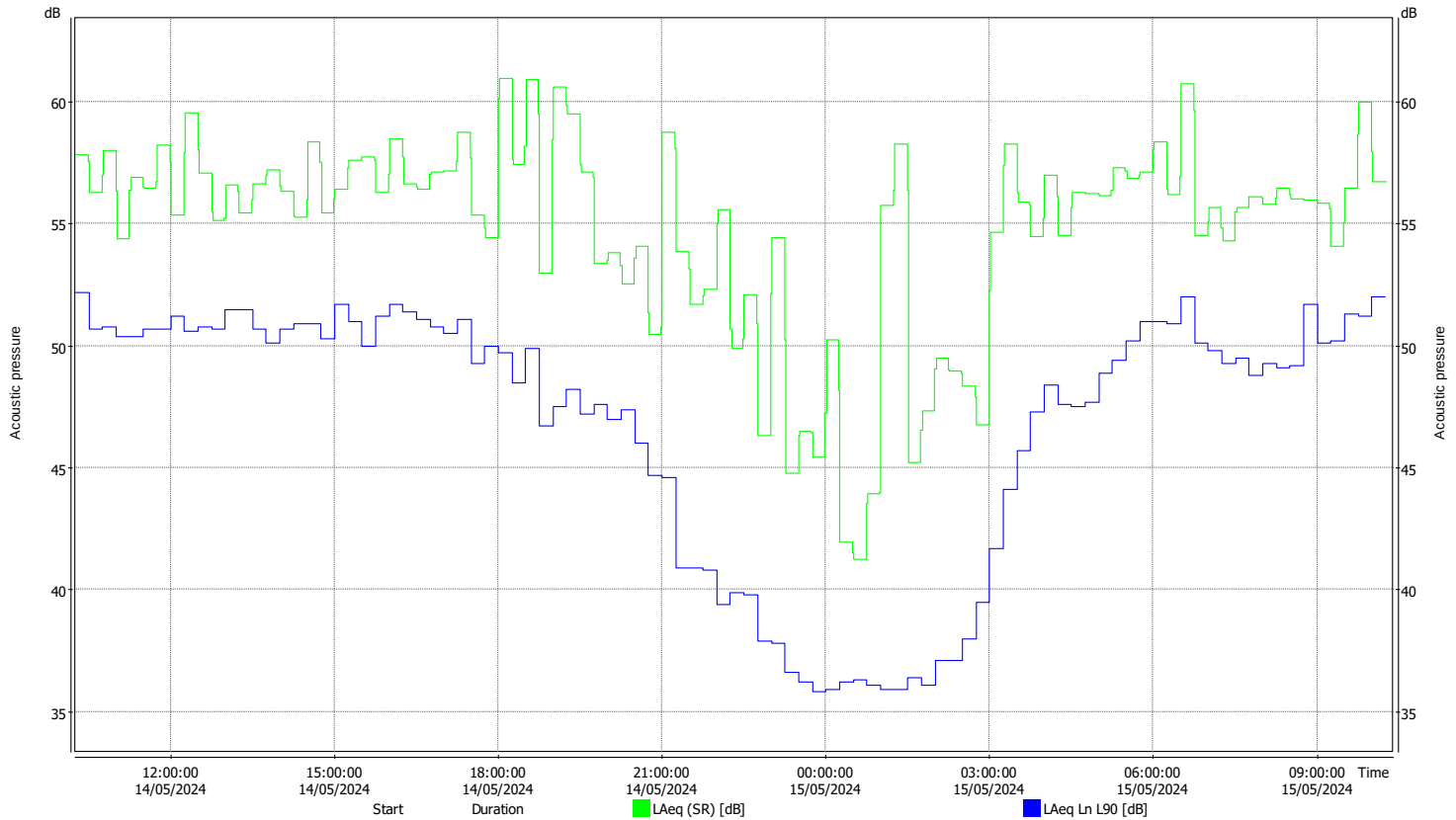
Noise emissions have been assessed from the client's drawings and acoustic design of the rear area of The Page Lounge, as per the local authority requirements. Predicted levels through the proposed building envelope from the existing noise conditions are anticipated to provide a low impact rating and be compliant with current BS 8233 and WHO criteria inside the nearest habitable rooms.

