Acoustic Report

OCTOBER 2024

JAMESTOWN ROAD

RBA ACOUSTICS

JAMESTOWN ROAD, CAMDEN

Stage 2 Acoustic Report

Reference: 13097.RP01.AAR.2
Prepared: 8 November 2024
Revision Number: 3

Regal London
4 – 5 Coleridge Gardens
London
NW6 3QH

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Revision	Comment	Date	Prepared By	Approved By
0	First issue of report.	19 September 2024	Patrick Spiers	Torben Andersen
1	Minor amendments based on client feedback.	23 September 2024	Patrick Spiers	Torben Andersen
2	Further amendments to site description based on updates from client.	23 October 2024	Patrick Spiers	Torben Andersen
3	Updated to reflect plant screen for roof areas	8 November 2024	Torben Andersen	Robert Barlow

Terms of contract:

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The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting-out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and will need to be developed into full working drawings by the lead designer to incorporate all other design disciplines.

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1. INTRODUCTION

The development of 33-35 Jamestown Road, London, NW1 7DB and 211 Arlington Road, London, NW1 7HD is proposed.

This Stage 2 Acoustic report has been prepared by RBA Acoustics on behalf of 4C – Jamestown Road Ltd in support of an application for full planning permission for:

> *Demolition of existing buildings and structures to facilitate redevelopment comprising a Purpose Built Student Accommodation (Sui Generis) block over the basement, ground, plus six storeys and seventh-floor plant room with flexible commercial (Class E) on the ground floor and a residential (Class C3) block over the ground plus five storeys, each block has two private courtyards with hard and soft landscaping, cycle parking, and associated works.*

It should be read alongside the full suite of reports that have been prepared and submitted, particularly the Design and Access Statement, prepared Morris + Company and the Planning Statement, prepared by DP9.

This report provides a summary of the Stage 2 acoustic design for the site, including initial acoustic advice for environmental noise limits, external building fabric (overheating and indicative glazing), and an assessment of noise from the adjacent licensed premises and subsequent Agent of Change (AoC) implications. A summary of communications with the Local Authority is included – design targets, survey requirements (including vibration) and noise breakout from the adjacent licensed premises.

This report occasionally employs technical acoustic terminology. A glossary of acoustic terminology is presented in Appendix A.

2. SITE DESCRIPTION

The site is located at the junction of Jamestown Road, and Arlington Road, approximately 200m northwest of Camden Town Underground station, London. Jamestown Road runs along the northern border of the site, with Arlington Road bounding it to the east.

The site is surrounded by a mix of commercial and residential properties, with hotel and office spaces located across Jamestown and Arlington Roads to the north and east. Adjacent to the site, on the corner of Jamestown and Arlington Roads, is a licensed premises, currently known as Cushla. Residential properties are located to the west of site, with the rear gardens of residential properties along Arlington Road and Gloucester Cresent bounding the southern border of the property. An architecture and design studio, Studio Moren, is also located adjacent to site to the southwest.

The noise climate was noted to be dominated by road-traffic movements along Jamestown Road and Arlington Road, in addition to other anonymous urban sounds. Noise from patrons and activities within Cushla are generally dominated by noise from plant associated with the premises located on the first-floor roof. This plant is clearly distinguishable when running and dominates the nearby acoustic environment when present.

3. SITE PROPOSALS

The proposed development is understood to consist of the following:

- 2No. purpose-built student accommodation (PBSA) blocks – providing approximately 187No. rooms.
- 2No. residential blocks – providing approximately 27No. new homes
- 1No. flexible commercial unit (Class E) – approximately 318m^2 gross internal area

A site plan showing the proposed location and layout of the new development is included in Figure 1 of Appendix E.

4. CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS

The table provided in Appendix B outlines the items identified by RBA Acoustics as potentially hazardous with regards the specific recommendations made within this report.

5. LOCAL AUTHORITY LIAISON

To ensure that the proposed development meets the requirements of London Borough of Camden (LBC), the following were discussed and agreed in communications with LBC representatives:

- **Design Targets** – in pursuit of achieving BREEAM Excellent (with aspirations for Outstanding) at the Proposed Development, advice will be provided based on BS8233, WHO advice and Approved Document O.

- **Sources of Vibration** – given the closest source of vibration is the London Underground Northern Line (approximately 55-metres northwest of the Proposed Development), and that existing residential properties are located directly above this path, no adverse impacts from vibration are expected at the Proposed Development, and thus no detailed vibration survey is necessary.

- **Survey Methodology** – as described below in Section 6

- **Breakout Noise from Cushla** – upholding the principles of AoC was noted and agreed as of high importance in protecting the operations of adjacent licensed premises, currently known as Cushla. The premises, located on the corner of Jamestown and Arlington Roads, lies adjacent to adjacent to proposed new blocks. Cushla holds regular karaoke, live music and cabaret nights, and, as such, has the potential to adversely impact the Proposed Development if not mitigated against effectively. As such, design targets for internal noise levels from music noise breakout within the premises were agreed to be NR20 within bedrooms and NR25 within living areas – more stringent criteria than The Camden draft Local Plan January 2024, but deemed sensible to ensure normal operations can continue.

6. ENVIRONMENTAL NOISE SURVEY

Two separate surveys have been undertaken to assess the acoustic environment of the site – an initial survey was undertaken to assess the general acoustic climate of the site, and a subsequent survey undertaken to specifically assess noise breakout from Cushla, the adjacent licensed premises. The two surveys are described in the following sections

6.1 General Acoustic Climate Survey

An initial survey was undertaken to assess the general acoustic climate of the site, excluding specific measurements of noise breakout from Cushla.

6.1.1 Survey Methodology

Monitoring of the prevailing background noise was undertaken over the following period:

- 13:00 Thursday 4 April to 15:00 Tuesday 9 April 2024.

As the survey was unattended it is not possible to comment with certainty regarding meteorological conditions throughout the entire survey period. However, based on observations during the site visits and weather reports for the area, conditions were generally considered suitable for obtaining representative noise measurements, being predominantly dry with little wind.

Measurements were made of the L_{A90}, L_{Amax} and L_{Aeq} noise levels and subsequently analysed over sample periods of 15 minutes and 5 minutes.

6.1.2 Measurement Positions

To determine the existing noise climate around the site measurements were undertaken at the following locations:

Table 1 - Initial Survey Measurement Positions

Measurement Positions	Name / Address	Description
MP1	Jamestown Road	The microphone was set up on an A-frame outside of a first-floor window overlooking Jamestown Road, 1.5m from the façade and approximately 4.5m from the ground. Measurements at this position are considered façade-reflected.
MP2	Arlington Road	The microphone was set up on an A-frame outside of a first-floor window overlooking Arlington Road, 1.5m from the façade and approximately 4.5m from the ground. Measurements at this position are considered façade-reflected.
MP3	Rear of Site	The microphone was set up on an extension pole, and attached to the fence along the rear of the site – approximately 4m from the ground and away from any reflective surfaces.

The measurement positions are also illustrated on the site plan attached in Figure 1 and photos in Figure 4 (Appendix E).

6.1.3 Instrumentation

For information regarding the equipment used for the measurements please refer to Appendix C.

The sound level meters were calibrated both prior to and on completion of the survey with no significant calibration drifts observed.

6.1.4 Survey Noise Levels

The noise levels measured are shown as time-histories in Graphs 1-2, 4-5 and 7-8 below in Appendix E.

Selection of an appropriately representative background sound level is discussed in BS 4142:2014 *Methods for Rating and Assessing Industrial and Commercial Sound* as follows:

> *"In practice, there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.*
>
> *[...] A representative level should account for the range of background sound levels and should not automatically be assumed to be either the minimum or modal value."*

Graph 3, Graph 6 and Graph 9 in Appendix E present the range of background sound levels measured at each position and, on this occasion, the 'typical-lowest' level has been chosen as representative for all periods. The 'typical-lowest' level can be determined statistically as the lowest $L_{A90,\ 15mins}$ level which is exceeded for 90% of the assessment period, or alternatively termed the 10th percentile of the measured $L_{A90,\ 15mins}$ levels.

The measured period averaged $L_{Aeq,15min}$ noise levels, $L_{A90,15min}$ typical background noise levels, and typical night-time $L_{AFmax,5min}$ levels measured are summarised in Table 2.

Table 2 - Unattended Survey Measured Levels

Measurement Position	Measurement Period	Period-Averaged Noise Level $L_{Aeq,15min}$ (dB)	Typical Lowest Background Noise Level $L_{A90,15min}$ (dB)	Typical Maximum Noise Level $L_{AFmax,5min}$ (dB)
MP1	Daytime (07:00 – 23:00)	64	48	–
	Night-time (23:00 – 07:00)	58	44	79
MP2	Daytime (07:00 – 23:00)	63	45	–
	Night-time (23:00 – 07:00)	57	40	78
MP3	Daytime (07:00 – 23:00)	51	44	–
	Night-time (23:00 – 07:00)	48	39	62

6.2 Noise Survey – Licensed Premises

A subsequent acoustic survey was undertaken to specifically assess noise breakout from Cushla which lies adjacent to site on the corner of Jamestown and Arlington Roads. Internal and external monitoring positions were set up in the existing adjacent building along Arlington Road, in addition to an internal position within the Cabaret Room

6.2.1 Survey Methodology

Monitoring of the noise breakout was undertaken over the following period:

- 13:00 Thursday 8 August to 15:00 Monday 12 August 2024.

It is understood from conversations with Cushla staff that during this period the following high-noise activities occurred with the premises:

- Karaoke (18:00 to 20:00 Thursday 8 August 2024).
- Live music (18:00 to 22:00 Friday 9 August 2024).
- Live music (18:00 to 20:00 Saturday 10 August 2024).
- Cabaret (20:00 to 23:00 Saturday 10 August 2024).

From discussions with the premises management, and to satisfy the requirements of AoC, we understand that the activities occurring within Cushla over this period were fully representative of typical worst-case (noisiest) events. As such, the assessment based on the results measured can be considered robust.

As the survey was unattended it is not possible to comment with certainty regarding meteorological conditions throughout the entire survey period. However, based on observations during the site visits and weather reports for the area, conditions were generally considered suitable for obtaining representative noise measurements, being predominantly dry with little wind.

Measurements were made of the L_{A90}, L_{Amax} and L_{Aeq} noise levels and subsequently analysed over sample periods of 15 minutes and 5 minutes.

6.2.2 Measurement Positions

To determine the existing noise climate around the site measurements were undertaken at the following locations:

Table 3 - Initial Survey Measurement Positions

Measurement Positions	Name / Address	Description
MP4	Cushla (Internal)	The microphone was attached to a lighting truss in the centre of the Cabaret Room of Cushla. This position is representative of the acoustic climate experienced within the Cabaret Room, and capture worst-case internal noise levels occurring within the premises.
MP5	Arlington Road Building (Internal)	The microphone was set up on a tripod at first-floor level within the existing building adjacent to Cushla along Arlington Road, approximately 1.5m from the ground and 2m from the façade. Measurements at this position are considered representative of breakout noise from Cushla and, in particular, worst-case breakout from the Cabaret Room.

Measurement Positions	Name / Address	Description
MP6	Arlington Road Building (External)	The microphone was set up on an extension pole, and attached to the façade of the existing building adjacent to Cushla along Arlington Road, such that it was positioned approximately 1m above the façade. It is considered representative of external noise breakout from the Cabaret Room. As this position is overlooks the glazed area of the premises' roof, it is also considered representative of noise breakout from the ground floor area of Cushla where both karaoke and live music performances occur.

The measurement positions are also illustrated on the site plan attached in Figure 1 and photos in Figure 5 in (Appendix E).

6.2.3 Instrumentation

For information regarding the equipment used for the measurements please refer to Appendix C.

The sound level meters were calibrated both prior to and on completion of the survey with no significant calibration drifts observed.

6.2.4 Survey Noise Levels

The measured period averaged $L_{Aeq,5min}$ noise levels measured for each position during live music event times are summarised in Table 4.

Table 4 – Cushla Noise Breakout Survey Measured Levels

Noise Breakout Event	Measurement Period	Period-Averaged Noise Level $L_{Aeq,5min}$ (dB)		
		MP4 (Cushla, Internal)	MP5 (Arlington Road, Internal)	MP6 (Arlington Road, External)
Karaoke	Thursday 8 August 2024 (18:00 to 20:00)	48	39	65
Live Music	Friday 9 August 2024 (18:00 to 22:00)	47	40	66
	Saturday 10 August 2024 (18:00 to 20:00)	75	42	65
Cabaret Show	Saturday 10 August 2024 (20:30 to 23:00)	86	36	64

From observations on site, and due to the consistency of the measured levels, MP6 is most likely to have been dominated by plant servicing the premises located on the first-floor roof area adjacent to the Proposed Development.

7. PROJECT CRITERIA AND RELEVANT GUIDANCE

7.1 General Planning Policy

7.1.1 National Planning Policy Framework

The Ministry of Housing, Communities and Local Government (December 2023) *National Planning Policy Framework* (NPPF), sets out the Government's planning policies for England. In respect of noise, Paragraphs 180, 191 and 193 of the NPPF state the following:

> *"180) 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, taking into account relevant information such as river basin management plans.*
>
> *191) 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;*
> *(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.*
>
> *193) 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."*

7.1.2 London Plan

The Greater London Authority (2021) *The London Plan* policies D13 Agent of Change and D14 Noise provide outline guidance for the assessment and approach to noise within London Boroughs. The Plan does not provide criteria to be achieved but does reference the guidance provided in BS 8233:2014 and BS 4142:2014+A1 2019.

Important to note is that the London Plan is increasingly being adopted by Local Authorities as a benchmark for good acoustic design.

