PLANNING NOISE ASSESSMENT

43 HIGH ST, SHOREHAM-BY-SEA

OSG ARCHITECTURE LIMITED

SEPTEMBER 2023

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43 HIGH ST, SHOREHAM-BY-SEA

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Client:	**Jason Chandler** OSG Architecture Limited Unit 2A Capital House 4 Jubilee Way Faversham ME13 8GD
Report by:	**Anderson Acoustics Limited** 12 Mill Street London SE1 2AY www.andersonacoustics.co.uk T: 0203 176 6933
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Author	**Grady Cook** Assistant Consultant BSc (Hons)	**12 September 2023**
Reviewed	**Pau Santamaria** Principal Consultant MSc BEng MIOA	**12 September 2023**
Approved	**Pau Santamaria** Principal Consultant MSc BEng MIOA	**12 September 2023**

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1 INTRODUCTION

Anderson Acoustics Ltd have been commissioned by OSG Architecture Limited to undertake a review of the architectural design package and provide a planning noise assessment to support planning application ref. AWDM/0753/23 for the *refurbishment the ground floor of the building; Ground floor extension to the rear providing a single bedroom apartment; extension and refurbishment works to the first floor creating a 2-bed maisonette on first and second floors; and rear terraces at first and second floor.*

A previous planning application was submitted to Adur and Worthing District Council (AWDC) council, which included 4 studio flats over 1st and 2nd floors; however, the design has now evolved, and a new planning permission is being sought, which requires an updated planning noise assessment (a previous one had been produced by Hilson Moran, ref. 28398-RP-AC-001, dated November 2019).

This report therefore presents the results of an updated environmental noise survey undertaken on site and provides guidance on appropriate façade elements required to ensure that an acceptable internal noise environment is achieved within the proposed dwellings. The report also sets out sound insulation targets for the separating wall and floor between the existing commercial unit at ground floor level and the adjacent apartments at ground and 1st floor levels, respectively.

Environmental noise criteria relevant to the assessment have been presented and discussed in **Section 2** of this report.

A brief description of the site and the proposed development are given in **Section 3.**

Section 4 provides a summary of the environmental noise survey undertaken on site.

Section 5 presents an assessment of the external building fabric and provides performance specifications for glazing, ventilation and external wall constructions; such that appropriate internal ambient noise levels can be achieved within habitable spaces.

Section 6 sets out sound insulation targets for the separating wall and floor between the existing ground floor commercial unit and the adjacent apartments at ground and first floors, respectively.

The report is summarised in **Section 7.**

This report is technical in nature and, as such, a summary of noise units and acoustic terminology can be found here for reference.

2 NOISE GUIDANCE

Adur and Worthing District Council's Local Plan (2023) refers to Sussex Local Authorities' 'Planning Noise Advice Document: Sussex', dated September 2021, which provides advice for developers and consultants making planning applications where noise will need to be considered. Table 2.1 below presents the relevant standards listed in the Annex 1 of the document.

Table 2.1: Relevant standards taken from 'Planning Noise Advice Document: Sussex'

Development Category	Type of development	Relevant standards	Recommended noise thresholds
Residential development	New houses, extensions, flats, and house conversions that require planning permission	BS8233:2014 WHO (2009) ProPG (2017) Building Regulations 2010 Approved Document E.	1 Apply the indoor ambient noise levels in Tables 4 and 6 of BS8233. 2 Apply the WHO 2009 Community Noise guidelines for outdoor amenity areas.
Industrial and commercial sites and plant	Factories, industrial premises, fixed installations, or sources of an industrial nature in commercial premises. This includes kennels and other forms of animal breeding and boarding establishments.	BS 4142:2014 + A1:2019 BS8233:2014 WHO (2009) WHO (2018) DMRB (2020) EMQ (2018)	1 The rating level of plant, where applicable, shall be no greater than the existing background sound levels when measured in accordance with BS 4142. 2 Where background sound levels are low, discussions shall be had with the LPA to agree an objective. 3 Apply the indoor ambient noise levels in Tables 4 and 6 of BS 8233. 4 Apply the WHO 2009 Community Noise guidelines for outdoor amenity areas.

The document also refers to the Governments' overarching planning principles with respect to noise, including Noise Policy Statement for England [1]; National Planning Practice Framework [2]; and Planning Practice Guidance – Noise [3], which are summarised in Appendix B. Broadly speaking, key to the successful assessment and implementation of the scheme will be the application of guidance contained within BS 8233 and WHO, which are summarised below.

