

NOISE MITIGATION STATEMENT

Prepared in Support of Planning Application APP/26/00150

**Retention of One Class E Commercial Unit at Ground Floor Level
and Change of Use of the Remainder of the Building to a 12-
Bedroom (14-Person) House in Multiple Occupation (Sui Generis),
Including Part Ground and First Floor Rear Extensions and
Construction of a Mansard Roof Extension**

79 London Road, Waterloooville

Planning Application Reference: APP/26/0015

Prepared by:

JB Architectural Design Studio

June 2026

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Appendix C – Approved Noise Mitigation Strategy – 81A London Road (Planning Reference APP/25/00096) *(Included for contextual reference only.)*

1. Introduction

This Noise Mitigation Statement has been prepared in support of Planning Application **APP/26/00150** for the redevelopment of **79 London Road, Waterlooville**.

The proposed development comprises the retention of one Class E commercial unit at ground floor level together with the change of use, extension and alteration of the remainder of the building to form a **12-bedroom (14-person) House in Multiple Occupation (Sui Generis)** including part ground and first floor rear extensions, construction of a mansard roof extension and associated external works.

This statement has been prepared in response to the consultation comments received from Havant Borough Council's Environmental Health Officer and demonstrates that appropriate noise mitigation has been fully considered during the planning process.

The purpose of the document is to confirm the mitigation measures that will be incorporated into the development and to provide sufficient information for the Local Planning Authority to consider the acoustic strategy during determination of the planning application.

2. Purpose of this Statement

The purpose of this statement is to demonstrate that the proposed development incorporates a robust and deliverable acoustic mitigation strategy.

The information contained within this document has been prepared to address the Environmental Health consultation comments at planning stage and to demonstrate that the principal acoustic mitigation measures have been established as part of the proposed design.

It is respectfully requested that the Local Planning Authority considers the submitted information sufficient to agree the proposed mitigation strategy without the need for a separate pre-commencement Noise Mitigation submission.

3. Planning Context

The application site immediately adjoins the approved redevelopment at **81A London Road, Waterlooville (Planning Reference APP/25/00096)**.

Both developments occupy adjoining sites fronting London Road and are exposed to the same principal environmental noise source, namely road traffic associated with London Road.

As part of the adjoining development, Havant Borough Council accepted a Noise Mitigation Strategy prepared by Vine Acoustics establishing an appropriate acoustic mitigation approach for residential accommodation adjoining London Road.

Whilst this statement is specific to the proposed development at **79 London Road**, it has been prepared having regard to the same acoustic design principles previously accepted by the Local Planning Authority, whilst incorporating the revised ventilation strategy proposed for this development.

4. Proposed Noise Mitigation Strategy

The proposed development incorporates the following acoustic mitigation measures:

- Enhanced acoustic double glazing to noise-sensitive rooms fronting London Road.
- Individual decentralised Mechanical Ventilation with Heat Recovery (MVHR) units serving bedrooms fronting London Road.
- Enhanced external wall construction.
- British Gypsum tested separating floor construction between the retained commercial premises and the residential accommodation above.
- Enhanced insulated roof construction.

Collectively these measures provide an integrated approach to reducing the effects of external road traffic noise whilst maintaining satisfactory internal environmental conditions.

5. Ventilation Strategy

The proposed ventilation strategy has been developed specifically to address the Environmental Health Officer's comments regarding the relationship between road traffic noise and background ventilation.

Bedrooms located on the front elevation facing London Road will each be provided with an individual **decentralised Mechanical Ventilation with Heat Recovery (MVHR)** unit.

The proposed system will provide:

- Continuous supply of tempered fresh air.
- Continuous extraction of stale internal air.
- Heat recovery to improve thermal efficiency.
- Compliance with Approved Document F.
- Reduced reliance upon opening windows for routine background ventilation.

The MVHR units enable the front elevation windows to remain closed during periods of elevated traffic noise whilst maintaining satisfactory indoor air quality and thermal comfort.

Purge ventilation will remain available via openable window elements when external environmental conditions allow.

Bedrooms located to the rear of the building are subject to a significantly lower external noise environment and will be ventilated in accordance with the approved Building Regulations ventilation strategy.

Typical product information is included at **Appendix A**.

6. Windows and Glazing

All habitable room windows fronting London Road shall comprise enhanced acoustic double-glazed units suitable for locations exposed to road traffic noise.

The glazing specification shall be equivalent to:

4-10-6 Double Glazed Unit (20mm overall thickness)

or another glazing specification capable of achieving equivalent or better acoustic performance.

The glazing has been considered as part of the overall acoustic strategy and operates in conjunction with the proposed decentralised MVHR system.

7. Building Fabric

The existing external masonry walls will be upgraded internally where required to enhance the overall acoustic performance of the building envelope.

The proposed mansard roof extension will comprise an insulated timber roof construction incorporating high performance insulation over the structural deck.

The separating floor between the retained Class E commercial premises and the residential accommodation above shall comprise the **British Gypsum tested separating floor system** included within **Appendix B**.

The selected construction has been chosen as a proven tested system providing appropriate airborne sound insulation between commercial and residential accommodation and shall be installed in accordance with the manufacturer's published specification.

8. Commitment to Implementation

The mitigation measures described within this statement form part of the proposed design and shall be incorporated during construction.

The committed acoustic mitigation strategy comprises:

- Enhanced acoustic glazing.
- Individual decentralised MVHR units serving bedrooms fronting London Road.
- British Gypsum tested separating floor construction.
- Enhanced external wall construction.
- Enhanced roof construction.

Together these measures provide a coordinated acoustic design strategy appropriate for the site's location.

9. Conclusion

This Noise Mitigation Statement demonstrates that a comprehensive and deliverable acoustic mitigation strategy has been developed for the proposed redevelopment of **79 London Road**.

The statement responds directly to the Environmental Health consultation comments by confirming the proposed glazing, ventilation and building fabric specifications that will be incorporated into the completed development.

The proposed strategy has been developed having regard to the approved mitigation principles accepted by Havant Borough Council for the adjoining redevelopment at **81A London Road**, whilst introducing a dedicated decentralised MVHR strategy for the bedrooms fronting London Road.

The combination of enhanced acoustic glazing, individual MVHR units, upgraded building fabric and a tested British Gypsum separating floor construction provides a robust approach to mitigating road traffic noise whilst maintaining satisfactory indoor environmental quality.

It is therefore respectfully considered that this statement provides sufficient information for the Local Planning Authority and Environmental Health Officer to confirm that an appropriate

acoustic mitigation strategy has been established at planning stage, thereby avoiding the need for a separate pre-commencement Noise Mitigation submission.

APPENDIX A

Single Room Mechanical Ventilation with Heat Recovery (MVHR)

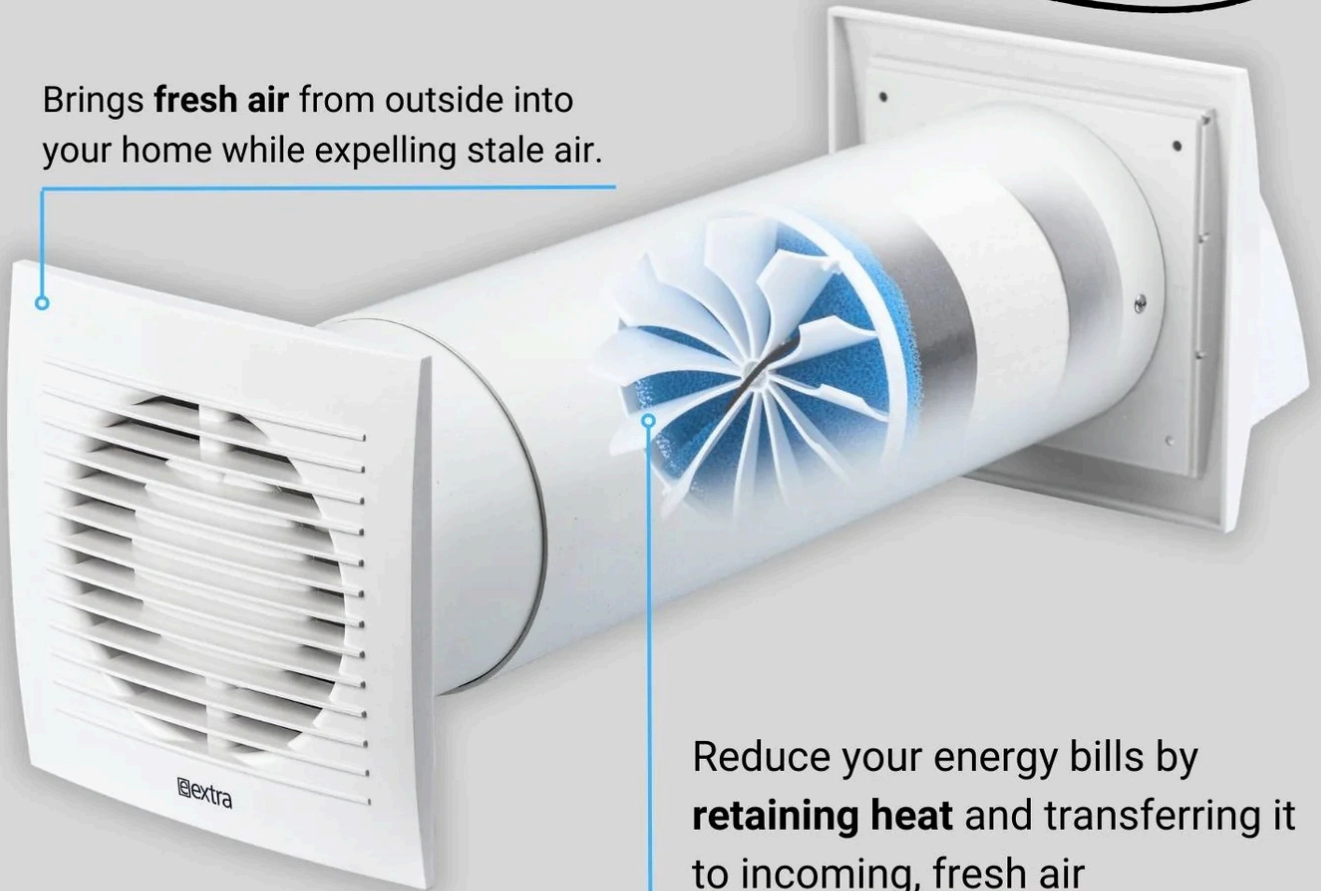
Manufacturer's product information illustrating the proposed decentralised MVHR units to serve bedrooms fronting London Road.

The proposed units provide continuous fresh air supply, stale air extraction, heat recovery and compliance with Approved Document F whilst reducing reliance upon opening windows during periods of elevated road traffic noise.

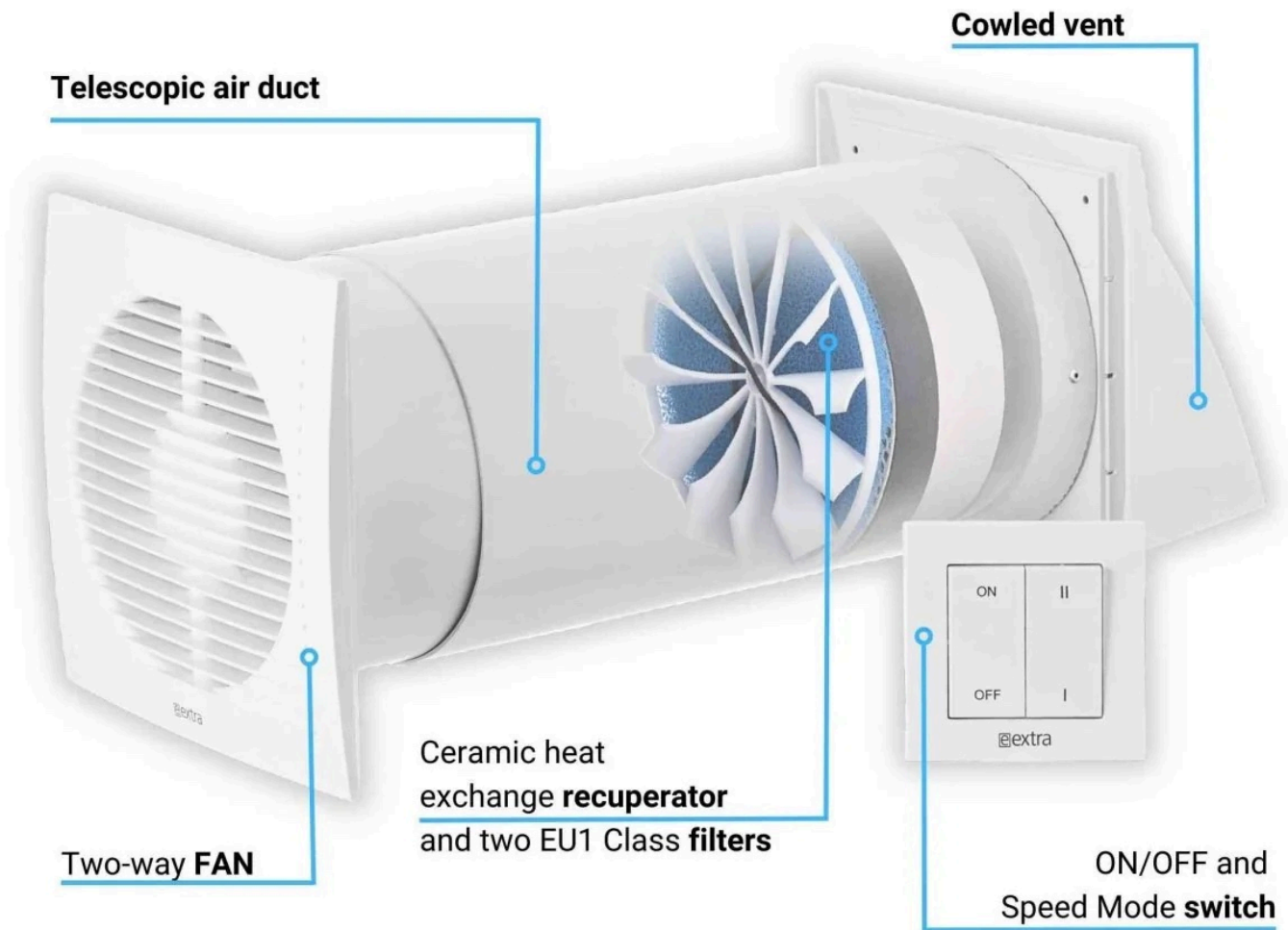
Heat Recovery Ventilator for single room



Brings **fresh air** from outside into your home while expelling stale air.



Reduce your energy bills by **retaining heat** and transferring it to incoming, fresh air



How does it work?

Heat **Energy recovery** takes place thanks to the reversible operation of the fan, which **consists of 2 cycles**.

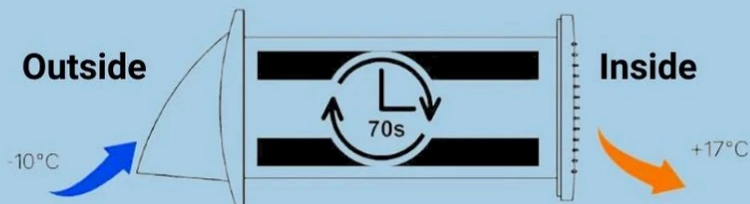


I cycle

For the first 70 seconds, the fan exhausts the room air and the heat exchanger absorbs the heat.

II cycle

Fan changes the direction of rotation and fresh air flows into the room, which is warmed as it flows through the heat exchanger.



After 70 seconds, the fan changes direction and cycle I begins.



APPENDIX B

British Gypsum Tested Separating Floor Specification

Tested British Gypsum floor/ceiling system to be installed between the retained Class E commercial premises and the residential accommodation above.

The system shall be installed in accordance with the manufacturer's published specification and forms part of the committed acoustic mitigation strategy for the development.

Report Number BTC 10724A

**ACOUSTIC TEST REPORT COVERING
LABORATORY SOUND INSULATION TESTS TO
BS EN ISO 140-3:1995 AND
BS EN ISO 140-6:1998 ON A 213mm TIMBER
JOIST FLOOR WITH A GYPROC MF SUSPENDED
CEILING INCORPORATING ACOUSTIC HANGERS.**

Test Date: 5th August 1999

Customer:

British Gypsum Ltd
Head Office
East Leake
Loughborough
Leicestershire
LE12 6HX

Customer: **British Gypsum Ltd**

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The Building Test Centre is wholly owned by British Gypsum Ltd registered in England 209091, registered office East Leake, Loughborough, Leics LE12 6HX. British Gypsum Ltd is a subsidiary of, and trades exclusively as an agent for, BPB United Kingdom Ltd, of the same address.

ACOUSTIC TEST REPORT COVERING LABORATORY SOUND INSULATION TESTS TO BS EN ISO 140-3:1995 AND BS EN ISO 140-6:1998 ON A 213mm TIMBER JOIST FLOOR WITH A GYPROC MF SUSPENDED CEILING INCORPORATING ACOUSTIC HANGERS.

