



GAIL'S BAKERY,
HAWLEY WHARF,
CAMDEN

Plant Noise Assessment

Reference: 12421.RP01.PNA.0

Prepared: 20 June 2023

Revision Number: 0

Gail's Bakery

Unit 12 Garrick Road Industrial
Estate

Irving Way

Hendon

NW9 6AQ

Plant Noise Assessment



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Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	20 June 2023	David Johnston	Andrew Heath

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

It is proposed to locate new items of plant at the new Gail's Bakery café and office site at Hawley Wharf, Camden. As part of the planning application, Camden Council requires consideration be given to atmospheric noise emissions from the proposed equipment to the nearest noise-sensitive receptors.

RBA Acoustics have been commissioned to undertake measurements of the prevailing noise conditions at the site and to determine the atmospheric noise emission limits in accordance with Camden's requirements. This report presents the results of the noise measurements, associated criteria and provides the required assessment.

A summary of acoustic terminology is included in Appendix A.

2. SITE DESCRIPTION

The site is shown in relation to its surroundings in the site plan in Figure 1 (Appendix E).

The Hawley Wharf development is a mixed use development situated on Castlehaven Road, west of Camden Road Overground station where the railway line forks. The building is located between elevated railway lines to the north and south. The ground and mezzanine floors of the eastern half of the building is being fitted out by Gail's Bakery to form a café / bakery space and office space. The demise has a small elevation on the north façade of the building, but the majority of the elevations are located on the west façade of the building, facing into the internal courtyard between buildings, and the south façade, facing the arches of the southern railway line.

There is another floor level above the Gail's demise which is commercial space (currently untenanted), and residential apartments at second floor level and above. The noise environment at the site is largely dominated by train noise from the elevated railway lines, and plant noise from existing plant installations serving the Hawley Wharf development.

3. ENVIRONMENTAL NOISE SURVEY

3.1 Survey Methodology

Monitoring of the prevailing background noise was undertaken over the following 24-hour period:

Wednesday 18 January to Thursday 19 January 2023.

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 over sample periods of 15 minutes.

3.2 Measurement Location

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

Measurement Position 1 – Podium Roof Level:

Measurements were undertaken directly above the Gail's demise on the podium roof area at 2nd floor level. The measurement position overlooked the internal pedestrianised plaza space between the buildings, and the railway line to the south. The microphone was mounted to existing railings at a height of approximately 1.8m in order to avoid screening effects from the glass balustrade. This position was considered as being representative of the noise climate as experienced at the closest residential receptors to the south of the site. The receptors to the north, closest to proposed plant installations at that location, are exposed to road noise from Castlehaven Road and railway noise from the elevated railway line serving Kentish Town West station and beyond. We have elected to use the noise data from the measurement position to the south to represent receptors to the north representing, as it does, a quieter elevation of the site and therefore a worst-case assessment.

The prevailing noise climate was noted to be dominated by noise from the railway lines approximately 30m to the north and south and noise from Hawley primary school approximately 70m away. Noise from the surrounding road network was also audible.

The measurement positions are also illustrated on the site plan in Figure 1 in Appendix E.

3.3 Instrumentation

For information regarding the equipment used for the measurements please refer to Appendix B. The sound level meter was calibrated both prior to and on completion of the survey with no significant calibration drift observed.

3.4 Results

The noise levels measured are shown as time-histories on the attached Graphs 1-2 (Appendix E).

The typical L_{A90} and the period averaged L_{Aeq} noise levels measured are summarised in Table 1.

Table 1 – Measured Levels

Measurement Period	Position 1 – Podium Roof	
	Typical $L_{A90,15min}$ (dB)	L_{Aeq} (dB)
Daytime (07:00 – 23:00)	48	59
Night-time (23:00 – 07:00)	42	57
Operating Hours (06:00 – 22:00)	47	59

A histogram showing the distribution of noise levels of the relevant periods is provided in Graph 3 (Appendix E). The typical, or representative, background noise level selected is the one which breaches an overall contribution of 10% throughout the time period. This is not the lowest or most commonly occurring noise level in all cases, but given the character of the existing noise environment as being urban and with pre-existing plant contributions it is considered the most representative level to describe the existing noise climate.

4. PLANT NOISE CRITERIA

The requirements of Camden Council Environmental Health Department regarding new building services plant are outlined in the Camden Local Plan (2017) as follows:

"[...] 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."