2.1 British Standard 8233

British Standard BS 8233: 2014: Sound insulation and noise reduction for buildings – Code of practice [4] provides guideline values for internal noise levels within a number of building types including residential dwellings.

In general, for steady external noise sources, it is desirable that internal ambient noise levels do not exceed the guideline values in Table 2.2:

Table 2.2: British Standard 8233 Indoor Noise Levels

Activity	Location	Daytime	Night-time
Resting	Living room	35 dB $L_{Aeq, 16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq, 16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16hour}$	30 dB $L_{Aeq, 8hour}$

Notes: Daytime assessment period – 07:00 to 23:00 hrs
Night-time assessment period – 23:00 to 07:00 hrs

In respect of external noise levels, the guidance in BS 8233:2014 suggests that "it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments". BS 8233:2014 however acknowledges that "these guideline values are not achievable in all circumstances where development might be desirable", and that "…a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited".

BS 8233:2014 suggests that proposed developments within noisy environments should be designed to ensure that the recommended internal design standards are achieved, and that noise levels in external amenity areas are designed to effectively control and reduce noise levels; although it acknowledges that in certain circumstances meeting the external design recommendations may not be feasible, or necessary, especially where the provision of such spaces is desirable for other technical, planning or policy reasons.

2.2 World Health Organisation Guidelines

The following guideline values for community ambient noise levels in specific environments are presented in the World Health Organization (WHO) Guidelines for Community Noise [5], shown in Table 2.3 below.

Table 2.3: WHO Guideline Noise Values

Specific Environment	Critical Health Effect(s)	dB $L_{Aeq,T}$	Time Base hours	dB $L_{Amax,F}$
Dwelling indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outdoor amenity	Annoyance, daytime and evening	50-55	16	-

The 45 dB $L_{Amax,\,F}$ criterion applies to "single sound events" within bedrooms at night. This guideline is generally interpreted as the value that individual noise events should not normally exceed more than 10 times a night.

3 SITE DESCRIPTION

3.1 Existing Site

The currently vacant development is a three-storey building comprising commercial at ground floor level and a two-storey maisonette apartment at first and second floor level, located at 43 High Street, Shoreham-by-Sea. The site location and surrounding area can be seen in Figure 3.1.

Figure 3.1: Site location (red) and noise monitoring positions (MP1 and MP2)



The high street is located north of the development and is mostly comprised of commercial units, such as pubs, restaurants and general shops. Here the noise climate was found to be largely dominated by road traffic, which is busy and generally constant through day and night.

South of the development is generally made up of other residential dwellings, parking and the Crown & Anchor pub located approximately 35m to the south-east. The noise climate is mostly dominated by plant noise associated with Tosca Ristorante and though nothing was observed whilst on-site, the area is expected to be affected by vehicle movements related to loading and unloading supplies to the commercial premises in the area.

3.2 Proposed Development

The proposed development consists of the refurbishment the ground floor of the building; comprising a *Ground floor extension to the rear providing a single bedroom apartment; extension and refurbishment works to the first floor creating a 2-bed maisonette on first and second floors; and rear terraces at first and second floor*. Proposed plans and elevations can be found in Figures 3.2 to 3.6 below, produced by OSG Architecture.

