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Augusta Place / Regent Street
Leamington Spa

Acoustic Report

14 March 2024

Contents

SUMMARY

It is proposed to convert the existing commercial property at 1 August Place / 36 Regent Street in Leamington Spa to create new residential properties.

The application seeks prior approval to convert the upper floors from Class E (Commercial) to Class C3 (Residential) under Class MA of the General Permitted Development Order. One of the Prior Approval conditions is that the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to the impacts of noise from commercial premises on the intended occupiers of the development.

A noise survey has been undertaken to assess environmental noise levels affecting the site.

The noise survey results have been used to predict internal noise levels in relation to standard internal noise level requirements.

It was concluded that the sound reduction performance of the façade would need to be upgraded for the proposed bedrooms facing Augusta Place and Regent Street.

In addition, the retained glazed and non-glazed areas of the façades throughout the development shall be made good and well-sealed.

The internal noise level limits are predicted to be exceeded with windows open, therefore mechanical ventilation will be required throughout the proposed development.

Provided the sound reduction performance of the façade is upgraded for the proposed bedrooms facing Augusta Place and Regent Street, that the retained glazed and non-glazed areas of the facades throughout the development are made good and well-sealed, and that mechanical ventilation is installed, the noise level limits of the internal accommodation are not predicted to be exceeded.

These upgrades could be secured by an appropriately worded planning condition and on the basis that they are undertaken there are no noise-related reasons why prior approval should be withheld.

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1.0 Introduction

It is proposed to convert the existing commercial property at 1 August Place / 36 Regent Street in Leamington Spa to create new residential properties.

The application seeks prior approval to convert the upper floors from Class E (Commercial) to Class C3 (Residential) under Class MA of the General Permitted Development Order. One of the Prior Approval conditions is that the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to the impacts of noise from commercial premises on the intended occupiers of the development.

The following report presents the methodology and results of an environmental noise survey carried out at the site and the subsequent assessments necessary to address the local authority's requirements.