Based on the measured noise levels provided in Section 3.4 the following noise limits are therefore proposed at the nearest noise-sensitive receptors to the proposed plant:

Plant operating hours (06:00 – 22:00)*	37dBA
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In line with the Camden Local Plan, should the proposed plant be identified as having intermittent or tonal characteristics, a further 5dB penalty should be subtracted from any of the above proposed noise emission limits.

*The time period has been chosen to allow for the possibility of plant ramping up and down at the start and end of each day. The daily operating hours are likely to fall within these hours.

5. PLANT NOISE ASSESSMENT

This assessment has been based on the information provided to RBA by Foreman Roberts, the project M&E designers and is described in the following sections.

5.1 Proposed Plant Items

The following plant is proposed for the scheme:

Table 2 – Plant Types

Ref.	Manufacturer/Model/Duty	Plant Type
Phase 1 – West (Office and Café/Bakery)		
FF-AHU-01	Topvex FR08 HWH-R-CAV – 94564 (940 l/s)*	AHU
GF-EXF-02	Systemair Prio 150EC	Extract Fan
GF-EXF-03	Systemair Prio 150EC	Extract Fan
FF-EXF-01	Systemair Prio Silent XP 150EC	Extract Fan
Phase 2 – East (Offices)		
GF-AHU-01	Topvex TR60-L-HWH – 247909 (3.4 m³/h)	AHU
FF-AHU-02	Topvex TR60-L-HWH – 247909 (2.7 m³/h)	AHU
GF-EXF-01	Systemair Prio Silent XP 150EC	Extract Fan
*Airflows are given to distinguish between units, not for absolute accuracy		

5.2 Attenuation

The following atmosphere-side attenuation is proposed for the plant:

Table 3 – Atmospheric Attenuation Requirements

Unit	Element	Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
GF-AHU-01 & FF-AHU-02	Extract Stub*	4	8	12	17	29	28	23	16
	Louvre	7	9	12	16	21	23	19	18
	Intake & Exhaust	Line ductwork internally with acoustically absorbent material (e.g. barafoam)							
	Plant room	Line soffit and walls with acoustic absorption							
FF-AHU-01	Exhaust	5	10	19	25	25	25	20	15
	Intake	1	2	7	10	10	7	7	7
Extract Fans	All Branches	Not required							
*Extract is normally a roomside concern but the extract is open into the room which is louvred to outside									

5.3 Plant Locations

GF-AHU-01 and FF-AHU-02 are located on the south façade of the building within internal plant spaces. The plant rooms have an acoustically louvred façade to atmosphere. FF-AHU-01 is located internally near the north façade of the mezzanine level, ducted to the north façade. GF-EXF-02 and FF-EXF-01 are also ducted to this location. GF-EXF-01 and GF-EXF-03 are both ducted to the west façade of the demise.

The equipment positions are indicated on the site plan in Figure 2 and Figure 3 in Appendix E.

5.4 Plant Noise Levels

Information regarding the noise levels of the proposed plant has been provided by the manufacturer of the unit. The associated plant noise levels are detailed as follows:

Table 4 – Plant Noise Levels

Unit	Parameter (All L_w)	Sound Level (dB) at Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
GF-AHU-01	Supply	66	77	70	70	70	65	59	53
	Outdoor	65	72	60	56	54	47	41	39
	Extract	78	83	65	58	54	46	36	29
	Exhaust	77	87	74	70	68	62	53	41
	Surrounding	66	75	60	53	47	42	35	32
FF-AHU-02	Supply	63	74	68	66	66	60	54	48
	Outdoor	62	71	60	52	49	43	35	34
	Extract	74	87	61	54	50	42	31	25
	Exhaust	74	89	70	66	64	58	48	37
	Surrounding	63	72	57	49	43	37	30	27
FF-AHU-01	Supply	84	82	88	79	77	71	66	59
	Outdoor	82	78	74	59	50	41	32	24
	Extract	80	78	73	54	48	40	30	23
	Exhaust	86	82	90	81	78	74	66	58
	Surrounding	71	71	73	57	47	44	41	32
GF-EXF-01	Outlet	44	50	53	47	45	39	28	23
GF-EXF-02	Outlet	70	80	68	62	55	51	45	34
GF-EXF-03	Outlet	44	45	55	48	47	41	31	24
FF-EXF-01	Outlet	46	50	55	59	51	47	35	30