Figure 3.2: Proposed elevations and internal layouts



Figure 3.3: Proposed sections



Figure 3.4: Proposed ground floor plan



Figure 3.5: Proposed first floor plan

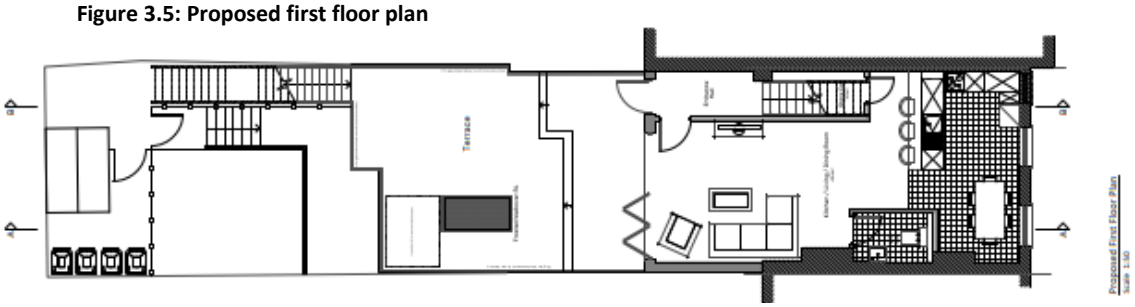
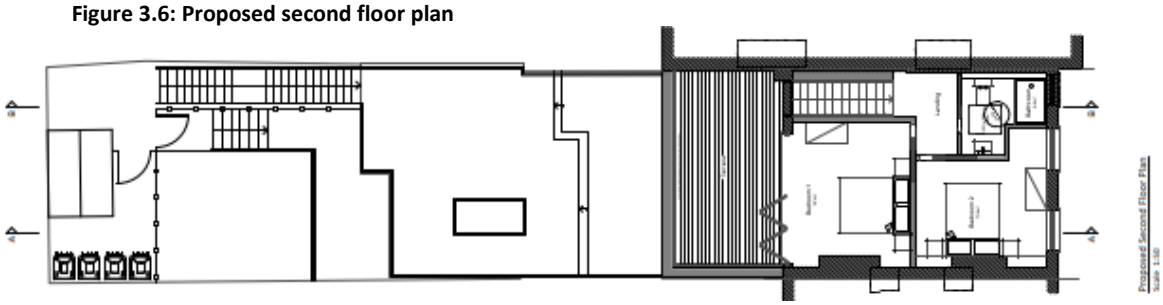


Figure 3.6: Proposed second floor plan



4 NOISE SURVEY

4.1 General

The prevailing noise conditions in the area were determined by a detailed environmental noise survey undertaken at the site. This section details the methodology and results of the unattended noise survey, undertaken between Wednesday 23rd and Thursday 31st August 2023.

4.2 Methodology

The unattended survey was undertaken over a 7-day period at the locations shown in Figure 3.1. Continuous unattended noise measurements were obtained in two locations: first floor level to the front (MP1), overlooking the high street, approximately 4m above ground level; and second floor level to the rear (MP2), overlooking the terraced area, at an approximate height of 5m above ground level. Both measurement locations utilised Rion NL-52 sound level meters.

During the survey, the sound level meters were stored inside weatherproof casing and connected to external microphones fitted with weatherproof windshields, which were attached to telescopic poles protruding 1m from the existing windows (therefore measuring under "façade" conditions). Consecutive 5-minute 1/3rd octave band $L_{Aeq,T}$, $L_{A90,T}$ and $L_{Amax,F}$ were obtained using the 'F' time weighting.

The equipment was calibrated before and after the survey using a Rion NC-74 acoustic calibrator to generate a calibration level of 94.0 dB at 1 kHz. No significant calibration drift was observed. Equipment details are fully summarised in Table 4.1, with calibration certificates available upon request.

4.3 Equipment details

Table 4-1: Inventory of Measurement Equipment

Position	Item	Make and Model	Serial Number	Calibration	
				Certificate number	Expiry Date
MP1 (Front)	Sound Level Meter	Rion NL-52	00732147	UCRT22/1046	12/01/2024
MP2 (Rear)	Sound Level Meter	Rion NL-52	00743139	TCRT23/1336	28/04/2025
N/a	Calibrator	Rion NC-74	34625646	1501872-1	24/02/2023

4.4 Weather Conditions

Weather conditions during the survey period have been obtained from an internet source www.timeanddate.com (weather station in Shoreham-by-Sea), which indicates that the weather during the survey period is considered to be generally acceptable and not to have significantly affected the noise measurements.

4.5 Survey Results

The results of the unattended survey are summarised in Tables 4.2 and 4.3 below. Time histories of the unattended survey are presented in graphical form in Figures A1 and A2 in Appendix A.

Please note that MP1 had an issue with the internal batteries powering the equipment, which involved the equipment stopping monitoring between Friday evening and Tuesday morning. A fresh battery was provided then, which then enabled another 2 days of further noise monitoring to capture a slightly longer period.