DESCRIPTION

195mm x 45mm timber joists are laid at 450mm centres. A walking surface of 18mm T&G chipboard is screw fixed to the top of the joists using 42mm Gyproc Drywall screws. The perimeter of the floor is sealed to the test aperture with Gyproc sealant.

A Gyproc MF suspended ceiling is fitted to the underside of the joists. Gyproc MF6A Perimeter Channel is fixed to the perimeter of the aperture using 25mm Drywall screws. The Gyproc Perimeter Channel is fixed so that the distance from the underside of the chipboard walking surface to the underside of the Gyproc Perimeter Channel is 277mm. Gyproc Soffit Cleats are fixed to the ends of Gyproc Acoustic Hangers using MF11 nuts and bolts. The Gyproc Acoustic Hangers are fixed, at 1200mm centres, along one side of each intermediate joist, forming a 1200mm x 900mm grid of hangers. The Gyproc Acoustic Hangers are fixed to the timber joists so that the 'L' bend of the Acoustic Hanger is level with the base of the joists. Each Gyproc Acoustic Hanger is fixed to the timber joist using three 25mm Drywall screws.

Gyproc MF7 Primary Support Channels are fixed to the bottom of the Gyproc Soffit Cleats using two 13mm Gyproc Wafer Head Jack Point screws. The Gyproc MF7 Primary Support Channels are placed at 900mm centres and run parallel to the timber joists. Gyproc MF5 Ceiling Section is placed perpendicular to the joists and Gyproc MF7 Primary Support Channel and spaced at 450mm centres. The Gyproc MF5 Ceiling Section is clip fixed to the Gyproc MF7 Primary Support Channels using Gyproc MF9 Connecting Clips.

80mm thick Isowool 1000 is placed into the cavity above the framework.

The framework is clad with a double layer of 12.5mm Gyproc SoundBloc. The inner layer is fixed to the Gyproc MF5 Ceiling Section at 230mm centres in the field of the boards and at 150mm centres around the perimeter of the boards using 25mm Gyproc Drywall screws. The outer layer of Gyproc SoundBloc is fixed back to the Gyproc MF5 Ceiling Sections at 230mm centres in the field of the boards and at 150mm centres around the perimeter of the boards using 36mm Gyproc Drywall screws. All board joints are staggered between layers.

The perimeter of the ceiling was sealed to the test aperture with Gyproc Sealant. All outer layer board joints were taped with adhesive tape.

Customer: **British Gypsum Ltd**

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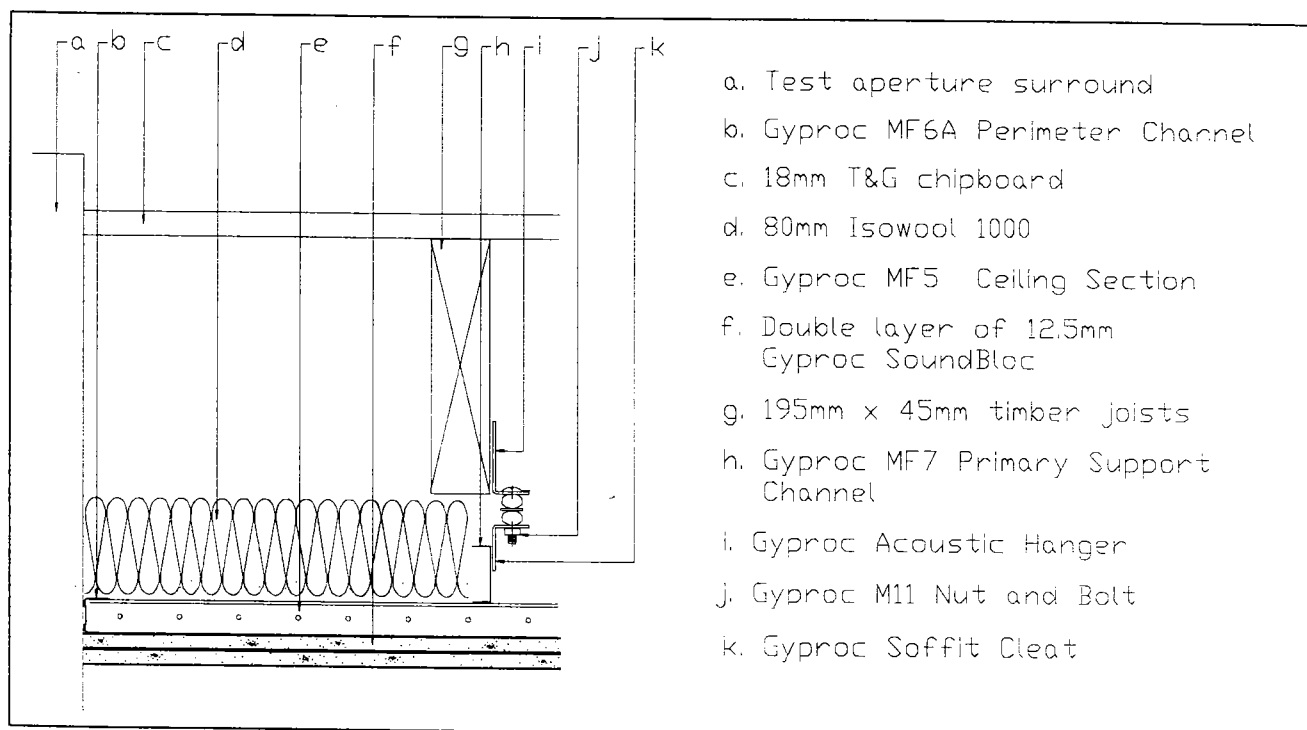


Figure 1: Section through test specimen

The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.

RESULTS

Weighted Airborne Sound Reduction Index

$R_w (C; Ctr) = 63 (-3; -8) \text{ dB}$

Weighted Normalised Impact Sound Pressure Level $L_{n,w} = 54 \text{ dB}$

For full data see pages 6 -9.

Tested in accordance with BS EN ISO 140-3:1995 and BS EN ISO140-6:1998

Airborne sound Insulation test rated in accordance with BS EN ISO 717-1:1997

Impact sound insulation test rated in accordance with BS EN ISO 717-2:1997

Customer: British Gypsum Ltd

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MATERIALS

Boards

Gyproc SoundBloc

Nominally 12.5mm (thick) x 1200mm (wide) x 2400mm (long) Gyproc SoundBloc manufactured by British Gypsum Limited at Kirkby Thore works.

Average thickness:	12.45 mm
Average surface density:	10.97 kg/m ²
Board code:	27-175-9 20:38
Nominal moisture content:	< 1%.

The surface density was calculated using the actual weight and size of the boards used for the test specimens. The moisture content of plasterboard has been established from measurements made over many tests using samples dried to constant weight in an oven at 40°C.

Timber

- (i) Nominally 18mm (thick) x 600mm (wide) x 2400mm (long) grade P5 Caberfloor, manufactured by Caberboard Ltd, Station Road, Cowie, Stirling, Stirlingshire, FK7 7BQ

Average thickness	18.11mm
Surface density:	11.29 kg/m ²
Board Code:	02799 21:55

Surface density calculated using average weight and dimensions of the 18mm T&G chipboard used in test specimen.

- (ii) Softwood timber joists nominally 195 mm (deep) x 45mm (wide) of SC3 grade timber.

Insulation

Isowool 1000

Nominally 80mm thick glass mineral wool. Manufactured and supplied by British Gypsum – Isover Ltd.

Average weight	11.7 kg
Average surface density	0.86 kg/m ²
Density	10.79 kg/m ³

Surface density calculated using actual weight of a pack of 80mm thick Isowool 1000 used in the test specimen.

Customer: **British Gypsum Ltd**

Fasteners

- (i) 25mm, 36mm and 42mm Gyproc Drywall screws
- (ii) 13mm Gyproc Wafer Head Jack Point screws
- (iii) Gyproc MF11 nut and bolts

All fasteners supplied by British Gypsum Limited.

Metal Components

- (i) Gyproc Acoustic Hangers
- (ii) Gyproc MF5 Ceiling Section manufactured from 0.55mm gauge mild steel.
- (iii) Gyproc MF6A Perimeter Channel manufactured from 0.5mm gauge mild steel.
- (iv) Gyproc MF7 Primary Support Channel manufactured from 0.9mm gauge mild steel.
- (v) Gyproc MF9 Connecting Clips.
- (vi) Gyproc MF12 Soffit Cleats manufactured from 1.6mm gauge mild steel.

All metal components supplied by British Gypsum Limited.

Where measurements could not be taken then the weight and dimensions were provided by the customer or the manufacturer e.g. from material labelling. Material information was recorded according to procedure MAT/1.

TEST PROCEDURE

The test specimen (3.16m x 3.16m) is constructed in a floor dividing two reverberant rooms of approximately 98m³ and 101m³. The accuracy of the test method conforms to BS EN 20140-2: 1993, the test procedures used were 140/3 issue 1 (airborne) and 140/6 issue 1 (impact). Broad-band white noise was used to measure the level differences and broad-band pink noise was used to measure the reverberation times. Third octave band pass filters were used in real time mode. Four impact machine positions were used and placed more than 0.5m away from each other and the edge of the floor. See appendix for further information.

Report Author:



Chris Oakton
Technologist

Report Approved by:



Eur Ing Paul Howard B.Sc. (Hons.), C.Eng., MIOA
Head of Laboratory
The Building Test Centre

Report Date:

12 August, 1999

Customer: British Gypsum Ltd

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LABORATORY AIRBORNE SOUND INSULATION TEST - BS EN ISO 140-3:1995

Test Code: **V10724AA**

Test Date: **05/08/99**

Specimen Area, S = **9.99 m²**

	Room T3	Room T4
Room Volume, m ³ :	98	101
Temperature, deg.C:	22.1	23
Rel. Humidity, %RH:	67.2	64.6

Freq Hz	Test Room T3 to Test Room T4						R dB	U.Dev. dB	R 1/1 Oct dB
	Source dB	Rec. (uc) dB	Bgrnd dB	Rec. (corr) dB	Rev.time Sec	Corr. dB			
50	64.9	51.5	27.6	51.5	2.04	1.0	14.4		
63	70.2	46.6	17.6	46.6	3.41	3.2	26.8		18.8
80	81.1	48.3	16.1	48.3	1.20	-1.3	31.5		
100	87.8	47.6	15.9	47.6	1.04	-1.9	38.3	5.7	
125	95.2	46.7	9.0	46.7	0.94	-2.4	46.1	0.9	41.6
160	99.6	53.1	17.7	53.1	1.07	-1.8	44.7	5.3	
200	101.7	54.4	17.3	54.4	1.41	-0.6	46.7	6.3	
250	100.3	51.0	8.5	51.0	1.80	0.5	49.8	6.2	49.4
315	100.0	44.4	8.0	44.4	1.85	0.6	56.2	2.8	
400	98.3	37.7	9.5	37.7	1.71	0.2	60.8	1.2	
500	97.5	35.3	6.6	35.3	1.71	0.2	62.4	0.6	61.9
630	96.7	33.9	5.5	33.9	1.60	0.0	62.8	1.2	
800	97.3	30.9	4.4	30.9	1.71	0.2	66.6		
1 000	99.4	32.9	6.8	32.9	1.88	0.7	67.2		67.5
1 250	101.3	33.1	5.3	33.1	1.96	0.8	69.0		
1 600	99.2	31.0	5.8	31.0	1.98	0.9	69.1		
2 000	101.0	33.1	6.3	33.1	1.93	0.8	68.7		69.1
2 500	101.8	32.8	6.6	32.8	1.91	0.7	69.7		
3 150	101.5	31.9	7.6	31.9	1.88	0.7	70.3		
4 000	96.7	23.5	10.3	23.3	1.72	0.3	73.7		73.1
5 000	102.7	22.8	10.7	22.5	1.51	-0.3	79.9		
6 300									
8 000									
10 000									

Single Figure Ratings
BS EN ISO 717-1: 1997

Rw

dB

63

C

dB

-3

Ctr

dB

-8

Total U. Dev., dB

30.2

Background Corrected

(100-5000)

-2

-8

RT's > factor 1.5 apart

(50-3150)

-10

-24

Tested Serially/Real Time

(50-5000)

-9

-24

Tested By:

E. Dahlen

Checked By:

P. H. A.

Test Procedure: 140/3/issue 1

Worksheet: MSOFFICE\EXCEL\140\140_3_1.XLS

Customer: **British Gypsum Ltd**

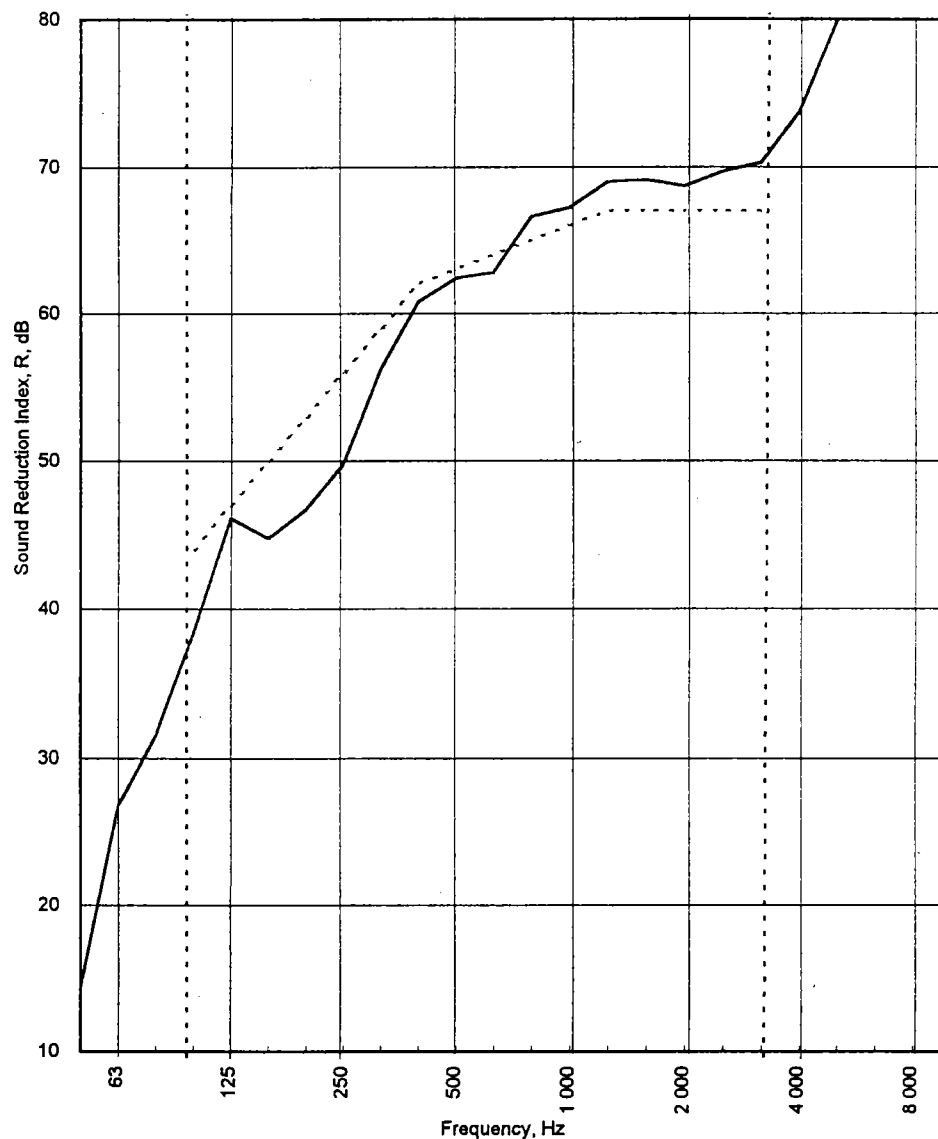
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Test Code:
V10724AA
Test Date:
05/08/99

Freq. Hz	R dB
50	14.4
63	26.8
80	31.5
100	38.3
125	46.1
160	44.7
200	46.7
250	49.8
315	56.2
400	60.8
500	62.4
630	62.8
800	66.6
1 000	67.2
1 250	69.0
1 600	69.1
2 000	68.7
2 500	69.7
3 150	70.3
4 000	73.7
5 000	79.9
6 300	
8 000	
10 000	



Rating according to
BS EN ISO 717-1:1997

R_w (C;Ctr) = 63 (-3;-8) dB

Max dev. 6.3 dB at 200 Hz

Evaluation based on laboratory
measurement results obtained by
an engineering method:

C₅₀₋₃₁₅₀ = -10 dB

C₅₀₋₅₀₀₀ = -9 dB

C₁₀₀₋₅₀₀₀ = -2 dB

C_{tr,50-3150} = -24 dB

C_{tr,50-5000} = -24 dB

C_{tr,100-5000} = -8 dB

Customer: **British Gypsum Ltd**

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LABORATORY IMPACT SOUND INSULATION TEST - BS EN ISO 140-6:1998

Test Code: **V10724AI**

Test Date: **05/08/99**

Specimen Area, S = **9.99 m²**

Room T3 Room T4

Room Volume, m³: **98 101**
Temperature, deg.C: **22 23**
Rel. Humidity, %RH: **67 64.6**