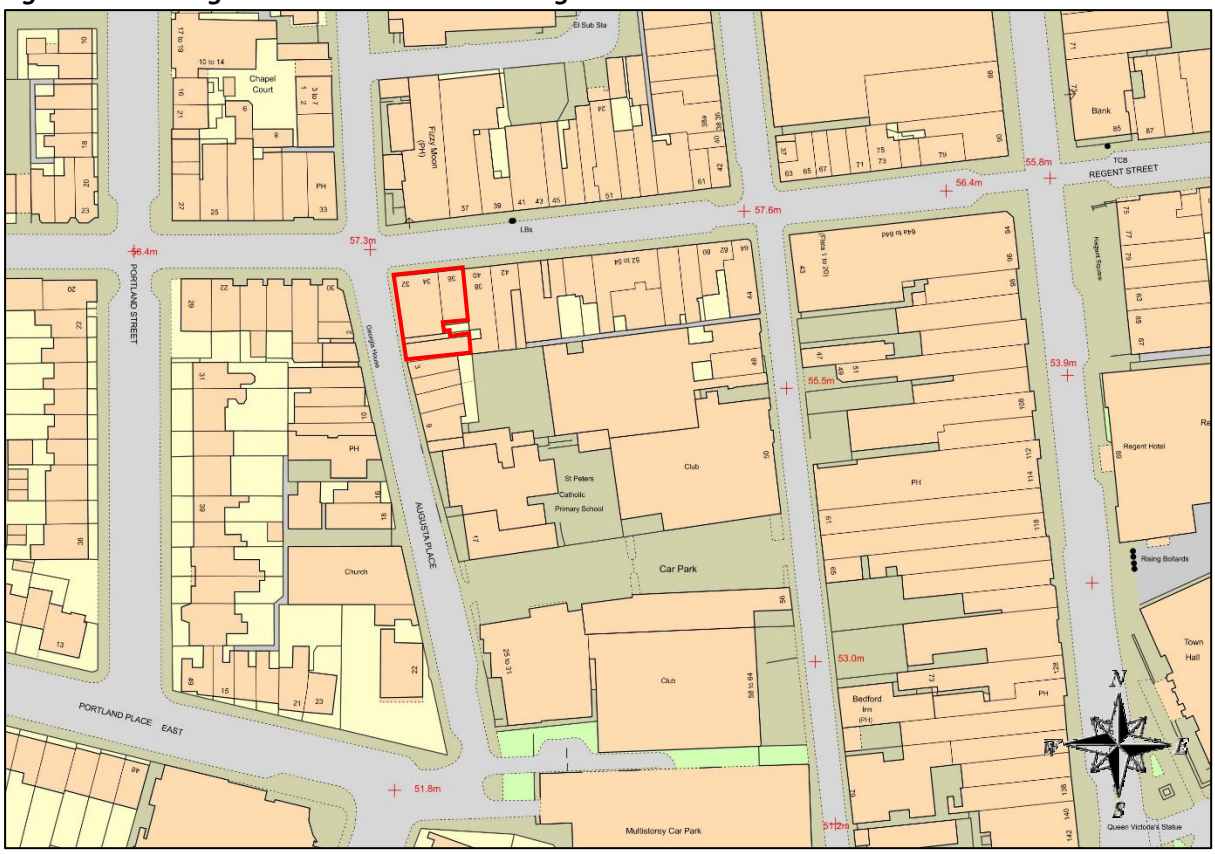
2.0 Description of Site and Proposals

The site is located on the corner of Augusta Place and Regent Street in Leamington Spa and is currently occupied by a commercial office with retail units at ground floor level and office space at first and second floor level. The surrounding properties are predominantly commercial.

The site is bounded by Regent Street to the north and August Place to the west, with further commercial properties to the south and east and a school playground to the south-east.

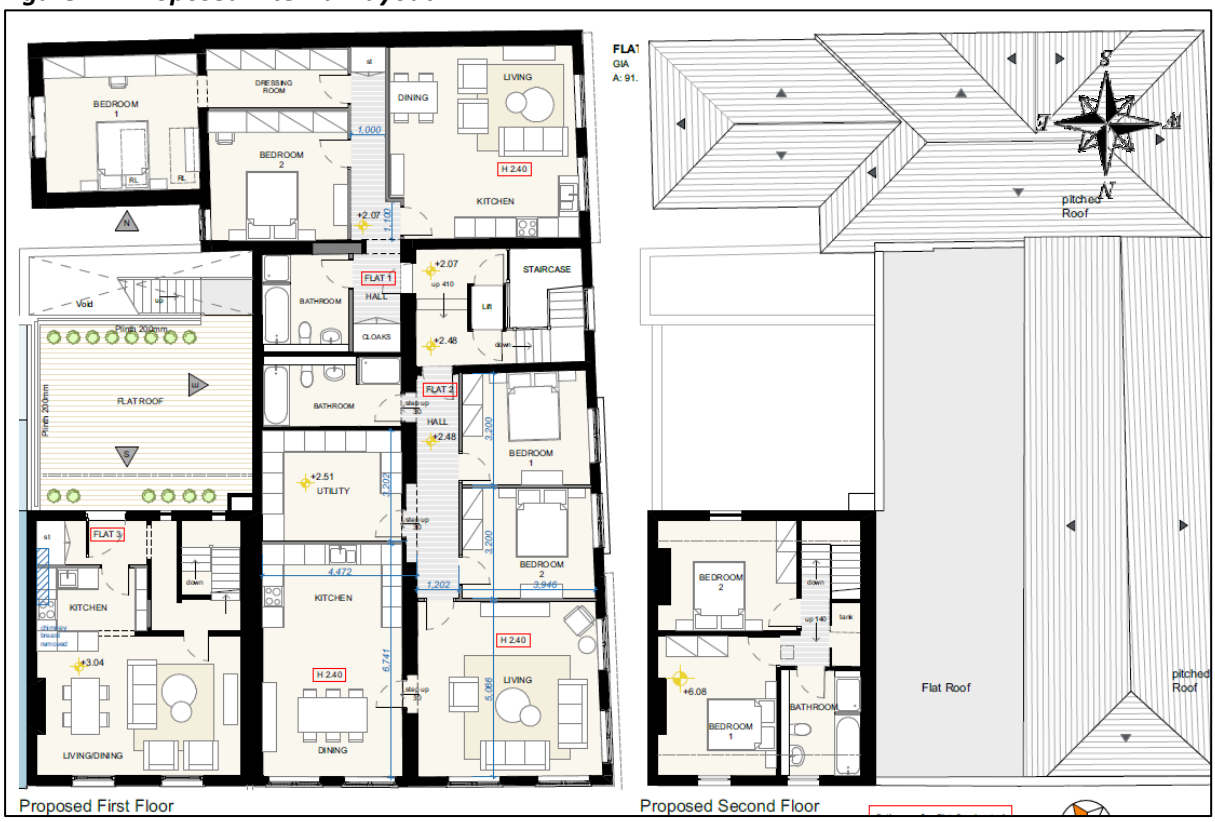
Figure 2.1 shows the approximate existing site extent in **red** in relation to the surrounding area.

