Winters Buildings
St Anns Square
Manchester

Environmental Noise Survey and Noise Impact Assessment Report

32884/NIA

2 September 2026

For:
CubicWorks Ltd
Spinnaker Court
31 Broadway
Salford
Manchester
M50 2YRs



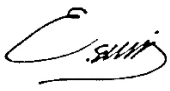
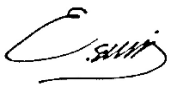
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Document Control

Rev	Date	Comment	Prepared by	Reviewed by	Approved by
0	02/09/2026	Updates to address EHO comments	 Jake Howarth Senior Associate BEng(Hons), MIOA		
0	16/07/2026		 Euan Ellis Assistant Consultant BA(Hons), TechIOA	 Jake Howarth Senior Associate BEng(Hons), MIOA	
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Appendix A – Acoustic Terminology

Appendix B – Relevant Planning Policies and Guidance

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1.0 Introduction

Hann Tucker Associates Limited (HTA) has been commissioned by CubicWorks Ltd to undertake a noise assessment for a site in Manchester.

The site, located at the Winters Buildings in St Ann's Square, is being considered for conversion from retail/office use across all floors to residential apartments on Level 2, 3 and 4 with Ground and Level 1 retained as retail use. The residential conversion will comprise 5No apartments, together with associated common parts.

The site is subject to road noise from St Ann Street and tram noise from Cross Street as well as noise from plant located on surrounding buildings.

Baseline noise conditions have been established by means of a detailed noise survey, presented herein. The findings have subsequently been used to assess the suitability of the site for residential use. Measures required to mitigate noise impacts for the proposed development (when operational) have been discussed in context with relevant national & local planning policies, design standards and good practice guides.

2.0 Objectives

To undertake an environmental noise survey to establish the existing L_{Amax}, L_{Aeq} and L_{A90} environmental road, rail and air traffic noise levels at selected accessible positions.

To obtain data that can be used to determine the requirements for sound insulation of the external facades at a later date.

To liaise with the Local Authority and agree the methodology for a baseline environmental noise survey of the site as well as the requirements for a detailed noise impact assessment for the development.

Based on the results of the survey, to undertake a noise assessment to assess the suitability of the site for residential use in accordance with the Noise Policy Statement for England (NPSE), National Planning Policy Framework (NPPF), Planning Practice Guidance (ProPG), British Standard BS8233:2014 and Local Authority requirements.

To undertake façade tests to determine whether the existing façade can be retained.

An assessment of the ground floor retail units to the newly formed residential will be undertaken with reference to MCC guidelines. An assessment of noise incident on the roof terrace will be undertaken with reference to MCC guidelines.

Measurement procedures shall be in general accordance with British Standard BS 7445 “Description and measurement of environmental noise”.

The survey will enable noise emission limits from the development to be identified with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 and to minimise the possibility of noise nuisance to neighbours.

To discuss noise mitigation and acoustic design solutions to achieve acceptable noise levels in residential areas.

3.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

4.0 Site Description

4.1 Location

The site is located in central Manchester. The location is shown in the Figure 1 below.

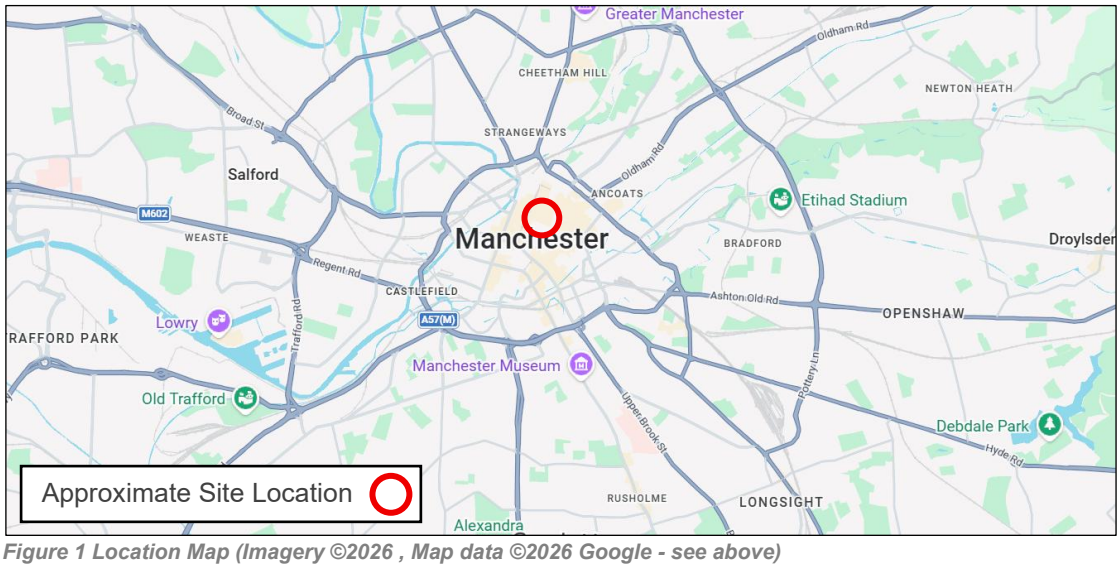


Figure 1 Location Map (Imagery ©2026 , Map data ©2026 Google - see above)

The site falls within the jurisdiction of Manchester City Council.

4.2 Description

The site is surrounded by densely populated urban area characterised by a mix of commercial, retail, hospitality with predominantly multi-storey buildings. To the north of the site is St Ann's Square as well as several vehicle and pedestrian routes. A tramline is located on Cross Street to the east which is understood to be a main contributor to the noise climate of the area. To the west lies Saint Anns Church and Churchyard. A Thomas's Chop House is located to the immediate south of the site with its associated extract fans understood to be located approximately 3m from the east façade of the proposed site.

The site is shown in Figure 2 below.



Figure 2 Site Plan (Imagery ©2026 Google, Imagery ©2026 Airbus, Maxar Technologies, Map data ©2026)

5.0 Proposed Development

The proposals are for refurbishment of the Winters Building in Manchester, proposing conversion from retail use to residential apartments on level 2, 3 and 4. The residential conversion will comprise 5 apartments, together with associated common parts.

The site is shown in and Figure 4 below.

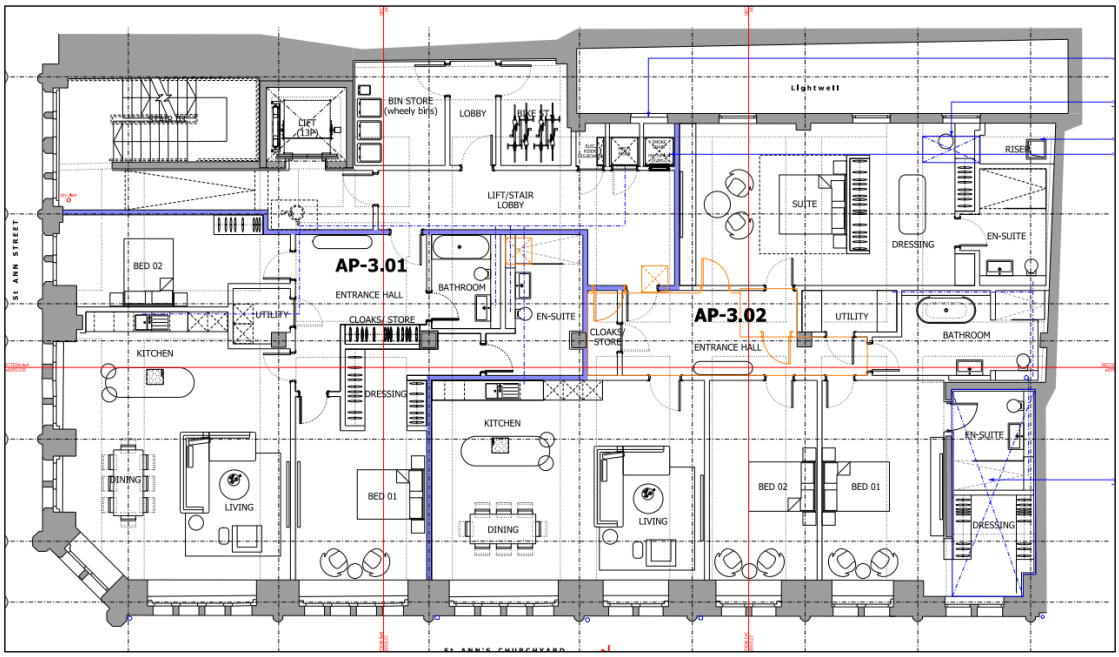


Figure 3 Proposed Third Floor Plan



Figure 4 Proposed elevation

6.0 Planning Policies, Standards & Guidance

6.1 Policies & Guides

In order to provide a suitable assessment a number of national planning policies have been considered, including:

- The National Planning Policy Framework (NPPF) 2026
- The Noise Policy Statement for England (NPSE), 2010
- Planning Practice Guidance – Noise (PPGN), 2019

The above documents highlight the importance of considering the potential noise effects on any new residential development and provide a qualitative approach to assessment. However, each of the above does not provide any quantitative guidance. As such, all quantitative guidance used to form a noise impact assessment is taken from various other standards, guidance, and Local Authority requirements as summarised below:

- Local Planning Policy
- World Health Organisation: 2018
- British Standard BS8233: 2014
- ProPG : Planning & Noise: 2017
- British Standard 4142:2014 + A1:2019

Detailed information for relevant planning policies and guidance can be found within Appendix B.

6.2 Specific Local Authority Criteria

MCC have adopted 'Planning and Noise Technical Guidance' (PNTG), issued in October 2022 which provides planning guidance on matters relation to noise and vibration.

Section 3.7.1.1 of PNTG states the following with respect to new residential developments.