7.1.3 The Camden Local Plan 2017

The current Local Plan for LBC includes general guidance in regards to noise – it states:

> ***Policy A4 Noise and vibration***
> *The Council will seek to ensure that noise and vibration is controlled and managed. Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for:*
>
> *a. development likely to generate unacceptable noise and vibration impacts; or*
> *b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.*
>
> *We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development.*

7.1.4 The Camden draft Local Plan January 2024

We set out below the relevant policies from LBC's emerging Draft New Local Plan. We have referred to the policy text as proposed in the Regulation 18 Consultation Version (January 2024), published for consultation which concluded in March 2024, at this stage, in advance of independent Examination in Public, the policies in the draft New Local Plan carry very limited weight. The Applicant has made site specific representations to the Plan, particularly in respect of the site allocation. Please refer to the Planning Statement, prepared by DP9 for an assessment of weight that can be attached to the draft policies.

The following references are made to the AoC principle in regards to noise – it states:

> ***13.82*** *In accordance with the London Plan, the agent of change principle places the responsibility for mitigating impacts from existing noise and other nuisance generating activities or uses on the proposed new sensitive development.*
>
> ***13.83*** *The Council will apply the agent of change principle to all established noise generating activities, especially when new developments are proposed nearby. Development should be designed to ensure that established noise generating uses remain viable and can continue or grow without unreasonable* restrictions being placed on them.

7.2 Atmospheric Noise Emissions

7.2.1 Local Authority Criteria

The latest requirements of LBC's Environmental Health Department regarding new building services plant are outlined in *Appendix 3: Noise Thresholds* of *The Camden Local Plan 2017* (also retained in *The Draft Camden Local Plan January 2024*), and are understood to be as follows:

> ***Industrial and Commercial Noise Sources***
>
> *A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion).*

In line with these requirements, we would propose items of mechanical services be designed so that noise emissions from the plant do not exceed the following levels when assessed at the nearest noise sensitive location:

Table 5 – Atmospheric Plant Noise Limits

Assessment Period	Plant Noise Criteria to be achieved at 1m outside the window of the nearest Noise-Sensitive Receptor (NSR)		
	NSRs located on Jamestown Road	NSRs located on Arlington Road	NSRs located to the Rear of Site
Daytime (07:00 – 23:00)	38	35	34
Night-time (23:00 – 07:00)	34	30	29

In their guidance, LBC do not specify whether these criteria should be achieved at residential receptors external to the new development only, or if these criteria are also applicable to new residential receptors created within the new development itself. The following interpretation is recommended:

a) For noise levels from new items of plant installed as part of the new development serving residential spaces:
   i. The criteria in Table 5 should be achieved at residential receptors external to the new development.
   ii. A relaxation of 5dB should be applied to the criteria in Table 5 at residential receptors within the new development.

b) For noise levels from new items of plant installed as part of the new development serving the commercial unit:
   i. The criteria in Table 5 should be achieved at both residential receptors external to the new development, and to new residential receptors created within the development.

It should be noted that the above requirements are applied at the nearest residential adjacencies and alternative criteria should be incorporated if there are also commercial properties affected by the proposed plant installations.

Based on our experience working on other similar projects, items of emergency plant should be designed so that they do not exceed 10dB above the prevailing background noise levels. As such, the following criteria is recommended:

Table 6 - Plant Noise Emissions Limits for Emergency Items of Plant

Measurement Period	Emergency Plant Noise Criteria to be achieved at 1m outside the window of the nearest Noise-Sensitive Receptor (NSR) – $L_{Aeq,T}$ (dB)		
	NSRs located on Jamestown Road	NSRs located on Arlington Road	NSRs located to the Rear of Site
Daytime Testing (07:00 – 23:00)	58	55	54

7.3 Roomside Plant Noise Limits

Noise transferred from plant to internal areas via ducts or due to the operation of MEV / extract fans / ventilation systems, etc. should not exceed the internal noise levels detailed in Table 7.

Table 7 - Internal Noise Levels due to Plant Noise

Area	Internal Noise Criterion (NR)
Bedrooms	20-25
Living Rooms	25-30
Studios	25
Bathrooms	35-40
Corridor (Normal AOV / Plant Duty)	40
Corridor (Emergency & Testing AOV / Plant Duty)	60
Plant / Cycle Store / Other Ancillary Areas	55
Reception / Lobby / Lounge / Gym	40
Management Suite / Office / Secret Room	30

7.4 External Building Fabric

The sections below outline relevant standards for the design and assessment of eternal building fabric elements.

7.4.1 British Standard 8233:2014

British Standards Institution (2014) *BS 8233:2014: Guidance on Sound Insulation and Noise Reduction for Buildings* draws on the results of research and experience to provide information on achieving internal acoustic environments appropriate to their functions.

The noise level values given are in terms of an average (L_{Aeq}) level.

The standard advises internal ambient noise levels for achieving suitable resting and sleeping conditions within residential properties as set out in Table 8 - .

Table 8 - BS 8233:2014 Residential Criteria

Room	07:00 to 23:00	23:00 to 07:00
Living Rooms	35 dB $L_{Aeq,16hour}$	--
Dining Room/area	40 dB $L_{Aeq,16hour}$	--
Bedrooms	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

7.4.2 World Health Organisation Guidelines

WHO (2018) *Environmental Noise Guidelines for the European Region* sets out to define "*recommended exposure levels for environmental noise in order to protect population health*". The guidance document relates specifically to external noise levels, and recommends that "*all CNG* [WHO (1999) *Guidelines for Community*

Noise] *indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid*". RBA therefore make reference to Guidelines for Community Noise for recommendations on internal noise levels.

Guidelines for Community Noise describes guideline levels that are "*essentially values for the onset of health effects from noise exposure*". A table of guideline values is included, relating to adverse health effects, defined as any temporary or long-term deterioration in physical, psychological, or social functioning that is associated with noise exposure. The following is an extract from Table 4.1: Guideline values for community noise in specific environments, as stated in the WHO document.

Table 9 - Guideline Values for Community Noise

Specific Environment	Critical Health Effect(s)	L_{Aeq} (dB)	Time Base (hours)	$L_{Amax,f}$ (dB)
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-times	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

With reference to maximum noise levels the following guidance is provided within the WHO guidance:

> *"For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB L_{Amax} more than 10-15 times per night (Vallet & Vernet 1991) and most studies show an increase in the percentage of awakenings at SEL values of 55-60 dBA (Passchier-Vermeer 1993; Finegold et al. 1994; Pearsons et al. 1995). For intermittent events that approximate aircraft noise, with an effective duration of 10-30s, SEL values of 55-60 corresponds to a L_{Amax} value of 45dB. Ten to 15 of these events during an 8 hour night-time implies a $L_{Aeq, 8h}$ of 20-25dB. This is 10-15dB below the $L_{Aeq, 8h}$ or 30dB for continuous night-time noise exposure, and shows that intermittent character of noise must be taken into account when setting night-time noise limits for noise exposure. For example, this can be achieved by considering the number of noise events and the difference between the maximum sound pressure level and the background of these events."*

Therefore, the frequency of occurrence of maximum noise events should not typically exceed 10-15 times in any night.

7.4.3 Music Noise Breakout / Local Authority Liaison

In communications with LBC, it has been agreed that, in light of noise complaints against licensed premises within the Borough, the need to adhere to the principles of AoC, and general good practice, that the following design criteria should be targeted for music noise break in:

Table 10 - Criteria Summary

Room	Period	Criteria
Bedrooms	Live Music Event Times	NR 20
Living Rooms		NR 25

7.4.4 Summary

The project criteria adopted are therefore as follows:

Table 11 - Criteria Summary

Room	Period	Criteria
Bedrooms	07:00 – 23:00	35 dB $L_{Aeq,16hour}$
	23:00 – 07:00	30 dB $L_{Aeq,8hour}$ 45 dB $L_{Amax,f}$ (not normally exceeded)
	Noise from Licensed Premises	NR 20
Living Rooms	07:00 – 23:00	35 dB LAeq,16hour
	Noise from Licensed Premises	NR 25

7.5 Internal Building Fabric Requirements and Target Criteria (New Builds)

The following section describes the various requirements for internal building fabric elements of the development in terms of Approved Document E (2003) of the Building Regulations, as well as recommended enhanced criteria (also needed to meet BREEAM or HQM certification).

7.5.1 Local Authority Guidance

In their document, *Camden Planning Guidance: Amenity*, LBC state:

> ***Internal noise levels***
>
> *6.22 The requirements of the Building Regulations are usually adequate for the sound insulation between floors and walls of adjoining dwellings, making planning conditions unnecessary.*
>
> *6.23 The requirements of the Building Regulations are however likely to be inadequate in instances where:*
> - *a new commercial use likely to generate noise adjoins an existing residential building (and vice versa); and/or*
> - *a change of use will result in a residential development being sited in a noisy environment.*
>
> *6.24 Where such development is proposed, the Council is likely to use planning conditions requiring substantially enhanced sound insulation of relevant walls, floors and ceilings compared to the minimum specifications of the Building Regulations. In proposing conditions, the Council will consider guidance available within BS8233:2014 Guidance on sound insulation and noise reduction for buildings, Guidelines for Community Noise (1999) and Night Noise Guidelines for Europe (2009) published by the World Health Organisation.*

7.5.2 Approved Document E (2003)

Building Regulations Approved Document E (2003) provides guidance for levels of sound insulation within 'Room for Residential Purposes' and residential developments. These criteria are applicable to separating walls and floors between individual studio rooms / demises and also between studio rooms / demises and common parts. The sound insulation criteria to be achieved are set out below.

Separating Floors

For new Rooms for Residential Purposes:

- Minimum airborne sound insulation of 45dB $D_{nT,w+}C_{tr}$. This is an on-site performance rating.
- Maximum impact sound pressure level of 62dB $L'_{nT,w}$. This is an on-site performance rating.

For new residential developments:

- Minimum airborne sound insulation of 45dB $D_{nT,w+}C_{tr}$. This is an on-site performance rating.
- Maximum impact sound pressure level of 62dB $L'_{nT,w}$. This is an on-site performance rating.

Separating Walls

For new Rooms for Residential Purposes (Studio to Studio):

- Minimum airborne sound insulation of 43dB $D_{nT,w+}C_{tr}$. This is an on-site performance rating.

For new residential developments:

- Minimum airborne sound insulation of 45dB $D_{nT,w+Ctr}$. This is an on-site performance rating.

7.5.3 Recommended Enhanced Criteria

In light of LBC's planning guidance outlined above, and to reflect design standards adopted in other comparable student accommodation schemes, it is considered appropriate to target a 5dB improvement on sound insulation criteria required by the Building Regulations.

The recommendations within the following sections have therefore been based upon achieving these enhanced standards as follows:

Separating Floors

For new Rooms for Residential Purposes:

- Minimum airborne sound insulation of 50dB $D_{nT,w+}C_{tr}$. This is an on-site performance rating.
- Maximum impact sound pressure level of 57dB $L'_{nT,w}$. This is an on-site performance rating.

For new residential developments:

- Minimum airborne sound insulation of 50dB $D_{nT,w+}C_{tr}$. This is an on-site performance rating.
- Maximum impact sound pressure level of 57dB $L'_{nT,w}$. This is an on-site performance rating.

Separating Walls

For new Rooms for Residential Purposes (Studio to Studio):

- Minimum airborne sound insulation of 48dB $D_{nT,w+}C_{tr}$. This is an on-site performance rating.

For new residential developments:

- Minimum airborne sound insulation of 50dB $D_{nT,w+Ctr}$. This is an on-site performance rating.

8. APPROVED DOCUMENT O (ADO)

RBA Acoustics has undertaken an assessment of the external noise levels affecting future residential dwellings at the Development with regards to the implications of opening windows to address overheating under Approved Document O (ADO) based on the information outlined Section 8.1 below. Please note that this assessment, under ADO, is only applicable to bedroom windows during the night-time period (23:00 – 07:00).

Façade references are illustrated on the site plan included in Figure 2 in Appendix E, with the worst-case categorisation present on that façade also indicated.

Screenshots of the 3D Acoustic Model are shown in Figure 6 to Figure 9 in Appendix E, which indicate typical period averaged façade noise levels ($L_{Aeq,15min}$) during the night (23:00 – 07:00).

8.1 Assumptions

8.1.1 Drawings and Documentation

Calculations have assumed massing and block names as indicated in the following drawings from Morris & Company, the project architects:

Drawing/Document Number	Revision	Description	Date
23054-MCO-XX-00-DR-A-01110	P08	"PROPOSED PLAN LEVEL 00"	5 September 2024
23054-MCO-XX-01-DR-A-01111	P07	"PROPOSED PLAN LEVEL 01"	5 September 2024
23054-MCO-XX-02-DR-A-01112	P09	"PROPOSED PLAN LEVEL 02-04"	5 September 2024
23054-MCO-XX-05-DR-A-01115	P05	"PROPOSED PLAN LEVEL 05"	31 July 2024
23054-MCO-XX-06-DR-A-01116	P07	"PROPOSED PLAN LEVEL 06"	5 September 2024
23054-MCO-XX-07-DR-A-01120	P03	"PROPOSED PLAN ROOF LEVEL"	5 September 2024
23054-MCO-XX-ZZ-DR-A-01201	P01	"PROPOSED ELEVATIONS STREET"	31 July 2024
23054-MCO-XX-ZZ-DR-A-01202	P01	"PROPOSED ELEVATIONS C3 COURTYARD"	31 July 2024
23054-MCO-XX-ZZ-DR-A-01203	P01	"PROPOSED ELEVATIONS C3 COURTYARD"	31 July 2024
23054-MCO-XX-XX-PP-A-06007	P01	"FAÇADE INTENT DOCUMENT"	20 August 2024

8.1.2 Noise Levels

Calculations have been made on the basis that noise breakout from Cushla remains the same as current levels – including noise from plant servicing the premises on the first-floor roof level. As such, this assessment has been based on the measured noise levels as detailed in Section 6.1.4 and Section 6.2.4 above.

8.1.3 Ventilation Strategy

It is understood that acoustic louvres will not be considered as a strategy for ventilation, and areas where these would be used instead will employ MVHR with comfort cooling.