Figure 2.1 Existing Site Extent and Surroundings



It is proposed to convert the building to create flats on the first and second floor levels. The proposed internal layout is shown in Figure 2.2.

Figure 2.2 Proposed Internal Layout



3.0 Acoustic Standards

British Standard (BS) 8233: 2014 "*Guidance on sound insulation and noise reduction for buildings*" is the industry standard for 'desirable' internal noise level standards for dwellings, as shown in Table 3.1.

Table 3.1 BS 8233 Desirable Internal Noise Levels

Activity	Location	07:00 to 23:00 hours	23:00 to 07:00 hours
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 $L_{Aeq,8hour}$

The standard advises that the limits shown in Table 3.1 could be increased by 5 dB whilst still achieving 'reasonable' conditions.

In relation to individual noise events during night-time periods, the standard advises the following:

"*Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,\ F}$, depending on the character and number of events per night.*"

In relation to night-time maximum noise events, we have considered the World Health Organisation (WHO) document "*Guidelines for Community Noise*" (1999), which advises the following:

"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)."

We have considered the above standards in our noise survey methodology and noise assessment.

4.0 Noise Survey

4.1 Noise Survey Methodology

An unmanned environmental noise survey was undertaken in both internal and external locations at the site over a 4-day period between Friday 1 March 2024 and Tuesday 5 March 2024.

The noise survey period was selected to determine typical noise levels affecting the proposed development site during the daytime and night-time, over weekday and weekend periods, when the proposed development will be occupied.

Figure 4.1 indicates the approximate internal and external measurement locations in **purple**. with further description in Table 4.1