Freq Hz	Test Room 4 to Test Room 3										Ln dB	U.Dev. dB	Ln 1/1 Oct. dB
	Imp.L1 dB	Imp.L2 dB	Imp.L3 dB	Imp.L4 dB	SD dB	Li (uc) dB	BKGD dB	Li (corr) dB	Rev.time Sec	Corr. dB			
50	62.1	61.7	65.2	63.1	1.6	63.3	15.3	63.3	2.52	-2.0	61.3		
63	59.6	59.6	62.9	61.4	1.6	61.1	20.6	61.1	2.39	-1.7	59.4		65.2
80	63.4	63.9	65.2	61.8	1.4	63.7	24.9	63.7	3.36	-3.2	60.5		
100	64.7	65.7	61.3	62.0	2.1	63.8	7.3	63.8	3.26	-3.1	60.7	4.7	
125	65.1	65.6	59.5	61.9	2.9	63.7	1.6	63.7	2.70	-2.3	61.4	5.4	66.9
160	66.8	65.7	63.3	64.6	1.5	65.3	0.8	65.3	2.34	-1.7	63.6	7.6	
200	62.9	62.8	61.8	63.0	0.6	62.7	5.8	62.7	1.49	0.3	63.0	7.0	
250	59.4	58.7	58.7	61.2	1.2	59.6	0.8	59.6	1.64	-0.1	59.5	3.5	65.0
315	55.5	52.6	54.1	55.2	1.3	54.5	5.6	54.5	1.54	0.2	54.7		
400	54.3	53.0	53.5	53.4	0.5	53.6	9.9	53.6	1.61	0.0	53.6		
500	55.0	54.3	55.3	55.5	0.5	55.0	4.3	55.0	1.60	0.0	55.0	1.0	58.7
630	52.1	52.5	53.7	53.5	0.8	53.0	4.1	53.0	1.61	0.0	53.0		
800	52.5	51.4	51.3	51.4	0.6	51.7	7.4	51.7	1.73	-0.3	51.4		
1 000	50.2	51.3	50.0	51.0	0.6	50.7	6.7	50.7	1.82	-0.6	50.1		54.6
1 250	46.2	48.5	45.9	47.1	1.2	47.0	4.7	47.0	1.70	-0.3	46.7		
1 600	42.8	45.6	43.4	44.3	1.2	44.2	5.7	44.2	1.71	-0.3	43.9		
2 000	40.2	43.0	40.1	40.5	1.4	41.1	6.0	41.1	1.70	-0.3	40.8		46.4
2 500	37.4	40.1	37.1	37.0	1.5	38.1	6.9	38.1	1.57	0.1	38.2		
3 150	36.2	38.0	35.0	34.3	1.6	36.1	8.5	36.1	1.51	0.2	36.3	0.3	
4 000	31.3	32.4	29.1	28.8	1.7	30.7	9.7	30.7	1.36	0.7	31.4		37.7
5 000	24.7	24.5	21.8	21.2	1.8	23.3	11.0	23.0	1.22	1.2	24.2		
6 300													
8 000													
10 000													

Single Figure Rating **Ln,w 54 dB**
ISO 717-2:1997

Total U. Dev., dB **29.5**

Background Corrected

RT's > factor 1.5 apart

Tested Serially [✓] Real Time []

Tested By: *[Signature]*

Checked By: *[Signature]*

Test Procedure: 140/6/issue 1

Worksheet: MSOFFICE\EXCEL\140\140_6.XLS

Customer: **British Gypsum Ltd**

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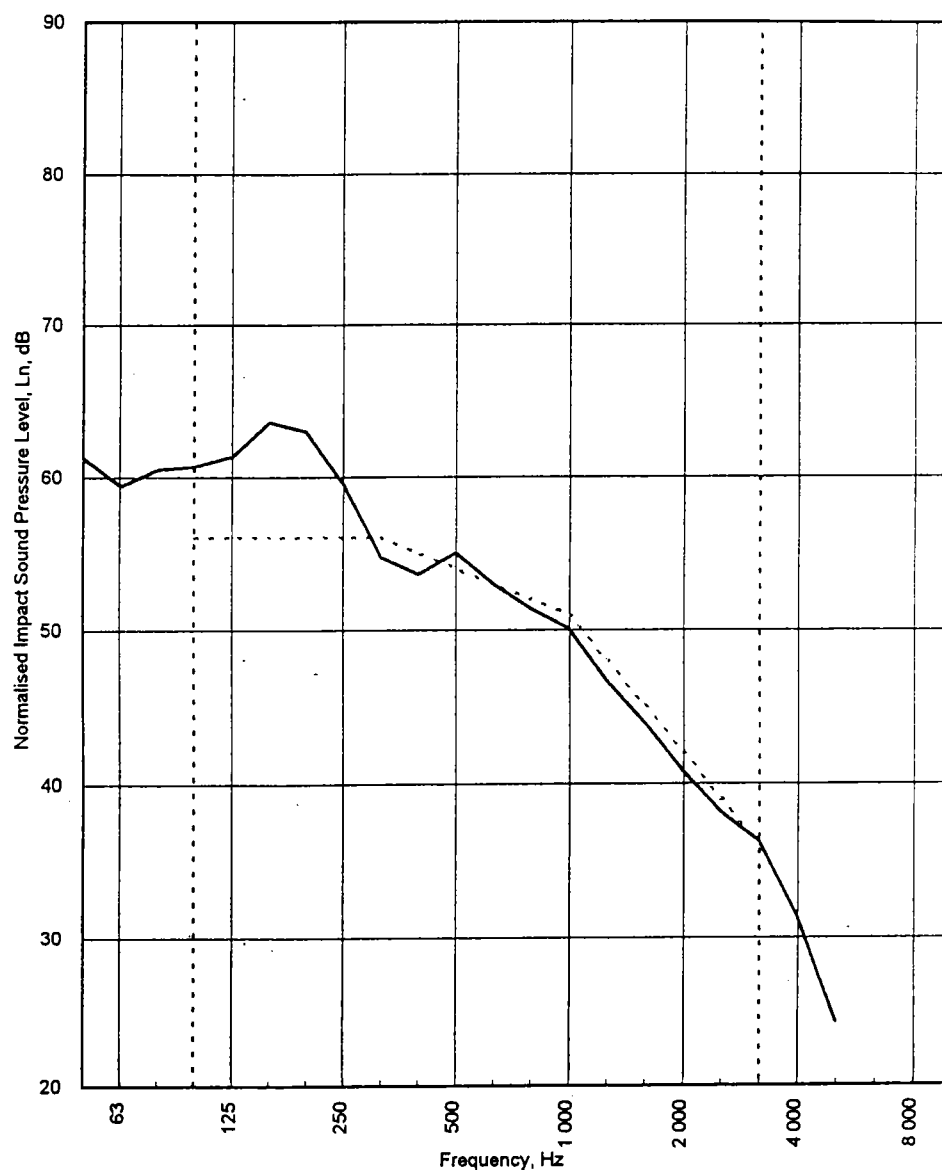
The Building Test Centre

Fire Acoustics Structures

The Building Test Centre
British Gypsum Limited
East Leake
Loughborough
Leicestershire LE12 6NP
Tel: 0115 945 1564
Fax: 0115 345 1562

Test Code:
V10724AI
Test Date:
05/08/99

Freq. Hz	Ln, 1/3 oct., dB
50	61.3
63	59.4
80	60.5
100	60.7
125	61.4
160	63.6
200	63.0
250	59.5
315	54.7
400	53.6
500	55.0
630	53.0
800	51.4
1 000	50.1
1 250	46.7
1 600	43.9
2 000	40.8
2 500	38.2
3 150	36.3
4 000	31.4
5 000	24.2
6 300	
8 000	
10 000	



..... Curve of reference values (ISO 717-2)

Rating according to draft
ISO 717-2:1997

Ln,w 54 dB

Max dev. 7.6 dB at 160 Hz

Evaluation based on laboratory
measurement results obtained by
an engineering method:

Customer: **British Gypsum Ltd**

BTC 10724A: Page 9 of 9

A BPB group company

The Building Test Centre is wholly owned by British Gypsum Ltd registered in England 209091, registered office East Leake, Loughborough, Leics LE12 6HX. British Gypsum Ltd is a subsidiary of, and trades exclusively as an agent for, BPB United Kingdom Ltd, of the same address.

TEST METHOD AND CONDITIONS

An omnidirectional loudspeaker rotating at 1rpm is used in source room satisfying Annex C of BS EN ISO 140-3: 1995. The average sound pressure level in each 1/3 octave band is measured using a rotating microphone boom, positioned such that the minimum distance between microphone and sound source is 1m and between microphone and room boundaries is 0.7m.

The rotating microphone has a sweep radius of at least 1m and is inclined in relation to the boundaries at an angle of at least 30° to the horizontal. The microphone has a traverse time of 32 seconds, and the sound pressure levels are averaged over 64 seconds which is equivalent to two complete sweeps of the microphone boom. The equivalent absorption area of each room is determined by producing the arithmetic average of six reverberation times and applying this to the Sabine formula.

The laboratory limit for airborne sound insulation measurement due to flanking on a lightweight construction is

Freq Hz	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
R _{max}	20	27	29	33	43	53	55	60	63	66	70	72	73	78	82	83	84	82	84	88	88

The laboratory limit for airborne sound insulation measurement due to flanking on concrete based construction is

Freq Hz	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
R _{max}	26	36	33	35	39	47	51	58	61	66	70	68	71	75	79	83	85	84	82	85	83

The figures below show flanking and isolation treatments in the test chamber

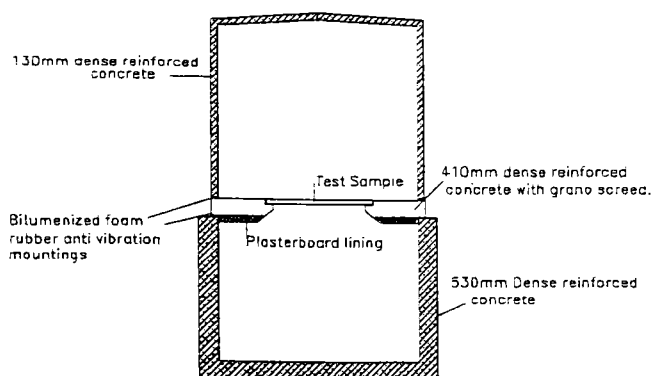


Figure 1 Chamber layout

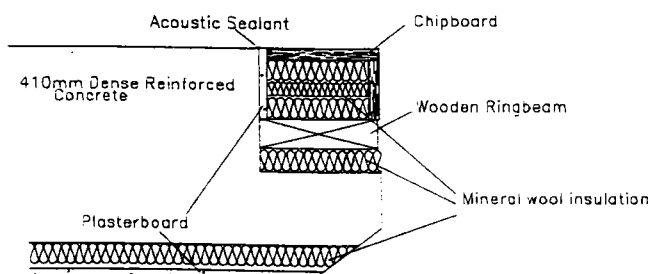


Figure 2 Ringbeam construction around test aperture

Customer: **British Gypsum Ltd**

BTC 10724A: Appendix

A BPB group company

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APPENDIX C

Approved Noise Mitigation Strategy / Noise Impact Assessment

81A London Road, Waterloooville

Planning Reference APP/25/00096

This document is included for contextual reference only.

It demonstrates the noise mitigation strategy previously accepted by Havant Borough Council for the immediately adjoining redevelopment at 81A London Road, which is subject to the same principal source of road traffic noise.

The mitigation strategy proposed for **79 London Road** has been developed having regard to the same acoustic design principles whilst responding specifically to the Environmental Health consultation comments received for this application.



Vine Acoustics Ltd | Cams Hall | Fareham | Hampshire | PO16 8AB

Client: Thrive Living

Site: 81A London Road
Waterlooville
Hampshire

Date: 26th February 2026

Noise Mitigation Strategy NMS81ALRT – 81A London Road, Waterlooville

Project: Technical Note listing the proposed noise mitigation strategy for the proposed scheme at 81A
London Road – Planning Approval No: APP/25/00096

Discharge of Conditions 4 & 5

Application History:

Planning permission was granted for the redevelopment of 81A London Road, Waterloooville under application reference APP/25/00096.

The approved scheme comprises the conversion and extension of the existing building to provide residential accommodation.

This Noise Mitigation Strategy is submitted in support of a discharge of conditions application relating to Conditions 4 and 5 of the above approval, specifically in respect of acoustic design, glazing and ventilation strategy.

The site is located on London Road within Waterloooville and is subject to road traffic noise, which has been assessed within the accompanying Vine Acoustics Noise Impact Assessment.

Building Specifications:

Ventilation

The development will be ventilated via acoustic trickle ventilators serving all noise-sensitive bedrooms. This approach allows adequate background ventilation to be maintained with windows closed, ensuring internal noise levels are controlled.

The proposed system will comprise RW Simon Acoustic EHA trickle ventilators (or similar approved), achieving a minimum sound attenuation performance of 36dB.

Product	Sound Reduction - open	Sound reduction - closed
RW Simon Acoustic EHA trickle vent	36dB	38dB

Each bedroom will be served by a single acoustic trickle ventilator integrated within the window frame, sized to achieve the required airflow rates in accordance with Approved Document F.

Purge ventilation will be provided via openable window elements.

Façade Detail

The external wall construction will comprise the existing masonry façade upgraded internally with battens and insulated plasterboard lining.

This construction is expected to achieve a sound reduction performance in the order of 50–52dB DnT,w + Ctr, in accordance with BS8233:2014.

Roof Detail

The roof construction will comprise a Bauder single ply Thermafol PVC membrane (or equivalent) on 120mm Kingspan TR27 insulation over vapour control layer and structural deck, supported on timber joists in accordance with structural engineer's design.

This construction is expected to achieve a sound reduction performance of approximately 43dB Rw in accordance with BS8233:2014.

Windows

All habitable room windows will comprise double glazed units designed to achieve a minimum sound reduction performance of 30dB.

The glazing specification will be equivalent to:

SG Solaglass 4-10-6 (20mm overall thickness)

which provides an overall sound reduction of approximately 30dB based on frequency performance data.

No alternative glazing specification is proposed.

Acoustic Performance Statement

The above measures represent the committed acoustic design strategy for the development.

The combination of glazing, acoustic ventilation and building fabric performance ensures that internal noise levels within habitable rooms will comply with BS8233:2014.

These measures are based on the Vine Acoustics Noise Impact Assessment and are considered sufficient to mitigate external noise sources affecting the site, including road traffic along London Road.



Vine Acoustics Ltd | Hampshire | mike@vineacoustics.co.uk

Noise Impact Assessment undertaken by:

Michael D Vine – BSc Hons, MIOA

Michael Vine was the founder and operator of Airtight & Noisecheck Ltd for over 20 years, during which time he undertook numerous Noise Impact Assessments Nationwide. He now owns and operates Vine Acoustics Ltd.

NOISE IMPACT ASSESSMENT FOR

THRIVE LIVING LTD
38 GLAMORGAN ROAD
WATERLOOVILLE
HAMPSHIRE
PO8 0TR

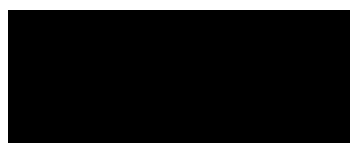
SITE ADDRESS

PROPOSED 13 BED HMO & COMMERCIAL SCHEME
81A LONDON ROAD
WATERLOOVILLE
HAMPSHIRE
PO7 7ER

ASSESSMENT DATE: 16TH – 17TH SEPTEMBER 2025

REPORT DATE: 22ND SEPTEMBER 2025

Acoustic Engineer:



Testing Date: 16th – 18th August 2025

Michael Vine



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

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VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

Customer Name:

Testing Date: 16th – 18th September 2025

Report Date: 22nd September 2025

Thrive Living Ltd
38 Glamorgan Road
Waterlooville
Hampshire
PO8 0TR

Site Address:

81A London Road
Waterlooville
Hampshire
PO7 7ER

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 140 BS EN IEC 61672-1 2013 Class 1 – Associated frequency analyser to BS EN IEC 61260: 1996 Class 1 – serial 1407126 – calibration due March 2026

Measurement Microphone (Nor 1225) – Serial Number 305215 – calibration due March 2026

Acoustic Calibrator - (Type 1251) – Serial No 31652, Calibration due 31st October 2025

Measurement Procedure:

The purpose of this noise impact assessment is to assist with the proposed planning application shown below & to provide suitable mitigation measures to ensure the future residents are protected from the local noise sources apparent:

Site Address: 81A London Road, Waterlooville, Hampshire, PO7 7ER

Proposal: Conversion of current commercial 1st floor into 13 x bed HMO with retail remaining on the ground floor. There will be some small extensions to the rear of the building & an additional mansard roof built at 2nd floor level.