At the worst-case noise sensitive receptor, the specific source level from within the proposed acoustically graded structure was calculated to be -22 dBA below the representative background level and LAeq 5 dB in habitable rooms through a partially open window. This is anticipated to be compliant with the relevant guidance and as set out in the local authority's requirements.

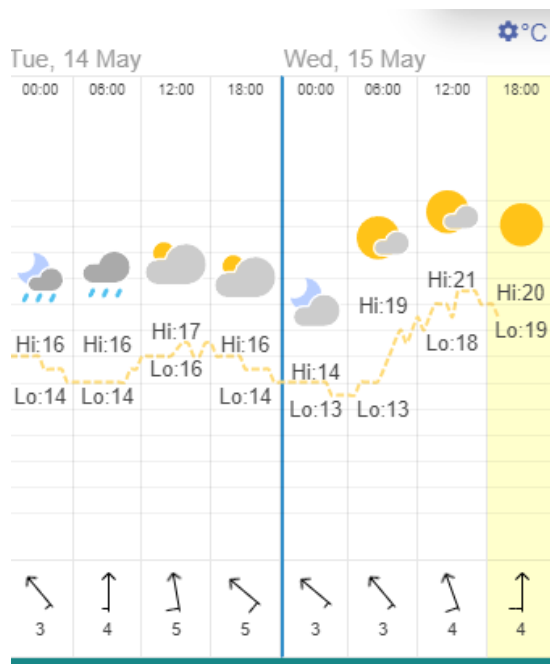
Appendix A – Baseline Information

- Svantek 307 Class 1 traceable with remote connection via SvanNET.

Logger results, logger step = 0.123,228



Device type	SV 971A
Serial No.	131655
Internal software version	1.06.1
Preamplifier S/N	130668
Measurement time	11:52:14
Measurement date [dd/MM/yyyy]	15/05/2024
Pre Calibration date	15/05/2024
Pre Calibration time	10:44:10
Post Calibration date	15/05/2024
Post Calibration time	14:26:32
Mic. compensation filter	Outdoor environment
Calibrator S/N	125825
Pre Calibration factor	0.6 dB
Pre Calibration level	114 dB
Post Calibration factor	0.7 dB
Post Calibration level	114 dB
Calibration drift	-0 dB
Lab Calibration	Class 1 Traceable Valid (Cal and SLM)



- Measurement period was dry. (14th pm only and 15th daytime)
- No wind observed at measurement position.
- Cloud cover estimate 50%.
- 70-94% humidity recorded during 24-hour measurement period.

(Source: timeanddate.com and Custom Weather for Gravesend. Temp °C and Wind m/s)

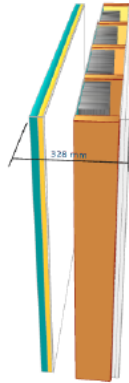
Appendix B – Predicted Acoustic Performance of Design Elements

Sound Insulation Prediction (v10.0.6)

Program copyright Marshall Day Acoustics 2023 | Margin of error is generally within $R_w \pm 3$ dB