Table 4-2: Unattended noise results summary from MP1 - Front (façade levels)

Monitoring Period	Daytime		Night-time		
	$L_{Aeq,16hr}$	Typical $L_{A90,T}$	$L_{Aeq,8hr}$	Typical $L_{A90,T}$	$L_{Amax,}$ 5 minute [1]
Wed 23/08/2023	66[2]	58	62	34	83
Thu 24/08/2023	70	59	61	35	81
Fri 25/08/2023	-	-	-	-	-
Sat 26/08/2023	-	-	-	-	-
Sun 27/08/2023	-	-	-	-	-
Mon 28/08/2023	-	-	-	-	-
Tue 29/08/2023	70	59	64	35	82
Wed 30/09/2023	68	59	63	34	84
Summary	**69[3]**	**58[4]**	**63[3]**	**35[4]**	**83[3]**

Note [1]: The $L_{AMax,F}$ levels presented are representative of the value not exceeded more than 10 times each night.
[2]: Data obtained during the daytime was not a full 16-hour measurement (start time 15:05h), so this has been excluded from the summary averages.
[3]: Logarithmic average.
[4]: Arithmetic average.

Table 4-3: Unattended noise results summary from MP2 – Rear (façade levels)

Monitoring Period	Daytime		Night-time		
	$L_{Aeq,16hr}$	Typical $L_{A90,T}$	$L_{Aeq,8hr}$	Typical $L_{A90,T}$	$L_{Amax,}$ 5 minute [1]
Wed 23/08/2023	56[2]	56	41	29	61
Thu 24/08/2023	56	55	41	28	60
Fri 25/08/2023	56	55	47	34	65
Sat 26/08/2023	56	56	46	27	66
Sun 27/08/2023	55	54	42	27	71
Mon 28/08/2023	55	55	44	28	71
Tue 29/08/2023	55[2]	54	-	-	-
Summary	**56[3]**	**55[4]**	**44[3]**	**29[4]**	**68[3]**

Note [1]: The $L_{AMax,F}$ levels presented are representative of the value not exceeded more than 10 times each night.
[2]: Data obtained during the daytime was not a full 16-hour measurement (start time 15:20h), so this has been excluded from the summary averages.
[3]: Logarithmic average.
[4]: Arithmetic average.

5 INTERNAL AMBIENT NOISE LEVEL GUIDELINES

In order to achieve the internal noise guidelines set out in BS 8233 and WHO, it is necessary to estimate internal noise levels with windows closed using standard glazing and ventilation products.

Calculations have been undertaken in accordance with BS EN 12354-3:2017 [6]. The area of glazing and method of ventilation in any particular room, along with the room's size and acoustic conditions, affect the degree of reduction in noise transmission from outside to inside. The dimensions of these building envelope elements have been based on the architectural drawings provided by the client.

Assumptions

Room Reverberation

In order to calculate the internal ambient noise levels within habitable rooms, our analysis has assumed typical reverberation times in furnished bedrooms and living rooms, which have been based on a flat reverberation time of 0.5 seconds across the frequency spectrum between 125 Hz and 4kHz.

External Wall Construction

It is understood that the external walls of the existing building are made of a brick and block cavity construction. We would expect such a wall to achieve the following minimum sound reduction performance, based on experience of similar wall constructions:

Table 5-1: Estimated sound reduction index (dB) of the assumed cavity masonry external wall construction

125	250	500	1k	2k	4k	R_w / R_w + C_{tr}
41	45	45	54	58	58	52 / 48

Roof Construction

We have assumed that a traditional lightweight roof is in place in the existing 2nd floor, likely consisting of concrete tiles, trussed rafters, thermal insulation between rafters and a dense suspended plasterboard ceiling installed to the underside of the sloping rafters. With regard to the ground floor rear extension, we expect the new roof to be of a concrete construction.

We would expect these constructions to achieve the following sound reduction performance, based on experience of similar roof constructions:

Table 5-2: Sound reduction performance (dB) of the roof at 2nd floor level

Roof Type	125	250	500	1k	2k	4k	R_w / R_w + C_{tr}
Existing 2nd floor (lightweight)	27	37	43	48	52	52	46 / 39
New ground floor concrete (e.g., min. 100mm RC + insulation)	39	40	49	53	57	57	52 / 47

Ventilation

We have assumed that any of the following ventilation systems could be used to provide whole-dwelling ventilation to all habitable rooms:

- Background ventilators and intermittent extract fans (System 1 in Approved Document F [7]), or
- A continuous mechanical extract MEV system (System 3 in ADF).

In any of the above instances, inlet air is provided via trickle ventilators.