5.5 Location of the Nearest Noise-Sensitive Receptors

Based on observations made on site and discussions with the design team we understand the nearest noise-sensitive receptors to the proposed plant to be as follows, as shown in the site plan in Figure 1 in Appendix E:

Receptor 1 - South Façade, Level 2, Same Building

There are residential apartments at Level 2, above the louvres serving the AHU plant rooms in Phase 2, between 5 and 8m from the louvres and grilles and facing in the same direction (i.e. away from the source).

Receptor 2 - North Façade, Level 2

Residential apartments above the north façade plant terminations are situated approximately 10m from the grilles and on the same façade, so facing away from the source.

5.6 Calculation of Noise Levels at Nearest Noise-Sensitive Receptors

Our calculation method for predicting noise levels from the proposed plant at the nearest noise-sensitive receptors, based on the information above, is summarised below.

- Source Term SPL / SWL
- Mitigation (attenuation / louvres)
- Distance Attenuation
- Directivity
- Reflections

Calculation sheets are attached for further information in Appendix C.

The results of the calculations indicate the following noise levels at the nearest affected residential windows:

Table 5 – Predicted Noise Levels

Operating Period	Noise Level [dB] at South Receptors		Noise Level [dB] at North Receptors	
	Prediction	Criterion	Prediction	Criterion
Operating Hours (06:00 – 22:00)	37	37	36	37

Noise from the proposed plant installations is within the criteria.

6. VIBRATION CONTROL

In addition to the control of airborne noise transfer, it is also important to consider the transfer of noise as vibration to adjacent properties (as well as to any sensitive areas of the same building).

We would typically advise that condensing units / fans / AHUs be isolated from the supporting structure by means of either steel spring isolators or rubber footings. For particularly sensitive locations, or when on lightweight structures the mounts should ideally be caged and be of the restrained type.

It is important the isolation is not “short-circuited” by associated pipework or conduits. To this end, any conduits should be looped and flexible connectors should be introduced between the condenser and any associated pipework. Pipework should be supported by brackets containing neoprene inserts.

7. CONCLUSION

RBA Acoustics have undertaken noise monitoring at Hawley Wharf, Camden. The measured noise levels are presented within this report. The resultant noise levels have been used to determine the required criteria for atmospheric noise emissions from the proposed plant installations.

Provided the mitigation measures described in Section 5.2 of this report are included in the design and installation, the results of the assessment indicate atmospheric noise emissions from the proposed plant are within the criteria required by Camden Council and, as such, can be considered acceptable in terms of noise.

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.
L_{eq}	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.
NR	Noise Rating – A single figure term to describe a measured noise level which considers the frequency content of the noise, generally used for internal noise level measurements (particularly mechanical services plant).

Appendix B – Instrumentation

The following equipment was used for the measurements.

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Expiry Date
Norsonic Type 1 Sound Level Meter	Nor140	1406116	U42827	22 December 2024
Norsonic Pre Amplifier	1209	20295		
Norsonic 1/2" Microphone	1225	344468	42826	22 December 2024
Norsonic Sound Calibrator	1251	34307	U42827	22 December 2024

Table B1– Equipment Calibration Details

Appendix C – Plant Calculations

Table C1 – Example Calculation, GF-AHU-01 Exhaust

Parameter	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
L_w	77	87	74	70	68	62	53	41	
Duct Losses (Plenum & lining)	3	5	6	6	6	6	6	6	
Grille-end reflection	5	2	0	0	0	0	0	0	
Acoustic Louvre	7	9	12	16	21	23	19	18	
Hemispherical spreading	8	8	8	8	8	8	8	8	
Directivity (90° off-axis)	0	0	0	4	7	7	7	7	
Distance losses (8m)	18	18	18	18	18	18	18	18	
Noise level at receiver	36	45	30	18	8	0	0	0	30

Table C2 – Summary Noise Levels

Unit	Received noise level (dB) at 1m from Receptor 1
GF-AHU-01 Exhaust	30
GF-AHU-01 Intake	17
GF-AHU-01 Breakout (including open extract)	25
FF-AHU-02 Exhaust	35
FF-AHU-02 Intake	21
FF-AHU-02 Breakout (including open extract)	29
Total Received Level	37