An unattended assessment measuring the current acoustic climate over a 24-hour period in each microphone location was undertaken to determine the ambient noise levels at the proposed front façade (24hours) and rear façade (24hours) of the proposed development site, to the front of proposed scheme facing London Road and to the rear facing Swiss Road & the car park for ASDA supermarket. The assessment took place between 0954hrs on Tuesday 16th to 0954hrs on Wednesday 17th September at the front and 1048hrs on the 17th to 1048hrs on the 18th of September at the rear.

The unattended assessment took measurements from the noise associated with London Road (Bus route & commercial street) at the front. The noise sources at the rear of the site are vehicles using the local road network, people using the car park that serves ASDA supermarket and the general activity associated with the supermarket.



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

Assessment Criteria:

The National Planning Policy Framework (NPPF) came into effect in March 2012 and was updated in December 2024. It replaced other documents such as PPG24. The NPPF provides several objectives and aims that are directed towards avoiding significant adverse impacts and reducing others on quality of life and health. This document states that:

Paragraph 187 states Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, considering relevant information such as river basin management plans.

Paragraph 198 states - Planning policies and decisions should also ensure that new development is appropriate for its location considering 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 impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes, and nature conservation.

Paragraph 200 - Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

The Planning Practice Guidance has guidance on noise, dated 22nd July 2019, and has the noise hierarchy table as shown below. Paragraphs 009 & 011 are referenced later in this report.



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

NOEL – No Observed Effect Level This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.

LOAEL – Lowest Observed Adverse Effect Level This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level This is the level above which significant adverse effects on health and quality of life occur.

The NPSE (Noise Policy Statement for England) states the following aims with respect to noise policy:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of the Government policy on sustainable development:

*avoid significant adverse impacts on health and quality of life;
mitigate and minimise adverse impacts on health and quality of life; and
where possible, contribute to the improvement of health and quality of life.*



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

PROPG: PLANNING & NOISE (2017) NEW RESIDENTIAL DEVELOPMENT [PROPG 2017]

The ProPG Planning & Noise document was published in 2017, its development supported by the Institute of Acoustics, the Association of Noise Consultants, and the Chartered Institute of Environmental Health. The aim of the document is to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

ProPG advocates a systematic, proportionate risk-based, 2 stage approach which:

1. Encourages early consideration of noise issues;
2. Facilitates straightforward accelerated decision making for lower risk sites;
3. Assists proper consideration of noise issues where the acoustic environment is challenging.

A summary of the overall ProPG approach is included in Appendix B. The two sequential stages of the overall approach are:

1. Stage 1 – an initial noise risk assessment of the proposed development site; and
2. Stage 2 – a systematic consideration of four key elements.

The four key elements to be undertaken in parallel during Stage 2 are:

1. Element 1 – demonstrating a “Good Acoustic Design Process”;
2. Element 2 – observing internal “Noise Level Guidelines”;
3. Element 3 – undertaking an “External Amenity Area Noise Assessment”; and
4. Element 4 – consideration of “Other Relevant Issues”.

The approach is underpinned by the preparation and delivery of an “Acoustic Design Statement” [ADS]. The ADS is intended to conclude in the provision of one of the following four recommendations to the decision maker:

1. Planning consent may be granted without any need for noise conditions;
2. Planning consent may be granted subject to the inclusion of suitable noise conditions;
3. Planning consent should be refused on noise grounds in order to avoid significant adverse effects (“avoid”); or
4. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects (“prevent”).

The overall ProPG 2017 approach is intended for implementation with projects at an earlier stage than the subject of this report. This report provides a full noise mitigation strategy for the site, rather than an initial recommendation to the decision maker.

ProPG 2017 contains the most up to date guidance available on industry-wide adopted best-practice interpretation of relevant guidance regarding acceptable internal and external noise levels i.e., BS8233:2014 and WHO Guidelines.

WHO GUIDELINES FOR COMMUNITY NOISE (1999)

The guidance in this document recommends design criteria for internal noise levels within residential and commercial buildings. A summary of the recommended guidance is shown in Table 2.1. **Table 2.1 – Excerpt from WHO [dB ref. 20μPa]**

Criterion	Environment	Design range LAeq, T dB
Maintain speech intelligibility, avoid moderate annoyance, daytime & evening	Living Rooms	35
Prevent sleep disturbance, night time	Bedrooms	30

This guidance also states:

For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB LAmax more than 10-15 times a night (Vallet & Vernet 1991)



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

For outdoor living areas, it is stated that:

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB LAeq on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50dB LAeq. Where it is practical and feasible, the lower outdoor sound level should be considered the maximum desirable sound level for new development.

BS8233:2014 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

The guidance in this document indicates acceptable noise levels for various activities within residential dwellings. A summary of the recommended guidance is shown in the following table as listed in BS8233: 2014

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

The local authority listed the below criteria for the Noise Impact Assessment.

Noise Impact Assessment together with an Acoustic Design Statement detailing acoustic mitigation measures has been submitted to and approved in writing by the Local Planning Authority. The Noise Impact Assessment and Acoustic Design Statement shall show that the noise levels within all habitable rooms shall comply with the recommendations of BS8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' as follows:

- a) Internal daytime noise levels shall not exceed 35 dB LAeq, 16 hour in living rooms*
- b) Internal night-time noise levels shall not exceed 30 dB LAeq, 8 hour in bedrooms*
- c) Internal night-time noise levels shall not exceed 45 dB LAMax more than 10 times a night in bedrooms*
- d) External daytime noise levels shall not exceed 55dB LAeq, 16 hour in external amenity areas.*

The development shall be carried out in accordance with the approved details.



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

Executive Summary:

Vine Acoustics Ltd were instructed by Thrive Living Ltd to undertake a Noise Impact Assessment (NIA) at 81A London Road, Waterlooville. A planning application is to be made to convert the existing building into a 13-x bedroom HMO with the commercial units remaining at ground floor level. The site will be extended to the rear by a small extension and a 2nd floor added using a Mansard roof system. The microphone location was used to determine the impact of the following noise sources on the proposed dwellings:

1. Noise associated with London Road – Front façade (Northeast)
2. Noise associated with Swiss Road, supermarket & supermarket car park (Southwest)

This report will address the noise source listed above and has been written to assess the impact of the noise sources on the proposed mixed-use scheme, in particular the bedrooms that will be located on both the front rear facades at 1st & 2nd floor and also the proposed amenity space that will comprise of a pergola and be located to the rear of the scheme. The proposed bedrooms should not be adversely affected by the noise associated with the immediate area providing the necessary mitigation measures are implemented to the scheme. The measured noise levels are consistent with the site near the noise sources listed above. The conclusions of this report illustrate that the noise associated with the immediate area will not have an adverse impact on the proposed residential scheme, providing that suitable mitigation measures are implemented to the proposed scheme. It is recommended that the scheme be fitted with an alternative ventilation system such as acoustic wall ventilation or acoustic trickle vents to assist with periods when windows are closed. However, to strike a balance between noise, overheating & ventilation it is anticipated that future residents of the scheme should be able to ventilate the bedrooms naturally by opening windows on various elevations throughout the day time and night time period. Both the measured & calculated levels indicate a generally low to moderate impact on the proposed scheme with lengthy periods whereby the rooms can be naturally ventilated via open windows without leading to an adverse impact. The rooms located to the rear are exposed to lower noise levels than the front, but the same level of mitigation is proposed, but in reality the rear rooms could be naturally ventilated for longer without it leading to an adverse impact.

Therefore, the scheme can be naturally ventilated with open windows for periods of the day time and night time. The measures to be taken by the client should ensure a satisfactory acoustic climate for the future residents of the proposed scheme.

The immediate area is in a mixed-use location with dwellings & commercial activity located to the front of the scheme and the local road network, car park and supermarket located to the rear.

There are existing residential dwellings located in similar locations to the proposed, above the other commercial units.



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

Acoustic Design Statement:

The measured average levels are moderate and constant throughout the measurement duration. The necessary noise criteria should be achieved by suitable mitigation measures for the building façade & glazing. The client will take steps and implement mitigation measures to ensure the impact of the external & internal noise should not have an adverse impact on the future residential dwelling. These steps include:

- 1 Install a robust glazing system to the scheme to protect the residents from the external noise emissions when closed
- 2 Thermal mass offered by the building fabric
- 3 Alternative ventilation system installed to dwellings to ensure ventilation when windows closed
- 4 Orientation of noise sensitive rooms – some bedrooms located to the rear

The initial risk assessment has indicated that the day time noise levels for the proposed scheme fall into the low category at the front and negligible category at the rear and the night time levels fall into the low category at the front and are negligible at the rear (due to screening and location). Pro PG states that for low categories '*at low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development*' and for the medium & high categories '*High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.*

As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development.'

A robust & comprehensive ADS has been applied to the scheme. This is the case as can be seen above. The ADS for this scheme included robust & comprehensive mitigation measures that will ensure a suitable acoustic criterion for the future residents of the scheme.

The alternative ventilation system are not designed to ensure BS8233: 2014 compliance in isolation but offer suitable levels of ventilation during periods when windows maybe closed, but it is anticipated that the scheme can be naturally ventilated with open windows for periods of the day time and night time periods, and it is essential that a balance is struck between noise, ventilation and overheating as there will clearly be periods of the day time and night time that the dwellings will not be adversely affected by the noise sources.

The levels listed below are the required criteria as listed by the local authority to the client.

Noise Impact Assessment together with an Acoustic Design Statement detailing acoustic mitigation measures has been submitted to and approved in writing by the Local Planning Authority. The Noise Impact Assessment and Acoustic Design Statement shall show that the noise levels within all habitable rooms shall comply with the recommendations of BS8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' as follows:

- a) Internal daytime noise levels shall not exceed 35 dB LAeq, 16 hour in living rooms*
- b) Internal night-time noise levels shall not exceed 30 dB LAeq, 8 hour in bedrooms*
- c) Internal night-time noise levels shall not exceed 45 dB LAMax more than 10 times a night in bedrooms*
- d) External daytime noise levels shall not exceed 55dB LAeq, 16 hour in external amenity areas.*

The development shall be carried out in accordance with the approved details.

Therefore, this will form the basis of the Noise Impact Assessment



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

1 Objective:

1.1 To demonstrate that the noise associated with the immediate area will not have an adverse impact on the proposed residential scheme. A planning application is to be made to convert the existing building into a 13-x bed HMO with the bedrooms located at ground, 1st & 2nd floor, and the commercial/retail units remaining at the ground floor.

1.2 This report will account for noise emissions produced from London Road at the front & Swiss Road & the car park to the rear. The scheme will include comprehensive mitigation measures to reduce the impact of the sources and ensure a suitable internal acoustic environment and a balance between noise, ventilation & overheating.

2 Calibration:

2.1 The measurement microphone was calibrated before and after testing in the measurement location and there were no drifts recorded during the assessments.

3 Site Layout & Microphone Position:

3.1 London Road is the main commercial street and bus route in the centre of Waterlooville, Hampshire. The proposed building is located in a terrace of mixed-use buildings located immediately to the Southwest of London Road with the front elevation facing the street. The building is a former bank and is built over two floors.

3.2 The buildings are predominantly mixed-use with a large number of commercial buildings with residential located above them in the immediate area. London Road is not open to cars but is the main bus route through Waterlooville. The local road network and car park is located to the rear of the site, beyond the car park for the scheme.

3.3 The proposed scheme will comprise of a mixed-use scheme with 2 retail units located at the front on the ground floor, the residential kitchen & lounge and bin stores at the rear and bedrooms 1&2 located at ground floor too, facing the rear. Bedrooms 3-8 will be located at 1st floor, with bedrooms 3, 4 & 5 facing London Road and 6, 7 & 8 facing the rear. Bedrooms 9-13 will be located at 2nd floor level with bedrooms 11&12 facing London Road and bedrooms 9, 10 & 13 facing the rear, so it is clear to see that orientation of the bedrooms has been considered to reduce noise break in and offer a quieter façade for these rooms.

3.4 The measurement microphone was located:

- 1- At the building façade facing London Road. It was 1m from the building façade so a -3dB reduction has been applied to the figures to account for reflection.
- 2- At the building façade facing the rear of the site. It was 1m from the building façade so a -3dB reduction has been applied to the figures to account for reflection.

4 Weather Conditions:

4.1 The weather was warm & predominantly dry during the measurement procedure; the temperature ranged between 13-18 degrees on Tuesday 16th, 15-18 degrees on Wednesday 17th and 17-21 degrees on Thursday 18th September. There was light cloud and some light rain showers over the measurement period.

5 Measurement Duration:

5.1 The continuous measurement was taken for a 24-hour period at the front façade and 24hours at the rear façade. The immediate area was operating at normal levels and thus offers a fair reflection of the noise associated with the immediate area.



VINE ACOUSTICS LIMITED – NOISE IMPACT ASSESSMENT

6 Results:

6.1 The purpose of this measurement was to establish the levels associated with the immediate area on the proposed scheme. The levels will be compared to the necessary British Standards & relevant documents, also some bespoke measurements will be adopted.

L_{Aeq} 16hour & 8hour Noise Levels:

Mic Location	L _{Aeq} 16hour Value	Reduction needed for BS8233 compliance	L _{Aeq} 8hour Value	Reduction for BS8233 compliance	L _{Amax} Value	Reduction for compliance
ML 1 – Front elevation	59dBA	24dB	48dBA	18dB	73dBA	28dB
ML 2 – Rear elevation	51dBA	16dB	45dBA	15dB	64dBA	19dB

7 Results Conclusion:

7.1 The tables listed above clearly indicate the required sound reduction values at the proposed site. It is clear to see that the measured levels are within the low category of the Pro PG document for the front façade and the low to negligible category for the rear façade. Providing suitable mitigation measures are applied to the necessary facades and the required internal criteria can be achieved. It is anticipated that the scheme can be naturally ventilated with open windows for periods during the day time and night time, to achieve a balance between noise, ventilation, and overheating and without leading to a change in behavior. Based on the L_{Aeq} values, the rear rooms should be able to have their windows open throughout the 24hour without leading to an adverse impact.

7.2 Based on the measured noise levels, the proposed mitigation measures, the location of the development and the type of noise apparent it is anticipated that the noise will fall at The NOEL value (No adverse effect level) and maybe towards the LOAEL (Lowest observed adverse effect level) and as such the noise should not have a detrimental effect on the future residents providing adequate measures are implemented to the building fabric & elements. For noise sources at the LOAEL, it is anticipated that the noise will be noticeable but not intrusive if suitable mitigation measures are implemented to the development.

7.3 Based on the measured levels and assuming a glazing specification offering a sound reduction of 30dBA (meeting the levels required above) is installed the following internal levels would be achieved:

Front Facade

Room	External Level	Sound Reduction of windows	Internal Level	Criteria Met
Lounge	59dBA	30dB	29dBA	Yes
Bedroom – L_{Aeq}	48dBA	30dB	18dBA	Yes
Bedroom – L_{Amax}	73dBA	30dB	43dBA	Yes

Rear Facade

Room	External Level	Sound Reduction of windows	Internal Level	Criteria Met
Lounge	51dBA	30dB	21dBA	Yes
Bedroom – L_{Aeq}	45dBA	30dB	15dBA	Yes
Bedroom – L_{Amax}	64dBA	30dB	34dBA	Yes

7.4 The levels above indicate that the internal levels can be achieved with the windows closed. Further table shown on the following page. Section 2.30 and Figure 2 of the Pro PG document states that the internal guidelines of BS8233: 2014 can be relaxed by 5dBA (40dBA L_{Aeq} 16hour and 35dBA L_{Aeq} 8hour) when the dwellings are necessary or desirable and that residents will accept a slight increase in noise levels to ensure natural ventilation. A relaxation of 5dBA will still ensure a reasonable standard of living. This approach could be implemented to development for the day time levels and the night time levels.



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7.5 The levels shown in the table above indicate that a reasonable standard of living can be achieved with closed windows and the calculations below indicate the levels with open windows for transportation noise.