> *"The Council has adopted the following noise limits for residential properties:*
>
> - *Bedrooms (night time - 23.00 - 07.00) 30 dB L_{Aeq} (individual noise events should not normally exceed 45 dB $L_{Amax,F}$ by more than 10 times)*
> - *Living Rooms (daytime - 07.00 - 23.00) 35 dB L_{Aeq}*
> - *Gardens and terraces (daytime) 55 dB L_{Aeq}"*

Section 3.7.1.2 of PNTG states the following with respect to noise from entertainment venues.

> *"Music noise levels in the 63 Hz and 125 Hz octave centre frequency bands (L_{eq}) should be controlled so as not to exceed (in habitable rooms) 47 dB and 41 dB ($L_{eq,5min}$), respectively".*

PNTG states the following with respect to noise from fixed plant / equipment.

> "*Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location".*

7.0 Baseline Noise Survey

7.1 Procedure

Fully automated environmental noise monitoring was undertaken by Euan Ellis BA(Hons), TechIOA, and assisted by Christopher Fisk BA(Hons), AMIOA, from approximately 12:00 hours on Thursday 28 May 2026 to 15:00 hours on Monday 1 June 2026, to establish full daytime and night-time noise levels over a typical weekday and weekend period. Measurements were taken continuously of the A-weighted (dBA) L_{90}, L_{eq}, and L_{max} sound pressure levels over discrete 2 and 15-minute periods.

Additional measurements were performed between 11:00 hours and 12:00 hours on Monday 1 June 2026 and between 15 June 2026 and 16 June 2026 to establish noise levels at the east façade of the site and along St Ann's Street and within an existing lightwell to the rear of the building.

7.2 Measurement Positions

The noise level measurements were undertaken at positions as described in the Table 1 below.

Table 1: Description of Measurement Positions

Position	Type	Description
1	Unattended	Located to the west of the site approximately 3m from the façade of the site and attached to a lamp post 2m above ground level. Microphone in free field conditions.
2	Unattended	Located to the west of the site approximately 3m from the façade of the site and attached to a lamp post 2m above ground level. Approximately 20m north of position 1 and 7m from St Anns Street. Microphone in free field conditions.

Position	Type	Description
3	Attended	Located to the north of the site on St Anns Street and attached to a tripod approximately 1.5m above ground level.
4	Unattended	Located within a rear lightwell of the site approximately 2m from existing extract fans associated with Thomas's Chop House. Microphone attached to a tripod approximately 2m above ground level and in free field conditions.

The positions are shown in Figure 5 below.

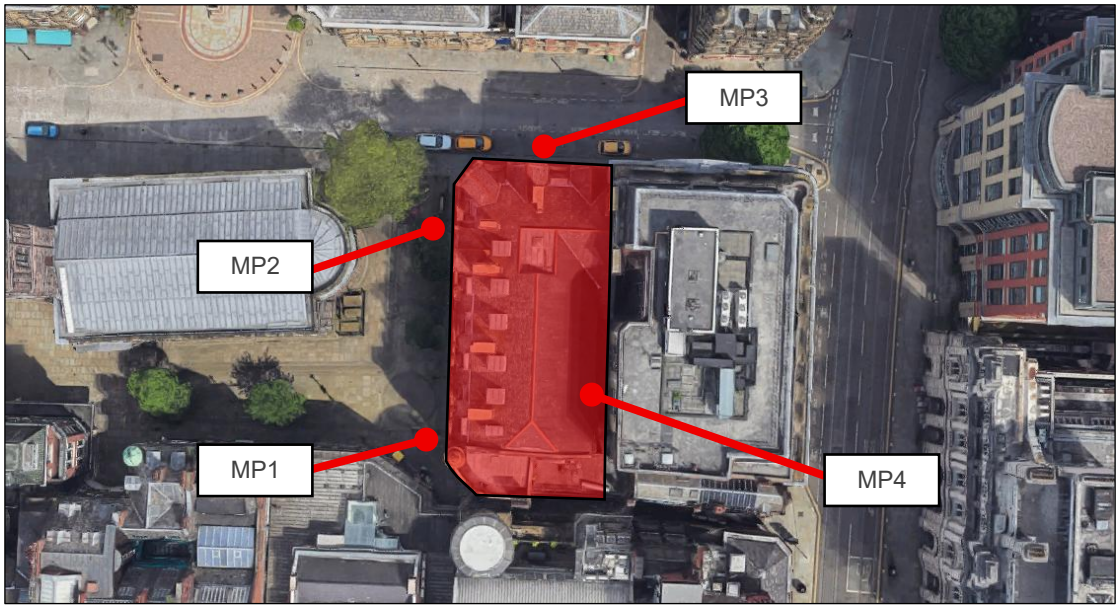


Figure 5 Plan Showing Measurement Positions (Imagery ©2026 Google, Imagery ©2026 Airbus, Maxar Technologies, Map data ©2026 Google) - see above)

7.3 Weather Conditions

For the unattended surveys between Thursday 28 May 2026 and Monday 1 June 2026 and between Monday 15 June 2026 and Tuesday 16 June 2026 local weather reports indicated no notable periods of prolonged and or heavy rainfall, with temperatures ranging from 6 °C (night) to 20 °C (day) and wind speeds less than 5 m/s. During our time on site, skies were largely clear with patchy cloud cover, wind conditions were calm and from a southeasterly direction and road surfaces were largely dry. During the attended survey on Monday 1 June 2026, the weather was generally cloudy and with some periods of rainfall and light winds wind conditions.

7.4 Instrumentation

The instrumentation used during the survey is presented in Table 2 below:

Table 2: Instrumentation

Position	Manufacturer	Unit Type	Model	Serial No	Calibrated
1	Larson Davis	Sound Level Meter	LxT	5111	24/12/2025
	PCB	Preamp	PRML x TL1	55823	
	PCB	Microphone	377B02	330047	
2	Larson Davis	Sound Level Meter	LxT	4086	28/04/2026
	PCB	Preamp	PRML x TL1	42843	
	PCB	Microphone	377B02	174436	
3	Larson Davis	Sound Level Meter	LxT	5104	28/04/2026
	PCB	Preamp	PRML x TL1	69922	
	PCB	Microphone	377B02	317684	
4	Larson Davis	Sound Level Meter	824	3157	05/08/2025
	Larson Davis	Preamp	PRM902	3936	
	B&K	Microphone	4169	2470594	
All	Larson Davis	Calibrator	Cal200	3083	04/03/2026

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.3 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a windshield.

7.5 Results

The results have been plotted on Time History Graphs 32884/TH1 to 32884/TH2 enclosed presenting the 15 minute A-weighted (dBA) L_{90}, L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

A summary of the results, as used to inform subsequent assessments against current guidelines, is presented in the table below. The L_{A90} values presented are the 'representative' levels determined through statistical analysis of the 15-minute readings, in line with BS 4142. L_{Afmax} values are the '10th highest' 2-minute value.

Table 3: Unattended Measurement Results

Position	Day/Period	Daytime (07:00 – 23:00 hrs)		Night-time (23:00 – 07:00 hrs)		
		$L_{Aeq,16hr}$	L_{A90}	$L_{Aeq,8hr}$	L_{A90}	L_{Amax}
1	28/05/2026	57	48	52	42	73
	29/05/2026	60		56		77
	30/05/2026	59		56		77
	31/05/2026	60		51		72
	01/06/2026	61		-		-
2	28/05/2026	62	51	58	45	80
	29/05/2026	65		60		83
	30/05/2026	63		61		83
	31/05/2026	65		57		79
	01/06/2026	64				
4	15/06/2026	68	65	59	55	66
	16/06/2026	60		-		-

Table 4 summarises noise levels recorded at each of the attended measurement positions as well as synchronized unattended measurements.

Table 4: Attended Measurement Results

Position	Date	Period	Sound Pressure Level (dB)		
			$L_{Aeq,T}$	$L_{A90,T}$	$L_{Amax,T}$
1	01/06/2026	11:15:00 – 11:30:00	62	54	81
2	01/06/2026		64	55	86
3	01/06/2026		64	53	82

7.6 Discussion of Noise Climate

Due to the nature of the survey, i.e. unattended, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period the noise climate was noted to be dominated by road traffic noise, tram noise from Cross Street, and pedestrian vocalisation.

It is understood that outdoor seating area associated with Thomas's Chop House was previously located to the west of the site adjacent to Façade A which could potentially elevate noise levels on this façade. This seating area has since been removed and therefore noise levels measured at position 2 are reliable and representative. Furthermore, the unattended survey was carried out over a weekend period which is a period of elevated pedestrian and road traffic activity.

Measurement position 4 was taken within the rear lightwell of the building with the purpose of establishing noise levels with the existing plant associated with Thomas's Chop House which is located adjacent to the site. During the installation of this survey location, the dominant noise source was observed to be primarily plant noise as well as music coming from an open window through to Thomas's Chop House Kitchen.

8.0 Existing Facade Performance

8.1 Overview

Hann Tucker carried out façade sound insulation testing on Monday 1 June 2026 between 14:00 and 15:00 to establish the sound insulation performance of the existing façade.

The measurements were undertaken in general accordance with BS EN ISO 16283-3:2016, Acoustics – Field measurement of sound insulation in buildings and of building elements – Part 3: Façade sound insulation. The standard sets out procedures for determining the in-situ sound insulation performance of façades by comparing external and internal sound pressure levels, using either loudspeaker-generated noise or existing environmental noise as the sound source.

BS EN ISO 16283-3:2016 states that an omnidirectional loudspeaker as the preferred sound source for façade sound insulation testing. In this case, a cabinet loudspeaker was used. While this represents a departure from the preferred methodology, the measurements are considered representative and reliable, as adequate sound levels and coverage of the test façade were achieved throughout the assessment.

For the testing, a loudspeaker was positioned within St Ann's Courtyard, approximately 4m from the façade, at a height of 1.5m above ground level. The loudspeaker was orientated at approximately 45° to the normal of the façade.