Our calculations have therefore allowed for 2 trickle ventilators in the living rooms and 1 trickle ventilator in each bedroom, with a minimum required normalised level difference shown in Table 5.3. Should the number of required trickle vents be different to achieve compliance with Building Regulations ADF, we would need to update our detailed calculations.

Table 5-3: Element normalized level difference $D_{n,e}$ (dB) of trickle ventilators (should ADF System 1 or 3 be used)

Plot	Description	125	250	500	1k	2k	4k	$D_{n,e,w}$ / $D_{n,e,w}$ + C_{tr}
1	Standard acoustically rated through-the-frame trickle ventilator	30	33	38	37	36	36	38 / 36
2	High performance through-the-frame acoustic trickle ventilator	34	40	44	46	48	52	46 / 43

For unit ventilators, the measurements are based on BS EN ISO 10140-2:2010 *Acoustics. Laboratory measurement of sound insulation of building elements. Measurement of airborne sound insulation* and rated in accordance with BS EN ISO 717-1:2013 *"Acoustics – Rating of sound insulation in buildings and of building elements"*.

Windows should still be openable for purge or rapid ventilation, as requested by ADF. Internal noise level guidelines are generally not applicable under these exceptional events, which should only occur occasionally (i.e. to remove odour from painting, cooking, etc.).

Glazing

Based upon the drawings and elevations provided by OSG Architecture, detailed calculations have been undertaken in accordance with BS 12354-3 to determine the minimum sound reduction performance required for the glazed elements of the façade. The resulting worse-case performance requirements are presented in Table 5.3.

Table 5-3: Sound reduction performance (dB) for the glazed elements of the façade

Plot	Glazing example	125	250	500	1k	2k	4k	R_w / R_w + C_{tr}
1 (GF)	4mm / 12mm / 6mm	23	22	27	38	40	41	35 / 29
2 (1F-2F)	8mm / 20mm / 12.8mm acoustic laminate	24	34	44	49	43	58	44 / 37

The sound insulation requirements of the glazing example provided above are applicable to the window system as a whole, including frames, mullions and panels.

Please note that the octave band sound reduction (R) performance shown above for the glazing is an indicative example, minor shortfalls in certain frequency bands could still achieve acceptable internal ambient noise levels in rooms, using alternative systems, where applicable.

The proposed glazing and ventilation façade elements will ensure that appropriate BS 8233 internal noise levels are achieved. Detailed calculations incorporating these proposals are shown in Appendix A.

6 NOISE LEVELS IN EXTERNAL AMENITY AREAS

The results of the external noise levels measured at MP2 towards the rear of the building (in the existing 2nd floor window overlooking the river Adur, 1m from the façade) showed daytime $L_{Aeq,16hr}$ levels range between 55 and 56 dB, as shown in Table 4-3. External noise levels at such position were generally dominated by a combination of existing plant serving the adjacent Tosca restaurant during part of the day, distant road traffic noise from the high street and birdsong from fauna near the River Adur.

The proposed garden at ground floor level will be screened from the abovementioned plant and road traffic noise, therefore noise levels in such external amenity area will certainly be below the recommended BS 8233 guidance level of 55 dB $L_{Aeq,16hr}$. With regard to the proposed external amenity areas at 1st and 2nd floor levels, these will incorporate a solid 1.1m high glass balustrade around them, which will provide acoustic screening from surrounding plant serving adjacent businesses to ensure external ambient noise levels are certainly below the recommended BS 8233 guidance level of 55 dB $L_{Aeq,16hr}$. As such, the proposed garden and terrace areas are expected to provide a good level of amenity in outdoor living areas of the scheme.

7 SEPARATING CONSTRUCTIONS BETWEEN COMMERCIAL AND RESIDENTIAL USES

7.1 Sound Insulation Design Criteria

7.1.1 Building Regulations Approved Document E (ADE)

Specific performance standards or constructions separating non-residential and residential accommodation are not detailed within ADE, which states that a higher standard of sound insulation may be required depending on the noise generated in the non-domestic areas. In this instance, there will be one commercial unit at ground floor, which was historically a betting shop, but it may change in the future, although limited to daytime hours operation (e.g., within 0700-2300).

As a minimum, we recommend targeting a minimum 50 dB $D_{nT,w} + C_{tr}$ to any separating walls and/or floors between commercial/ancillary spaces and adjacent residential use.