8.2 Results

The results of our assessment are presented below, setting out the ventilation strategies for the façades of each block, with the minimum mitigation measures noted if windows are unable to be opened. It is understood that no mitigation measures are to be applied to the plant servicing Cushla at this time. If this was to occur, areas close may need less mitigation than indicated.

Table 12 – Minimum Ventilation Strategies (PBSA North)

Block	Façade	Ventilation Strategy
PBSA (North Section)	North	Windows Not Openable – MVHR with comfort cooling necessary
	East	No Applicable Windows
	South	Openable Windows (No Restrictions)
	West 1 (Front)	No Applicable Windows
	West 2 (Rear)	Openable Windows (No Restrictions)

Table 13 - Ventilation Strategies (PBSA South)

Block	Façade	Ventilation Strategy
PBSA (South Section)	Northwest	Openable Windows (No Restrictions)
	Southeast	Openable Windows (No Restrictions)
	Southwest 1 (00 – 05)	No Applicable Windows
	Southwest 2 (06 – 07)	No Applicable Windows
	East	No Applicable Windows

Table 14 - Ventilation Strategies (Residential, Jamestown Road)

Block	Façade	Ventilation Strategy
Residential Block (Jamestown Road)	North	Windows Not Openable – MVHR with comfort cooling necessary
	East 1 (Front)	No Applicable Windows
	South	Windows Not Openable – MVHR with comfort cooling necessary
	East 2 (Rear)	Partially Openable Window (0.40m^2 Free Area) or MVHR with comfort cooling necessary
	Southeast	No Applicable Windows

Table 15 - Ventilation Strategies (Residential, Arlington Road)

Block	Façade	Ventilation Strategy	Free Area (m^2)
Residential Block (Arlington Road)	North	No Applicable Windows	
	East	Windows Not Openable – MVHR with comfort cooling necessary	
	South	No Applicable Windows	
	West	Windows Not Openable – MVHR with comfort cooling necessary	

8.3 Discussion

Due to the higher noise levels present, windows on facades facing Jamestown and Arlington Roads will not meet the acoustic requirements of Approved Document O with windows open to mitigate against overheating. Due to noise associated with plant servicing the adjacent licensed premises, nearby windows will also not meet the acoustic requirements of Approved Document O with windows open to mitigate against overheating.

Windows on façades at the rear of the Proposed Development can generally open windows to mitigate against overheating. The exceptions to this are flats located along façades near to existing plant on the first-floor roof area servicing of the adjacent licensed premises. Due to noise these items of plant, flats nearby will be unable to open windows or require acoustic louvres to meet the required levels. As above, if mitigation measures are applied to plant servicing Cushla, then the requirements for these areas should change.

8.4 Next Steps

The next steps in determining the impact on internal noise levels are identified as follows:

1. Dynamic thermal modelling is undertaken (by others) to determine the minimum free area requirements for openable windows to mitigate overheating.

2. Further acoustic calculations are undertaken based on the minimum area of any window openings to determine resultant internal noise levels.

Should the outcome of the above indicate that internal noise levels remain in excess of the ADO criteria then alternative means of overheating mitigation are required to be considered as an alternative to fully opening windows. ADO advises the following however the overheating assessor will naturally be able to advise further:

Limiting Solar Gains

- Fixed shading devices (e.g. shutters, awnings, overhangs, external blinds)
- Glazing design (e.g. size, orientation, g-value, depth of reveal)
- Building design (e.g. placement of balconies)
- Shading by permanent buildings, structures or landscaping

Removing Excess Heat

- Ventilation louvres in external walls
- Mechanical ventilation system
- Mechanical cooling system

9. EXTERNAL BUILDING FABRIC

9.1 Assumptions

Our external building fabric analyses have assumed the following:

9.1.1 Drawings

See Section 8.1.

9.1.2 Noise Levels

It is understood that no mitigation works will be undertaken on the existing plant servicing the licensed premises adjacent to site. As such, this assessment has been based on the measured noise levels as detailed in Section 6.1.4 and Section 6.2.4 above.

Screenshots of the 3D Acoustic Model are shown in Figure 6 to Figure 9 in Appendix E, which indicate typical period averaged façade noise levels ($L_{Aeq,15min}$) during the night (23:00 – 07:00).

9.1.3 Room Absorption

The calculations assume that bedrooms are acoustically 'soft' with carpets, curtains and other soft furnishings. The living rooms are assumed to be less acoustically absorptive (with a hard floor finish, although with furnishings).

Details of the absorption coefficients assumed in the calculations are provided in Appendix D.

9.1.4 External Wall

It is understood that external non-glazed areas are to comprise the following (illustrated in Figure 10 in Appendix E):

- 102.5mm brickwork
- 50mm open cavity
- 150mm external mineral wool insulation
- 12.5mm sheeting board
- 100mm mineral wool insulation
- 30mm stud
- 2No. 12.5mm standard density plasterboard

As such, RBA have assumed the following sound reduction indices (equating to an overall Rw of 57 dB) for all non-glazed façade areas:

Table 16 – Sound Reduction Indices of Non-Glazed Elements

Assumed Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
34	40	47	53	62	69	71	71

Should the proposals for non-glazed areas change, it is critical RBA are informed at the earliest opportunity as this could have a significant impact on the sound insulation performance requirements of the glazing systems.

9.1.5 Ventilation

It is understood the chosen strategy is likely to be MVHR whole house ventilation. As such there are no direct openings into habitable rooms for ventilation.

Such systems are highly beneficial when considering the noise ingress as they provide a high degree of noise attenuation. Environmental noise break-in to rooms via the ductwork of the whole house system is not anticipated to be an issue, as such systems have significant inherent attenuation (environmental noise will need to travel through the ductwork system and through the heat recovery exchange unit). Acoustic treatment in relation to this issue is therefore not anticipated.

We understand windows are to be openable to provide purge ventilation. During those periods where windows are opened for purge/rapid ventilation, noise levels will naturally be increased internally.

9.2 Glazing Acoustic Specifications

Glazed units (inclusive of glazing, louvres, timber panels, spandrel panels, infill panels, framing, opening lights, balcony/terrace doors, seals, etc. as appropriate) should achieve the following minimum sound reduction indices as tested in general accordance with BS EN ISO 10140-2:2021:

Table 17 – Window Sound Insulation Performance Specification

Type	Minimum Recommended Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)								R_w (dB)
	63	125	250	500	1k	2k	4k	8k	
G1	31	28	30	39	44	49	56	56	42
G2	21	25	22	33	40	43	44	44	36
G3	19	23	22	27	38	40	41	41	33

Note: R_w is the "overall weighted sound reduction index" tested in a laboratory.

N.B. as the internal noise criteria are expressed in overall terms, other frequency-specific performance levels may ultimately prove acoustically acceptable. Test data for representative samples of all glazing systems shall be submitted to RBA Acoustics for approval to demonstrate compliance with the above performance specifications.

The glazing performance specifications apply to the glazing package as a whole - inclusive of glazing, louvres, spandrel panels, framing, opening lights, doors, seals, etc. The performance of the glazing system will depend on many factors such as the glazing configuration, size of window panels, quality of framing, quality of sealing, etc.

External facade constructions and components, such as brise soleil, grilles, ventilators, curtain walling systems or other architectural features, are not to give rise to intrusive whistling, creaking, rattling or other noises as a result of wind or other climatic effects.

The Contractor shall take reasonable precautions to avoid unwanted noise including creaking, rattling and whistling being generated by the Contractors works when subject to environmental conditions (including wind) and thermal expansion over the life of the façade.

It should be noted that due to the non-acoustic reasons (security, thermal or structural purposes), the specifications may exceed those stated above in some locations.

For guidance purposes RBA would typically expect the following glazing configurations to prove commensurate with achieving the sound insulation performance specifications detailed within Table 18.

Table 18 – Guidance on Glazing Constructions

Glazing Type	Example Glazing Configuration
G1	Very high-performance laminate double glazing with differing pane thicknesses comprising 10mm glass/12mm cavity/8.4mm glass OR Secondary glazing system with 150mm minimum separating void
G2	High-performance double glazing with differing pane thicknesses comprising 6mm glass/12mm cavity/8mm glass
G3	Standard thermal double glazing with differing pane thicknesses comprising 4mm glass/12mm cavity/6mm glass

If mitigation works are undertaken to reduce noise emissions from plant servicing the adjacent licensed premises, then the glazing performance requirements would be reduced for nearby façades.

9.3 Applicable Zoning

Due to the differences in the prevailing noise climate around the site and the types of rooms at each floor level, three primary glazing zones have been defined, as indicated on the façade zoning plans provided in Figure 3 in Appendix E.

(i) Zone 1 – Glazing Type: G1

(ii) Zone 2 – Glazing Type: G2

(iii) Zone 3 – Glazing Type: G3

9.4 Flanking Specification

Should there be a proposal for any curtain walling or continuous glazing systems it is important that the control of flanking sound transmission via these elements is fully controlled.

Between residential uses a minimum flanking level difference of 62dB $D_{n,f,w}$ should be targeted. Between non-residential areas (e.g. commercial to commercial, office etc.) it is standard practice to relax the specification to a value of 50dB $D_{n,f,w}$.

It is likely insulated double/split mullions and transoms will be required in order to achieve the flanking specification for the residential units. For example, a unitised system would be expected more comfortably to achieve compliance with our specification. This obviously has a large impact on the design and style of any curtain walling system and should be investigated at the earliest opportunity to ensure the specification is achieved.

10. INTERNAL BUILDING FABRIC

In light of the recommended criteria outlined in Section 7.5 above, and information received from Morris & Co (Drawing Ref. 23054-MCO-XX-XX-PP-A-06007, Rev. P01, dated 20 August 2024) the following guidance constructions are proposed.

10.1 Guidance Constructions (Studio to Studio)

The following section gives our initial advice on internal walls, floors and ceilings.

10.1.1 Main Separating Floors

The construction of main separating floors is currently in development, and is understood to broadly will consist of:

- 75mm floor build-up
- 225mm slab
- Suspended ceiling build-up with 150mm services void (240mm overall)

Provided that a 5-10mm resilient later is included in the 75mm allowed above the slab, this construction is expected to prove sufficient.

Please note that if a floating screed is included in the build-up above the slab, it will require a high level of supervision to build quality. Acoustic failures are often encountered with floating screeds when the screed bridges on to the main structure. Attention will need to be given to ensure the following:

- Perimeter isolation strips are correctly implemented
- All joints within the resilient layer are well taped, with an adequate overlap

Please Note: In our experience, instances of resident complaint are more likely where thin screeds (<~50mm) are used even though compliance with the Building Regulations (and enhanced criterion) is achieved. The complaints relate typically to barefoot walking by residents in the flats above.

The proposed floor build-up is illustrated in Figure 10 in Appendix E.

10.1.2 Main Separating Walls

The following construction (min. 250mm overall) would be expected to prove sufficient.

- 2No layers 15mm dense plasterboard
- Metal I stud*
- 50mm mineral wool within stud zone
- Minimum void of 190mm between inner plasterboard layers
- Metal I stud*
- 50mm mineral wool within stud zone
- 2No layers 15mm dense plasterboard

Sockets and switches would require treatment via either a Hilti Putty Pad or plasterboard boxing. This treatment would also be suitable for back-to-back penetrations. The plasterboard boxing would be formed of the same boarding as the wall itself (i.e. 2No layers of 15mm dense plasterboard) and would need to be appropriately sealed with intumescent mastic to provide both a sufficient fire and air-tight seal. Both of these solutions (putty pad and plasterboard boxing) are commonly adopted.

10.2 Guidance Constructions (Between Flats)

The following section gives our initial advice on internal walls, floors and ceilings between residential flats, and is also applicable for separating walls between residential flats.

10.2.1 Main Separating Floors

See Section 10.1.1.

10.2.2 Main Separating Walls

The following construction (min. 250mm overall) would be expected to prove sufficient.

- 2No layers 15mm dense plasterboard
- Metal I stud*
- 50mm mineral wool within stud zone
- Minimum void of 190mm between inner plasterboard layers
- Metal I stud*
- 50mm mineral wool within stud zone
- 2No layers 15mm dense plasterboard

10.3 Communal/Entrance Lobbies

There is no requirement under the Building Regulations to incorporate acoustic absorption into communal/entrance lobbies which do not include front doors to flats. Depending upon the desired use of the space, some absorptive finishes may be beneficial, and these will be investigated during Stages 3 & 4.

11. PLANT NOISE ASSESSMENT

The energy strategy and selections for plant servicing the Proposed Development are currently being developed. As such, general considerations for the assessment of new items of plant are outlined below.

11.1 Location of the Nearest Noise-Sensitive Receptors

Based on observations made on site, we understand that potential future noise-sensitive receptors (NSRs) to the proposed plant are as follows:

Potential NSR 1 – 31 Jamestown Road

This receptor consists of the second and third floors of the adjacent licensed premises, in which are located residential rooms for the premises staff. It lies east of the proposed residential block along Jamestown Road, and north of the proposed residential block along Arlington Road.

Potential NSR 2 – 209c Arlington Road

This receptor lies south of the proposed residential block along Arlington Road.

Potential NSR 3 – 205 Arlington Road

This receptor lies south of the rear of site.

Potential NSR 4 – 61B Jamestown Road

This receptor lies adjacent to the west of site along Jamestown Road.

Potential NSR 5 – Holiday Inn Camden

This receptor lies across Jamestown Road to the north of site.

The potential receptors are shown in the site plan in Figure 1 in Appendix E.

11.2 Proposed Mitigation

It is understood from the drawing "Proposed Plan Roof Level" (Drawing No. 23054-MCO-XX-07-DR-A-06120, Rev. P01, dated October 2024) that a screen will be installed around future items of plant located at rooftop level. This will provide some attenuation to atmospheric noise levels incident on the surrounding NSRs, and should be taken into account by future analysis.