The external microphone was positioned 2 m from the building façade, at a height of 1.5 m above ground level, to measure the external sound pressure level incident on the façade at ground-floor level. Due to access constraints, direct external microphone positions could not be achieved at the upper floor façade locations as the windows were painted shut and not openable. Therefore, the measured external sound pressure level has been adjusted to account for the increased source to receiver distance to estimate the indecent noise level on each of the upper floor levels.

Internal sound pressure levels were measured within rooms on Levels 1, 2 and 3. In each case, the internal microphone was positioned approximately 1.5m from the window closest to the external noise source.

The relevant room volumes and façade areas are summarised in Table 5.

Table 5: Façade Testing Internal Room

Internal Location	Room Volume (m^3)	Façade Glazing Area (m^2)	Façade Wall Area (m^2)
Level 1	690	25	70
Level 2	480	25	70
Level 3	480	25	70

8.2 Facade Testing Instrumentation

The instrumentation used during the façade testing is presented in Table 6.

Table 6: Façade Testing Instrumentation

Manufacturer	Unit Type	Model	Serial No	Calibrated
Brüel and Kjær	Sound Level Meter	2250	3025254	25/02/2026
Brüel and Kjær	Calibrator	4231	2308993	25/02/2026

Manufacturer	Unit Type	Model	Serial No	Calibrated
Behringer	Speaker	Eurolive B112MP3	S250100053AJM	N/A

8.3 Results

Based on the measured noise levels and the room parameters noted in Table 5, the existing in-situ level difference and sound reduction indices have been calculated and are presented in Table 7.

Table 7: Façade Testing Results

Location	Estimated $R'_w + C_{tr}$ (dB) of Façade
Level 1	30
Level 2	30
Level 3	28

8.4 Discussion

The calculated performance of the composite façade, including the wall and glazed has been calculated to be between 28 dB $R'_w + C_{tr}$ and 30 dB $R'_w + C_{tr}$

It should be noted that the façade sound insulation performance was measured with the existing windows closed and retained in their current condition. At the time of testing, the windows were sealed shut by paint. This condition is likely to have improved the measured façade performance to some degree by reducing air leakage around the opening casements, window seals and frame junctions.

The existing windows are understood to be retained as part of the proposed development. Where paint is subsequently removed from the window perimeters and the windows are returned to an openable condition, the airtightness of the façade may reduce. Any increase in air leakage around the opening casements, seals, ironmongery or frame junctions could reduce the overall façade sound insulation performance.

On this basis, the measured façade performance should be considered representative of the current condition. The final performance of the retained windows may be lower once they are made fully openable.

9.0 Existing Industrial/Commercial Noise Impacts

9.1 Overview

During our time on site, plant associated with Thomas's Chop House was observed to be located to the immediate rear of the site within an existing lightwell. Another extract duct was located at second floor level of the building facing Cross Street.

Noise from these units was noted to be the dominant noise source and was subjectively tonal and intermittent in nature.

Figure 6 below highlights the location of the nearby plant items in relation to the proposed site.

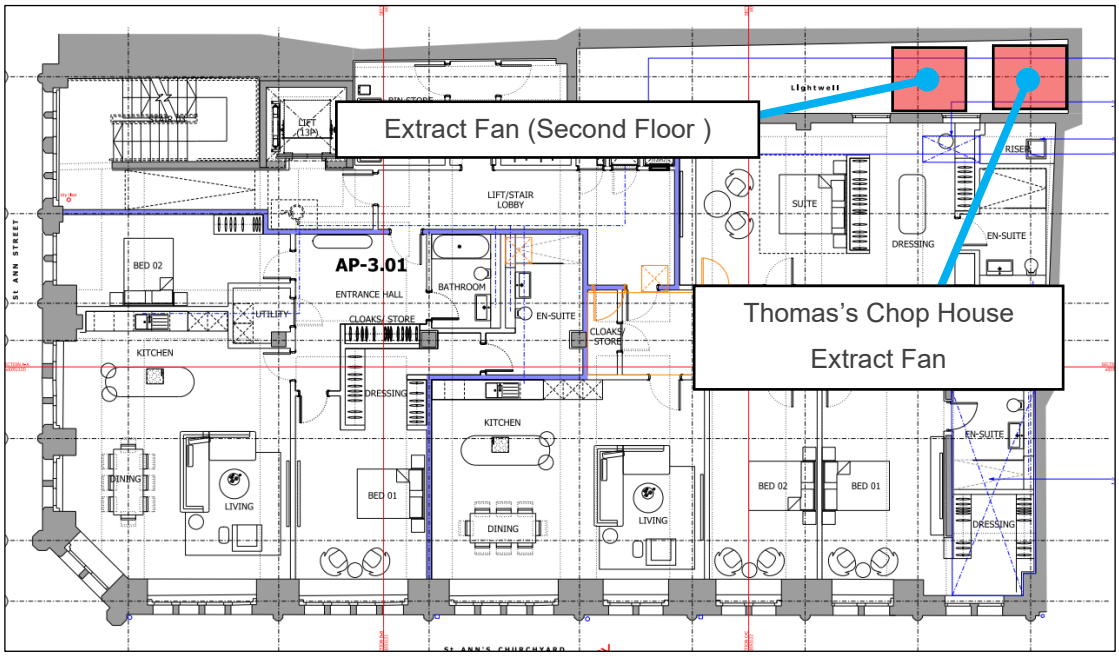


Figure 6 Plan Highlighting Existing Nearby Plant

The noise levels measured during the operation of the extract fan were 73 dB L_{Aeq} within the lightwell. It should be noted it was not possible to establish the background noise level in absence of plant noise within the lightwell as plant noise was a constant feature. As such, the lowest background measured during the daytime period has been used as the background, however, in reality the background noise level in absence of plant noise may be lower than this.

9.2 Extract Fan Assessment

Based on the measured data and observations made on site, the table below provides an initial BS4142:2014 assessment.

Results		Relevant Clause	Commentary
Measured Ambient Level	73 dB	7.3.2	Specific sound source on.
Measured Residual Level	N/A	7.3.3	Not possible to measure residential level.
Assessment made during the daytime so reference period is 1 hour		7.2	
On-time Correction	N/A	7.3.15	Fans running constantly throughout the day.
Specific Sound Level	73 dB	7.3.8 7.3.9 7.3.10	Specific level of source corrected for residual level and on-time.
Acoustic feature correction	+6 dB	9.2	The noise was tonal and intermittent.
Rating level	79 dB	9.2	Calculated by adding acoustic feature corrections to the specific sound level.
Background sound level	57 dB	8.1.1 8.1.3 8.3	Typical background sound level measured at the proposed development site during the night.
Excess of rating over background sound level	22 dB	11	
Assessment indicates likelihood of a significant adverse impact to residents without noise mitigation measures.		11	The excess of the rating level over the background level is very high, mitigation measures must therefore be assessed further to ensure good internal acoustic conditions.
Uncertainty of the assessment	Low	10	The background sound level is based on repeatable measurements made over the duration of a number of days. The measurements of noise from the industrial remained consistent throughout measurement period, and was subjectively not dominant above road/rail/aircraft sources at proposed development site.

The above indicates a likelihood of a significant adverse impact to proposed residents without noise mitigation measures, however, the context of the site must be considered to enable a full assessment.

Where the initial estimate of the impact needs to be modified due to the context, BS 4142:2014 states that all pertinent factors should be taken into consideration, including the following:

- The sensitivity of the receptor and whether dwellings will already incorporate design measures that secure good internal acoustic conditions.

Clearly, therefore, an initial estimate of a significant adverse impact does not imply that development may not be permitted, provided that proposed dwellings can incorporate design measures (ie imbedded mitigation) that secure good internal acoustic conditions.

In light of the above, we recommend that appropriate mitigation measures are incorporated into the design of proposed dwellings to control noise from the proposed facilities to a suitable level.

9.3 Historical Use of Church Yard

Tom's Chop House has historically made use of the adjacent churchyard within St Ann's Square for external customer seating. While this arrangement may not currently be in operation, its previous use demonstrates that external seating associated with the premises has occurred in close proximity to the proposed development and could reasonably occur again in the future, subject to the necessary permissions.

Accordingly, when determining the façade sound insulation requirements for the proposed development, it is considered appropriate to adopt a precautionary approach and allow for the potential future use of this area for seating associated with a pub. This avoids relying solely on the present day operating arrangement and provides greater resilience against a reasonably foreseeable change in the local noise environment.

The glazing specification has therefore been developed with an appropriate degree of caution, taking account of the potential for elevated evening noise levels associated with patrons occupying external seating within St Ann's Square.

10.0 Incident Noise Levels

Using the results of the noise survey the incident noise levels across the building have been calculated: Table 8 outlines the free-field incident noise levels across the development. For purposes of any subsequent assessment, these zones are considered to be the “Façade Zones”).

Table 8: Façade Zone Noise Levels

Façade zone	Calculated Incident Noise Levels		
	Daytime $L_{Aeq,16h}$ (dB)	Night $L_{Aeq,8h}$ (dB)	10th Highest Night $L_{max,2min}$ (dB)
A	65	61	83
B	69	59	66

Figure 7 shows the location of each Façade Zone noted in Table 8.