In addition to providing the future occupants of the residential units sufficient levels of acoustic protection from the noise generating activities in the adjacent non-residential areas, satisfying the above requirements will ensure that the levels of airborne noise transfer from the residential areas to the non-residential areas of the development are also appropriately controlled.

The design of the separating wall and floor constructions between the commercial unit at ground floor and the adjacent apartments at ground and first floors, respectively, will be developed during the detailed design stages of the scheme.

8 SUMMARY

Anderson Acoustics has produced a noise assessment to support a planning application at 43 High Street, Shoreham-by-Sea, for the *ground floor extension to the rear providing a single bedroom apartment; extension and refurbishment works to the first floor creating a 2-bed maisonette on first and second floors.*

Noise levels were recorded over a 5-day period to establish the level of environmental noise incident on the proposed development. The measurements along with site observations indicated that the noise climate to the north of the site was dominated by local road traffic on the High Street. The noise climate to south proved to be lower, dominated by plant noise sources serving adjacent businesses.

The measured noise levels were used to carry out calculations in accordance with BS EN 12354-3 to estimate internal ambient noise levels within dwellings. The noise levels calculated should not exceed the BS 8233 guidelines if the following measures are adhered to:

- The external building fabric of the scheme should include glazing capable of achieving a minimum sound reduction performance of 29 dB $R_w + C_{tr}$ in habitable rooms of Plot 1 (new ground floor apartment) and 37 dB $R_w + C_{tr}$ in habitable rooms of Plot 2 (1F-2F maisonette).
- Ventilation based on an ADF System 1 or 3 will likely be provided, which will require acoustic trickle ventilators to be fitted to all bedrooms and living rooms, achieving a minimum element normalised level difference ranging between 36 dB $D_{n,e,w} + C_{tr}$ (Plot 1) and 43 dB $D_{n,e,w} + C_{tr}$ (Plot 2).

The proposed garden and terrace areas are expected to provide a good level of amenity in outdoor living areas of the scheme.

The separating wall and floor constructions between the existing ground floor commercial unit and the apartments at ground and first floor should achieve a minimum sound insulation performance of 50 dB $D_{nT,w} + C_{tr}$.

The design measures recommended within this report should ensure the development is compliant with the relevant Council and ADE criteria.

9 REFERENCES

1 Department for Environment, Food and Rural Affairs. Noise Policy Statement for England (NPSE). March 2010.

2 Ministry of Housing Communities and Local Government. National Planning Policy Framework. 2021.

3 Ministry of Housing Communities and Local Government. Planning Practice Guidance, Noise (PPG-N). July 2019.

4 British Standards Institution. Sound Insulation and Noise Reduction for Buildings – Code of Practice. BS 8233: 2014.

5 World Health Organisation - Guidelines for Community Noise. 2000.

6 British Standards Institution. Estimation of acoustic performance in buildings from the performance of elements. BS 12354-3:2017.