Date: 17/12/2024

Job Name: Acoustic Design Appraisal - Walls | Job No.: PAG-004



R_w 73 dB

C -5 dB

Ctr -11 dB

System description

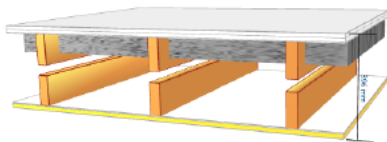
Panel 1	1 x 28 mm Polystyrene Panel (UPVC backed but ... + 1 x 18 mm Medium Density FibreBd + 1 x 4 mm Mass loaded vinyl
Frame	None (no connections) (144 mm x 47 mm), Stud spacing 600 mm , Cavity Width 100 mm + (Empty cavity)
Panel 2	1 x 0.4 mm No Panel
Frame	Timber stud (144 mm x 47 mm), Stud spacing 400 mm , Cavity Width 144 mm + 100 mm Rockwool (120kg/m3)
Panel 3	1 x 4 mm Mass loaded vinyl + 2 x 15 mm Gyproc SoundBloc 15mm
Details	Panel Size 2.7 m x 4.0 m, Partition surface mass = 73.7 kg/m ² , Mass-air-mass resonant frequency = : 31 Hz, 8591 Hz

Sound Insulation Prediction (v10.0.6)

Program copyright Marshall Day Acoustics 2023 | Margin of error is generally within $R_w \pm 3$ dB

Date: 17/12/2024

Job Name: Acoustic Design Appraisal - Ceiling | Job No.: PAG-004



R_w 81 dB

C -5 dB

Ctr -12 dB

System description

Panel 1	2 x 15 mm Gyproc SoundBloc 15mm + 1 x 4 mm Mass loaded vinyl
Frame	Separate Joists (144 mm x 47 mm), Stud spacing 600 mm , Cavity Width 338 mm + 100 mm Rockwool (120kg/m3)
Panel 2	1 x 4 mm Mass loaded vinyl + 1 x 18 mm Particle Board + 1 x 1.5 mm Rubber
Details	Panel Size 2.7 m x 4.0 m, Partition surface mass = 71.3 kg/m ² , Mass-air-mass resonant frequency = : 23 Hz

Appendix C – Source Noise Level Measurements

- Svantek 971a Lab Calibrated Class 1 Traceable.