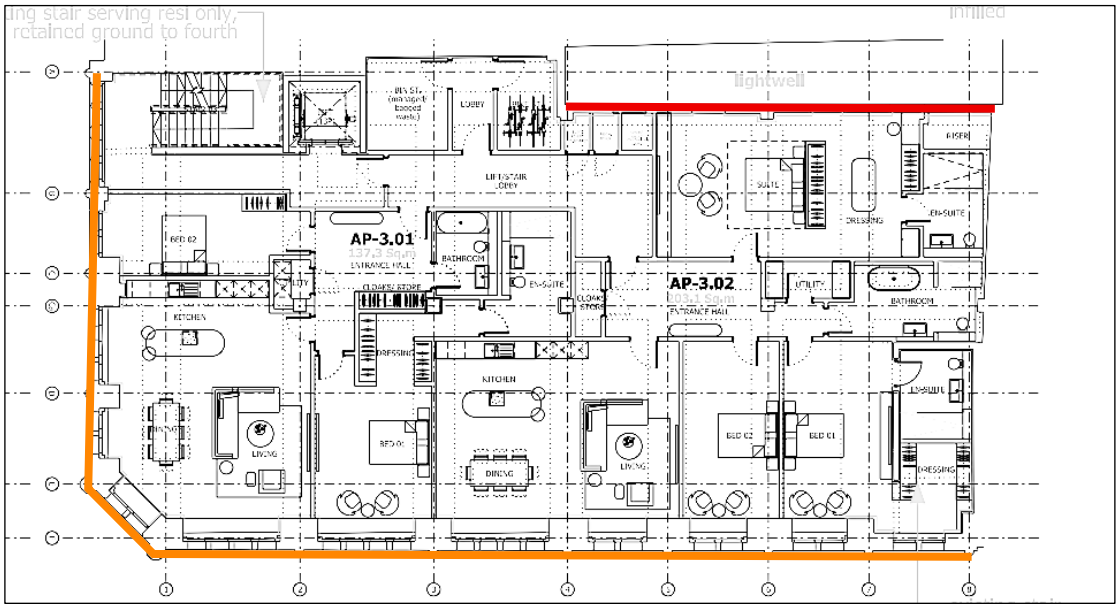


Figure 7 Façade Zones – All Levels

11.0 Achieving Internal Noise Levels

There are 3No ventilation conditions applicable to proposed residential dwellings. These are Background Ventilation as described in Approved Document F (Part F), Purge Ventilation (odour and smells) and overheating control.

Please note, this project is a refurbishment for Part O of the Building Regulations is not a requirement. As such, MCC has requested an assessment to the AVO Guide.

11.1 Purge Ventilation

It should be noted that the internal noise level guidelines are generally not applicable under *"purge ventilation"* conditions as defined by Part F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food).

As such, acoustic conditions are generally not a concern during purge ventilation.

11.2 Background Ventilation Condition

11.2.1 Criteria

With reference to the acoustic standards and guidelines as reviewed in Appendix B, the external noise intrusion levels from environmental sources should be controlled so as to not exceed the criteria set out in Table 9.

Table 9: Internal Noise Level Criteria

Activity	Location	Desirable Internal Ambient Criteria	
		07:00 – 23:00	23:00 – 07:00
Resting	Living Rooms	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 $L_{Aeq,8hour}$ 45 dB[1] L_{Amax}

[1] regular noise events such as trains, aircraft (10^{th} highest)

Section 9.0 considers existing industrial use impacts in line with BS 4142:2014 and advises that adverse impacts on future occupants could be avoided with suitably specified façade elements to secure suitable internal noise levels. Where existing industrial/commercial noise could 'contribute' to incident external noise levels on a given façade but do not 'dominate', the BS8233 internal noise level targets should be met. However, where the industrial noise has the potential to dominate the external noise climate, that industrial noise intrusion should achieve limits 5 dB lower than the BS8233 levels.

11.2.2 Outline Specifications

Based on the prevailing noise climate at the site, open windows as a means of background ventilation would not be suitable on any façade across the development. As such, alternative ventilation measures would be required.

Allowance should be made to provide appropriate sound insulation solutions as required including, where necessary, suitably specified glazing and attenuated ventilators/mechanical ventilation systems. Preliminary calculations have been carried out to determine the likely façade sound insulation performance requirements for each façade. Calculation methods follow those outlined in BS 8233:2014 Section G.2 and are based on the following:

- Conventional brick/block cavity external wall
- Typical room volume as per latest drawings
- Typical window area as per latest drawings
- Reverberation time of 0.5 seconds.

From the results of the assessment, Table 10 below presents the minimum preliminary acoustic performance specifications are recommended. These are intended for planning use only, and detailed design stage octave band acoustic specifications will need to be developed for tender.

11.2.3 Glazing Specifications

It is understood that MVHR ventilation is proposed throughout the development. This has been factored into outline specification presented below in Table 10.

Table 10: Façade Zone Required Specification

Façade Zone		Façade Element	Preliminary Minimum Sound Reduction Specification
A	Orange	Window	38 dB $R_w + C_{tr}$
		Ventilator	MVHR proposed
B	Red	Window	48 dB $R_w + C_{tr}$
		Ventilator	MVHR proposed

11.2.4 Example Glazing Configurations

With the minimum specific for Façade Zone A it may be possible to retain with windows as is. However, given the uncertainty around the acoustic performance of the windows (see Section 8.4) the decision has been made to provide secondary glazing throughout.

The following presents example glazing configurations commensurate with achieving the sound insulation specifications noted in Section 11.2.2 are given below.

Façade Zone A: Existing sash windows with secondary glazed units behind with 200mm airgap as indicated on Bridge Architects drawing *"al(05)300"*. Figure 8 shows third party test data for secondary glazing with a 200mm air gap (glass-to-glass) and a 6mm single-glazed toughened primary window in a hardwood frame. It can be seen that both the Zone A and B specifications can be readily achieved with a 4mm secondary glazing pane.

Values are Rw (dB) measured to BS EN ISO 717-1. All tests performed with a 200mm air gap (glass-to-glass) and a 6mm single-glazed toughened primary window in a hardwood frame. Deduct 1 dB for a 150mm air gap; deduct 1–4 dB for a 100mm air gap.

BVS - Balanced Vertical Slider

SECONDARY GLASS	RW (DB) WEIGHTED	RW+C (DB) TRAFFIC WEIGHTED	RW+CTR (DB) LOW-FREQ WEIGHTED
4mm Toughened	48	46	42
6mm Toughened	50	48	43
6.4mm Laminate	50	49	44
6.8mm Laminate	50	49	44
8mm Toughened	50	49	44
8.8mm Laminate	50	50	44
10.8mm Laminate	50	50	45

Figure 8 Test Data – Granada Glazing – Single Glazed with Differing Secondary Glazing

Façade Zone B: New framed double glazed primary and secondary glazing system. Figure 9 shows third party test results from Granada Glazing. There are multiple options that achieve $R_w + C_{tr}$ 48 dB. As such, there will be systems available that readily achieve the crtieiron, for example a 4/18/6.8 primary window with a 6.8/12/8.8 or 10.8mm laminate secondary glazing.

Rw+Ctr dB Values for Granada Secondary Glazing

Primary Glass Thickness	Primary Frame Material	Primary Rw dB	Air Gap	Secondary Glass Thickness	BVS	HS	HU-HD	HU-SL	LO	TBVS
6mm	50mm Hardwood	29	200mm	4mm Toughened	42	43	45	44	41	43
6mm	50mm Hardwood	29	200mm	6mm Toughened	43	44	46	45	42	44
6mm	50mm Hardwood	29	200mm	6.4mm Laminate	44	45	47	46	43	45
6mm	50mm Hardwood	29	200mm	6.8mm Laminate	44	45	47	46	43	45
6mm	50mm Hardwood	29	200mm	8mm Toughened	44	45	47	46	43	45
6mm	50mm Hardwood	29	200mm	8.8mm Laminate	44	45	47	46	43	45
6mm	50mm Hardwood	29	200mm	10.8mm Laminate	45	46	48	47	44	46
6mm	50mm Hardwood	29	200mm	6.8/12/8.8 DG	-	-	48	-	-	-
3mm	Steel Crittal	23	200mm	6.8/12/8.8 DG	-	-	48	-	-	-
4/16/4 DG	uPVC	31	200mm	6.8/12/8.8 DG	-	-	48	-	-	-
4/18/6.8 DG	uPVC	36	200mm	6.8/12/8.8 DG	-	-	50	-	-	-

Figure 9 Test Data – Granada Glazing – Differing Primary Glazing with Differing Secondary Glazing

11.2.5 Noise Break-in Via MVHR Louvres

Background ventilation, to Building Regulations Part F, shall be provided by means of whole house MVHR units per apartment. Façade openings will be required for air intake/exhaust which will be ducted through ceiling voids to the unit.

There are several MVHR louvres proposed across the scheme. The general strategy for the apartment MVHR is that the inlet will be taken at the dormer level and the exhaust will be ducted to the lightwell.

Noise break-in via the inlet MVHR ductwork is unlikely to be an acoustic issue as the inlet air is taken from roof level into the apartments. Figure 10 shows the location of the rooftop inlet louvre.

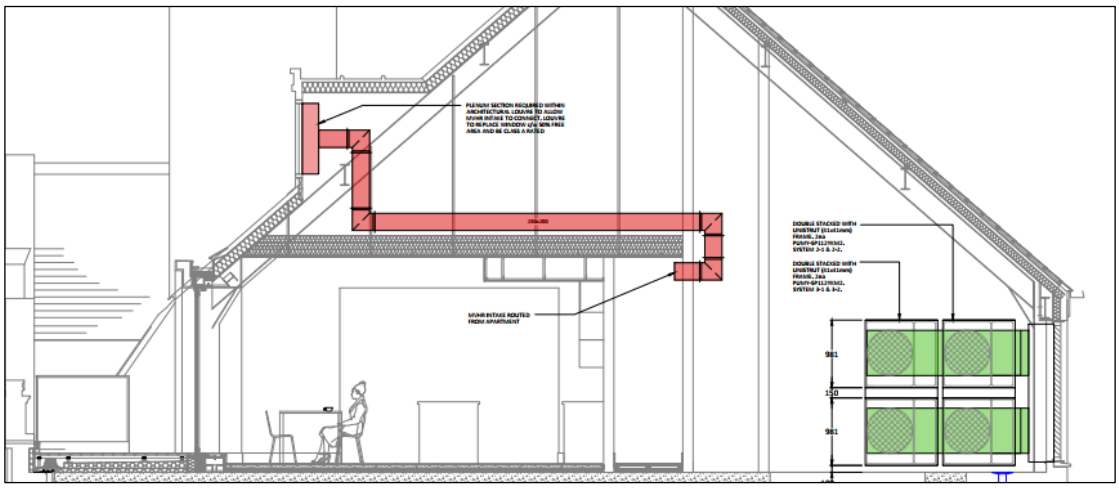


Figure 10 Section Showing Inlet Path for all Apartments

The exhaust of the MVHR units discharge into the lightwell.