7 Building Regulations 1991: Approved Document F 2010, Ventilation.

8 Building Regulations 2010: Approved Document E 2010, Resistance to the passage of sound.

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APPENDIX A

FIGURES

Figure A1: Measurement Position 1 – Northern Façade

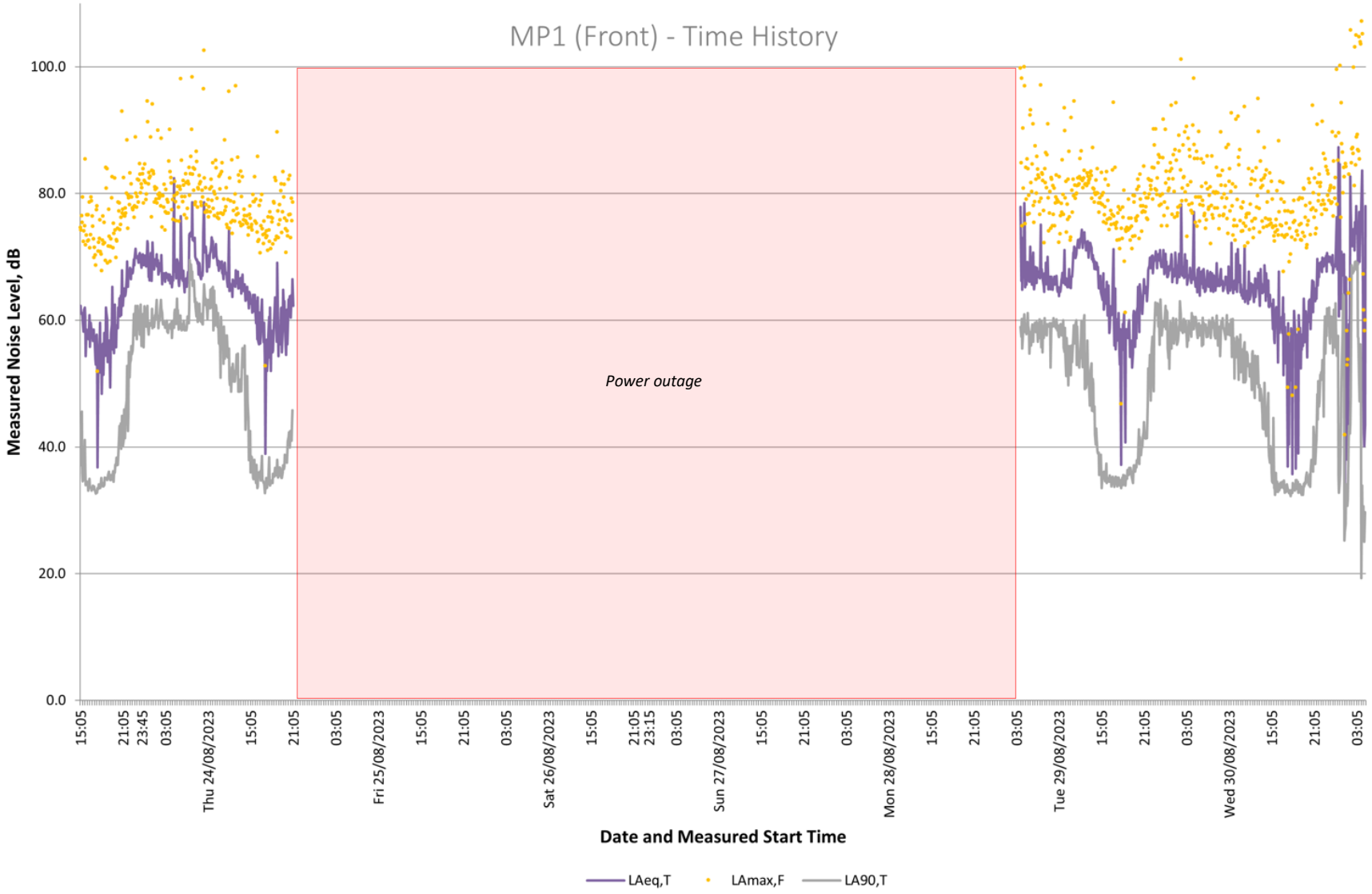
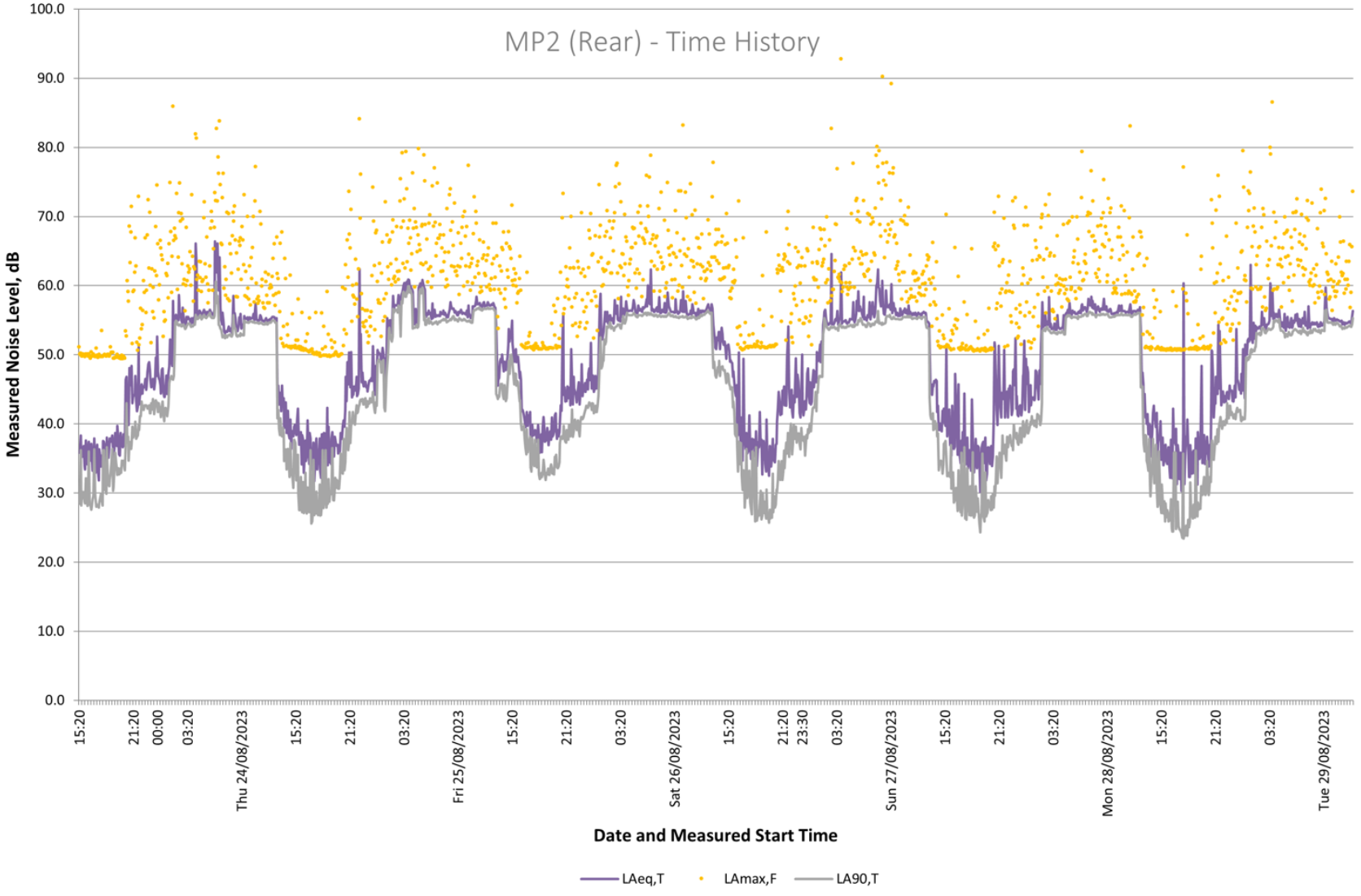