Table C3 – Summary Noise Levels

Unit	Received noise level (dB) at 1m from Receptor 2
FF-AHU-01 Exhaust	31
FF-AHU-01 Intake	30
GF-EXF-02	31
FF-EXF-01	26
Total Received Level	36

Appendix D – 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 D1 – 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 D2 – 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
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

L: Likelihood S: Severity R: Rating

Appendix E – Graphs and Site Plans

Gail's Bakery, Hawley Wharf, Camden

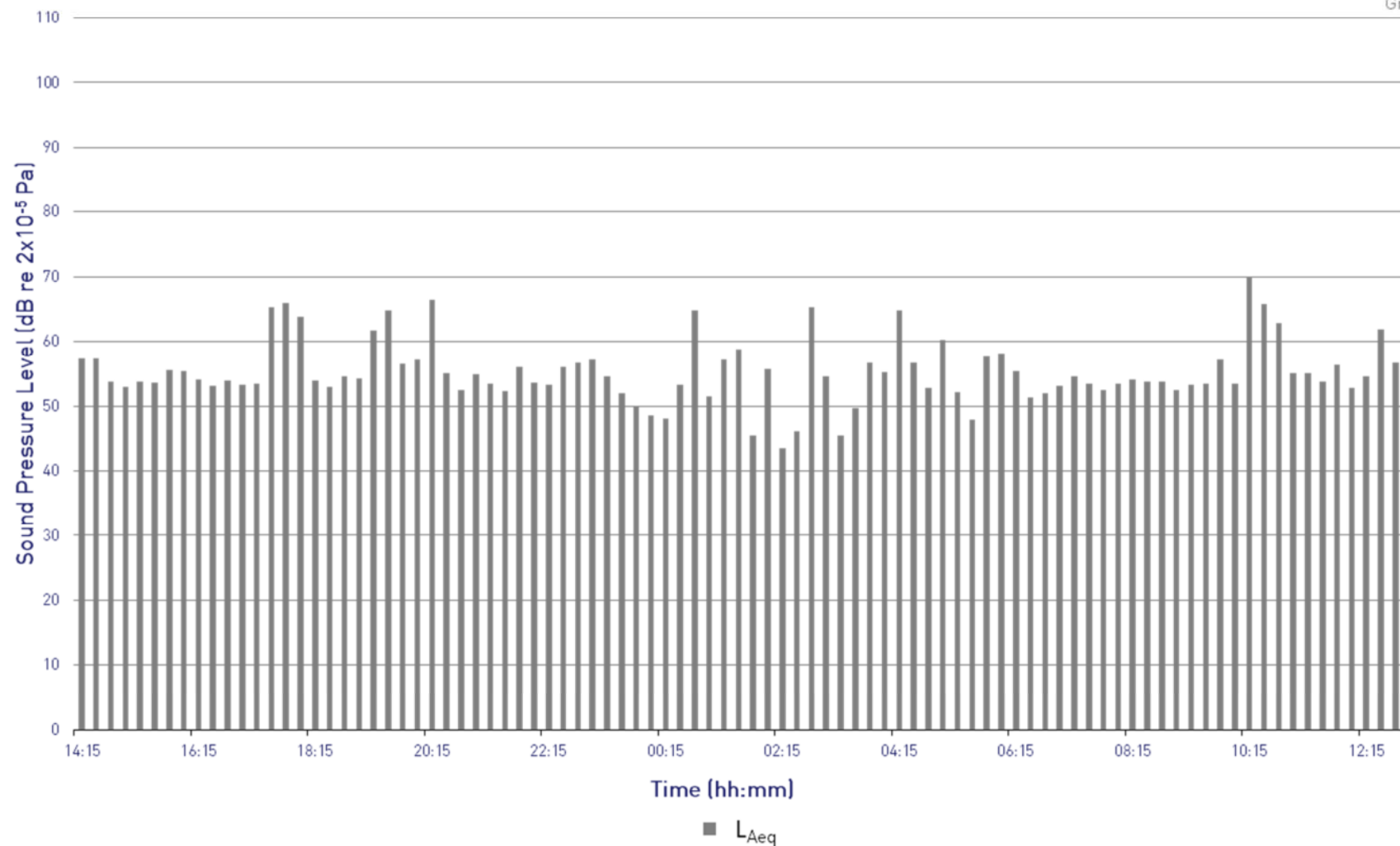
L_{Aeq} Time History

Position 1 - Podium Level - 18 January - 19 January 2023



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Graph 1



Gail's Bakery, Hawley Wharf, Camden

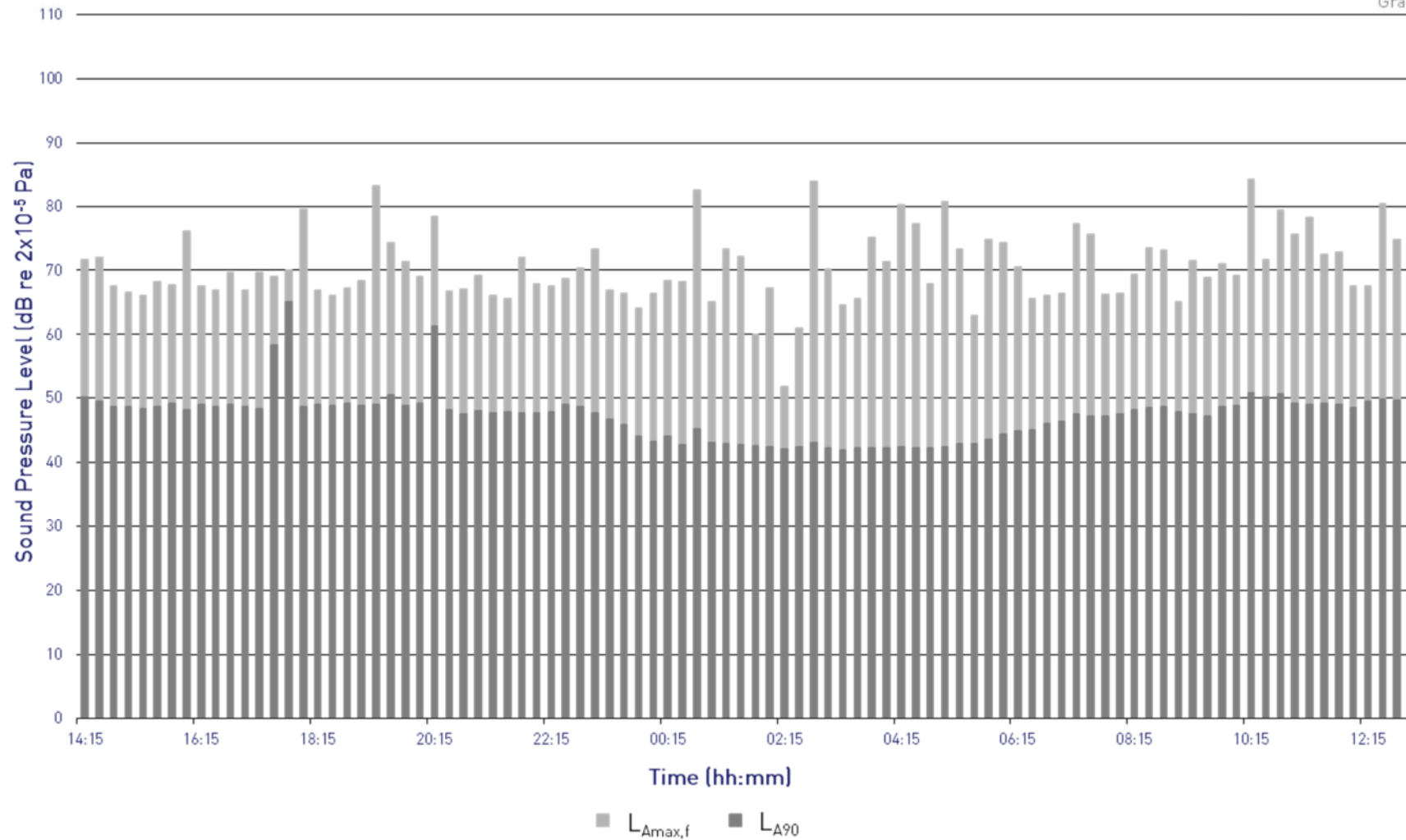
$L_{Amax,f}$ and L_{A90} Time History

Position 1 - Podium Level - 18 January - 19 January 2023