Consideration has therefore been given to the potential for external noise to enter these openings, pass through the duct and radiate through the PVCu ductwork in to habitable rooms. All apartments will have plasterboard ceilings/bulkheads to conceal the atmospheric ductwork, which will be thermally wrapped with foil faced mineral wool. The insulated PVCu ductwork (dimensions 220mm x 90mm) will connect to plenums and grilles at the façade. The plenum opening has been assumed to be slightly wider than that ductwork itself at 250mm x 110mm.

Calculation have been carried out to assess the noise level into the worse case rooms via this path's outside to inside sound reduction based on the external noise level within the lightwell, MVHR layouts and calculation methods described in SRL's 'Noise Control for Building Services' book and Marshall Long's 'Architectural Acoustics' book.

Based on the above, noise break-in via the MVHR exhaust ductwork are considered to be in the region of 33 dBA with components of 54 and 64 dB at 63 Hz and 125 HZ respectively. Based on this, is it recommended that façade attenuation is provided to the back of the exhaust louvres indicated in Figure 11, Figure 12 and Figure 13.

Table 11 sets out the minimum octave band specification for these attenuators with a view to controlling noise break-in to 20 dBA with low frequency components of 47 and 41 dB at 63 Hz and 125 Hz.

Table 11 Minimum Exhaust Louvre Attenuator Insertion Loss

Minimum Dynamic Attenuator Insertion Loss, DIL (dB) at each Octave Band Centre Frequency (Hz)							
63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
6	13	23	37	43	44	35	20

The attenuators should be installed to the back of the atmospheric plenum in all cases and the plenum should be externally lagged with a acoustic lagging material comprising a 5kg/m^2 mass layer.

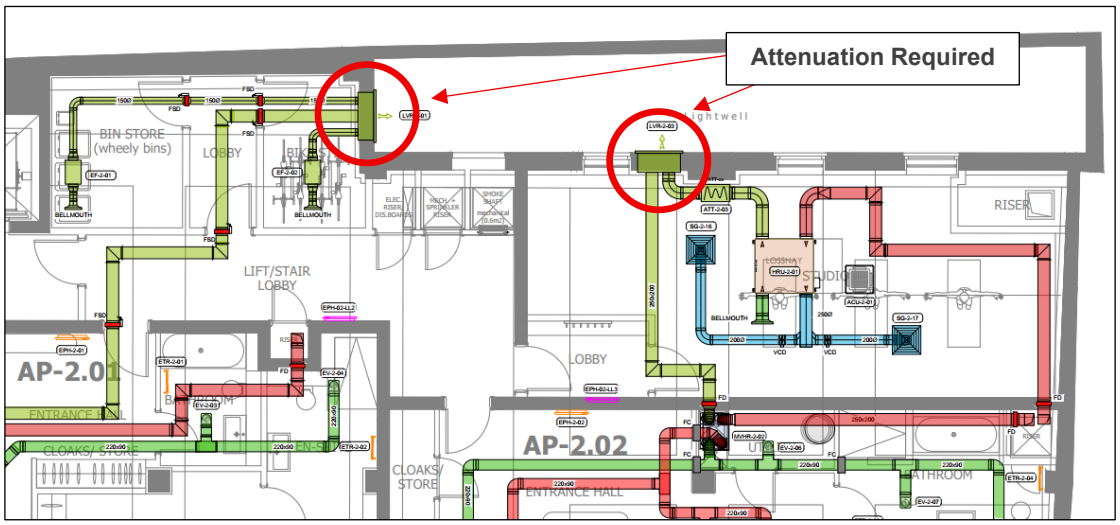


Figure 11 Location of Louvres Requiring Attenuation – L02

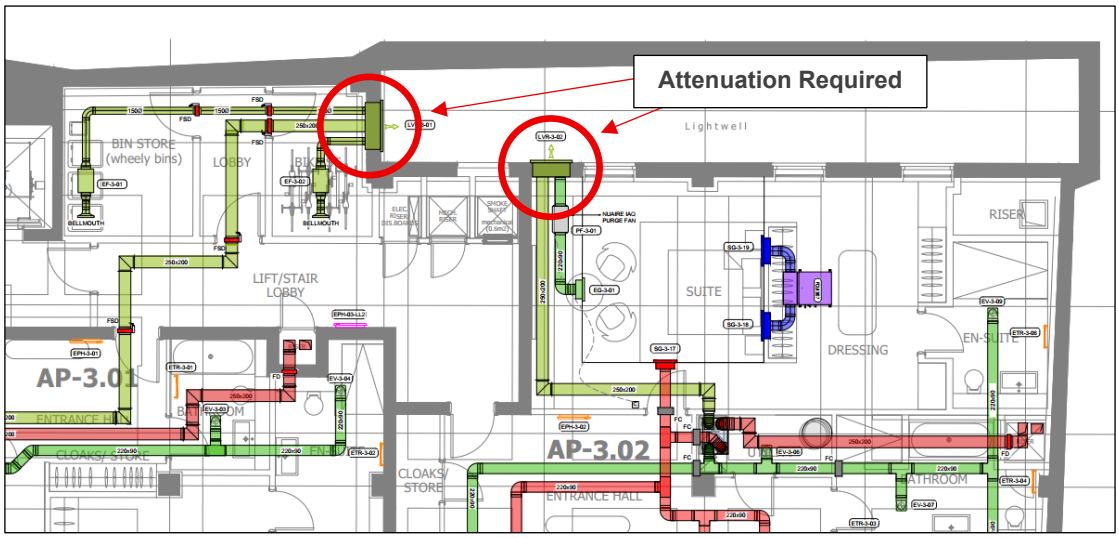


Figure 12 Location of Louvres Requiring Attenuation – L03

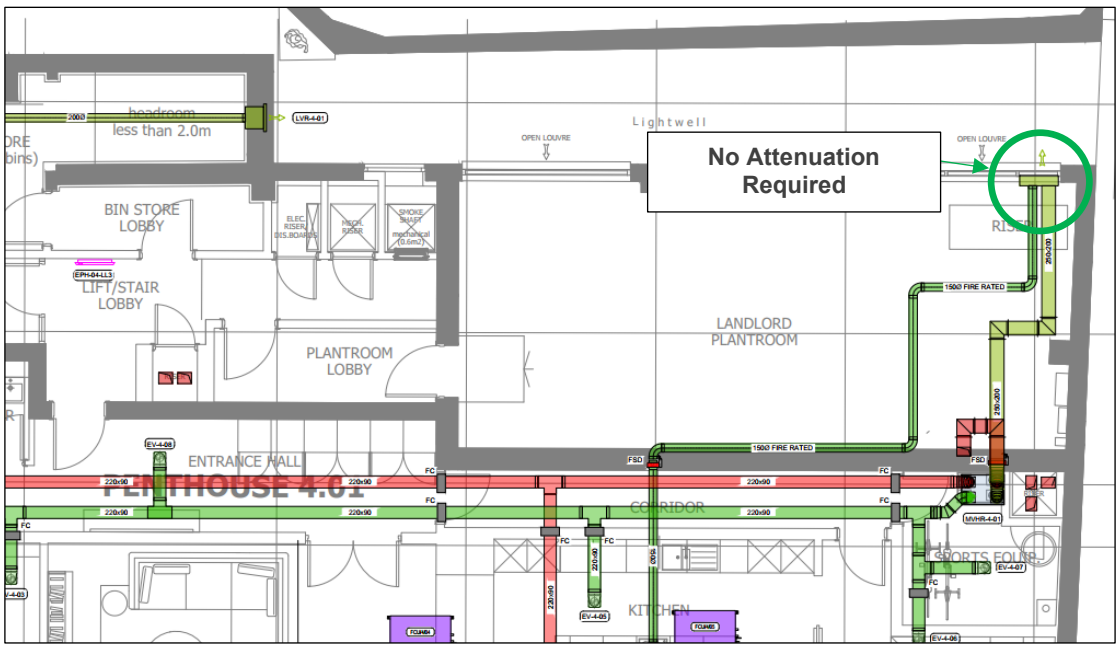


Figure 13 Location of Louvres Requiring Attenuation – L04

12.0 Overheating & Noise

The apartments will be provided with comfort cooling. As such, there would be no need for occupants to open windows for overheating control.

13.0 Operational Noise Impact Limits

13.1 Fixed Plant & Equipment

Based on the results of the noise survey and the requirements of the Local Authority, we propose that the following plant noise emission criteria be achieved incident at the nearest noise sensitive residential windows, in free-field conditions, with all plant operating simultaneously.

Table 12: Plant Noise Emission Criteria

Location	Plant Noise Emission Criteria (L_{ArTr}, dB)	
	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
Nearest Residential Receiver on the development	38	32

Noise shall be assessed in accordance with BS 4142:2014 with corrections applied for any plant emitting noise of a tonal or irregular quality. The above limits shall be subject to the final approval of the Local Authority.