7.6 Table 3.3 – Guidance for level 2 assessment of noise from transport services in the ANC AVO guide states that ‘Noise causes a material change in behaviour e.g., having to keep windows closed most of the time’ if the following levels are exceeded for longer periods of time:

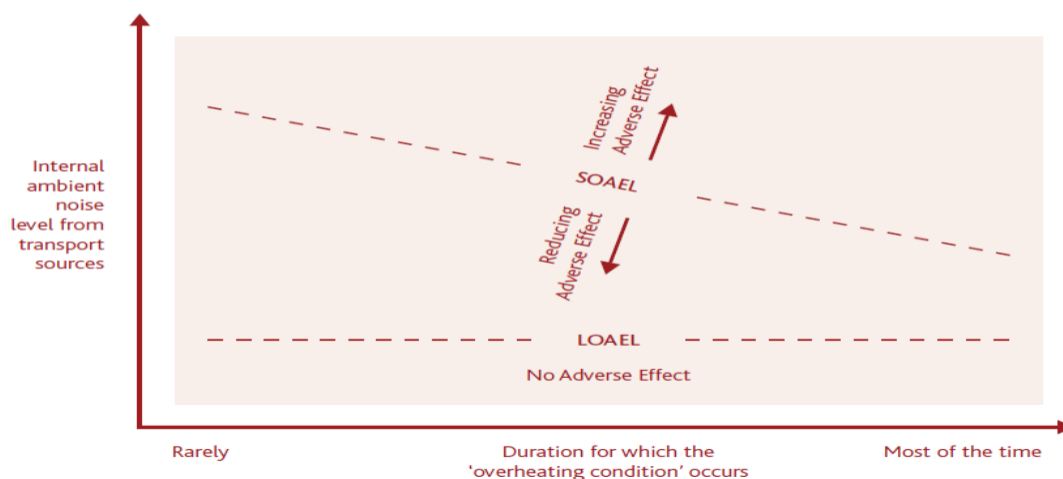
<i>Internal ambient noise levels</i>		
<i>L_{Aeq} 16hour 0700-2300</i>	<i>L_{Aeq} 8hour 2300-0700</i>	<i>Individual noise events 2300-0700</i>
>50dB	>42dB	Normally exceeds 65dB L _{Amax} T

7.7 Using the above guidance (sliding scale as shown in the diagram below) the calculated internal levels at all facades and other screened facades (rear facades) with the windows open are also shown below. It is anticipated that the future occupants will accept an increase in the noise levels for periods of time to ensure good thermal comfort for the dwellings. These levels can be met for transportation noise. There will be periods of time when windows are opened and may be fewer, but then the acoustic trickle vents can ensure suitable levels of ventilation for the bedrooms. The future residents will be able to open and close the windows at their own discretion at the rear elevations can be open as they wish.

<i>Front Facade</i>	<i>External Level</i>	<i>Sound Reduction of open windows</i>	<i>Internal Level</i>
<i>Lounge</i>	59dBA	-13dB	46dBA
<i>Bedroom – L_{Aeq}</i>	48dBA	-13dB	35dBA
<i>Bedroom - L_{Amax}</i>	73dBA	-13dB	60BA

<i>Rear Facade</i>	<i>External Level</i>	<i>Sound Reduction of open windows</i>	<i>Internal Level</i>
<i>Lounge</i>	51dBA	-13dB	38dBA
<i>Bedroom – L_{Aeq}</i>	45dBA	-13dB	32dBA
<i>Bedroom - L_{Amax}</i>	64dBA	-13dB	51dBA

Figure 3-2 Qualitative guidance on combined effect of internal ambient noise level and duration for the overheating situation



7.8 Based on the measured average levels and anticipated internal levels, it is recommended that whilst the scheme can be naturally ventilated for short periods of time (front) and longer periods (at the rear), to ensure suitable internal balance and criteria that an alternative ventilation system is incorporated into the scheme. An alternative ventilation system will help to ensure that the dwellings can be ventilated when the windows are closed. These measures combined with glazing should ensure a reasonable standard of living can be achieved for the proposed dwellings.



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7.9 It can be seen (using the measured levels) that the internal levels, are all calculated to be within the values listed in Table 3.3 with windows open and therefore illustrating that the noise ingress should not lead to a change in behavior. The purpose of the alternative ventilation system is to ensure the bedrooms can be ventilated for the period of time when the windows are closed, and a balance must be struck between noise, overheating and ventilation. It is anticipated that future residents will accept this slightly higher level for periods of time to be able to naturally ventilate their homes and the measured levels should not be intrusive.

7.10 The proposed measures indicate that the development follows the approach recommended in the PPG Guidance (Paragraph 009) regarding the closure of windows which states: *“The agent of change will also need to define clearly the mitigation being proposed to address any potential significant adverse effects that are identified. Adopting this approach may not prevent all complaints from the new residents/users about noise or other effects but can help to achieve a satisfactory living or working environment and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed (for example, keeping windows closed and using alternative ventilation systems when the noise or other effects are occurring).”*

7.11 Paragraph 011 of the same guidance states: Noise impacts may be partially offset if residents have access to one or more of:

- a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling.
- a relatively quiet external amenity space for their sole use, (e.g., a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced if this area is exposed to noise levels that result in significant adverse effects.
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or
- a relatively quiet, protected, externally publicly accessible amenity space (e.g., a public park or a local green space designated because of its tranquility) that is nearby (e.g. within a 5-minute walking distance).

7.12 The proposed scheme ensures that some of the bullet points shown above have been implemented as part of the application. There are quieter facades as part of the application that are screened from the noise sources (rear facade). In addition to the orientation of the rooms, further measures also include installing alternative ventilation measures to the dwelling to ensure suitable levels of ventilation when the windows are closed, but all residents will have the ability to open their windows at their own discretion.

Residential Amenity Space:

7.13 The calculated $L_{Aeq\ 16\text{hour}}$ value at the rear of the development was 51dBA, this is below the upper limit for amenity space as listed in BS8233: 2014 and also below the required guidelines set by the local authority, which are listed below. Therefore, the residents will not be adversely affected by the noise sources when using the amenity space located to the rear of the scheme.

d) External daytime noise levels shall not exceed 55dB LAeq, 16 hour in external amenity areas.



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8 Required Levels of Mitigation:

<i>Elevation</i>	Noise Source	Level of Sound Reduction
<i>Front Façade</i>	London Road	28dBA
<i>Rear Façade</i>	Rear	19dBA

9 Building Specifications:

9.1 It is recommended that the dwellings are ventilated with an alternative ventilation system. These will ensure the dwellings can be ventilated when the windows are closed.

A ventilation system could be an acoustic wall ventilation system, such as:

Make	Model	Type
Titon Direct	Sonair F+	Wall mounted acoustic Ventilation

9.3 The above system is a wall mounted ventilation unit that allows for ventilation when the windows are closed, with elevated levels of sound reduction.

9.4 Another option could be to install acoustic trickle vents to the noise sensitive rooms, something similar to:

Product	Sound Reduction - open	Sound reduction - closed
RW Simon Acoustic EHA trickle vent	36dB	38dB - Front
RW Simon EHAS trickle vent	38dB	41dB – Front
RW Simon Acoustic FV trickle vent	32dB	40dB – Rear
RW Simon Acoustic SL trickle vent	33dB	39dB – Rear

If multiple vents are required, then the performance requirement shown in Table 6.3 will increase by a value equal to $+10\log(N)$, with N being the total number of vents serving the room.

9.4 Façade Detail – The proposed façade is believed to be something like: - Aggregate block cavity wall, minimum 100mm blocks (minimum density 1350kg/m³), minimum 75mm cavity between leaves, finished with 13mm plaster. This system should achieve a sound reduction of between 50-52dB DnT,w + Ctr 'Code of Practice BS8233: 2014, Page 60 – Table E.1B – Airborne sound insulation of walls and partitions'. Also, a cavity wall system comprising of 7N concrete blocks (two separate frames), have a sound reduction of approximately 53dB (predicted weighted sound reduction index values of Celcon Blockwork – from H&H Celcon). The mansard roof detail will also offer a suitable level of sound reduction for the scheme.

9.5 Roof Detail – The proposed roof detail is believed to be like: Flat roof system with 100mm mineral wool on plasterboard ceiling. This system should achieve a sound reduction of 43dB R_w 'BS8233: 2014, page 41 - Table 8 - The sound insulation of roofs'.

9.6 Windows - The proposed windows to be used is unknown but a robust system offering a sound reduction of more than 26-30dBA has been determined from the various calculations (should exceed requirements) and thus the specifications listed below will offer this level of reduction.

Possible Units	Thickness	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	Overall reduction
SG Solaglass 4-12-6	22mm	23	22	26	46	45	45	34-4=30dB
SG Solaglass 4-10-6	20mm	24	23	28	38	40	42	34-4 = 30dB

9.7 There are many other suitable products, and the client will have to show compliance with the windows before installation, the manufacturer will have the acoustic data for the windows.



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10 Results Summary:

10.1 The findings of this survey indicate that the noise associated with the immediate site will not have an adverse impact on the proposed residential bedrooms, providing the necessary mitigation measures are applied to the site.

10.2 The results of the various detailed calculations indicate that the noise emissions associated with area and neighbouring venue will not lead to an adverse impact for the future residents.

10.3 The mitigation measures listed within this report offer suitable sound reduction for the necessary building elements and if they are implemented throughout the site then the future residents should be able to enjoy a reasonable standard of living. Upon implementation of the mitigation measures, the internal & external criteria of BS8233: 2014 should be met within the noise sensitive bedrooms at the proposed development.

10.4 Planning ProPG states that a good acoustic design process is a vital part of new developments. The client has taken steps to ensure that the existing & future occupants are protected from the noise source, these steps include:

- 1 Install a robust glazing system to the dwellings to protect the residents from the external noise emissions when closed
- 2 Thermal mass offered by the building fabric
- 3 Alternative ventilation system installed to dwellings to ensure ventilation when windows closed
- 4 Orientation of noise sensitive rooms – some bedrooms located to the rear

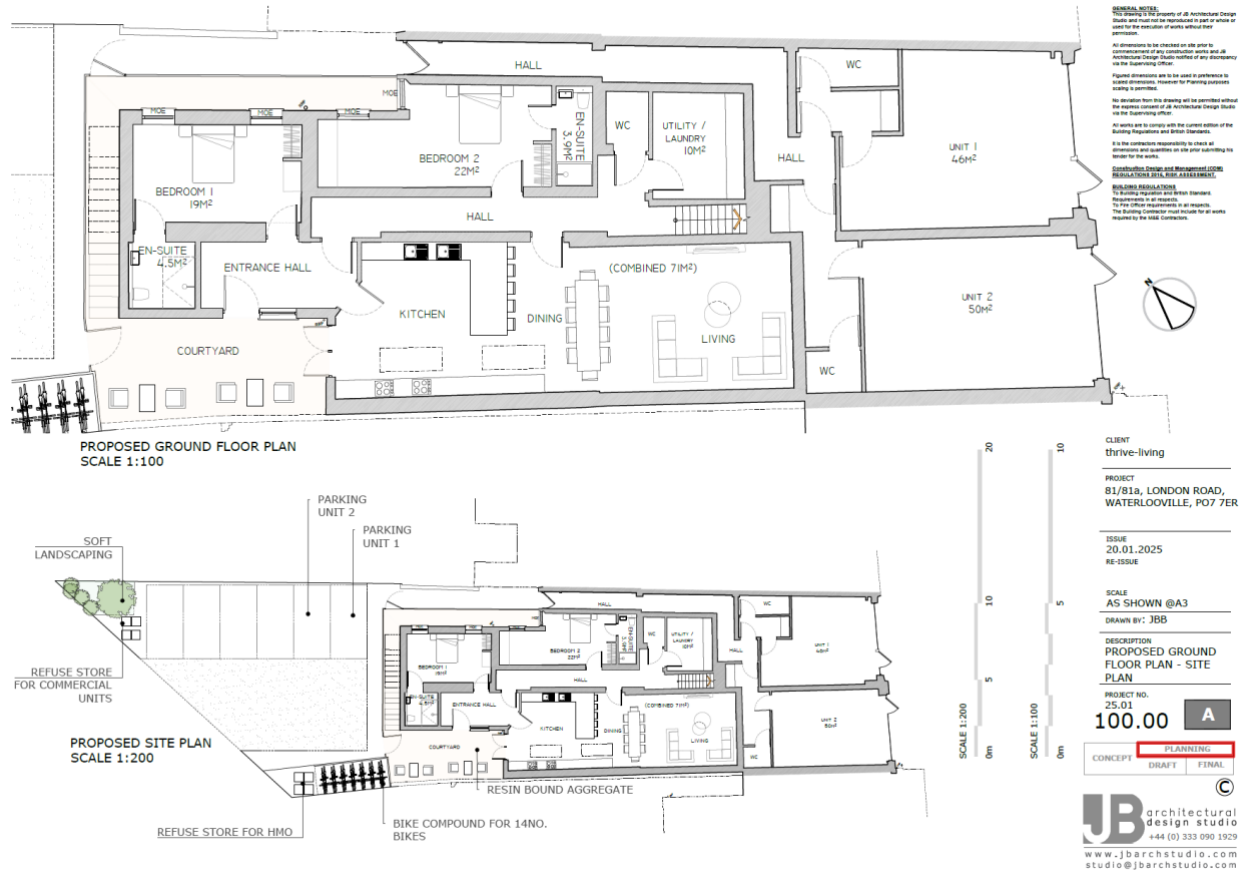
10.5 The measures taken by the client should ensure the future residents will not be adversely affected by the noise sources associated with the immediate area.

10.6 Whilst this report recommends an alternative ventilation system to be installed, this is not meant to ensure the bedrooms are solely reliant on such. There are facades on the proposed dwellings that will be able to be naturally ventilated for longer periods of the day time and night time via open windows due to screening from the noise sources. It is essential to strike a balance between noise, overheating & ventilation and this report offers such measures.



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SITE PLAN





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Table B-5 Examples of passive ventilation solutions providing enhanced sound insulation

Design option	Description and references	Approximate Level Difference (external free field level – internal reverberant level)	Improvement relative to a window providing a similar amount of ventilation
Standard opening windows	Window(s) open sufficiently to provide a ventilation free-area equivalent to 2% of the floor area. ^[42]	13 dB	0 dB
Open windows with sound attenuating balconies	Window(s) as above. Balconies may have a solid balustrade or be enclosed to a further degree (maintaining an open area for ventilation). Absorption may be provided to the balcony soffit or potentially to other surfaces. ^[49, 50, 51]	17 – 23 dB	4 – 10 dB
Attenuated or plenum windows	Dual windows (spaced by around 200mm) with staggered openings and absorptive linings to the cavity reveals. Various other configurations also possible in principle. ^[52, 53]	17 – 24 dB	4 – 11 dB
Attenuated vents/louvres	Ventilation openings with integral means of attenuating sound. Typically this may be acoustic louvres or acoustically lined ducts/plena. ^[54, 55]	17 – 29 dB	4 – 16 dB
Attenuated windows or vents/louvres with sound attenuating balconies	Combined use of balconies to provide screening and acoustically attenuated windows or vents. Refer to above for description of each element.	21 – 39 dB	8 – 26 dB



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APPENDIX

Continuous equivalent noise level, LAeq — The steady noise level (usually in dBA) which, over the period of time under consideration, contains the same amount of sound energy as the time varying noise.

L_{Amax} - The maximum value that the A-weighted sound pressure level reaches during a measurement period.

dB (A) — The A-weighted sound pressure level.

Decibel (dB) — A unit used for many acoustic qualities to indicate the level of sound with respect to a reference level.

A-weighting — A frequency weighting that relates to the response of the human ear.

Background noise level — Prevailing noise level in a specified environment measured in the absence of the noise being studied.

Habitable Room — A room used for sleeping or recreation/relaxation

D_{ne,w} Weighted element normalised level difference — A single-number quantity which characterises the airborne sound insulation of a small building elements.

EPU — Environmental Protection Unit

R_w Weighted sound reduction index — A single-number quantity which characterises the airborne sound insulation of a material or building element measured in the laboratory.

LA₁₀ — The A-weighted noise level exceeded for 10% of the measurement duration.

LA₉₀ - The A-weighted noise level exceeded for 90% of the measurement duration.

British Standards & associated documents:

Code of Practice: BS8233: 2014 - Sound Insulation and noise reduction for buildings.

World Health Organization (WHO) - Guidelines for Community Noise.