Figure 4.1 Noise Measurement Positions

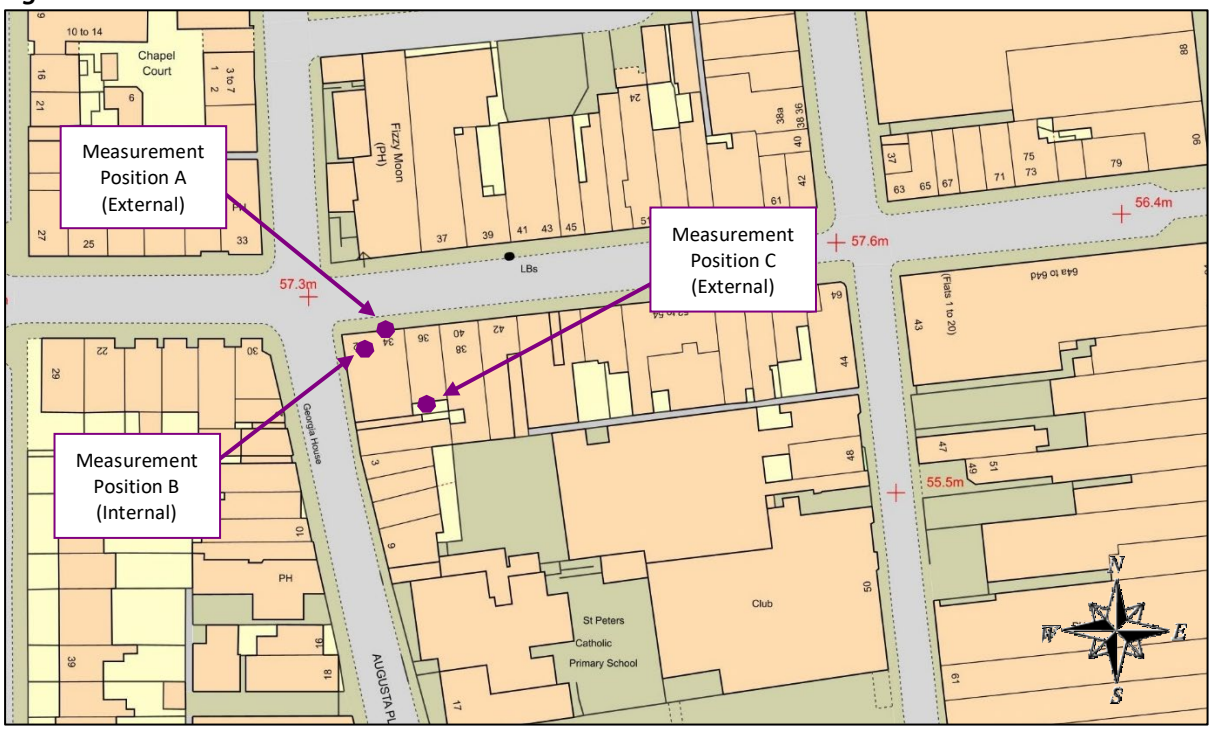


Table 4.1 Description of Measurement Positions

Measurement Position	Description
A (External)	Measurement microphone protruding from a first-floor level window in the northern façade, overlooking Regent Street
B (Internal)	Measurement microphone mounted on a tripod inside the first floor level office space approximately 3m from the northern façade, overlooking Regent Street
C (External)	Measurement microphone mounted on a tripod approximately 1.5m above the terrace at the rear/south-east of the site, at first floor level

Measurement positions A and C were selected as being representative of environmental noise levels affecting the northern and south-eastern façades respectively.

Measurement position B was selected as being representative of internal noise levels on the northern façade.

The equipment used for the noise survey is summarised in Table 4.2.

Table 4.2 Description of Equipment used for Noise Survey

Measurement Position	Item	Make & Model	Serial Number
A	Type 1 automated logging sound level meter	Norsonic 140	1405948
	Type 1 ½" microphone	GRAS 40AF	212903
B	Type 1 automated logging sound level meter	Norsonic 140	1405948
	Type 1 ½" microphone	GRAS 40AF	355507
C	Type 1 automated logging sound level meter	Norsonic 140	1403413
	Type 1 ½" microphone	GRAS 40AF	207390
All	Calibrator	Norsonic 1255	125525261

L_{Amax} and L_{Aeq} sound pressure levels were measured over contiguous 1-second intervals throughout the noise survey period at each measurement position.

Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the weather conditions throughout the entire noise survey period. However, at the beginning of the survey period, conditions were dry with a clear sky and light wind. We understand these conditions were

representative of the remainder of the survey period and are considered appropriate for undertaking environmental noise measurements.

The noise monitoring equipment was calibrated before and after the noise survey period. No significant change was found. Laboratory equipment calibration certificates can be provided upon request.

4.2 Noise Survey Results

Appendix B presents a time history graph showing the L_{Amax} and L_{Aeq} sound pressure levels measured throughout the noise survey at each measurement position.

As the measurement microphone at position A was located approximately 1m from an existing façade, a correction of -3 dB has been applied to the measurement results so as to replicate free-field conditions, in accordance with BS 8233: 2014.

The measured noise levels at each position are summarised in Table 4.3.

Table 4.3 Summary of Measured Noise Levels

Measurement Position	Daytime $L_{Aeq\ (16\ hour)}$ (dB)	Night-time $L_{Aeq\ (8\ hour)}$ (dB)	Night-time $L_{Amax\ (15\ minute)}$ (dB) (tenth highest)
A (External)	62	59	80
B (Internal)	34	31	50
C (External)	59	52	68

We would consider the measured levels to be reasonable, taking into account the locations of the measurement positions and the dominant nearby noise sources.