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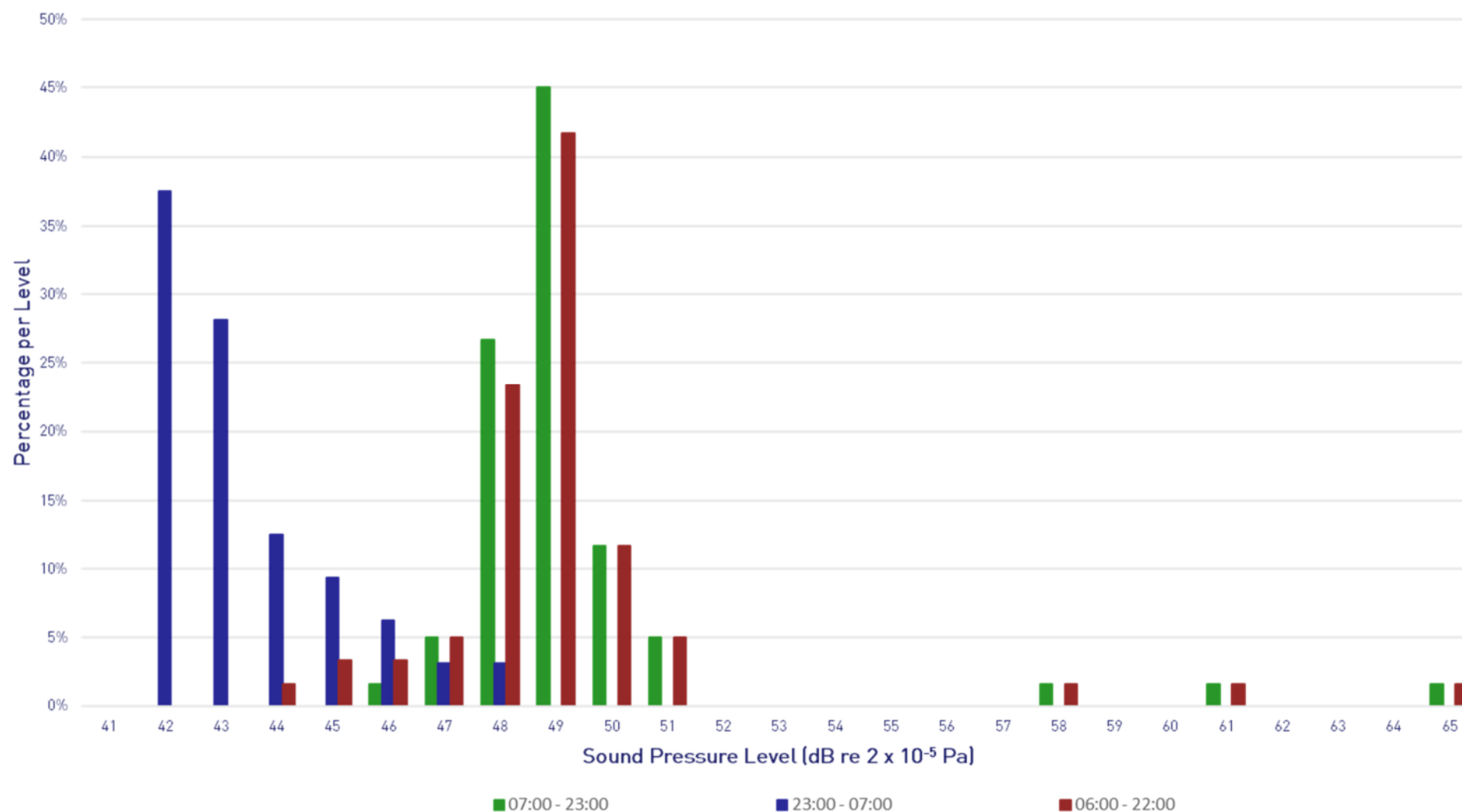
Graph 2



Gail's Bakery, Hawley Wharf, Camden

$L_{A90,15 \text{ minutes}}$ Histogram

Position 1 - Podium Level - 18 January - 19 January 2023





Gail's Bakery, Hawley Wharf, Camden

Site plan and photos showing site demise, monitoring location and NSR locations

Project 12421

Figure 1

20 June 2023

Not to Scale

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