Pro PG — Planning & Noise, Residential Development — 2017



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ML 1

Time Period	LAeq	LAmx
(2025/09/16 09:54:02.00)	62.3	80.2
(2025/09/16 09:57:02.00)	53.7	67.9
(2025/09/16 10:00:02.00)	58.5	75.5
(2025/09/16 10:03:02.00)	50.9	64.3
(2025/09/16 10:06:02.00)	63.4	82.2
(2025/09/16 10:09:02.00)	55.9	71.2
(2025/09/16 10:12:02.00)	53.5	67.2
(2025/09/16 10:15:02.00)	55.3	70.6
(2025/09/16 10:18:02.00)	58.4	74.1
(2025/09/16 10:21:02.00)	53.3	74.6
(2025/09/16 10:24:02.00)	60.5	76.7
(2025/09/16 10:27:02.00)	59.6	76.4
(2025/09/16 10:30:02.00)	57.1	73.7
(2025/09/16 10:33:02.00)	59.4	78.3
(2025/09/16 10:36:02.00)	61.7	76.4
(2025/09/16 10:39:02.00)	55.3	74.5
(2025/09/16 10:42:02.00)	54.2	75.3
(2025/09/16 10:45:02.00)	55.5	70.4
(2025/09/16 10:48:02.00)	61.1	75.3
(2025/09/16 10:51:02.00)	59.3	74
(2025/09/16 10:54:02.00)	54.1	70.7
(2025/09/16 10:57:02.00)	59	76.4
(2025/09/16 11:00:02.00)	55.1	69.9
(2025/09/16 11:03:02.00)	60.6	75.6
(2025/09/16 11:06:02.00)	59	74.2
(2025/09/16 11:09:02.00)	59.5	78.5
(2025/09/16 11:12:02.00)	61.5	79.1
(2025/09/16 11:15:02.00)	57	70.9
(2025/09/16 11:18:02.00)	57.7	72.1
(2025/09/16 11:21:02.00)	62.1	77.2
(2025/09/16 11:24:02.00)	54	69.7
(2025/09/16 11:27:02.00)	51.3	65.3
(2025/09/16 11:30:02.00)	60.6	74.4
(2025/09/16 11:33:02.00)	58.2	73
(2025/09/16 11:36:02.00)	63.3	77.8
(2025/09/16 11:39:02.00)	51.1	66
(2025/09/16 11:42:02.00)	55.4	70.4
(2025/09/16 11:45:02.00)	58.1	73.4
(2025/09/16 11:48:02.00)	57.2	73.5
(2025/09/16 11:51:02.00)	66	85



(2025/09/16 11:54:02.00)	62.3	79.2
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(2025/09/16 12:00:02.00)	59.8	73.6
(2025/09/16 12:03:02.00)	57.9	78.5
(2025/09/16 12:06:02.00)	59	77.1
(2025/09/16 12:09:02.00)	60.4	78.2
(2025/09/16 12:12:02.00)	56.1	80.1
(2025/09/16 12:15:02.00)	53.4	68.7
(2025/09/16 12:18:02.00)	56.5	71.8
(2025/09/16 12:21:02.00)	60.3	73.8
(2025/09/16 12:24:02.00)	49.4	64.2
(2025/09/16 12:27:02.00)	57.6	76
(2025/09/16 12:30:02.00)	55.5	70.5
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(2025/09/16 12:39:02.00)	60.5	75.7
(2025/09/16 12:42:02.00)	58.9	76.6
(2025/09/16 12:45:02.00)	55.2	76.1
(2025/09/16 12:48:02.00)	58.1	76.9
(2025/09/16 12:51:02.00)	63.2	81.6
(2025/09/16 12:54:02.00)	58.3	82
(2025/09/16 12:57:02.00)	56.1	71.1
(2025/09/16 13:00:02.00)	57.4	72.2
(2025/09/16 13:03:02.00)	57.1	73.1
(2025/09/16 13:06:02.00)	58	72.6
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(2025/09/16 13:27:02.00)	56.8	75.4
(2025/09/16 13:30:02.00)	59.2	76.2
(2025/09/16 13:33:02.00)	57.7	75.5
(2025/09/16 13:36:03.00)	56.4	73.1
(2025/09/16 13:39:02.00)	59.8	78.3
(2025/09/16 13:42:02.00)	48	58.9
(2025/09/16 13:45:02.00)	56	71.4
(2025/09/16 13:48:02.00)	50	64.3
(2025/09/16 13:51:02.00)	65.1	84.2
(2025/09/16 13:54:02.00)	49.7	65.8
(2025/09/16 13:57:02.00)	49.4	62.7
(2025/09/16 14:00:02.00)	62.8	80.4
(2025/09/16 14:03:02.00)	57.2	73.2



(2025/09/16 14:06:02.00)	55.8	71.9
(2025/09/16 14:09:02.00)	49.2	59
(2025/09/16 14:12:02.00)	59.4	76.8
(2025/09/16 14:15:02.00)	52.3	62.3
(2025/09/16 14:18:02.00)	59.2	72.8
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(2025/09/16 14:27:02.00)	54.6	72.9
(2025/09/16 14:30:02.00)	57.1	72.7
(2025/09/16 14:33:02.00)	49	56.5
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(2025/09/16 14:39:02.00)	60.7	77
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(2025/09/16 14:54:02.00)	51.8	67.6
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(2025/09/16 15:06:02.00)	56.7	74.3
(2025/09/16 15:09:02.00)	56.7	71.5
(2025/09/16 15:12:02.00)	47.6	58.1
(2025/09/16 15:15:02.00)	50	63.4
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(2025/09/16 15:36:02.00)	58.5	73
(2025/09/16 15:39:02.00)	60.1	76.4
(2025/09/16 15:42:02.00)	50	61.3
(2025/09/16 15:45:02.00)	50	67
(2025/09/16 15:48:02.00)	61.4	79.3
(2025/09/16 15:51:02.00)	64.6	83.8
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(2025/09/16 16:06:02.00)	60.6	79.9
(2025/09/16 16:09:02.00)	52.5	71.6
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(2025/09/16 16:21:02.00)	55.4	73.2
(2025/09/16 16:24:02.00)	63.8	79.9
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(2025/09/16 16:30:02.00)	56.8	72.7
(2025/09/16 16:33:02.00)	56.9	73.6
(2025/09/16 16:36:02.00)	51.2	56.2
(2025/09/16 16:39:02.00)	60.3	77.6
(2025/09/16 16:42:02.00)	59.7	75.2
(2025/09/16 16:45:02.00)	51	62.5
(2025/09/16 16:48:02.00)	51.5	73.9
(2025/09/16 16:51:02.00)	51.1	59.6
(2025/09/16 16:54:02.00)	59.5	75.4
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(2025/09/16 17:00:02.00)	62.4	78.6
(2025/09/16 17:03:02.00)	58.1	74
(2025/09/16 17:06:02.00)	57.6	73.9
(2025/09/16 17:09:02.00)	52.7	64.2
(2025/09/16 17:12:02.00)	58	76.1
(2025/09/16 17:15:02.00)	57.7	74.8
(2025/09/16 17:18:02.00)	57.4	78.7
(2025/09/16 17:21:02.00)	61.4	74.7
(2025/09/16 17:24:02.00)	52.2	67.9
(2025/09/16 17:27:02.00)	62.4	78.2
(2025/09/16 17:30:02.00)	51.7	59.4
(2025/09/16 17:33:02.00)	58.1	72.7
(2025/09/16 17:36:02.00)	50.9	60.6
(2025/09/16 17:39:02.00)	56.6	71.9
(2025/09/16 17:42:02.00)	61.1	77.7
(2025/09/16 17:45:02.00)	51.8	61.1
(2025/09/16 17:48:02.00)	64.8	75.5
(2025/09/16 17:51:02.00)	49.8	60.1
(2025/09/16 17:54:02.00)	55.8	71.6
(2025/09/16 17:57:02.00)	62	80.7
(2025/09/16 18:00:02.00)	62.9	76.3
(2025/09/16 18:03:02.00)	51.5	67
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(2025/09/16 18:09:02.00)	51.6	65.4
(2025/09/16 18:12:02.00)	51	67.9
(2025/09/16 18:15:02.00)	51.1	63.5
(2025/09/16 18:18:02.00)	53.8	66.3
(2025/09/16 18:21:02.00)	58.4	75
(2025/09/16 18:24:02.00)	59.4	74.6
(2025/09/16 18:27:02.00)	51.2	64.7
(2025/09/16 18:30:02.00)	50.2	72



(2025/09/16 18:33:02.00)	50.5	60.6
(2025/09/16 18:36:02.00)	61.6	77.5
(2025/09/16 18:39:02.00)	51.4	62.6
(2025/09/16 18:42:02.00)	60.2	75.2
(2025/09/16 18:45:02.00)	49.6	65.8
(2025/09/16 18:48:02.00)	49.7	61.6
(2025/09/16 18:51:02.00)	63.9	79.6
(2025/09/16 18:54:02.00)	62.3	78.2
(2025/09/16 18:57:02.00)	53.5	71.6
(2025/09/16 19:00:02.00)	53.5	69.1
(2025/09/16 19:03:02.00)	60.7	76.6
(2025/09/16 19:06:02.00)	50.9	74.7
(2025/09/16 19:09:02.00)	48.6	59.2
(2025/09/16 19:12:02.00)	60	74.9
(2025/09/16 19:15:02.00)	49	62.6
(2025/09/16 19:18:02.00)	56.9	73.3
(2025/09/16 19:21:02.00)	48.3	57.2
(2025/09/16 19:24:02.00)	47.6	57.8
(2025/09/16 19:27:02.00)	50.7	64.6
(2025/09/16 19:30:02.00)	56.8	73.9
(2025/09/16 19:33:02.00)	58.3	73.7
(2025/09/16 19:36:02.00)	48.3	58
(2025/09/16 19:39:02.00)	48	55.1
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(2025/09/16 19:45:02.00)	60.9	78.1
(2025/09/16 19:48:02.00)	56.1	72.8
(2025/09/16 19:51:02.00)	50.1	62.7
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(2025/09/16 20:18:02.00)	57.6	76.8
(2025/09/16 20:21:02.00)	46.8	57
(2025/09/16 20:24:02.00)	45.9	51.9
(2025/09/16 20:27:02.00)	54.3	71.3
(2025/09/16 20:30:02.00)	46.6	52.2
(2025/09/16 20:33:02.00)	55	71.1
(2025/09/16 20:36:02.00)	53.6	70
(2025/09/16 20:39:02.00)	48	59.3
(2025/09/16 20:42:02.00)	46.6	56.4
(2025/09/16 20:45:02.00)	59.5	77.2



(2025/09/16 20:48:02.00)	59.8	79.8
(2025/09/16 20:51:02.00)	45.8	51.4
(2025/09/16 20:54:02.00)	55.8	73.4
(2025/09/16 20:57:02.00)	45	59.6
(2025/09/16 21:00:02.00)	47.2	54.7
(2025/09/16 21:03:02.00)	57.7	75
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(2025/09/16 21:12:02.00)	47.5	65.7
(2025/09/16 21:15:02.00)	55.3	72.5
(2025/09/16 21:18:02.00)	47.6	58.7
(2025/09/16 21:21:02.00)	45.8	57.9
(2025/09/16 21:24:02.00)	56	73.1
(2025/09/16 21:27:02.00)	46	59.7
(2025/09/16 21:30:02.00)	56.6	74.5
(2025/09/16 21:33:02.00)	45.7	49.1
(2025/09/16 21:36:02.00)	46.7	65
(2025/09/16 21:39:02.00)	56.3	71
(2025/09/16 21:42:02.00)	44.9	57.8
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(2025/09/16 21:57:02.00)	45.6	54.5
(2025/09/16 22:00:02.00)	45.4	55.7
(2025/09/16 22:03:02.00)	58.2	76.8
(2025/09/16 22:06:02.00)	46.4	53.5
(2025/09/16 22:09:02.00)	48.3	63.8
(2025/09/16 22:12:02.00)	58.1	75.1
(2025/09/16 22:15:02.00)	56.3	74.7
(2025/09/16 22:18:02.00)	45.6	57.5
(2025/09/16 22:21:02.00)	45.4	58.2
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(2025/09/16 22:30:02.00)	47.2	61
(2025/09/16 22:33:02.00)	57.6	76.6
(2025/09/16 22:36:02.00)	47.5	63.4
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(2025/09/16 22:42:02.00)	61	78.3
(2025/09/16 22:45:02.00)	45.9	55.7
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(2025/09/16 23:27:02.00)	40.5	48.5
(2025/09/16 23:30:02.00)	41.2	54.2
(2025/09/16 23:33:02.00)	48.5	63.2
(2025/09/16 23:36:02.00)	41.3	50.1
(2025/09/16 23:39:02.00)	37	48
(2025/09/16 23:42:02.00)	55.5	74.7
(2025/09/16 23:45:02.00)	43	58.4
(2025/09/16 23:48:02.00)	37.3	43.1
(2025/09/16 23:51:02.00)	39.5	47
(2025/09/16 23:54:02.00)	41.2	59.2
(2025/09/16 23:57:02.00)	41.7	51.3
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(2025/09/17 00:15:02.00)	45.8	67.9
(2025/09/17 00:18:02.00)	39.2	49.5
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(2025/09/17 00:24:02.00)	35.5	43.5
(2025/09/17 00:27:02.00)	37.8	48.9
(2025/09/17 00:30:02.00)	38.8	47
(2025/09/17 00:33:02.00)	35.6	45.2
(2025/09/17 00:36:02.00)	36.8	43.4
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(2025/09/17 00:42:02.00)	45	63.3
(2025/09/17 00:45:02.00)	39.1	50.6
(2025/09/17 00:48:02.00)	37.1	43.3
(2025/09/17 00:51:02.00)	37.7	45.4
(2025/09/17 00:54:02.00)	34.5	45.7
(2025/09/17 00:57:02.00)	48.3	64.9
(2025/09/17 01:00:02.00)	40.2	50.7
(2025/09/17 01:03:02.00)	33.7	53.2
(2025/09/17 01:06:02.00)	37.8	50.4
(2025/09/17 01:09:02.00)	34.6	41.9
(2025/09/17 01:12:02.00)	38.9	51.3



(2025/09/17 01:15:02.00)	37.8	51.3
(2025/09/17 01:18:02.00)	34.5	39.8
(2025/09/17 01:21:02.00)	35.4	43.5
(2025/09/17 01:24:02.00)	37.3	43.7
(2025/09/17 01:27:02.00)	34.9	42.4
(2025/09/17 01:30:02.00)	38.2	45.2
(2025/09/17 01:33:02.00)	38.8	48.4
(2025/09/17 01:36:02.00)	37.8	48.4
(2025/09/17 01:39:02.00)	36.5	46.3
(2025/09/17 01:42:02.00)	36	41.8
(2025/09/17 01:45:02.00)	34.7	40.2
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(2025/09/17 01:51:02.00)	35.3	43.7
(2025/09/17 01:54:02.00)	33.5	38.7
(2025/09/17 01:57:02.00)	38.3	46.4
(2025/09/17 02:00:02.00)	37.2	46.3
(2025/09/17 02:03:02.00)	36.9	44.2
(2025/09/17 02:06:02.00)	32.3	37.8
(2025/09/17 02:09:02.00)	35.9	41.9
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(2025/09/17 02:15:02.00)	35	42.8
(2025/09/17 02:18:02.00)	34.2	43.9
(2025/09/17 02:21:02.00)	34.3	40.6
(2025/09/17 02:24:02.00)	35	42.7
(2025/09/17 02:27:02.00)	34.5	50.8
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(2025/09/17 02:39:02.00)	35.9	47.2
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(2025/09/17 02:48:02.00)	34.8	41.4
(2025/09/17 02:51:02.00)	35.4	43.4
(2025/09/17 02:54:02.00)	33.7	41.7
(2025/09/17 02:57:02.00)	35.3	43
(2025/09/17 03:00:02.00)	35.8	43.3
(2025/09/17 03:03:02.00)	40	49.8
(2025/09/17 03:06:02.00)	34.3	40.8
(2025/09/17 03:09:02.00)	38.2	44.9
(2025/09/17 03:12:02.00)	35.1	55.7
(2025/09/17 03:15:02.00)	37.5	47
(2025/09/17 03:18:02.00)	38.1	43.1
(2025/09/17 03:21:02.00)	39.7	46
(2025/09/17 03:24:02.00)	35.3	43.3