4.3 Observations

At the beginning and end of the survey period the daytime noise climate at measurement positions A and B was noted to be dominated by activity on Regent Street to the north of the site.

At measurement position C, the daytime noise climate was noted to be affected by a kitchen extract fan approximately 8m from the measurement position, as well as a school playground (when active) to the south-east of the site.

5.0 External Noise Intrusion

5.1 Internal Noise Levels

The layout of the proposed development will involve different room sizes and proportions of glazing to the proposed rooms, which will affect the internal noise levels measured at position B.

Based on the combination of the measurements at each position and the proposed room dimensions and surface finishes, we have undertaken calculations to predict internal noise levels in the proposed living rooms and bedrooms, the results of which are shown in Table 5.1.

Table 5.1 Predicted Internal Noise Levels

Room		Daytime $L_{Aeq\ (16\ hour)}$ (dB)	Night-time $L_{Aeq\ (8\ hour)}$ (dB)	Night-time $L_{Amax\ (15\ min)}$ (dB) (tenth highest)
Flat 1	Living/Dining/ Kitchen	34	-	-
	Bedroom 1	31	24	38
	Bedroom 2	31	24	28
Flat 2	Living	34	-	-
	Dining/ Kitchen	34	-	-
	Bedroom 1	34	30	**51**
	Bedroom 2	34	30	**51**
Flat 3	Living/Dining/ Kitchen	34	-	-
	Bedroom 1	34	30	**51**
	Bedroom 2	31	24	28
BS 8233: 2014 Limits		**35-40**	**30-35**	**45**

It can be seen that, in the kitchen/dining/living rooms, the daytime internal noise levels are predicted to be less than the BS 8233: 2014 limits. Also, in the bedrooms that face away from Augusta Place / Regent Street, the daytime and night-time internal noise levels are predicted to be less than the BS 8233: 2014 limits.

In the bedrooms facing Augusta Place and Regent Street, the night-time internal noise levels are predicted to exceed the L_{Amax} limit.

As such, secondary glazing is proposed to Bedrooms 1 and 2 for Flat 2 (first floor) and to Bedroom 1 of Flat 3 (second floor), which shall be specified to achieve a laboratory sound insulation performance of at least R_w 45 dB (taking into account the existing glazing). This is anticipated to involve an additional 6mm thick secondary internal pane spaced at least 100mm off the existing retained glazing.

In addition, the retained glazed and non-glazed areas of the façades throughout the development shall be made good and well-sealed.

5.2 Ventilation

Table 5.2 presents the predicted internal noise levels assuming a standard 13 dB reduction via an open window, in comparison with the BS 8233: 2014 limits.

Table 5.2 Predicted Internal Noise Levels with Open Windows

Façade	Predicted Internal Noise Level (dB)	
	Daytime $L_{Aeq\ (16\ hour)}$	Night-time $L_{Aeq\ (8\ hour)}$
Augusta Place / Regent Street	49	46
South-East	46	39
BS 8233: 2014 Limits	**35-40**	**30-35**

It can be seen that the limits are predicted to be exceeded with windows open, therefore mechanical ventilation will be required.

Internal noise levels associated with the mechanical ventilation system shall be limited so as not to exceed the noise limits specified by BS 8233: 2014 for living rooms and bedrooms.