13.2 Commercial Unit Operations

At Basement, Ground Level 1 commercial units are proposed as part of the development, however, the exact uses of these units have not yet been confirmed. Considering the prevailing environmental noise climate at the site, we would expect that noise egress via the unit frontage from most general commercial uses (e.g. restaurant, café, shop) should be readily controllable. However, for completeness we advise that operational noise break-out from any proposed use is controlled to no more than 5 dB below the existing background noise level as follows:

Table 13: Commercial Noise Break-out Limit

Period	Commercial noise break-out Limit, L_{Aeq} (dB)
Daytime (07:00-23:00)	38
Night-time (23:00-07:00)	32

Furthermore, noise transfer through the separating floor structure (and associated flanking paths) from the ground floor commercial units to first floor apartments shall be considered. As a minimum the requirements of Approved Document E should be achieve and once final uses have been confirmed for each unit, an assessment of noise transfer to structurally connected habitable rooms shall be carried out which considers typical noise levels within the commercial unit and the sound insulation performance of the separating construction.

For noise transfer to apartments above, the design intent should be to ensure operational L_{Aeq} noise transfer to apartments does not exceed a level at least 5 dB lower than the anticipated background L_{90} noise level in each octave band (ie typically NR 15-NR 20).

14.0 Retail to Residential Noise Transfer Assessment

14.1 Baseline Levels of Sound Insulation

14.1.1 Overview

Hann Tucker attended the site on Monday 01 June 2026 to carry out sound insulation testing to establish baseline conditions.

A total 2no. floor tests were completed between the existing L01 and L02 areas.

14.1.2 Methodology

Sound insulation tests were carried out by Hann Tucker Associates (UKAS accredited No. 4083) across a number of wall partitions in general accordance with the following standards:

- BS EN ISO 140-4:1998 — Field measurements of airborne sound insulation between rooms.

14.1.3 Sound Insulation Results

The measured results are provided below:

Table 14 Measured Sound Insulation Between L01 and L02

Test No.	Measured Sound Insulation, D_{nT}, (dB) at each Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
1	38	44	45	52	56	59	58
2	39	44	46	52	57	60	60

14.2 Limiting Noise Levels

Based on the measured levels of sound insulation presented in Table 14 limiting noise levels within the retail unit a view to ensuring operational L_{Aeq} noise transfer to apartments does not exceed a level at least 5 dB lower than the anticipated background L_{90} noise level in each octave band have been carried out. For a robust assessment, NR15 has been used as an indicative limit for this assessment.

The Table 15 below shows the calculated limiting noise levels

Table 15 Limiting Noise L:evels for Retail Units

Description	Sound Pressure Level, L_{eq} (dB) at each Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Limiting Noise Level	85	79	71	71	71	71	67

below shows typical operational internal noise levels associated with a range of representative commercial uses. Comparison of these levels with the calculated limiting noise levels indicates that a typical retail store and typical office use would be expected to comply with the limiting noise levels across all octave bands, with appreciable margin.

A chain restaurant would also generally be compatible with the calculated limits; however, the typical operational noise levels marginally exceed the limiting levels at 500 Hz and 1 kHz, by approximately 3 dB and 2 dB respectively. Consequently, depending upon the proposed fit-out, occupancy and operational characteristics, some additional control of internal noise levels may be required for this type of use.

A bar incorporating low-level amplified music represents the highest noise-generating use considered. The typical operational noise levels exceed the calculated limiting levels between 250 Hz and 4 kHz, with the greatest exceedance being approximately 6 dB at 500 Hz. Accordingly, an unrestricted bar use incorporating amplified music could not be assumed to satisfy the limiting noise levels without further acoustic consideration.

On this basis, conventional retail and office uses can be accommodated without specific additional acoustic controls beyond those already incorporated into the building design. Given that the intended uses of the units are jewellery shops, this would be suitble for the intended use.

Table 16 Typical Operational Noise Levels for Various Uses

Use Type	Typical Operational Noise Level, L_{eq}, (dB) at each Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Typical Retail Store	67	70	66	63	63	62	54
Chain Restaurant	64	65	69	74	73	69	63
Bar with Low Level Music	76	74	74	77	74	71	69
Typical Office Use	67	70	66	63	63	62	54

15.0 Conclusion

The assessment has considered the suitability of the Winters Building, St Ann's Square, Manchester, for conversion to residential apartments at Levels 2 to 4, with regard to the prevailing environmental and commercial noise climate.

Baseline noise monitoring was undertaken between 28 May and 1 June 2026, with supplementary measurements undertaken on 1 June 2026 and between 15 and 16 June 2026. The measured noise climate was influenced by road traffic, tram movements, pedestrian activity and existing plant associated with adjacent commercial premises. Noise from plant associated with Thomas's Chop House was identified within the rear lightwell and assessed as having the potential to cause a significant adverse impact without mitigation.

Façade sound insulation testing of the existing façade indicated a composite performance of approximately 28 to 30 dB $R'_w + C_{tr}$ in its current condition. However, the existing windows were sealed shut by paint at the time of testing. As such, it is advised that secondary glazing is provided to all retained facades.

The assessment indicates that open windows would not be suitable as the sole means of background ventilation to the proposed dwellings. The development therefore incorporates suitably specified glazing and MVHR systems as proposed throughout. Secondary glazing is expected to be required where façade sound insulation requirements exceed the measured performance of the retained primary windows.

Subject to the implementation of the recommended façade sound insulation and ventilation strategy, acceptable internal acoustic conditions are expected to be achievable within the proposed residential accommodation.

The apartments will be provided with comfort cooling to remove the need for occupants to open windows for overheating control.

Any new fixed plant associated with the development should be designed to achieve a cumulative rating level no greater than 38 dB $L_{Ar,Tr}$ during the daytime and 32 dB $L_{Ar,Tr}$ during the night-time at the nearest residential receiver, subject to final approval by Manchester City Council.

The proposed ground and lower-level commercial uses should also be controlled such that airborne noise break-out does not exceed the recommended limits, and sound transfer through the separating floor has been assessed with typical retail uses likely suitable without any enhancements being required.

Appendix A

Acoustic Terminology

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

L_p — Sound Pressure Level (SPL) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

L_w — Sound Power Level (SWL) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

Appendix B

Planning Policies, Standards & Guidance

B.1 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published in March 2010 (i.e. before the NPPF). The NPSE is the overarching statement of noise policy for England and applies to all forms of noise other than occupational noise, setting out the long term vision of Government noise policy which is to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

That vision is supported by the following NPSE noise policy aims which are reflected in three of the four aims of planning policies and decisions in paragraph 123 of the NPPF (see paragraph 8.2 (b) below):

"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 Explanatory Note to the NPSE has three concepts for the assessment of noise in this country:

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

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

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

None of these three levels are defined numerically and for the SOAEL the NPSE makes it clear that the noise level is likely to vary depending upon the noise source, the receptor and the time of day/day of the week, etc. The need for more research to investigate what may represent an SOAEL for noise is acknowledged in the NPSE and the NPSE asserts that not stating specific SOAEL levels provides policy flexibility in the period until there is further evidence and guidance.

The NPSE concludes by explaining in a little more detail how the LOAEL and SOAEL relate to the three NPSE noise policy aims listed above. It starts with the aim of avoiding significant adverse effects on health and quality of life, then addresses the situation where the noise impact falls between the LOAEL and the SOAEL when *"all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development."* The final aim envisages pro-active management of noise to improve health and quality of life, again taking into account the guiding principles of sustainable development which include the need to minimise travel distance between housing and employment uses in an area.

B.2 National Planning Policy Framework (NPPF)

The following policies are from the NPPF, published August 2026. The relevant policy wording relating to noise has been reproduced with all other non-relevant policy wording omitted.

Policy P3: Living Conditions and Pollution

1: Development proposals should be appropriate for their location, taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, whether these effects are on or off-site; and whether this is as a result of the development itself or the product of preexisting conditions in its vicinity. In assessing the potential effects of pollution, consideration should be given to the potential sensitivity of the site, and its intended occupiers and users, as well as that of the environment and population in the surrounding area (including where certain groups could be particularly vulnerable to its effects, such as children and older people).

2: Within this context development proposals should:

a) Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;

b) Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce pollution affecting the wider area (such as through traffic and travel management or improved external lighting);

d) Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason);

3: In applying this policy, it should be assumed, unless there is clear evidence to the contrary, that separate regulatory regimes for the control of pollution will operate effectively, as set out in policy DM7. This means that it will be appropriate to take into account emissions limits set through those other regimes.

Policy P4: Impact of Development on Existing Activities

1: Existing businesses, community facilities, public services and defence and security activities should not have unreasonable restrictions placed on their current or permitted operation as a result of development being approved after they were established. This means that development proposals should be capable of being integrated effectively with existing business, community and public service activities and infrastructure in their vicinity (including, but not limited to, uses such as pubs, music venues, places of worship, sports clubs, blue light services, defence, electricity network infrastructure and industrial and waste sites).

2: Where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development proposals should:

a) Identify the nature of the potential impacts, informed where necessary by early discussions between the applicant (i.e. the ‘agent of change’) and those existing uses which could be affected by the proposal to inform the scope for mitigation; and

b) Be able to demonstrate that suitable mitigation can be provided before first occupation of the development, if it is to be acceptable. Planning conditions or obligations should be used to secure agreed mitigation measures.

3: This policy applies to new development involving changes of use of land and property, as well as to new construction, and includes situations where new development may interfere with the operation of electronic communications networks. Both lawful current and permitted levels of operation of existing activities should be taken into account when applying this policy.

Annex B of the NPPF defines the Significant Observed Adverse Effect Level as follows:

"This is the level of noise exposure above which significant adverse effects on health and quality of life occur."

The August 2026 NPPF does not expressly reference the Noise Policy Statement for England (NPSE). Nevertheless, the terminology and approach adopted in Policy P3 are consistent with the principles established by the NPSE. The NPSE does not prescribe specific numerical noise limits but instead sets out the following three aims:

- "Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development."