11.3 Plant Proposals & Future Analyses

It is understood that new plant installations generating external plant noise emissions will be at rooftop level, however the specific location, number and model of the units are currently being developed.

Following the selection of final plant proposals, external plant noise emissions should be assessed and, where necessary, acoustic mitigation specified, such that the plant noise limits given in Section 7.2 are achievable at the nearest/worst-affected noise-sensitive receptor. The selection of the worst affected NSR will depend on the final plant locations in relation to the surrounding NSR.

In addition, it is understood that some emergency plant is to be located in the plant room on the western façade of the PBSA block along Jamestown Road. The assessment of this plant should take NSR 4 as the worst-case receptor, as well as the proposed criteria outlined in Section 7.2.

12. CONCLUSION

RBA Acoustics have undertaken noise monitoring for the Proposed Development of 33-35 Jamestown Road, London, NW1 7DB and 211 Arlington Road, London, NW1 7HD. A summary of the measured noise levels is presented within this report.

Communications with London Borough of Camden and agreed assessment strategies have been summarised.

Measured background noise levels were used in the setting of atmospheric plant noise emissions limits, in line with the requirements of London Borough of Camden. Structure-borne noise and internal mechanical services noise limits have also been set based on the relevant standards and guidance documents.

Measured noise levels have also been used to create an acoustic model of noise propagation across the site and provide an initial high-level assessment of external noise levels affecting future residential dwellings at the Jamestown Road, Camden Development with regards to the implications of opening windows to address overheating under Approved Document O (ADO).

In addition, this acoustic model has been used to provide indicative glazing specifications to ensure suitable internal noise levels are achieved at the proposed development with reference to BS 8233:2014, and WHO Guidelines, as well as to mitigate against breakout noise from the operations of the adjacent licensed premises.

Advice has been given regarding internal building fabric elements, both for new residential units, and for new purpose-built student accommodation studios.

The assessment of atmospheric noise emissions from future items of plant has been outlined, including the location of potential noise-sensitive receptors, and appropriate calculations measures provided for this assessment.

Appendix A – Acoustic Terminology

A-weighting (e.g. dB(A))	A correction applied across the frequency bands to take into account the response of the human ear, and therefore considered to be more representative of the sound levels people hear.
DeciBel (dB)	Unit used for many different acoustic parameters. It is the logarithmic ratio of the level being assessed to a standard reference level.
$D_{n,e,w}$	A single number weighted quantity which characterises the airborne sound insulation through a specified small element. A higher numerical quantity represents a better performance.
$D_{n,f,w}$	A single number weighted quantity which characterises the airborne sound insulation between rooms via a specified flanking path. A higher numerical quantity represents a better performance.
$L_{eq,T}$	The level of a notional steady sound which, over a stated period of time, T, would have the same acoustic energy as the fluctuating noise measured over that period. Typically used to represent the average or ambient noise level.
$L_{Aeq,T}$	The A-weighted level of a notional steady sound which, over a stated period of time, T, would have the same acoustic energy as the fluctuating noise measured over that period. Typically used to represent the average or ambient noise level.
L_{An} (e.g. L_{A10}, L_{A90})	The sound level exceeded for n% of the time. E.g. L_{A10} is the A-weighted level exceeded for 10% of the time and as such can be used to represent a typical maximum level. Similarly, L_{A90} is the level exceeded for 90% of the measurement period, and is often used to describe the underlying background noise.
$L_{Amax,T}$	The instantaneous maximum A-weighted sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, e.g. sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the ambient level.
Octave band	A frequency band in which the upper limit of the band is twice the frequency of the lower limit.
1/3 Octave band	A frequency band which is one-third of an octave band.
R_w	A single number quantity which characterises the airborne sound insulation of a material or building element in a laboratory test.

Appendix B – CDM Considerations

The likelihood the harm will occur can be assessed by applying an indicative score (from 1 to 5) as follows:

1 – Remote (almost never)
2 – Unlikely (occurs rarely)
3 – Possible (could occur, but uncommon)
4 – Likely (recurrent but not frequent)
5 – Very likely (occurs frequently)

The severity of harm can be assessed by applying an indicative score (from 1 to 5) as follows:

1 – Trivial (e.g. discomfort, slight bruising, self-help recovery)
2 – Minor (e.g. small cut, abrasion, basic first aid need)
3 – Moderate (e.g. strain, sprain, incapacitation for more than 3 days)
4 – Serious (e.g. fracture, hospitalisation for more than 24 hours, incapacitation for more than 4 weeks)
5 – Fatal (single or multiple)

The rating value is obtained by multiplying the two scores and is then used to determine the course of action.

Table C1 – Risk Ratings

Rating Bands (Severity x Likelihood)		
Low Risk (1 – 8)	Medium Risk (9 -12)	High Risk (15 – 25)
May be ignored but ensure controls remain effective	Continue, but implement additional reasonable practicable controls where possible	Avoidance action is required; therefore alternative design solutions must be examined. Activity must not proceed until risks are reduced to a low or medium level

The following hazards pertinent to our design input have been identified and control measures suggested:

Table C2 – Risk Assessment

Hazard	Risk Of	At Risk	Rating			Control Measures	Controlled		
			L	S	R		L	S	R
Mineral wool within drywalls and linings	Skin and respiratory irritation	Contractors	4	3	12	Wear gloves and mask	1	3	3
Acoustic doors - weight	Strain of neck, limbs or back	Contractors	3	4	12	Provide sufficient manpower/ lifting gear	1	4	4
Plant room noise levels may be above lower exposure action level	Hearing damage.	Contractors/ Operators	3	4	12	Employer should undertake noise at work assessment.	1	4	4
Vibration Isolators	Injury to hands	Contractors	3	3	9	Care needs to be taken during adjustment. Follow manufacturers guidance	1	3	3
Attenuators/ Acoustic Lagging	Strain of neck, limbs or back.	Contractors	3	4	12	Provide sufficient manpower/ lifting gear	1	4	4
Attenuators/ Acoustic Lagging	Skin & respiratory irritation	Contractors	4	3	12	Wear gloves and mask	1	3	3
Acoustic glazing - weight	Strain of neck, limbs or back. Fall from height.	Contractors	3	5	15	Provide sufficient manpower, lifting gear and structural support	1	5	5
Suspended Baffles	Strain of neck, limbs or back during installation & maintenance. Fall from height.	Contractors	3	5	15	Provide sufficient manpower, lifting gear and structural support	1	5	5

L: Likelihood S: Severity R: Rating

Appendix C – Instrumentation

The following equipment was used for the measurements.

Table B1 – Equipment Calibration Details I*

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1403226	U42991	18 January 2025
Norsonic Pre Amplifier	1209A	12066		
Norsonic ½“ Microphone	1225	168180	42990	18 January 2025
Norsonic Sound Calibrator	1251	31988	U42989	18 January 2025

Table B2 – Equipment Calibration Details II*

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1403127	U43500	28 February 2025
Norsonic Pre Amplifier	1209A	12071		11 February 2023
Norsonic ½“ Microphone	1225	41473	43499	28 February 2025
Norsonic Sound Calibrator	1251	31986	U43498	28 February 2025

Table B3 – Equipment Calibration Details III

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1406970	U44407	05 June 2025
Norsonic Pre Amplifier	1209	21205		
Norsonic ½“ Microphone	1225	271055	44406	05 June 2025
Norsonic Sound Calibrator	1251	35020	U44405	05 June 2024

Table B4 – Equipment Calibration Details IV

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1407477	U45669	18 October 2025
Norsonic Pre Amplifier	1209	22341		
Norsonic ½“ Microphone	1225	358196	45668	
Norsonic Sound Calibrator	1255	125525259	U45667	18 October 2025

* Used for both surveys

Appendix D – Room Absorption Coefficients

For the purposes of the analyses RBA have assumed the absorption coefficients detailed in Table B1 for bedrooms and Table B2 for living rooms.

Table B1 – Bedroom Absorption Coefficients

Absorption Coefficient (α) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
0.15	0.18	0.25	0.27	0.31	0.32	0.32	0.32

Table B2 – Living Room Absorption Coefficients

Absorption Coefficient (α) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
0.15	0.18	0.20	0.22	0.22	0.22	0.23	0.27

Appendix E – Site Plans and Figures

Jamestown Road, Camden - Regal

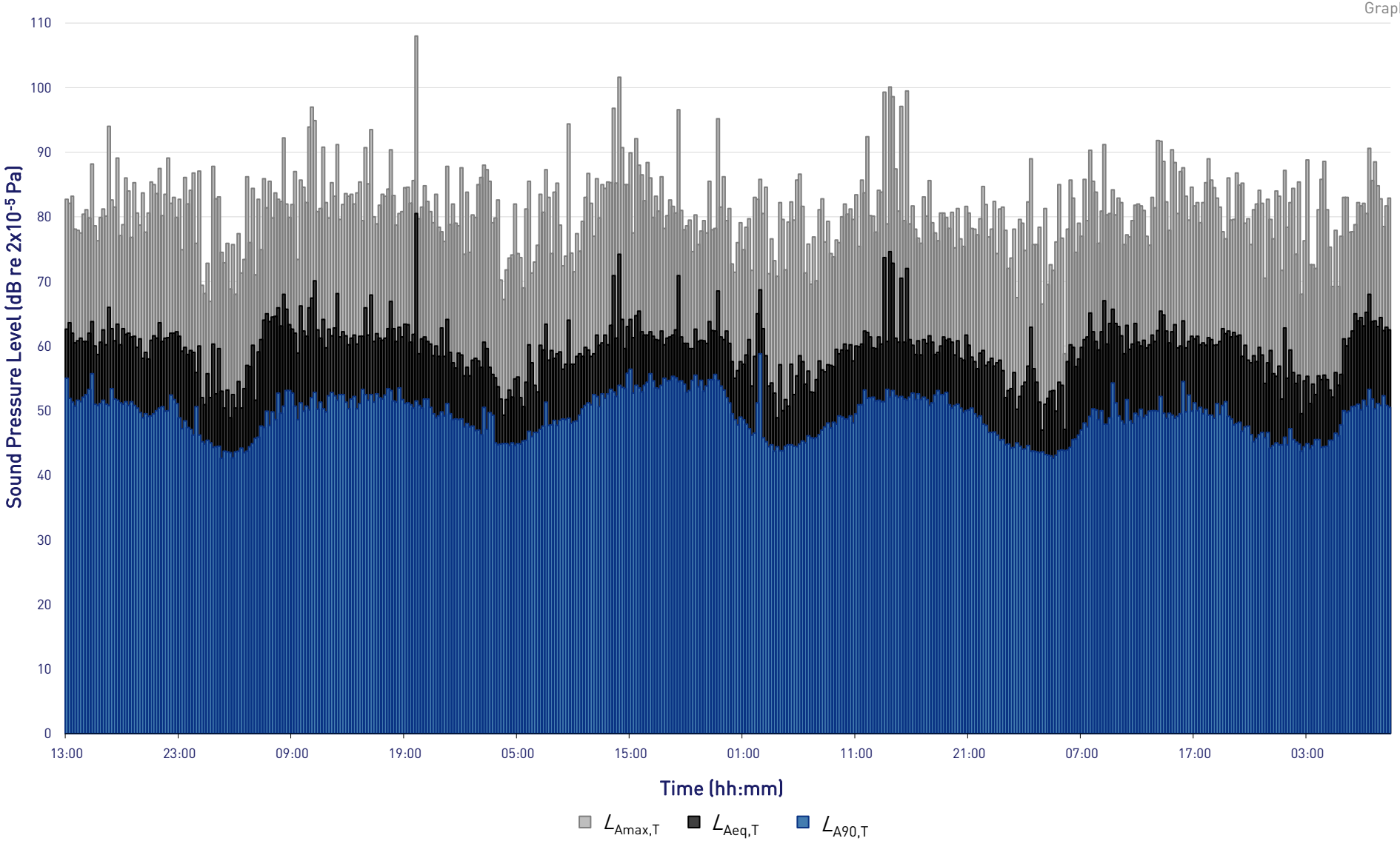
Measured Levels (15min Sample Periods)