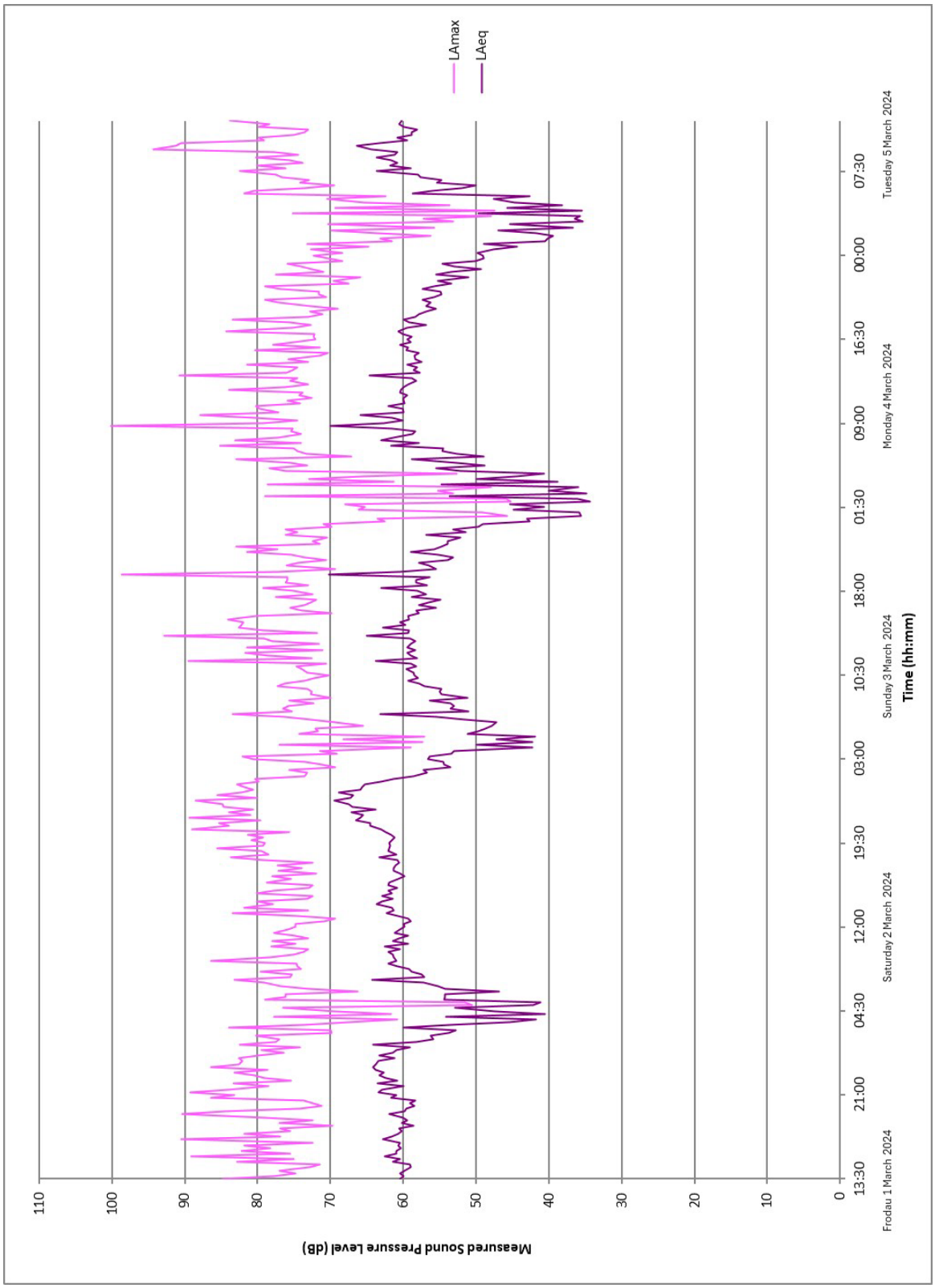
This could be secured by an appropriately-worded planning condition.