B.3 Planning Practice Guidance on Noise

Planning Practice Guidance (PPG) under the NPPF has been published by the Government as a web based resource at http://planningguidance.planningportal.gov.uk/blog/guidance/. This includes specific guidance on Noise although, like the NPPF and NPSE the PPG does not provide any quantitative advice. It seeks to illustrate a range of effect levels in terms of examples of outcomes as set out in the following table:

Perception	Examples of Outcomes	Increasing effect level	Action
Not noticeable	No effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	

Perception	Examples of Outcomes	Increasing effect level	Action
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, 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
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

B.4 World Health Organisation

The current Environmental Noise Guidelines 2018 for the European Region (ENG) supersede the Guidelines for Community Noise from 1999 (CNG). Nevertheless, the ENG recommends that all CNG indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) remain valid.

A summary of the guidance from the ENG and CNG is shown in the table below.

Source	CNG guideline indoors all sources	ENG guideline outdoors noise from specific source only
Road traffic noise	35 $L_{Aeq,\ 16h}$	53 dB L_{den}
	30 $L_{Aeq,\ 8h}$	45 dB L_{night}
Railway noise	35 $L_{Aeq,\ 16h}$	54 dB L_{den}
	30 $L_{Aeq,\ 8h}$	44 dB L_{night}
Aircraft noise	35 $L_{Aeq,\ 16h}$	45 dB L_{den}
	30 $L_{Aeq,\ 8h}$	40 dB L_{night}

With regard to single-event noise indicators, Section 2.2.2 of the WHO Environmental Noise Guidelines 2018 state:

"In many situations, average noise levels like the L_{den} or L_{night} indicators may not be the best to

explain a particular noise effect. Single-event noise indicators – such as the maximum sound pressure level ($L_{A,max}$) and its frequency distribution – are warranted in specific situations, such as in the context of night-time railway or aircraft noise events that can clearly elicit awakenings and other physiological reactions that are mostly determined by $L_{A,max}$. Nevertheless, the assessment of the relationship between different types of single-event noise indicators and long-term health outcomes at the population level remains tentative. The guidelines therefore make no recommendations for single-event noise indicators."

B.5 British Standard BS8233: 2014

British Standard 8233: 2014 "Guidance on sound insulation and noise reduction for buildings" provides guidance for the control of noise in and around buildings.

Internal Areas

BS8233:2014 Section 7.7.2 titled "Internal ambient noise levels for dwellings" states:

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

Activity	*Location*	*Desirable Internal Ambient Criteria*	
		07:00 – 23:00	*23:00 to 07:00*
Resting	*Living Rooms*	*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 $L_{Aeq,8hour}$*

Note 1 The above table provides recommended levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources. Groundborne noise is assessed separately and is not included as part of these targets, as human response to groundborne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

Note 2 The levels shown in the above table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the levels recommended in the above table.

Note 3 These levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve.

Note 4 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. Sporadic noise events could require separate values.

Note 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.

If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment.

Note 6 Attention is drawn to the Building Regulations.

Note 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

External Amenity Areas

BS8233:2014 Section 7.7.3.2 titled "Design criteria for external noise" states:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$[1], with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, 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.

Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens, and terraces, which might be intended to be used for relaxation. In high-noise areas consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."

B.6 ProPG : Planning & Noise : 2017

The primary goal of the ProPG is to assist the delivery of sustainable development by promoting good health and well-being through the effective management of noise. It seeks to do that through encouraging a good acoustic design process in and around proposed new residential development having regard to national policy on planning and noise. It is applicable to noise

from existing transport sources (noting that good professional practice should have regard to any reasonably foreseeable changes in existing and/or new sources of noise). The recommended approach is also considered suitable where some industrial or commercial noise contributes to the acoustic environment provided that is “not dominant”.

This ProPG advocates a systematic, proportionate, risk based, 2-stage, approach. The approach encourages early consideration of noise issues, facilitates straightforward accelerated decision making for lower risk sites, and assists proper consideration of noise issues where the acoustic environment is challenging.

The two sequential stages of the overall approach are:

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

The four key elements to be undertaken in parallel during Stage 2 of the recommended approach are:

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

The ProPG considers suitable guidance on internal noise levels found in “BS8233:2014: Guidance on sound insulation and noise reduction for buildings”.Table 4 in Section 7.7.2 of the standard suggests that “in general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values”. The standard states (Section 7.7.1) that “occupants are usually more tolerant of noise without a specific character” and only noise without such character is considered in Table 4 of the standard.

Activity	Location	07:00 – 23:00 Hours	23:00 – 07:00 Hours
Resting	Living Room	35dB $L_{Aeq,16hr}$	-
Dining	Dining Room / Area	40dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hr}$	30dB $L_{Aeq,16hr}$ 45dB $L_{Amax,F}$

NOTE 1 the Table provides recommended internal L_{Aeq} target levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources.

Ground-borne noise is assessed separately and is not included as part of these targets, as human response to ground-borne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

NOTE 2 The internal L_{Aeq} target levels shown in the Table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the L_{Aeq} target levels recommended in the Table.

NOTE 3 These internal L_{Aeq} target levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve.

NOTE 4 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. Sporadic noise events could require separate values. In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events (see Appendix A).

NOTE 5 Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the "open" position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded, subject to the further advice in Note 7.

NOTE 6 Attention is drawn to the requirements of the Building Regulations.

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5dB and reasonable internal conditions still achieved. The more often internal L_{Aeq} levels start to exceed the internal L_{Aeq} target levels by more than 5dB, the more that most people are likely to regard them as "unreasonable". Where such exceedances are predicted, applicants should be

required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target levels by more than 10dB, they are likely to be regarded as "unacceptable" by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing "unacceptable" noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form (See Section 3.D).

B.7 British Standard 4142:2014 + A1:2019

When setting plant noise emission criteria reference is commonly made to BS 4142:2014 "*Methods for rating and assessing industrial and commercial sound".*

The procedure contained in BS 4142:2014 provides an assessment of the likely effects of sound on people when comparing the specific noise levels from the source with representative background noise levels. Where the noise contains "a tone, impulse or other characteristic" then various corrections can be added to the specific (source) noise level to obtain the "rating level".

BS 4142 states that: *"The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs". An estimation of the impact of the specific noise can be obtained by the difference of the rating noise level and the background noise level and considering the following:*

• *"Typically, the greater this difference, the greater the magnitude of the impact."*

• *"A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."*

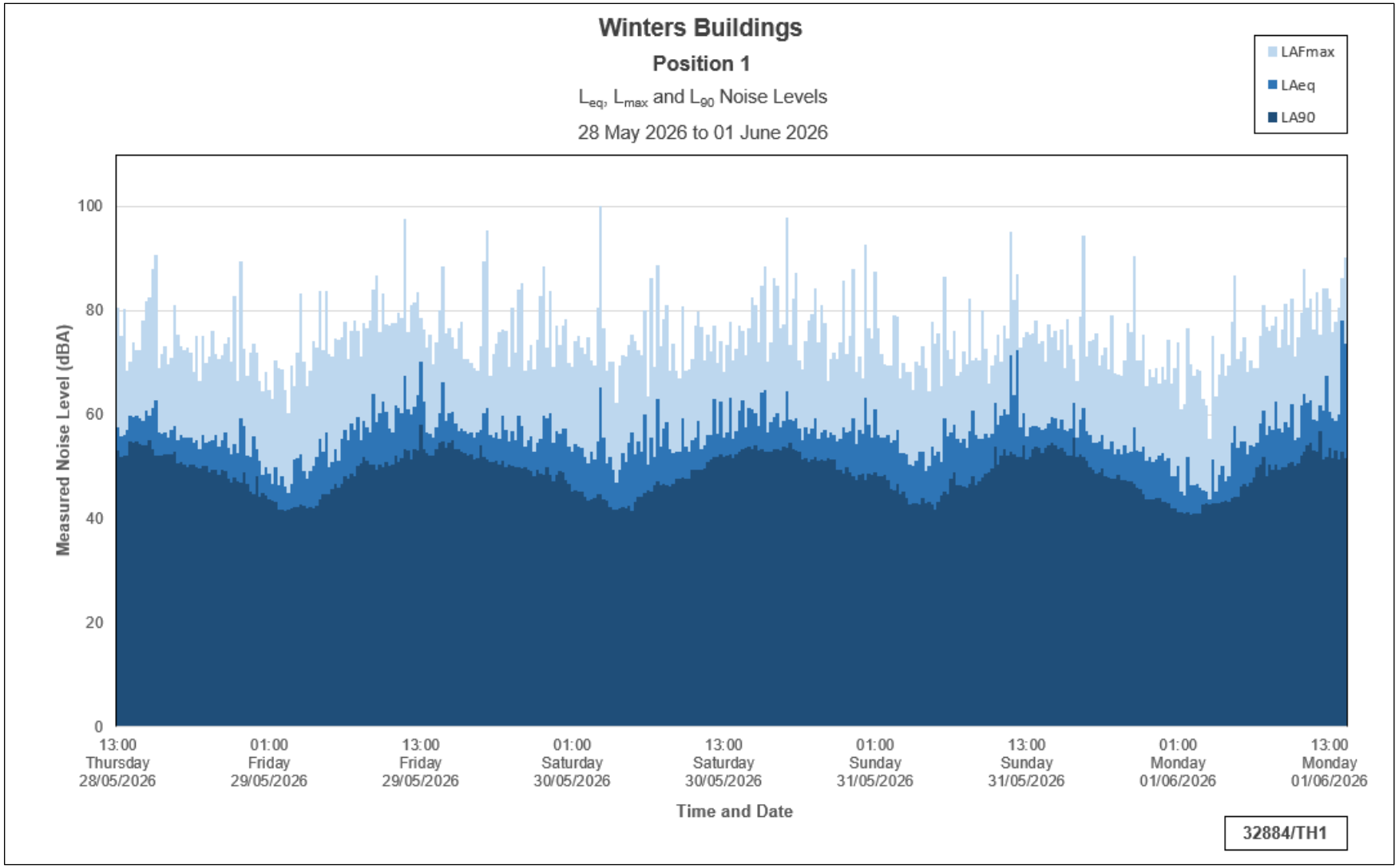
• *"A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context."*