Start date & time	Duration	LAFmax [dB]	Leq (SR) [dB]	1/3 Oct Leq (SR) [dB]																8000 Hz						
				50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1000 Hz	1250 Hz	1600 Hz		2000 Hz	2500 Hz	3150 Hz	4000 Hz	5000 Hz	6300 Hz
Friday	13/12/2024 19:00:00	15:00.0	89	76	66	62	61	69	72	72	65	69	71	70	74	74	72	69	65	59	55	54	54	56	57	63
	13/12/2024 19:15:00	15:00.0	88	78	64	61	59	68	72	71	64	68	70	70	74	74	70	68	63	56	54	52	53	55	57	54
	13/12/2024 19:30:00	15:00.0	88	78	65	61	62	69	71	73	64	67	72	71	73	71	73	70	66	58	56	56	56	59	54	54
	13/12/2024 19:45:00	15:00.0	89	78	69	63	61	69	71	72	64	67	70	69	73	71	74	71	67	64	59	55	55	57	58	55
	13/12/2024 20:00:00	15:00.0	89	80	62	59	60	69	71	71	65	68	70	70	72	71	75	72	67	61	58	57	56	58	54	55
	13/12/2024 20:15:00	15:00.0	92	77	66	64	63	67	69	70	63	67	70	70	74	70	76	72	66	62	57	54	53	56	58	54
	13/12/2024 20:30:00	15:00.0	89	80	64	62	60	68	72	69	64	67	71	70	75	73	76	72	70	66	60	56	54	56	58	56
	13/12/2024 20:45:00	15:00.0	89	79	62	61	59	67	69	70	65	68	71	69	73	72	74	71	69	65	59	56	55	57	57	64
	13/12/2024 21:00:00	15:00.0	90	80	64	61	63	70	71	73	64	68	72	72	73	75	72	70	67	62	58	58	57	58	60	57
	13/12/2024 21:15:00	15:00.0	93	80	62	62	61	68	72	72	67	70	72	71	75	74	75	72	68	65	61	58	57	57	58	55
	13/12/2024 21:30:00	15:00.0	92	79	70	66	65	68	70	72	64	67	69	69	73	70	74	71	69	66	59	56	55	56	59	61
	13/12/2024 21:45:00	15:00.0	88	79	69	62	61	67	68	69	63	65	70	70	74	71	74	71	68	66	62	59	58	57	60	62
	13/12/2024 22:00:00	15:00.0	92	82	71	63	64	70	73	74	66	68	72	71	75	74	77	74	72	70	66	64	62	63	65	63
Saturday	13/12/2024 22:15:00	15:00.0	97	83	77	67	67	69	72	73	68	67	73	74	77	75	77	75	73	72	67	65	63	64	65	67
	13/12/2024 22:30:00	15:00.0	92	83	75	65	69	74	76	76	68	67	72	74	77	74	78	76	73	70	67	65	64	64	64	62
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	14/12/2024 19:15:00	15:00.0	84	75	59	58	56	64	67	66	59	61	65	63	69	66	69	66	67	62	56	53	52	54	57	55
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	14/12/2024 20:15:00	15:00.0	94	78	60	60	60	67	69	70	63	66	69	67	73	70	72	69	67	65	62	60	58	57	56	57
	14/12/2024 20:30:00	15:00.0	94	81	64	63	62	69	71	73	66	70	73	73	74	72	76	73	71	68	65	63	61	59	58	58
	14/12/2024 20:45:00	15:00.0	105	83	65	61	61	69	71	73	67	69	73	73	77	75	77	75	76	71	67	66	63	62	61	62
	14/12/2024 21:00:00	15:00.0	100	84	65	61	61	70	74	74	69	73	76	76	78	77	79	76	75	72	68	67	65	63	62	64
	14/12/2024 21:15:00	15:00.0	96	83	62	59	59	71	73	73	66	72	73	73	76	75	78	74	72	71	67	65	64	62	65	64
14/12/2024 21:30:00	15:00.0	101	81	69	61	62	68	71	72	66	68	72	71	74	72	74	72	70	67	66	65	63	61	61	59	
14/12/2024 21:45:00	15:00.0	93	80	70	64	65	69	72	71	67	66	72	73	75	74	75	72	70	67	63	61	60	62	63	60	
14/12/2024 22:00:00	15:00.0	93	83	68	63	68	72	76	73	68	72	74	74	78	76	77	74	73	70	65	63	61	62	63	60	
14/12/2024 22:15:00	15:00.0	93	82	66	60	61	71	75	73	69	71	74	74	78	76	78	74	72	68	63	60	59	58	60	58	
14/12/2024 22:30:00	15:00.0	91	83	68	64	62	72	77	77	71	70	73	75	76	76	77	74	74	70	66	63	62	61	63	62	
14/12/2024 22:45:00	15:00.0	92	82	76	67	70	73	73	73	69	70	73	74	77	75	78	74	73	69	65	62	61	61	63	62	
14/12/2024 23:00:00	15:00.0	95	76	77	71	70	68	66	69	65	66	69	70	71	68	69	68	66	64	59	58	56	55	55	53	

Device type	SV 971A
Serial No.	131655
Preamplifier S/N	130668
Measurement time	14:30:00
Measurement date [dd/MM/yyyy]	14/12/2024
Pre Calibration date	13/12/2024
Pre Calibration time	14:25:20
Post Calibration date	16/12/2024
Post Calibration time	14:19:00
Mic. compensation	On
Mic. compensation filter	Diffuse field
Windscreen	On
Calibrator S/N	125825
Pre Calibration factor	0.7 dB
Pre Calibration level	114 dB
Post Calibration factor	0.8 dB
Post Calibration level	114 dB
Calibration drift	-0 dB
Lab Calibration	Class 1 Traceable Valid (Cal and SLM)

Appendix D – Calculation of Predicted Noise Breakout

Room Volume (m³)		Wall 1										Wall 2										Ceiling									