Position 1, Jamestown Road - Monday 16 October to Wednesday 18 October, 2023

RBA ACOUSTICS

Project: 13097

Graph 1



Jamestown Road, Camden - Regal

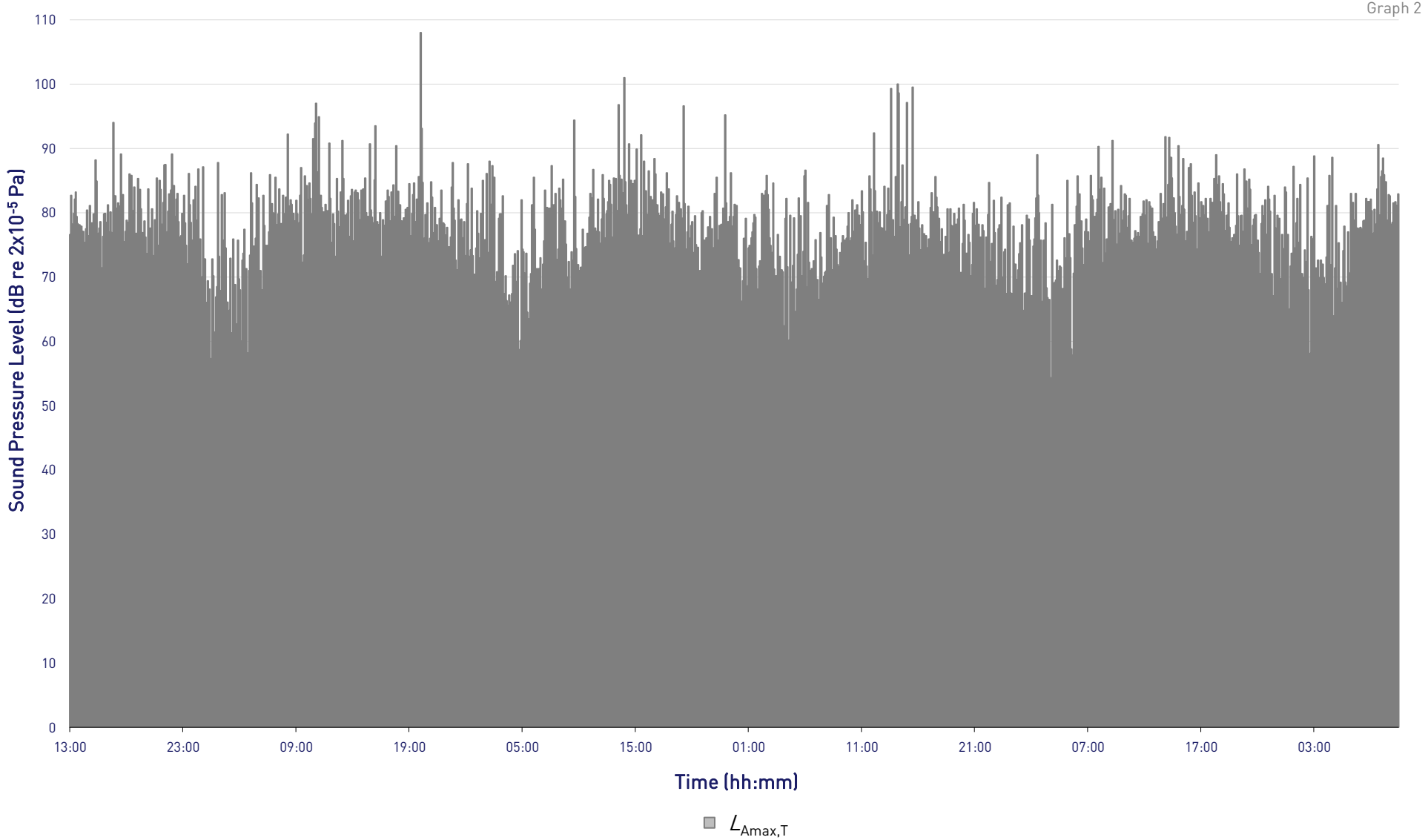
$L_{Amax,5\ min}$ Time History

Position 1, Jamestown Road - Monday 16 October to Wednesday 18 October, 2023

RBA ACOUSTICS

Project: 13097

Graph 2



Jamestown Road, Camden - Regal

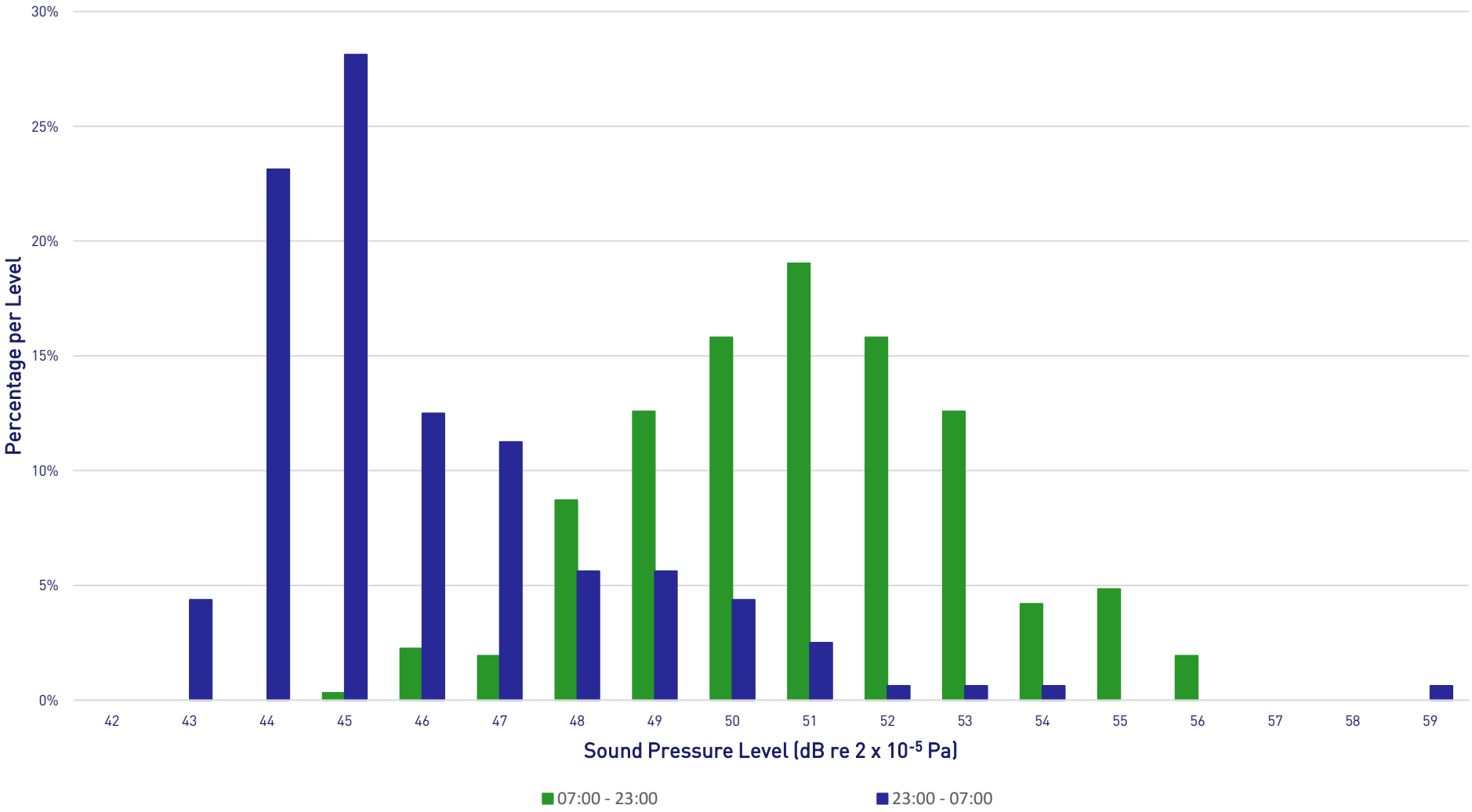
$L_{A90,\,15\,min}$ Histogram

Position 1, Jamestown Road - Monday 16 October to Wednesday 18 October, 2023

RBA ACOUSTICS

Project: 13097

Graph 3



Jamestown Road, Camden - Regal

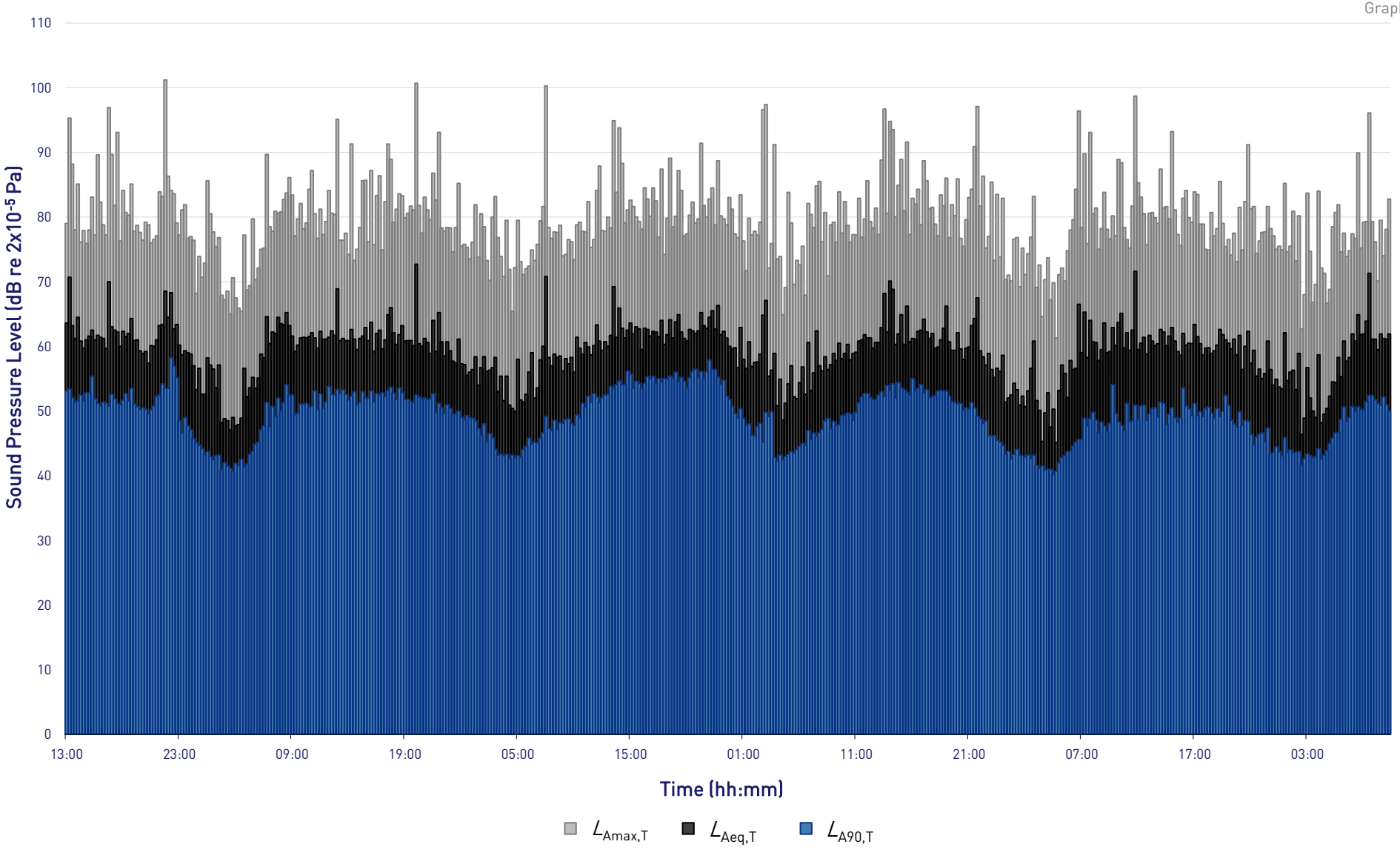
Measured Levels (15min Sample Periods)