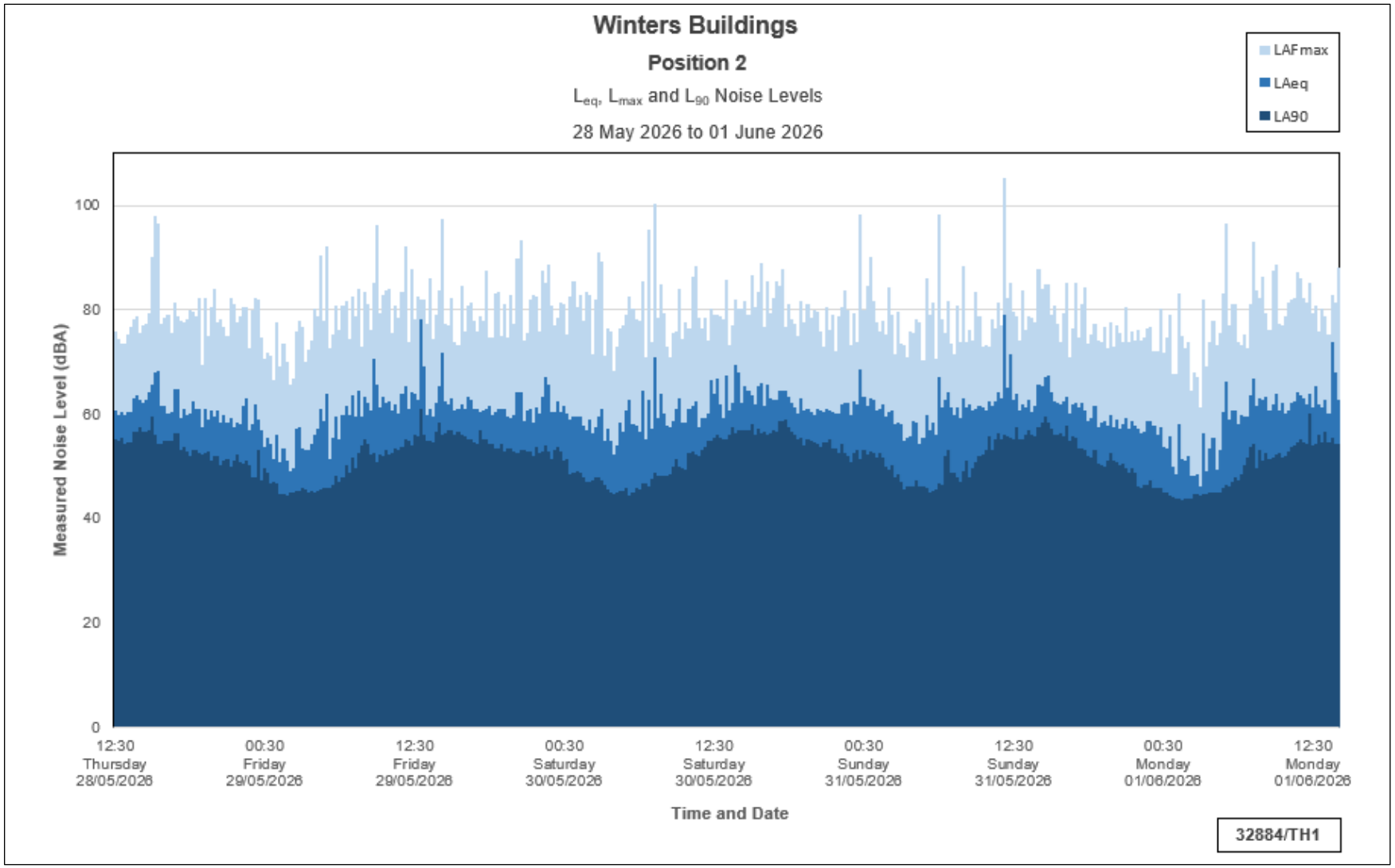
• *"The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

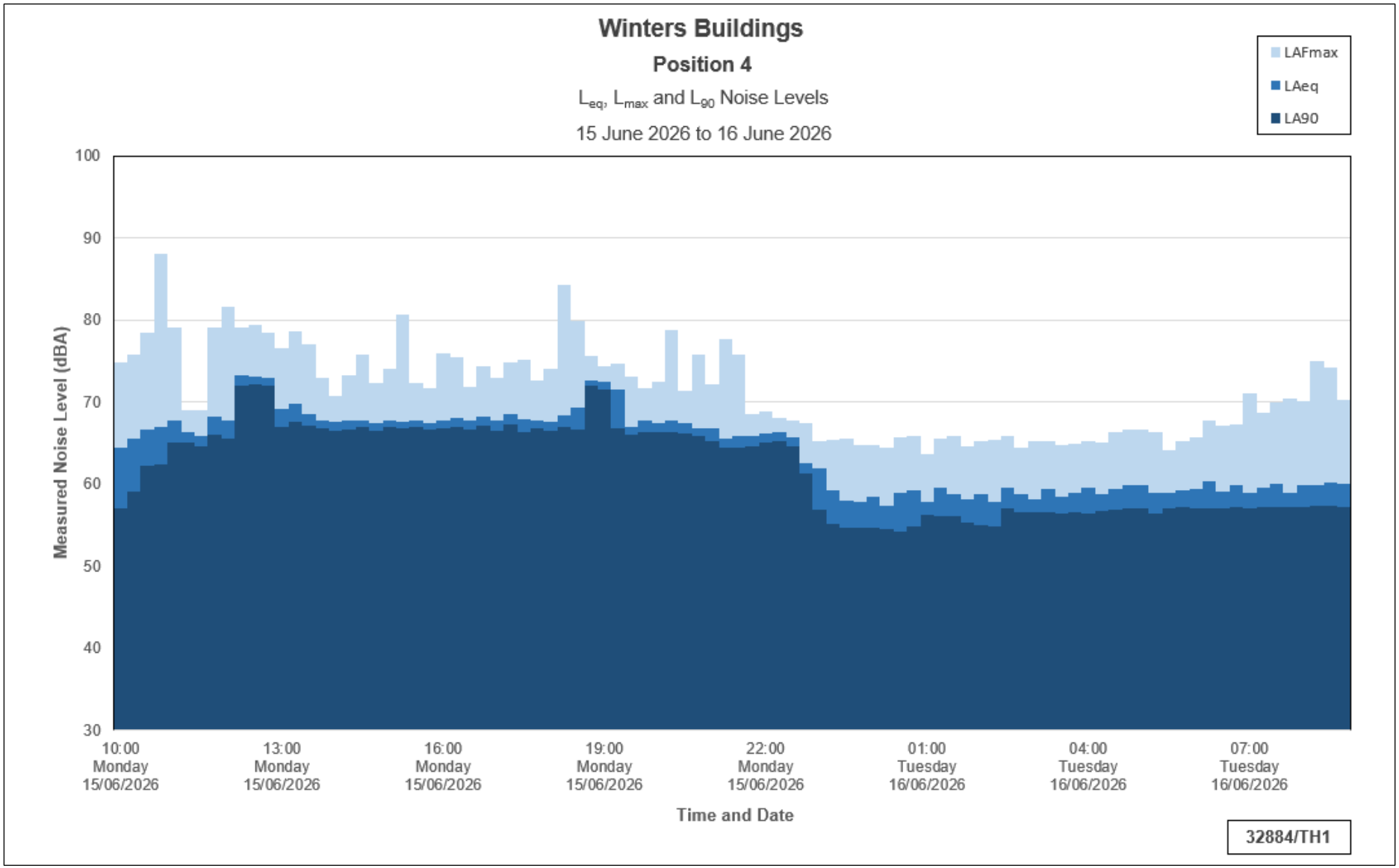
The determination of the "rating level" and the "background level" are both open to interpretation, depending on the context.

Appendix C

Time History Graphs


Winters Buildings
Position 1
L_{eq}, L_{max} and L_{90} Noise Levels
28 May 2026 to 01 June 2026
LAFmax
LAeq
LA90
Measured Noise Level (dBA)
100
80
60
40
20
0
13:00 Thursday 28/05/2026
01:00 Friday 29/05/2026
13:00 Friday 29/05/2026
01:00 Saturday 30/05/2026
13:00 Saturday 30/05/2026
01:00 Sunday 31/05/2026
13:00 Sunday 31/05/2026
01:00 Monday 01/06/2026
13:00 Monday 01/06/2026
Time and Date
32884/TH1


Winters Buildings
Position 2
L_{eq}, L_{max} and L_{90} Noise Levels
28 May 2026 to 01 June 2026
LAFmax
LAeq
LA90
Measured Noise Level (dBA)
0
20
40
60
80
100
12:30 Thursday 28/05/2026
00:30 Friday 29/05/2026
12:30 Friday 29/05/2026
00:30 Saturday 30/05/2026
12:30 Saturday 30/05/2026
00:30 Sunday 31/05/2026
12:30 Sunday 31/05/2026
00:30 Monday 01/06/2026
12:30 Monday 01/06/2026
Time and Date
32884/TH1


Winters Buildings
Position 4
L_{eq}, L_{max} and L_{90} Noise Levels
15 June 2026 to 16 June 2026
LAFmax
LAeq
LA90
Measured Noise Level (dBA)
100
90
80
70
60
50
40
30
10:00 Monday 15/06/2026
13:00 Monday 15/06/2026
16:00 Monday 15/06/2026
19:00 Monday 15/06/2026
22:00 Monday 15/06/2026
01:00 Tuesday 16/06/2026
04:00 Tuesday 16/06/2026
07:00 Tuesday 16/06/2026
Time and Date
32884/TH1