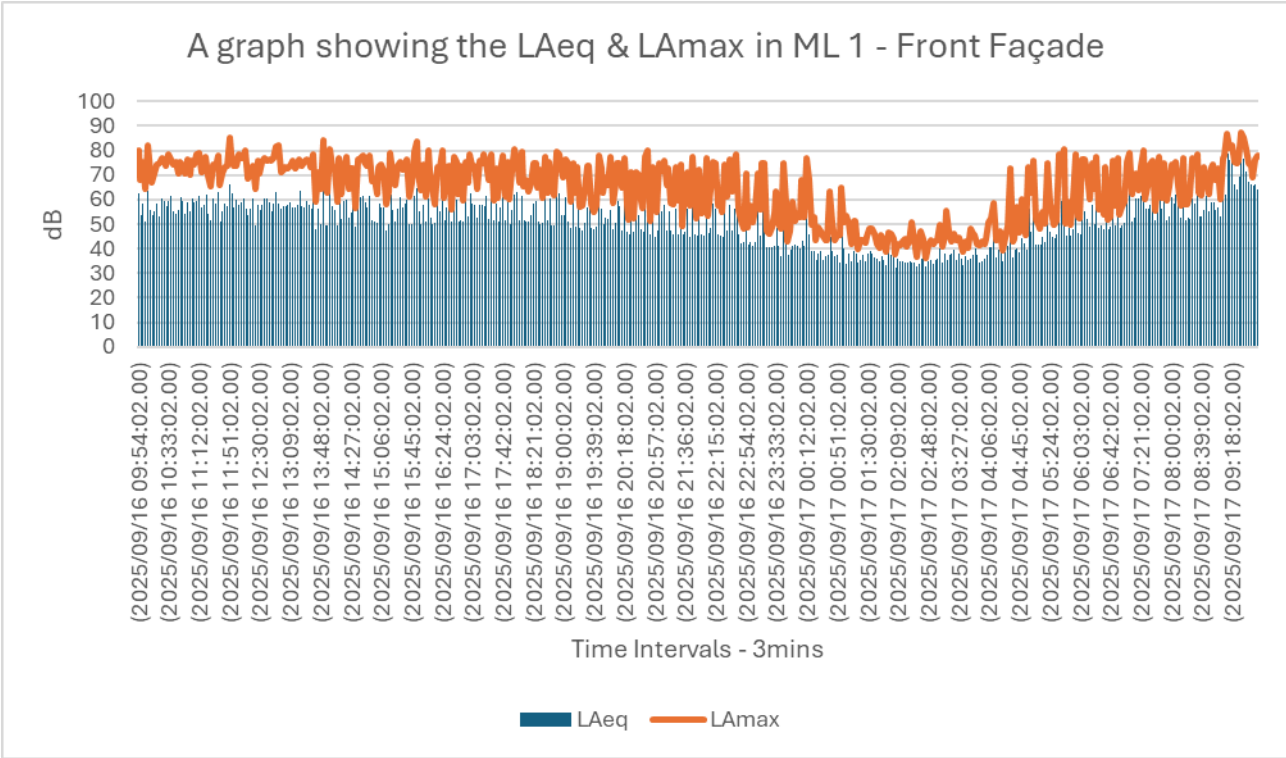
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(2025/09/17 03:39:02.00)	35.2	40.2
(2025/09/17 03:42:02.00)	36.1	48.1
(2025/09/17 03:45:02.00)	37.2	46.3
(2025/09/17 03:48:02.00)	40.2	45.8
(2025/09/17 03:51:02.00)	37.3	41.9
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(2025/09/17 03:57:02.00)	34.7	42.8
(2025/09/17 04:00:02.00)	35.7	42
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(2025/09/17 04:12:02.00)	44.3	58.6
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(2025/09/17 04:18:02.00)	39.3	44.5
(2025/09/17 04:21:02.00)	38.4	47
(2025/09/17 04:24:02.00)	35	39.3
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(2025/09/17 04:33:02.00)	55.3	72.6
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(2025/09/17 04:39:02.00)	39.6	44
(2025/09/17 04:42:02.00)	40.2	57.2
(2025/09/17 04:45:02.00)	38.5	46.6
(2025/09/17 04:48:02.00)	44	60.2
(2025/09/17 04:51:02.00)	42	52.4
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(2025/09/17 05:00:02.00)	47.1	62.8
(2025/09/17 05:03:02.00)	57.3	75.6
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(2025/09/17 05:24:02.00)	47	58.8
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(2025/09/17 05:33:02.00)	45.9	51.4
(2025/09/17 05:36:02.00)	62.6	78.4
(2025/09/17 05:39:02.00)	59.3	76.7



(2025/09/17 05:42:02.00)	62	80.3
(2025/09/17 05:45:02.00)	45.3	50.4
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(2025/09/17 05:54:02.00)	48.1	60.8
(2025/09/17 05:57:02.00)	63.7	78.5
(2025/09/17 06:00:02.00)	46.1	53
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(2025/09/17 06:15:02.00)	48.7	60.4
(2025/09/17 06:18:02.00)	57.8	74.7
(2025/09/17 06:21:02.00)	50.2	64.4
(2025/09/17 06:24:02.00)	63.2	77.4
(2025/09/17 06:27:02.00)	48.6	56.1
(2025/09/17 06:30:02.00)	49.3	59.1
(2025/09/17 06:33:02.00)	47.7	53.7
(2025/09/17 06:36:02.00)	56.7	73.2
(2025/09/17 06:39:02.00)	47.8	51.6
(2025/09/17 06:42:02.00)	49	52.8
(2025/09/17 06:45:02.00)	61.8	75.8
(2025/09/17 06:48:02.00)	49.7	57.3
(2025/09/17 06:51:02.00)	59.2	76.7
(2025/09/17 06:54:02.00)	48.3	53.7
(2025/09/17 06:57:02.00)	49.4	57.2
(2025/09/17 07:00:02.00)	50.3	59.1
(2025/09/17 07:03:02.00)	60.4	75.4
(2025/09/17 07:06:02.00)	64.8	79.2
(2025/09/17 07:09:02.00)	51.1	62
(2025/09/17 07:12:02.00)	52.7	70.2
(2025/09/17 07:15:02.00)	60.4	70.6
(2025/09/17 07:18:02.00)	60.4	63.9
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(2025/09/17 07:30:02.00)	56.1	65.2
(2025/09/17 07:33:02.00)	57.9	74.2
(2025/09/17 07:36:02.00)	60.8	75.7
(2025/09/17 07:39:02.00)	51.3	55.6
(2025/09/17 07:42:02.00)	55.1	68.2
(2025/09/17 07:45:02.00)	63.3	77.4
(2025/09/17 07:48:02.00)	56	60.5
(2025/09/17 07:51:02.00)	59.8	74.7



(2025/09/17 07:54:02.00)	51.7	59.9
(2025/09/17 07:57:02.00)	52.9	65.2
(2025/09/17 08:00:02.00)	61.1	74.4
(2025/09/17 08:03:02.00)	58.1	73.7
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(2025/09/17 08:09:02.00)	59.1	65.2
(2025/09/17 08:12:02.00)	52.5	57.5
(2025/09/17 08:15:02.00)	59.5	76.9
(2025/09/17 08:18:02.00)	51.5	58.1
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(2025/09/17 08:48:02.00)	55.2	62.5
(2025/09/17 08:51:02.00)	59	73
(2025/09/17 08:54:02.00)	58.7	74.3
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(2025/09/17 09:39:02.00)	67.2	74.6
(2025/09/17 09:42:02.00)	66.2	74
(2025/09/17 09:45:02.00)	65.8	69.2
(2025/09/17 09:48:02.00)	66.2	76.5
(2025/09/17 09:51:02.00)	64.2	77.8





ML 2

Time period	LAeq	LAmx
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(2025/09/17 10:51:02.00)	54.3	60.3
(2025/09/17 10:54:02.00)	53.7	62.4
(2025/09/17 10:57:02.00)	54.5	62.5
(2025/09/17 11:00:02.00)	54.9	60.4
(2025/09/17 11:03:02.00)	54	59.8
(2025/09/17 11:06:02.00)	54.8	62.5
(2025/09/17 11:09:02.00)	55.6	62
(2025/09/17 11:12:02.00)	55.9	67.2
(2025/09/17 11:15:02.00)	54.2	61.6
(2025/09/17 11:18:02.00)	54.7	61.6
(2025/09/17 11:21:02.00)	53.2	60.5
(2025/09/17 11:24:02.00)	54.7	60.6
(2025/09/17 11:27:02.00)	52.8	61.8
(2025/09/17 11:30:02.00)	53.6	60.2
(2025/09/17 11:33:02.00)	52.1	56.4
(2025/09/17 11:36:02.00)	54.8	60.3
(2025/09/17 11:39:02.00)	57.1	61.7
(2025/09/17 11:42:02.00)	56.1	60.7
(2025/09/17 11:45:02.00)	55.9	63.8
(2025/09/17 11:48:02.00)	56.5	68.8
(2025/09/17 11:51:02.00)	53.3	58.2
(2025/09/17 11:54:02.00)	55.3	61.2
(2025/09/17 11:57:02.00)	55.6	63.3
(2025/09/17 12:00:02.00)	54.9	62.4
(2025/09/17 12:03:02.00)	61.4	78
(2025/09/17 12:06:02.00)	51.9	57.1
(2025/09/17 12:09:02.00)	54	61.6
(2025/09/17 12:12:02.00)	52.4	56.6
(2025/09/17 12:15:02.00)	53.5	59.6
(2025/09/17 12:18:02.00)	53.5	62.9
(2025/09/17 12:21:02.00)	53.9	59.6
(2025/09/17 12:24:02.00)	56.5	64.2
(2025/09/17 12:27:02.00)	54.8	62.1
(2025/09/17 12:30:02.00)	59.8	76.4
(2025/09/17 12:33:02.00)	54.8	60.8
(2025/09/17 12:36:02.00)	56.6	63.1



(2025/09/17 12:39:02.00)	52.6	59.2
(2025/09/17 12:42:02.00)	52.3	59.8
(2025/09/17 12:45:02.00)	53.9	64.4
(2025/09/17 12:48:02.00)	54.4	63.6
(2025/09/17 12:51:02.00)	56	63.4
(2025/09/17 12:54:02.00)	54.4	59.8
(2025/09/17 12:57:02.00)	54.6	65.1
(2025/09/17 13:00:02.00)	54.6	59
(2025/09/17 13:03:02.00)	54.3	60.4
(2025/09/17 13:06:02.00)	53.8	58.8
(2025/09/17 13:09:02.00)	54.6	59.6
(2025/09/17 13:12:02.00)	54	60.8
(2025/09/17 13:15:02.00)	54.1	60.6
(2025/09/17 13:18:02.00)	65.6	82.9
(2025/09/17 13:21:02.00)	55.1	63.2
(2025/09/17 13:24:02.00)	55.4	64.7
(2025/09/17 13:27:02.00)	53.4	57.8
(2025/09/17 13:30:02.00)	53	57.7
(2025/09/17 13:33:02.00)	55	60
(2025/09/17 13:36:02.00)	54.4	59.9
(2025/09/17 13:39:02.00)	54.4	62.9
(2025/09/17 13:42:02.00)	54.3	58.6
(2025/09/17 13:45:02.00)	54	59.1
(2025/09/17 13:48:02.00)	54.2	59.5
(2025/09/17 13:51:02.00)	52.6	56.4
(2025/09/17 13:54:02.00)	52.7	62.3
(2025/09/17 13:57:02.00)	54.6	63.5
(2025/09/17 14:00:02.00)	54.8	63.4
(2025/09/17 14:03:02.00)	56.4	65.3
(2025/09/17 14:06:02.00)	55.4	63.1
(2025/09/17 14:09:02.00)	52.5	63.1
(2025/09/17 14:12:02.00)	53.4	60.6
(2025/09/17 14:15:02.00)	54.3	62.3
(2025/09/17 14:18:02.00)	54.3	62
(2025/09/17 14:21:02.00)	54.5	58.7
(2025/09/17 14:24:02.00)	54	58.8
(2025/09/17 14:27:02.00)	54.5	59.1
(2025/09/17 14:30:02.00)	53.8	57.4
(2025/09/17 14:33:02.00)	54	57.8
(2025/09/17 14:36:02.00)	54.1	60.4
(2025/09/17 14:39:02.00)	52.7	57
(2025/09/17 14:42:02.00)	53.9	58.9
(2025/09/17 14:45:02.00)	53.5	61.5
(2025/09/17 14:48:02.00)	53.6	57.2



(2025/09/17 14:51:02.00)	53.8	57.5
(2025/09/17 14:54:02.00)	53.8	59.6
(2025/09/17 14:57:02.00)	55.2	63.2
(2025/09/17 15:00:02.00)	53.4	62
(2025/09/17 15:03:02.00)	53.8	66.8
(2025/09/17 15:06:02.00)	54.6	62.9
(2025/09/17 15:09:02.00)	53.5	62.3
(2025/09/17 15:12:02.00)	53	66.2
(2025/09/17 15:15:02.00)	54.2	61.1
(2025/09/17 15:18:02.00)	53.8	62.9
(2025/09/17 15:21:02.00)	54.1	59.3
(2025/09/17 15:24:02.00)	56.6	70.2
(2025/09/17 15:27:02.00)	56.9	68.5
(2025/09/17 15:30:02.00)	54.3	58.6
(2025/09/17 15:33:02.00)	54.8	60.8
(2025/09/17 15:36:02.00)	55.2	66.8
(2025/09/17 15:39:02.00)	55.6	62.3
(2025/09/17 15:42:02.00)	55.2	61.2
(2025/09/17 15:45:02.00)	53.7	58.3
(2025/09/17 15:48:02.00)	54.1	63
(2025/09/17 15:51:02.00)	52.5	56.6
(2025/09/17 15:54:02.00)	53.1	56
(2025/09/17 15:57:02.00)	52.7	61.1
(2025/09/17 16:00:02.00)	54	60.7
(2025/09/17 16:03:02.00)	54.8	62
(2025/09/17 16:06:02.00)	54.5	67.3
(2025/09/17 16:09:02.00)	54.8	67.7
(2025/09/17 16:12:02.00)	53.6	60.4
(2025/09/17 16:15:02.00)	53.1	59.5
(2025/09/17 16:18:02.00)	53.8	63
(2025/09/17 16:21:02.00)	53.8	60.1
(2025/09/17 16:24:02.00)	54.5	67.9
(2025/09/17 16:27:02.00)	55.4	72.3
(2025/09/17 16:30:02.00)	54.4	59.2
(2025/09/17 16:33:02.00)	53.6	57.9
(2025/09/17 16:36:02.00)	53.1	59
(2025/09/17 16:39:02.00)	53.8	59
(2025/09/17 16:42:02.00)	53.7	57.5
(2025/09/17 16:45:02.00)	54	62.7
(2025/09/17 16:48:02.00)	53	59
(2025/09/17 16:51:02.00)	53.5	59.1
(2025/09/17 16:54:02.00)	54.1	58.5
(2025/09/17 16:57:02.00)	55.1	61.9
(2025/09/17 17:00:02.00)	54.5	68.2
(2025/09/17 17:03:02.00)	54	63.1



(2025/09/17 17:06:02.00)	54.9	59
(2025/09/17 17:09:02.00)	52.6	56.4
(2025/09/17 17:12:02.00)	55.1	71
(2025/09/17 17:15:02.00)	54.6	62.9
(2025/09/17 17:18:02.00)	55.1	62.9
(2025/09/17 17:21:02.00)	55.2	60.4
(2025/09/17 17:24:02.00)	55.8	68.6
(2025/09/17 17:27:02.00)	56.8	62
(2025/09/17 17:30:02.00)	55.8	69.2
(2025/09/17 17:33:02.00)	54.1	65.2
(2025/09/17 17:36:02.00)	53.7	63
(2025/09/17 17:39:02.00)	53.5	58.1
(2025/09/17 17:42:02.00)	55.7	75.1
(2025/09/17 17:45:02.00)	53.8	57.5
(2025/09/17 17:48:02.00)	55	59.2
(2025/09/17 17:51:02.00)	55.3	62.1
(2025/09/17 17:54:02.00)	55.6	65.7
(2025/09/17 17:57:02.00)	56.6	63.4
(2025/09/17 18:00:02.00)	53.8	58.9
(2025/09/17 18:03:02.00)	54.5	64.7
(2025/09/17 18:06:02.00)	52.8	61.2
(2025/09/17 18:09:02.00)	53.7	62
(2025/09/17 18:12:02.00)	54.5	59
(2025/09/17 18:15:02.00)	53.9	59.3
(2025/09/17 18:18:02.00)	54.2	58.3
(2025/09/17 18:21:02.00)	54.4	60.1
(2025/09/17 18:24:02.00)	54.4	63.7
(2025/09/17 18:27:02.00)	54.8	61
(2025/09/17 18:30:02.00)	53	58.4
(2025/09/17 18:33:02.00)	54.6	61.1
(2025/09/17 18:36:02.00)	53.6	66.2
(2025/09/17 18:39:02.00)	53.4	65
(2025/09/17 18:42:02.00)	51.7	57
(2025/09/17 18:45:02.00)	52	56.7
(2025/09/17 18:48:02.00)	52.9	57.9
(2025/09/17 18:51:02.00)	53.5	62.5
(2025/09/17 18:54:02.00)	53.6	59.8
(2025/09/17 18:57:02.00)	53.8	62.8
(2025/09/17 19:00:02.00)	51.2	59.1
(2025/09/17 19:03:02.00)	53.8	66.1
(2025/09/17 19:06:02.00)	52	56.2
(2025/09/17 19:09:02.00)	55.1	71.8
(2025/09/17 19:12:02.00)	53.1	57.7
(2025/09/17 19:15:02.00)	52.4	63