Position 2, Arlington Road - Monday 16 October to Wednesday 18 October, 2023

RBA ACOUSTICS

Project: 13097

Graph 4



Jamestown Road, Camden - Regal

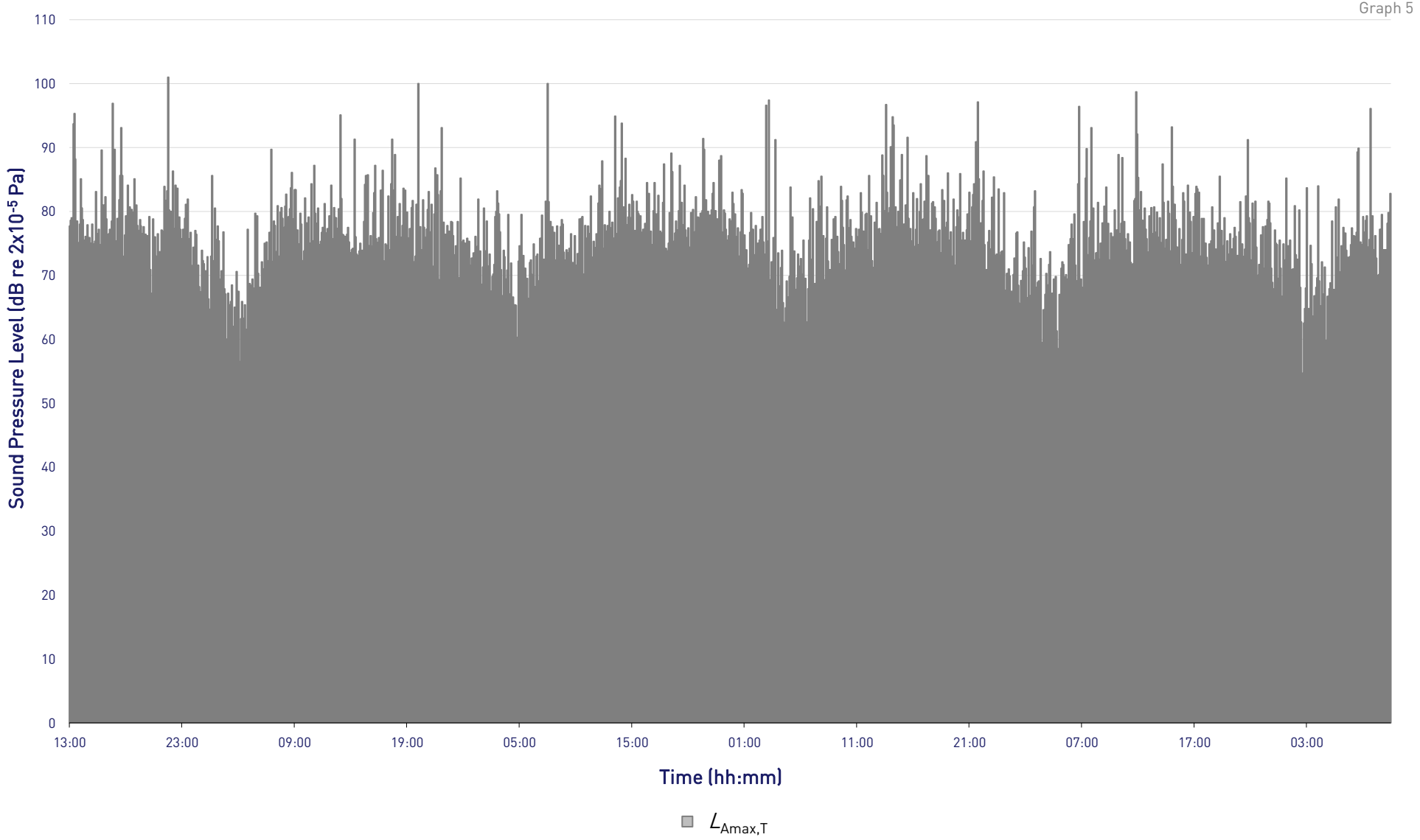
$L_{Amax,5\ min}$ Time History

Position 2, Arlington Road - Monday 16 October to Wednesday 18 October, 2023

RBA ACOUSTICS

Project: 13097

Graph 5



Jamestown Road, Camden - Regal

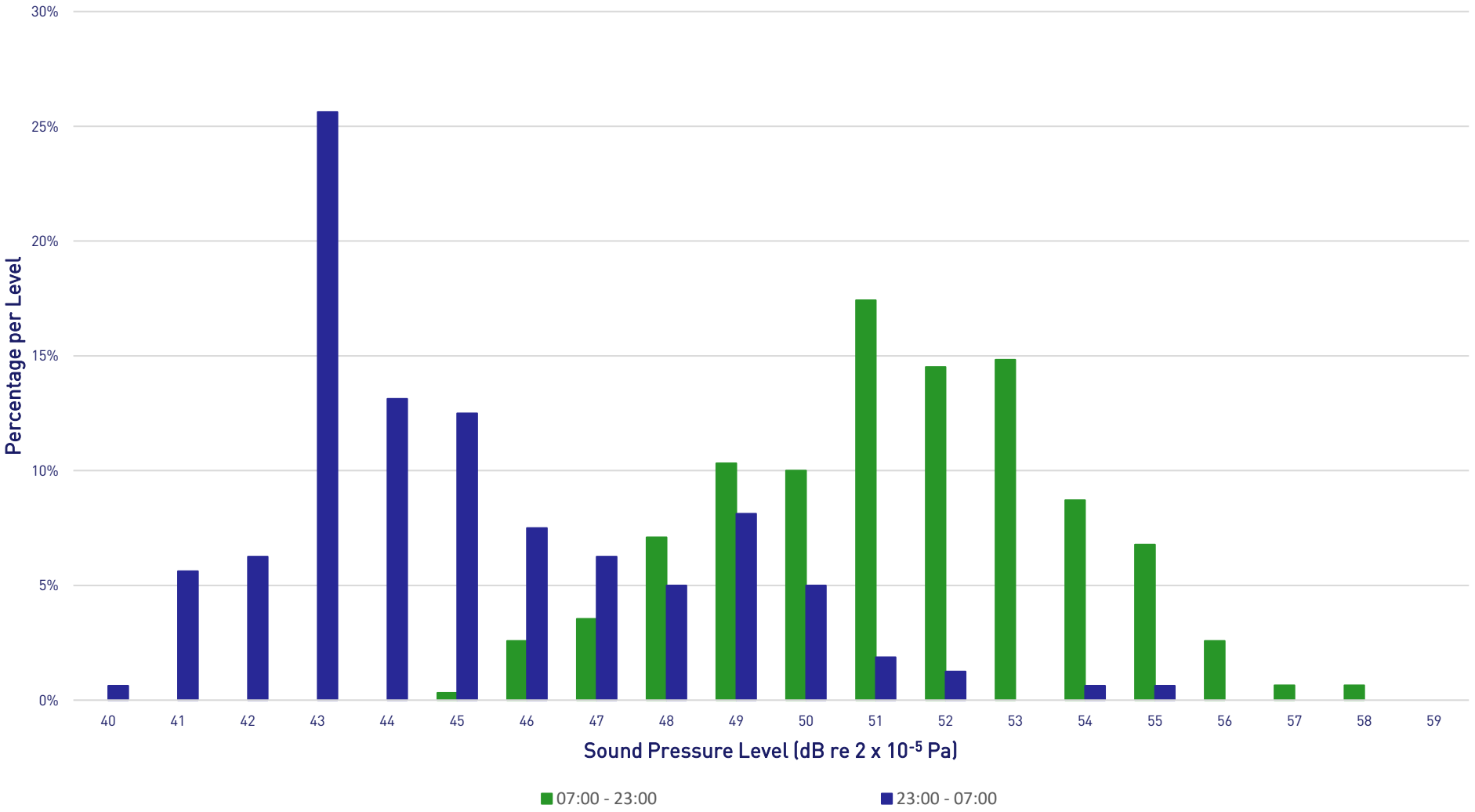
$L_{A90,15\ min}$ Histogram

Position 2, Arlington Road - Monday 16 October to Wednesday 18 October, 2023

RBA ACOUSTICS

Project: 13097

Graph 6



Jamestown Road, Camden - Regel

Measured Levels (15min Sample Periods)

Position 3, Rear of Site - Monday 16 October to Wednesday 18 October, 2023

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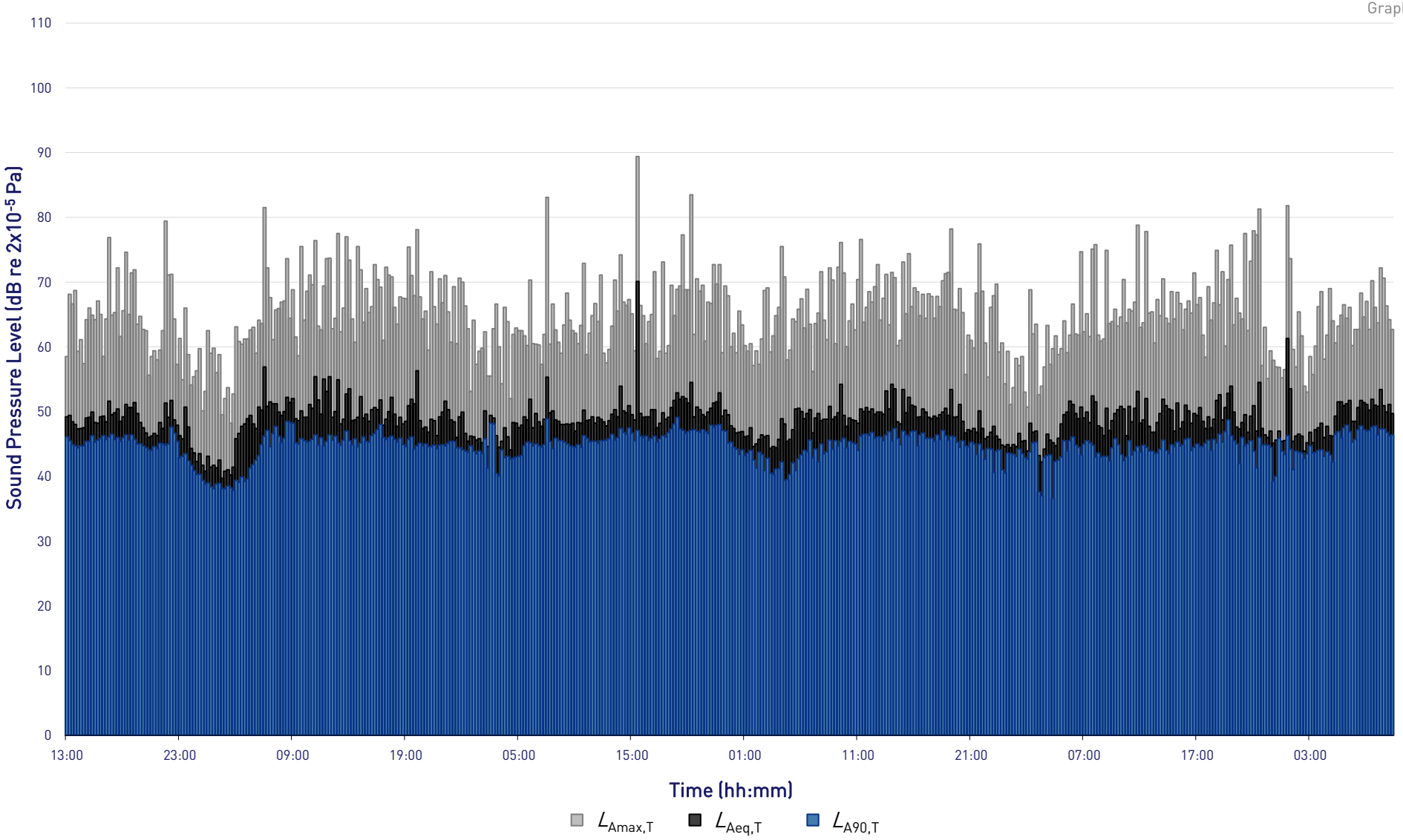
Graph 7



Jamestown Road, Camden - Regel

$L_{Amax,5\ min}$ Time History

Position 3, Rear of Site - Monday 16 October to Wednesday 18 October, 2023

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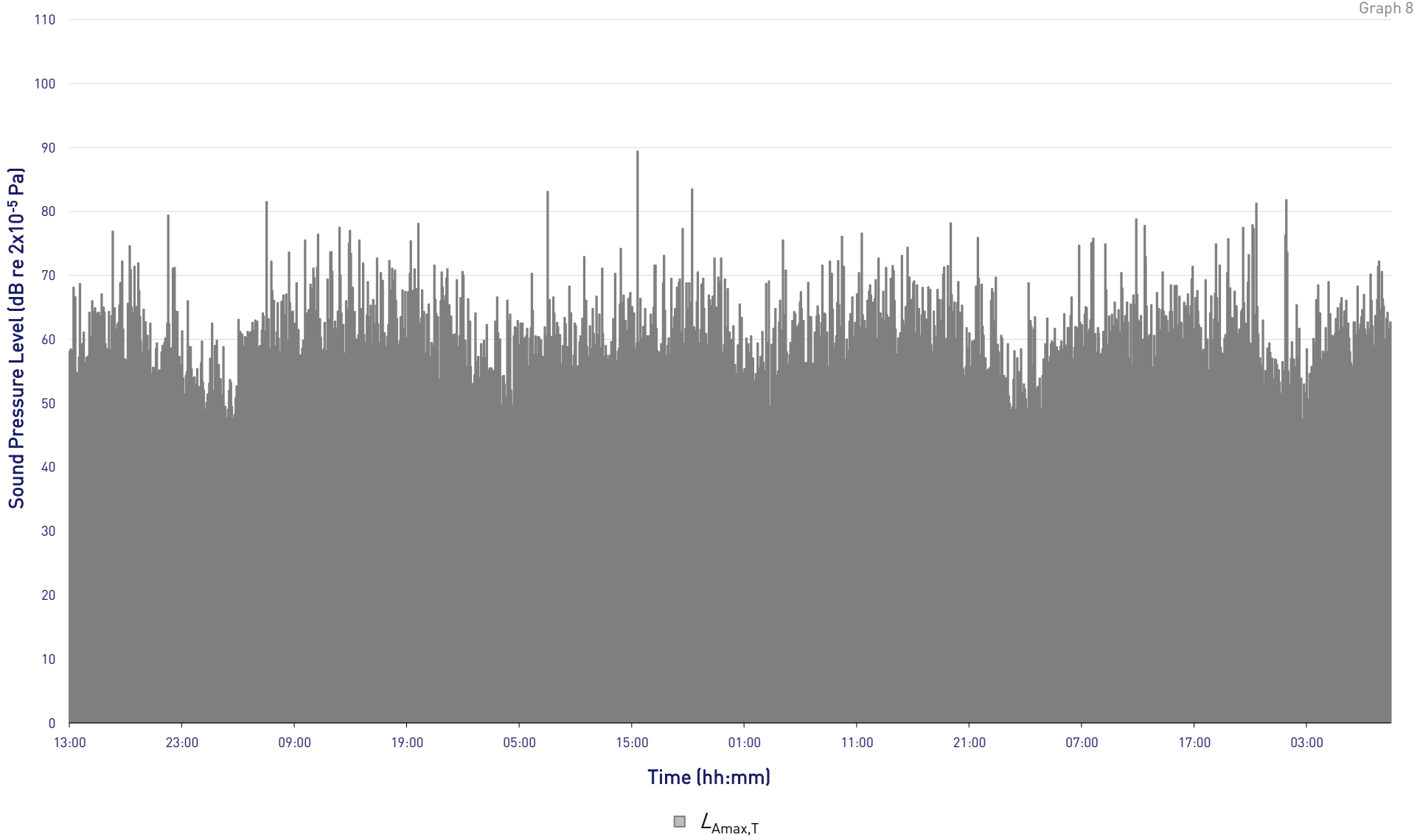
Graph 8