Figure A2: Measurement Position 2 – Southern Façade



APPENDIX B

NOISE UNITS, POLICY AND CRITERIA

Relevant Guidance

Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) [1] was published on 15 March 2010. It sets out the long-term vision of the Government's noise policy, which is to promote good health and a good quality of life through the management of noise within the context of sustainable development.

The NPSE sets out the following aims:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of 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."

The NPSE describes a number of effect levels that may be used to define effects in the context of noise policy, as follows:

- **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 the 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

Planning Practice Guidance – Noise

In March 2014 further guidance on interpreting the effect levels was published on the Government's Planning Practice Guidance – Noise. This planning practice guidance was updated and expanded on the 22nd of July 2019. This includes a table that summarises noise exposure hierarchy, noting this is based on the likely average response of a population. This table is presented in Table B.1.

This guidance has been prepared to assist in the planning permission process relating to noise. Recommendations within this guidance has been used to determine the potential impact of the proposed development. The following is stated within this guidance; *"Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). When preparing plans, or taking decisions about new development, there may also be opportunities to make improvements to the acoustic environment. Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset."*

When considering the impact of noise as part of any planning concerns it is important to consider the context and wider characteristics of a development proposal, its likely users and its surrounding, as these can have an important effect on whether noise is likely to pose a concern. It is noted that noise, where justified, may be used to override other planning concerns.

Considerations should be made in line with Noise Policy Statement for England.

Observed effect levels may indicate the potential impact of a proposed development, however, this does not mean that the effects can only be defined in terms of a single value of noise exposure. In some circumstances adverse effects are defined in terms of a combination of more than one factor such as noise exposure, the number of occurrences of the noise in a given time period, the duration of the noise and the time of day the noise occurs.

Table B.1: Noise exposure hierarchy and effect levels

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 behavior, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in 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 behavior, 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 behavior, 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 behavior, 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

National Planning Policy Framework

The National Planning Policy Framework (NPPF) was first published on 27 March 2012, revised in July 2018 and last updated in July 2021.

The NPPF sets out the Government's planning policies for England and how these are expected to be applied; with a main focus on economic, environmental and social planning policies. Clause 185 states that:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life…"