Appendix A – Acoustic Terminology

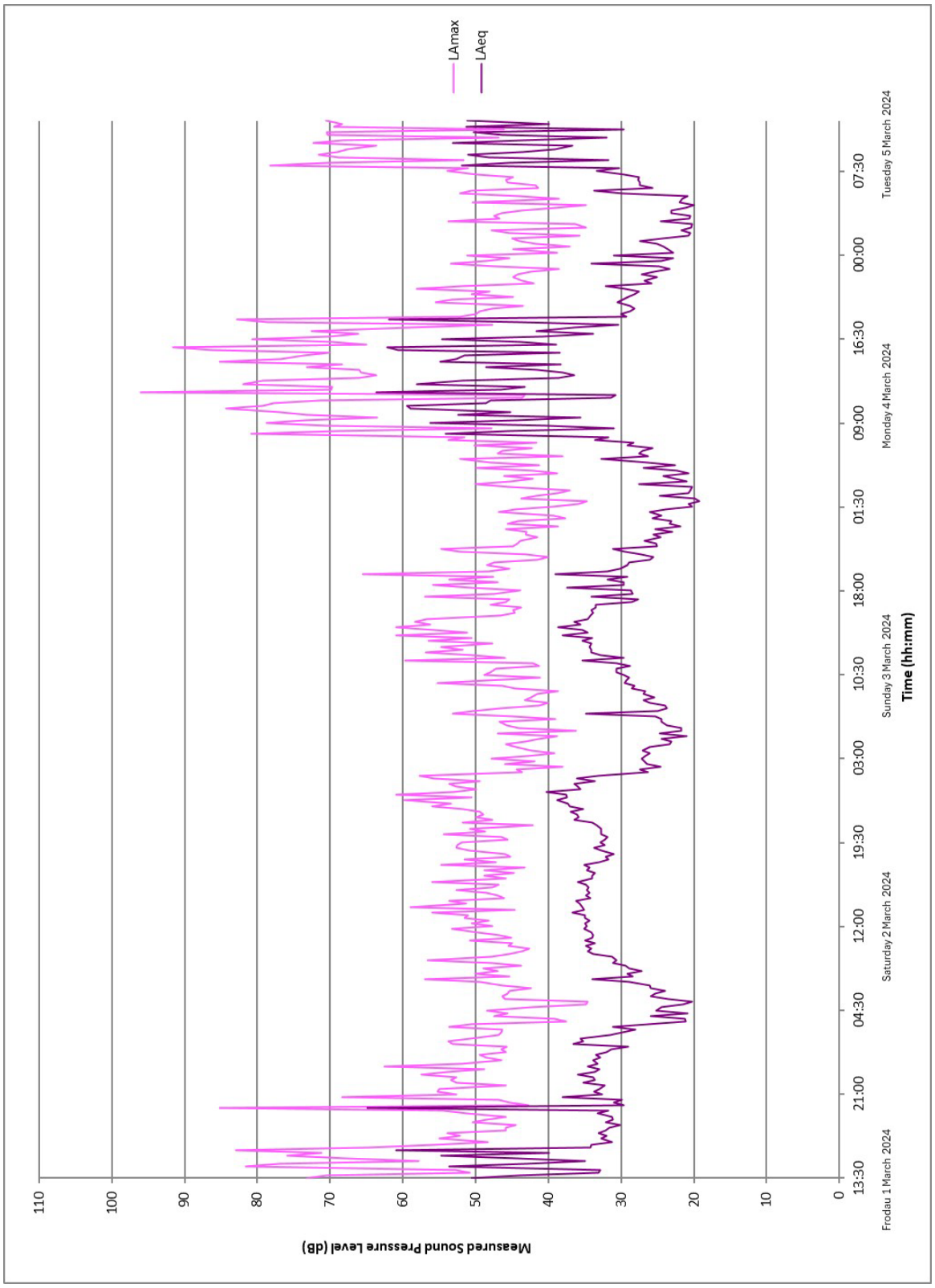
Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ($20x10^{-6}$ Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
L_{Amax}	The A-weighted maximum noise level measured during the measurement period.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
$L_{A90\ (15\ min)}$	The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over a 15-minute period
R_w	The weighted (w) sound reduction index (R), a single figure rating of the laboratory airborne sound insulation performance of a construction, usually measured across the frequency range 100-3150Hz. The higher the value, the greater the sound insulation, and the more onerous the requirement.
$D_{n,e,w}$	The weighted (w) element (e) normalised (n) level difference (D), a single figure indicator of the ability of a small building element (such as a trickle ventilator) to reduce sound. The higher the value, the greater the sound reduction, and vice versa.

Appendix B – Time History Graphs

Measurement Position A



Measurement Position B



Measurement Position C