Jamestown Road, Camden - Regel

$L_{A90,\,15\,min}$ Histogram

Position 3, Rear of Site - Monday 16 October to Wednesday 18 October, 2023

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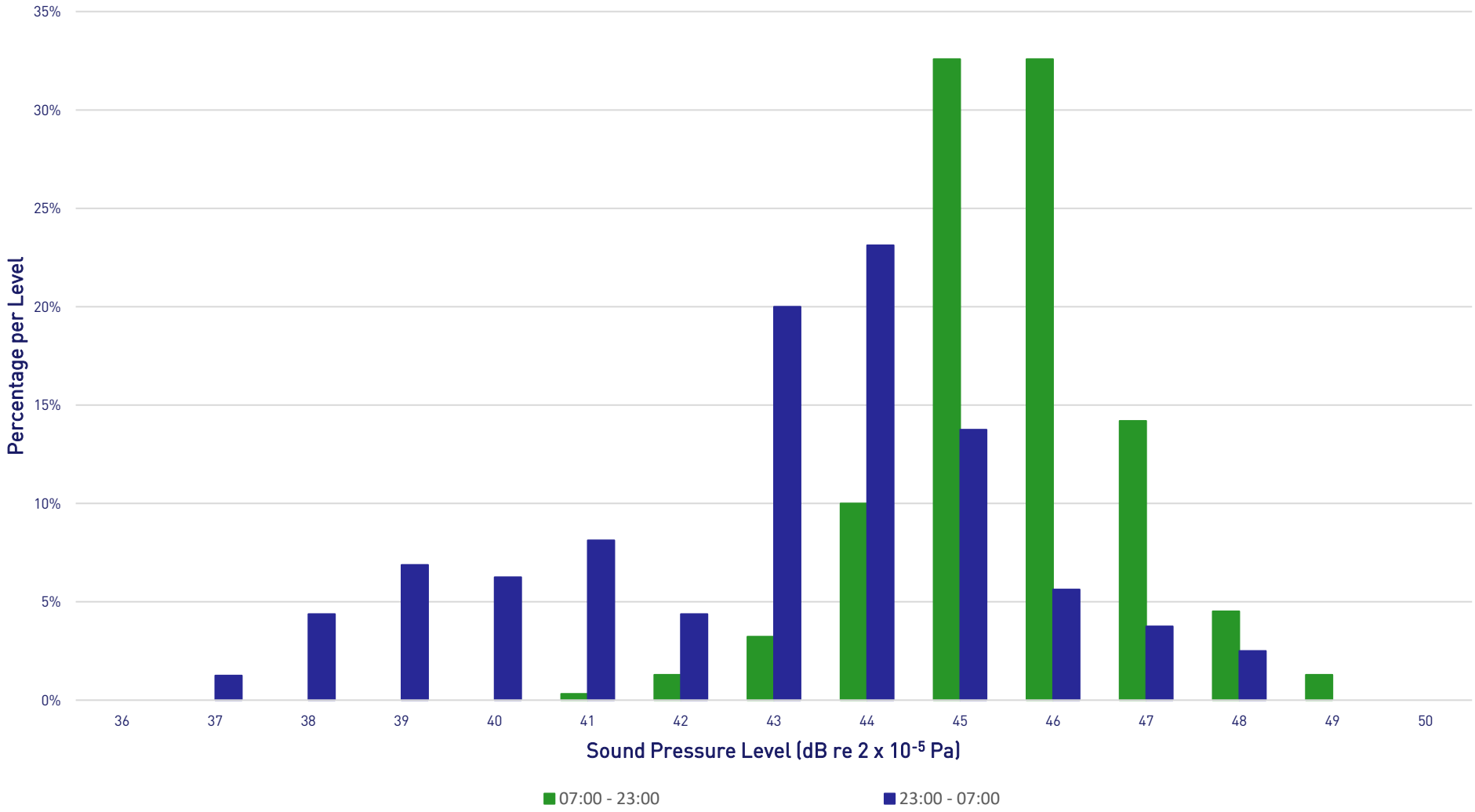
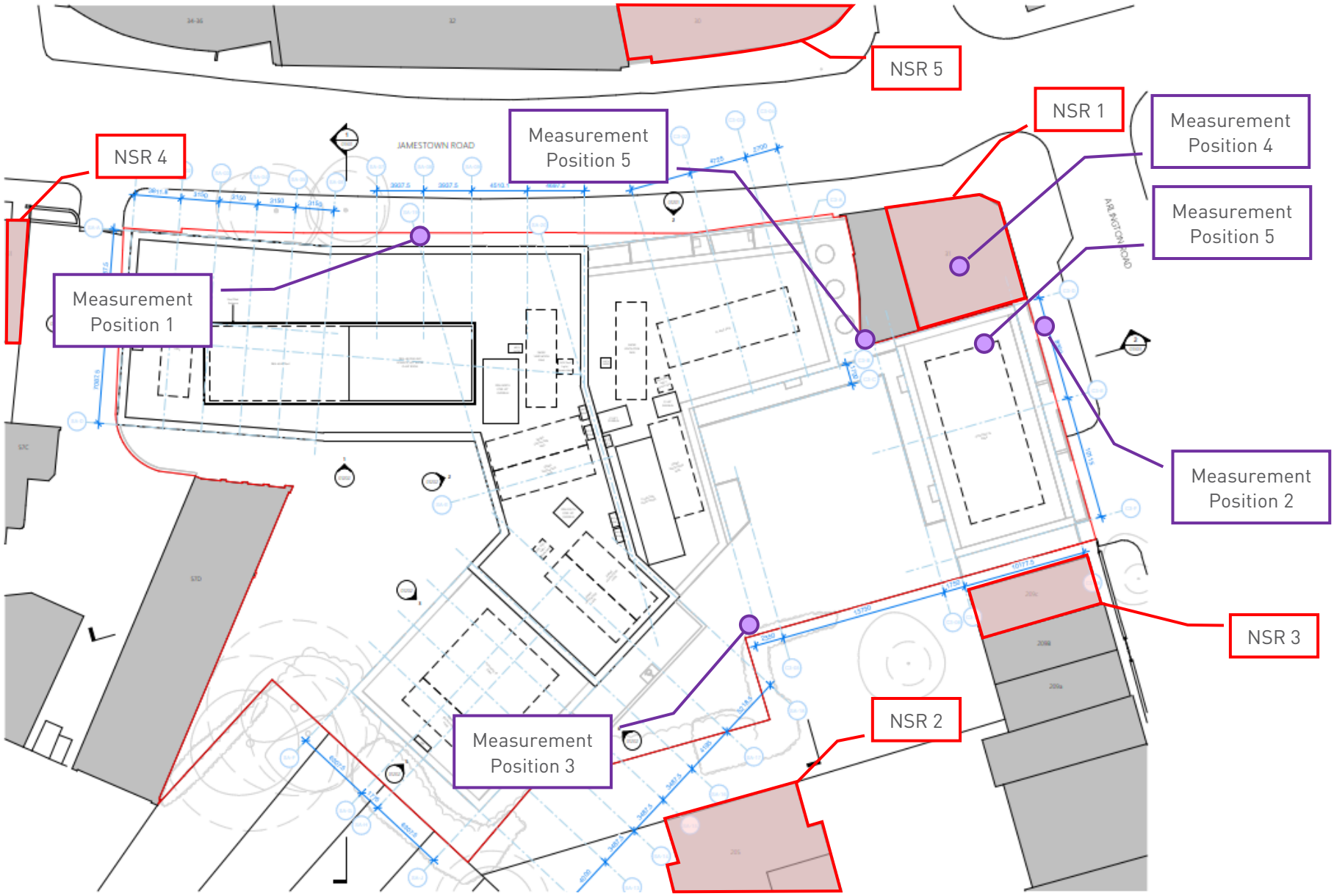
Graph 9





Jamestown Road, Camden

Site Layout & Nearest Noise-Sensitive Receptors

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Figure 1

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Not to Scale

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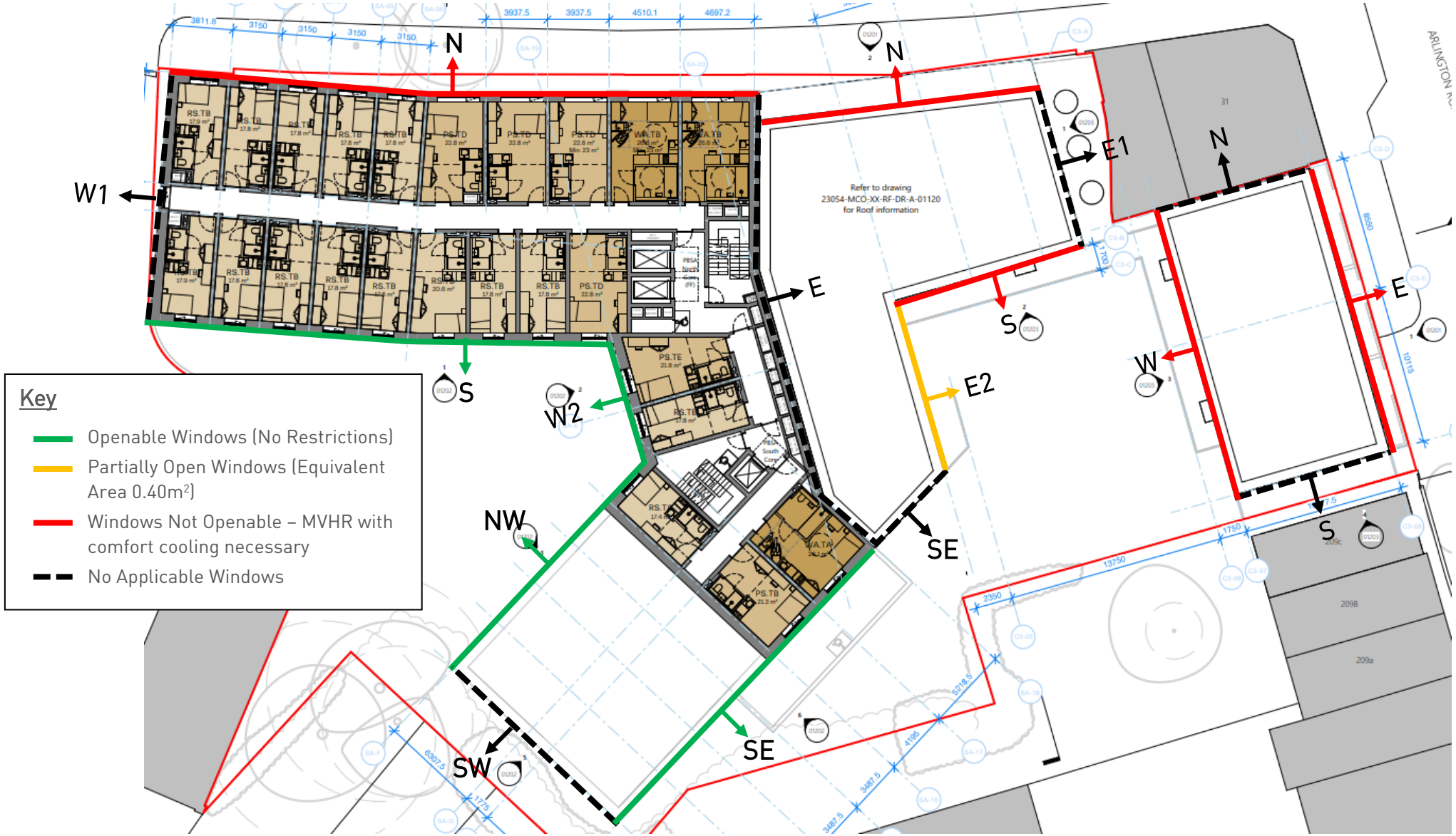

Jamestown Road, Camden

Façade References & Indicative Ventilation Strategies - Level 00

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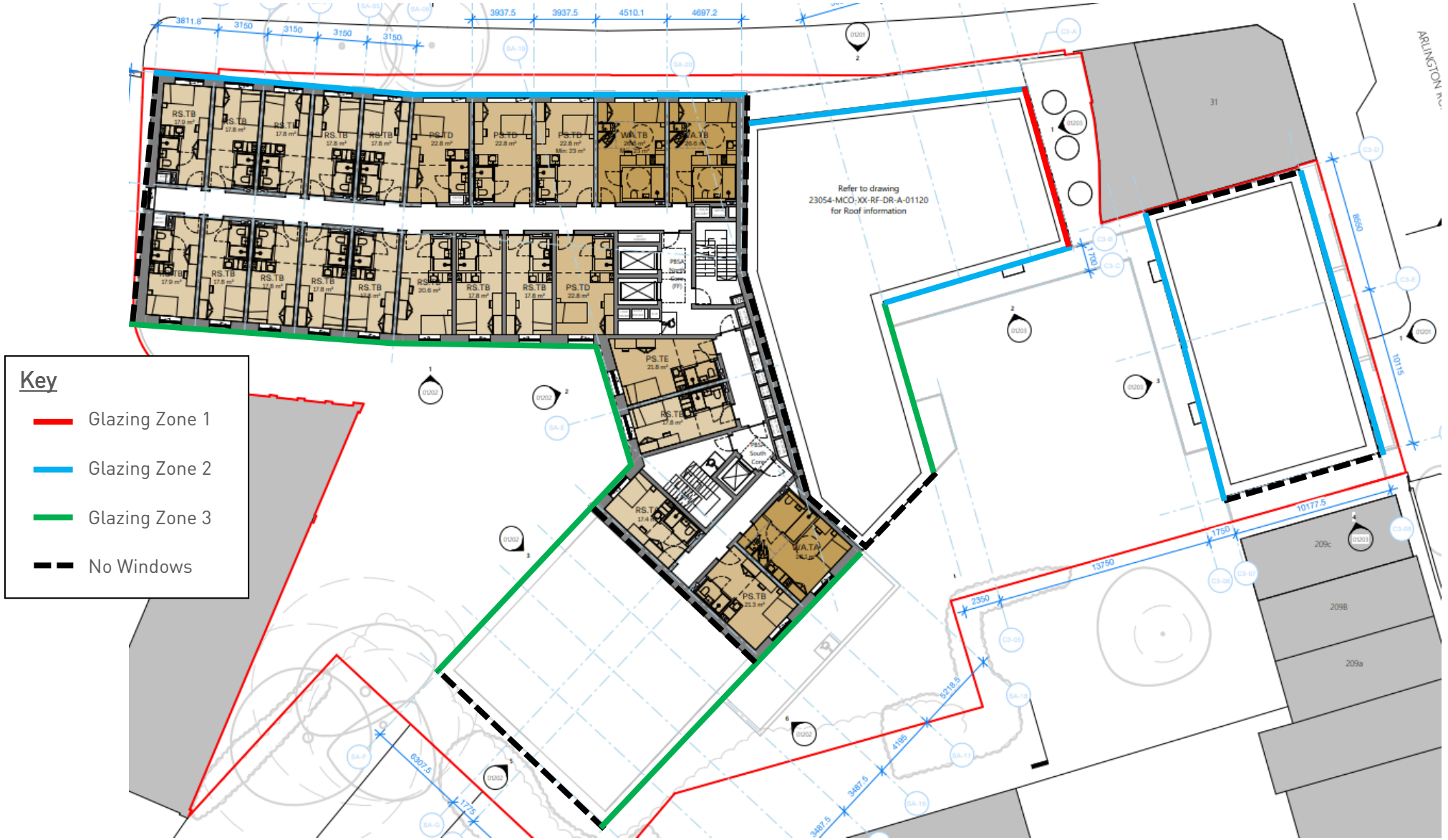
Figure 2