(2025/09/17 19:18:02.00)	53.6	58.7
(2025/09/17 19:21:02.00)	52.1	58.2
(2025/09/17 19:24:02.00)	52.6	57.3
(2025/09/17 19:27:02.00)	51.8	57.2
(2025/09/17 19:30:02.00)	52.5	58
(2025/09/17 19:33:02.00)	52.2	55.9
(2025/09/17 19:36:02.00)	51.2	55.8
(2025/09/17 19:39:02.00)	54	69.9
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(2025/09/17 19:45:02.00)	53	57.6
(2025/09/17 19:48:02.00)	54.6	70.1
(2025/09/17 19:51:02.00)	52.1	58.1
(2025/09/17 19:54:02.00)	51.5	55.4
(2025/09/17 19:57:02.00)	53.1	63.1
(2025/09/17 20:00:02.00)	52.1	55.8
(2025/09/17 20:03:02.00)	52	56.4
(2025/09/17 20:06:02.00)	53	60.2
(2025/09/17 20:09:02.00)	51.2	57.3
(2025/09/17 20:12:02.00)	51.4	58.1
(2025/09/17 20:15:02.00)	52.4	58.1
(2025/09/17 20:18:02.00)	52.7	57.9
(2025/09/17 20:21:02.00)	52	58.3
(2025/09/17 20:24:02.00)	51.7	55.7
(2025/09/17 20:27:02.00)	52.8	62.4
(2025/09/17 20:30:02.00)	51.6	65.2
(2025/09/17 20:33:02.00)	51.9	63
(2025/09/17 20:36:02.00)	51.1	58.3
(2025/09/17 20:39:02.00)	53	65.7
(2025/09/17 20:42:02.00)	51.7	59.1
(2025/09/17 20:45:02.00)	51.5	63
(2025/09/17 20:48:02.00)	53.8	69.1
(2025/09/17 20:51:02.00)	51.2	58.9
(2025/09/17 20:54:02.00)	51.4	59.3
(2025/09/17 20:57:02.00)	53.3	63.8
(2025/09/17 21:00:02.00)	55.1	68.2
(2025/09/17 21:03:02.00)	52.1	64
(2025/09/17 21:06:02.00)	52.2	65.7
(2025/09/17 21:09:02.00)	53.3	65.4
(2025/09/17 21:12:02.00)	52.2	61.2
(2025/09/17 21:15:02.00)	52	63.8
(2025/09/17 21:18:02.00)	52.8	65.5
(2025/09/17 21:21:02.00)	52.4	65
(2025/09/17 21:24:02.00)	52	65.1
(2025/09/17 21:27:02.00)	52.8	68.1
(2025/09/17 21:30:02.00)	52.6	66.8



(2025/09/17 21:33:02.00)	57.6	76.6
(2025/09/17 21:36:02.00)	52.7	66.2
(2025/09/17 21:39:02.00)	52.4	65.3
(2025/09/17 21:42:02.00)	52.7	65.1
(2025/09/17 21:45:02.00)	52.6	67.6
(2025/09/17 21:48:02.00)	52.8	66.1
(2025/09/17 21:51:02.00)	53.7	64.7
(2025/09/17 21:54:02.00)	53.3	70.1
(2025/09/17 21:57:02.00)	51.7	63.4
(2025/09/17 22:00:02.00)	52.3	63.1
(2025/09/17 22:03:02.00)	52.4	66.4
(2025/09/17 22:06:02.00)	51.7	65.4
(2025/09/17 22:09:02.00)	51.8	64
(2025/09/17 22:12:02.00)	53.6	68.6
(2025/09/17 22:15:02.00)	51.6	64.9
(2025/09/17 22:18:02.00)	51.8	66.2
(2025/09/17 22:21:02.00)	52	69.6
(2025/09/17 22:24:02.00)	50.2	64.3
(2025/09/17 22:27:02.00)	50.2	63.3
(2025/09/17 22:30:02.00)	51.3	60.6
(2025/09/17 22:33:02.00)	49.9	61.3
(2025/09/17 22:36:02.00)	50.9	61
(2025/09/17 22:39:02.00)	50.9	65.9
(2025/09/17 22:42:02.00)	50.4	60.8
(2025/09/17 22:45:02.00)	49.4	62.4
(2025/09/17 22:48:02.00)	49.6	64.1
(2025/09/17 22:51:02.00)	49.6	64.7
(2025/09/17 22:54:02.00)	50	64.1
(2025/09/17 22:57:02.00)	49.8	60.4
(2025/09/17 23:00:02.00)	49.7	63.6
(2025/09/17 23:03:02.00)	49.7	60.8
(2025/09/17 23:06:02.00)	51.3	63.2
(2025/09/17 23:09:02.00)	49.2	62.1
(2025/09/17 23:12:02.00)	49.9	63.1
(2025/09/17 23:15:02.00)	50.3	65.3
(2025/09/17 23:18:02.00)	49.7	68.1
(2025/09/17 23:21:02.00)	50	65.4
(2025/09/17 23:24:02.00)	49.2	60.6
(2025/09/17 23:27:02.00)	48.4	66.3
(2025/09/17 23:30:02.00)	49.2	63.3
(2025/09/17 23:33:02.00)	48.2	65.3
(2025/09/17 23:36:02.00)	50.7	65.6
(2025/09/17 23:39:02.00)	49.9	65.1
(2025/09/17 23:42:02.00)	49	64.4



(2025/09/17 23:45:02.00)	48.4	61.8
(2025/09/17 23:48:02.00)	47.6	61.7
(2025/09/17 23:51:02.00)	48.1	63.4
(2025/09/17 23:54:02.00)	49.5	62.9
(2025/09/17 23:57:02.00)	48.6	67.5
(2025/09/18 00:00:02.00)	48.2	64.8
(2025/09/18 00:03:02.00)	48	60.7
(2025/09/18 00:06:02.00)	47.9	60.4
(2025/09/18 00:09:02.00)	46.9	57.1
(2025/09/18 00:12:02.00)	48.4	61.5
(2025/09/18 00:15:02.00)	48	63.3
(2025/09/18 00:18:02.00)	46.9	60.9
(2025/09/18 00:21:02.00)	46.5	56.6
(2025/09/18 00:24:02.00)	47.1	61.7
(2025/09/18 00:27:02.00)	45.6	56.8
(2025/09/18 00:30:02.00)	46.2	53.4
(2025/09/18 00:33:02.00)	46	55.6
(2025/09/18 00:36:02.00)	46.7	57.2
(2025/09/18 00:39:02.00)	46.9	59.7
(2025/09/18 00:42:02.00)	46.3	59.6
(2025/09/18 00:45:02.00)	46.7	63.9
(2025/09/18 00:48:02.00)	46.9	59
(2025/09/18 00:51:02.00)	46.4	57.6
(2025/09/18 00:54:02.00)	45.1	55.3
(2025/09/18 00:57:02.00)	46.7	58.9
(2025/09/18 01:00:02.00)	47.1	63.4
(2025/09/18 01:03:02.00)	46.1	62.3
(2025/09/18 01:06:02.00)	47.9	64.4
(2025/09/18 01:09:02.00)	46	57.9
(2025/09/18 01:12:02.00)	46.6	63
(2025/09/18 01:15:02.00)	47	60.6
(2025/09/18 01:18:02.00)	49	63.4
(2025/09/18 01:21:02.00)	47.7	63.5
(2025/09/18 01:24:02.00)	48.6	61.5
(2025/09/18 01:27:02.00)	50.1	65.9
(2025/09/18 01:30:02.00)	48.8	61.8
(2025/09/18 01:33:02.00)	48.7	64.9
(2025/09/18 01:36:02.00)	49.1	62.5
(2025/09/18 01:39:02.00)	51.3	68.3
(2025/09/18 01:42:02.00)	51.1	67.7
(2025/09/18 01:45:02.00)	50.2	62.6
(2025/09/18 01:48:02.00)	48.8	66.8
(2025/09/18 01:51:02.00)	51.2	64.9
(2025/09/18 01:54:02.00)	47.9	63.4
(2025/09/18 01:57:02.00)	47.9	63.2



(2025/09/18 02:00:02.00)	49.8	65.2
(2025/09/18 02:03:02.00)	48.5	66.3
(2025/09/18 02:06:02.00)	47.5	63.4
(2025/09/18 02:09:02.00)	50.1	64.6
(2025/09/18 02:12:02.00)	50.2	64.2
(2025/09/18 02:15:02.00)	48.9	67.3
(2025/09/18 02:18:02.00)	48.8	65.8
(2025/09/18 02:21:02.00)	47.7	65.1
(2025/09/18 02:24:02.00)	49.3	64.2
(2025/09/18 02:27:02.00)	50	65.1
(2025/09/18 02:30:02.00)	51.1	67
(2025/09/18 02:33:02.00)	47.9	63
(2025/09/18 02:36:02.00)	50.3	67.9
(2025/09/18 02:39:02.00)	48.4	63.8
(2025/09/18 02:42:02.00)	48.3	65.9
(2025/09/18 02:45:02.00)	47.3	63
(2025/09/18 02:48:02.00)	47.2	62.6
(2025/09/18 02:51:02.00)	49.9	64
(2025/09/18 02:54:02.00)	46.4	60.3
(2025/09/18 02:57:02.00)	46.7	59.9
(2025/09/18 03:00:02.00)	45.8	59.3
(2025/09/18 03:03:02.00)	46.6	62.5
(2025/09/18 03:06:02.00)	46.7	63.1
(2025/09/18 03:09:02.00)	46.7	60.5
(2025/09/18 03:12:02.00)	46.8	64.1
(2025/09/18 03:15:02.00)	46	64.4
(2025/09/18 03:18:02.00)	48.6	63.9
(2025/09/18 03:21:02.00)	46.4	60.6
(2025/09/18 03:24:02.00)	46.4	61.2
(2025/09/18 03:27:02.00)	46.6	60.5
(2025/09/18 03:30:02.00)	47.2	60.5
(2025/09/18 03:33:02.00)	46.3	60.9
(2025/09/18 03:36:02.00)	45.8	60.3
(2025/09/18 03:39:02.00)	47	62.1
(2025/09/18 03:42:02.00)	46.3	58.3
(2025/09/18 03:45:02.00)	46.8	63.2
(2025/09/18 03:48:02.00)	47.3	60.4
(2025/09/18 03:51:02.00)	47.1	59.6
(2025/09/18 03:54:02.00)	47.4	59.3
(2025/09/18 03:57:02.00)	45.7	59.7
(2025/09/18 04:00:02.00)	45.9	58.3
(2025/09/18 04:03:02.00)	46.8	59.3
(2025/09/18 04:06:02.00)	46.4	65
(2025/09/18 04:09:02.00)	47.3	57.1



(2025/09/18 04:12:02.00)	45.8	64.2
(2025/09/18 04:15:02.00)	47.2	65.8
(2025/09/18 04:18:02.00)	46.2	60.4
(2025/09/18 04:21:02.00)	46.9	61
(2025/09/18 04:24:02.00)	47.9	64.7
(2025/09/18 04:27:02.00)	47.8	60.8
(2025/09/18 04:30:02.00)	48.4	60.1
(2025/09/18 04:33:02.00)	48	59.9
(2025/09/18 04:36:02.00)	48.2	63.1
(2025/09/18 04:39:02.00)	47.7	59.9
(2025/09/18 04:42:02.00)	47.6	61.9
(2025/09/18 04:45:02.00)	48.5	60.3
(2025/09/18 04:48:02.00)	47.5	66.3
(2025/09/18 04:51:02.00)	47.3	61.2
(2025/09/18 04:54:02.00)	46.7	61.8
(2025/09/18 04:57:02.00)	48.7	60.1
(2025/09/18 05:00:02.00)	49.5	58.7
(2025/09/18 05:03:02.00)	48.7	57.9
(2025/09/18 05:06:02.00)	49.2	63.1
(2025/09/18 05:09:02.00)	49.5	62.7
(2025/09/18 05:12:02.00)	49.2	63.7
(2025/09/18 05:15:02.00)	49.3	60.7
(2025/09/18 05:18:02.00)	49.8	66.5
(2025/09/18 05:21:02.00)	49	58.8
(2025/09/18 05:24:02.00)	49.1	62.9
(2025/09/18 05:27:02.00)	49.7	59.7
(2025/09/18 05:30:02.00)	49.5	59.2
(2025/09/18 05:33:02.00)	48.6	60.5
(2025/09/18 05:36:02.00)	48	62.4
(2025/09/18 05:39:02.00)	49.3	59.9
(2025/09/18 05:42:02.00)	48.9	61.8
(2025/09/18 05:45:02.00)	48.2	62
(2025/09/18 05:48:02.00)	50.8	60.9
(2025/09/18 05:51:02.00)	50.1	62.9
(2025/09/18 05:54:02.00)	49.1	60.4
(2025/09/18 05:57:02.00)	49.1	59.7
(2025/09/18 06:00:02.00)	50.6	62.1
(2025/09/18 06:03:02.00)	50	62.2
(2025/09/18 06:06:02.00)	49.5	57.5
(2025/09/18 06:09:02.00)	51.1	58.8
(2025/09/18 06:12:02.00)	50	58.8
(2025/09/18 06:15:02.00)	49.8	60.5
(2025/09/18 06:18:02.00)	50.2	65.1
(2025/09/18 06:21:02.00)	49.7	58.7
(2025/09/18 06:24:02.00)	49.6	59.2



(2025/09/18 06:27:02.00)	51.8	68.6
(2025/09/18 06:30:02.00)	50.2	67.1
(2025/09/18 06:33:02.00)	50.7	65.5
(2025/09/18 06:36:02.00)	49.8	58.9
(2025/09/18 06:39:02.00)	50.7	65
(2025/09/18 06:42:02.00)	51.8	57.9
(2025/09/18 06:45:02.00)	52.1	64.8
(2025/09/18 06:48:02.00)	55.7	74.8
(2025/09/18 06:51:02.00)	51.8	58.8
(2025/09/18 06:54:02.00)	51.3	60.9
(2025/09/18 06:57:02.00)	50.8	56.6
(2025/09/18 07:00:02.00)	51.1	57.2
(2025/09/18 07:03:02.00)	52	59.1
(2025/09/18 07:06:02.00)	51.7	56.5
(2025/09/18 07:09:02.00)	53.2	64.5
(2025/09/18 07:12:02.00)	61.7	80.3
(2025/09/18 07:15:02.00)	53.3	61.9
(2025/09/18 07:18:02.00)	52.6	61.1
(2025/09/18 07:21:02.00)	52.4	59.3
(2025/09/18 07:24:02.00)	52.2	57.1
(2025/09/18 07:27:02.00)	53	62
(2025/09/18 07:30:02.00)	52.7	60.5
(2025/09/18 07:33:02.00)	52.5	58.4
(2025/09/18 07:36:02.00)	53.9	60.1
(2025/09/18 07:39:02.00)	52.9	66.2
(2025/09/18 07:42:02.00)	53.2	59.9
(2025/09/18 07:45:02.00)	53	60.5
(2025/09/18 07:48:02.00)	52.3	58.6
(2025/09/18 07:51:02.00)	52.7	58.4
(2025/09/18 07:54:02.00)	53.5	59.3
(2025/09/18 07:57:02.00)	53.3	60.7
(2025/09/18 08:00:02.00)	52.9	59.2
(2025/09/18 08:03:02.00)	53.4	60.6
(2025/09/18 08:06:02.00)	54.3	63.6
(2025/09/18 08:09:02.00)	53.5	61
(2025/09/18 08:12:02.00)	53	58.9
(2025/09/18 08:15:02.00)	53.6	59.6
(2025/09/18 08:18:02.00)	55	64.3
(2025/09/18 08:21:02.00)	53.5	58.9
(2025/09/18 08:24:02.00)	53.8	62.1
(2025/09/18 08:27:02.00)	53.6	61.2
(2025/09/18 08:30:02.00)	52.9	62.5
(2025/09/18 08:33:02.00)	53.9	61.1
(2025/09/18 08:36:02.00)	52.9	57.1



(2025/09/18 08:39:02.00)	53.3	66.4
(2025/09/18 08:42:02.00)	54.2	63.3
(2025/09/18 08:45:02.00)	59	79.3
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(2025/09/18 08:57:02.00)	55.7	69.4
(2025/09/18 09:00:02.00)	54	62.6
(2025/09/18 09:03:02.00)	55	68.8
(2025/09/18 09:06:02.00)	54.9	61.4
(2025/09/18 09:09:02.00)	54.1	62.5
(2025/09/18 09:12:02.00)	54.2	59.4
(2025/09/18 09:15:02.00)	54.6	59.7
(2025/09/18 09:18:02.00)	53.4	58
(2025/09/18 09:21:02.00)	53.6	59.6
(2025/09/18 09:24:02.00)	54.2	65.6
(2025/09/18 09:27:02.00)	53.3	58.4
(2025/09/18 09:30:02.00)	53.3	59.6
(2025/09/18 09:33:02.00)	53.4	58.2
(2025/09/18 09:36:02.00)	53.1	57.5
(2025/09/18 09:39:02.00)	53.6	59.9
(2025/09/18 09:42:02.00)	53.5	59
(2025/09/18 09:45:02.00)	52.2	59.1
(2025/09/18 09:48:02.00)	53.8	60.1
(2025/09/18 09:51:02.00)	54	60.1
(2025/09/18 09:54:02.00)	53.1	57.3
(2025/09/18 09:57:02.00)	53	62.3
(2025/09/18 10:00:02.00)	52.5	58.6
(2025/09/18 10:03:02.00)	52.1	62.9
(2025/09/18 10:06:02.00)	51.9	57.1
(2025/09/18 10:09:02.00)	51.3	61.4
(2025/09/18 10:12:02.00)	51.6	58.2
(2025/09/18 10:15:02.00)	52.1	61.3
(2025/09/18 10:18:02.00)	52.8	58.7
(2025/09/18 10:21:02.00)	52.2	57.1
(2025/09/18 10:24:02.00)	52.5	59.6
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(2025/09/18 10:33:02.00)	53.9	61.7
(2025/09/18 10:36:02.00)	52.3	58
(2025/09/18 10:39:02.00)	52.6	65.5
(2025/09/18 10:42:02.00)	52.8	59
(2025/09/18 10:45:02.00)	51.2	56.9