8 November 2024

Not to Scale

RBA ACOUSTICS



Jamestown Road, Camden

Indicative Glazing Zones

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Figure 3

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Not to Scale

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Jamestown Road, Camden

Photos of General Acoustic Climate Survey Measurement Positions

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Figure 4

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Not to Scale

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Jamestown Road, Camden

Photos of Licensed Premises Noise Breakout Survey Measurement Positions

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Figure 5

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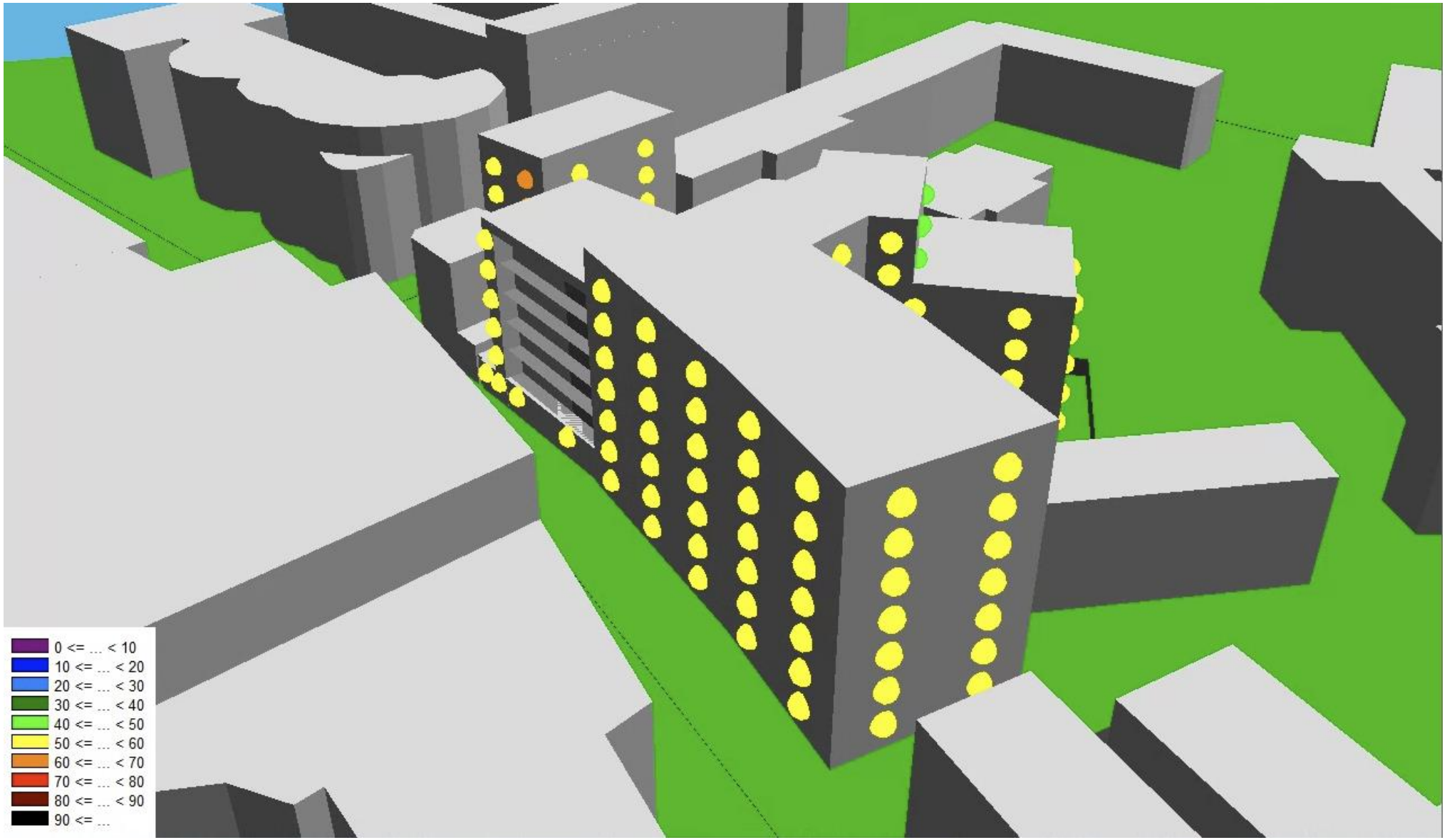
Not to Scale

RBA ACOUSTICS



Jamestown Road, Camden

3D CadnaA Visualisations – Typical Night-time Noise Levels ($L_{Aeq,8hr}$), Northwestern Facades

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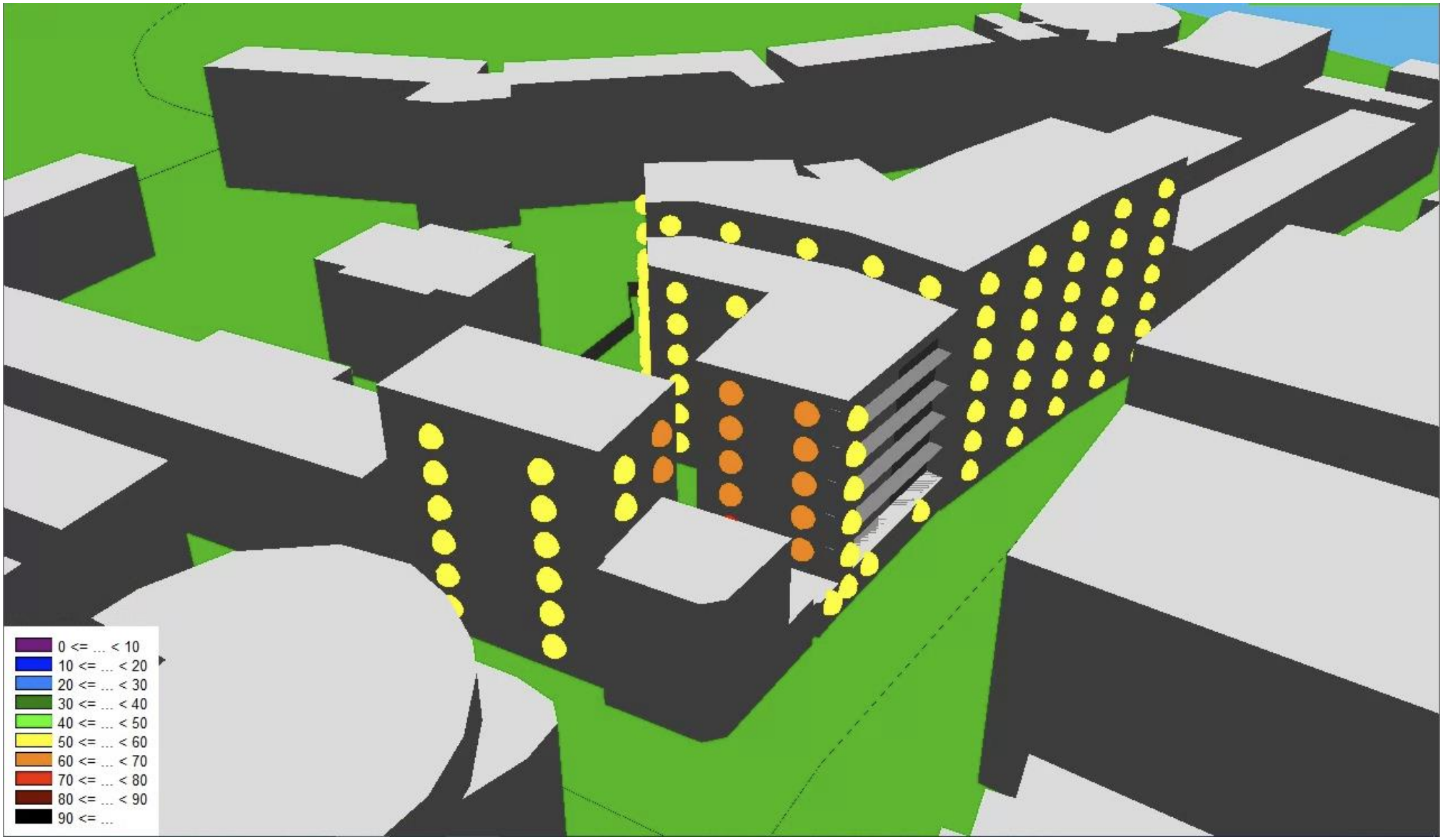
Figure 6

8 November 2024

Not to Scale

RBA ACOUSTICS



Jamestown Road, Camden

3D CadnaA Visualisations – Typical Night-time Noise Levels ($L_{Aeq,8hr}$), Northeastern Facades

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Figure 7

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Not to Scale

RBA ACOUSTICS

Jamestown Road, Camden

3D CadnaA Visualisations – Typical Night-time Noise Levels ($L_{Aeq,8hr}$), Southeastern Facades

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Figure 8

8 November 2024

Not to Scale

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Jamestown Road, Camden

3D CadnaA Visualisations – Typical Night-time Noise Levels ($L_{Aeq,8hr}$), Southwestern Facades

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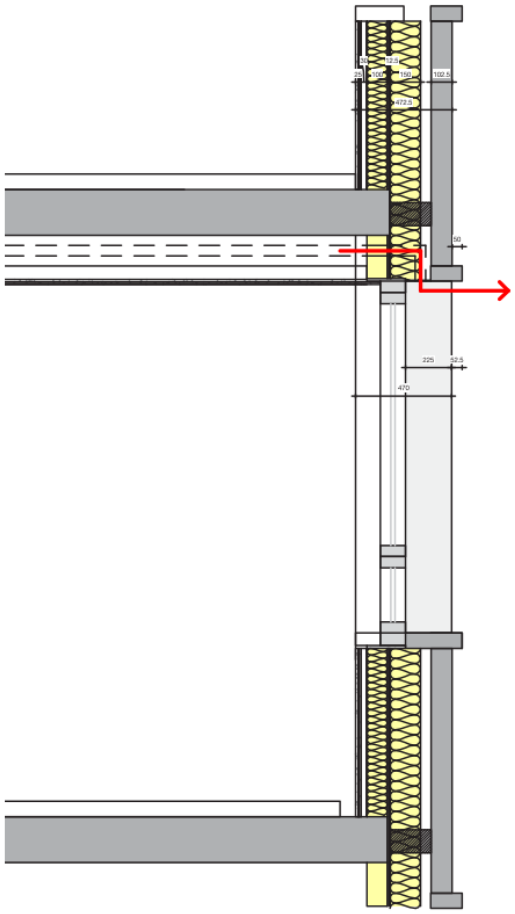
Figure 9

8 November 2024

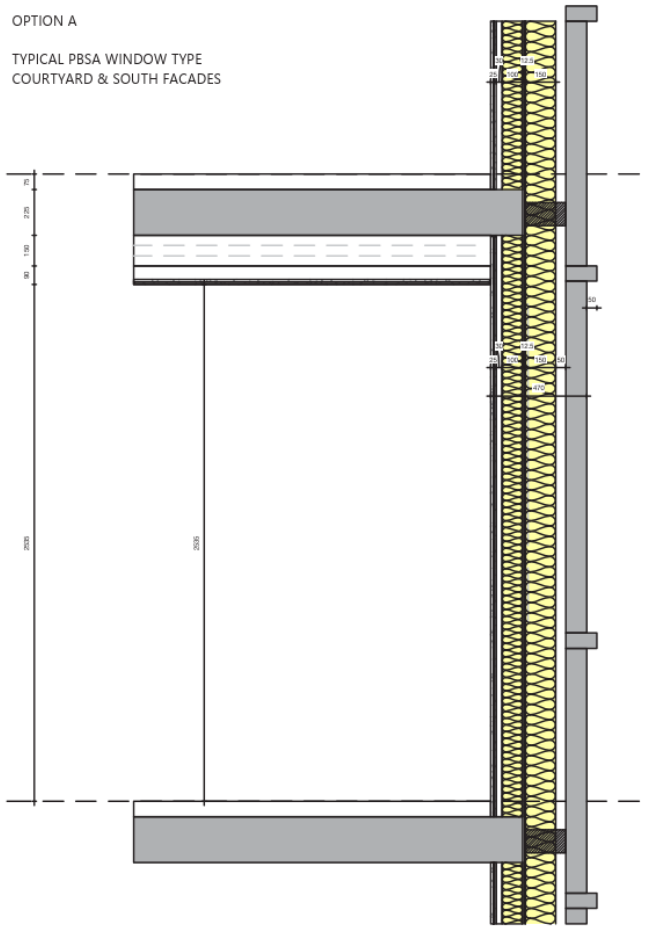
Not to Scale

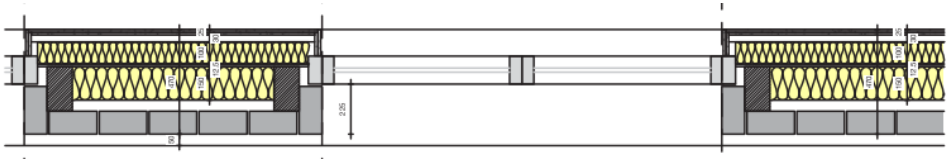
RBA ACOUSTICS

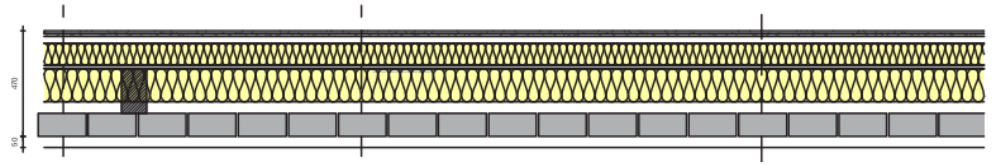


OPTION A

TYPICAL PBSA WINDOW TYPE
COURTYARD & SOUTH FACADES







Jamestown Road, Camden

Proposed External Façade & Floor Constructions

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Figure 10

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