450 Barlow Moor Road
Manchester

Acoustic Planning Report
1599/APR2
Revision 2

14 October 2026

For:

Mr Hiwa Zada

LIGHTHOUSE ACOUSTICS

2nd Floor 3 Hardman Square
Spinningfields Manchester M3 3EB

☏ 0161 457 0515 ▪ 07415 151 901
✉ Enquiry@LighthouseAcoustics.co.uk
🌍 www.LighthouseAcoustics.co.uk

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1599/APR2 Revision 2

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1.0 Introduction

Lighthouse Acoustics has been appointed by Mr Hiwa Zada to undertake a detailed environmental sound survey at 450 Barlow Moor Road, Manchester and to undertake an assessment of typical operational sound from the proposed restaurant/shisha lounge to the nearest residential receptors.

The survey methodology, results and assessment are presented in this report.

2.0 Objectives

To establish the Local Authority's acoustic requirements for the proposed restaurant/shisha lounge premises.

To undertake a detailed environmental sound survey in order to establish existing environmental sound levels at the proposed development.

To undertake an assessment of operational sound from the proposed external seating area to the nearest residential receptor based on typical source noise levels for an external seating area.

To undertake an assessment of operational sound breakout through the proposed open bi-fold doors to the nearest residential receptor based on typical source noise levels for a restaurant/shisha lounge.

To undertake an assessment of atmospheric plant sound emission levels from proposed the 1No. extract fan to the nearest noise sensitive receptor.

To comment on the calculated results and the likelihood of achieving an appropriate level of operational sound at the nearest residential receptors.

To propose mitigation measures where required in order to achieve the requirements of the Local Authority.

3.0 Site Description

The proposed restaurant/shisha lounge is at 450 Barlow Moor Road, Manchester. The site comprises a two storey semi-detached building with yard/garden to the rear and forecourt area to the front. The ground floor is currently vacant and was formerly used as office space whilst the 1st floor is currently an occupied flat. The proposals include the conversion of the ground floor to a restaurant/shisha lounge and the 1st floor to offices/storage.

The site is bound by commercial premises to the north (dental practice) residential properties to the east, adjoining commercial premises to the south (restaurant with flat above) and Barlow Moor Road to the west.

The adjoining restaurant to the south (488 Barlow Moor Road) and a further restaurant situated to the north of the site (456-458 Barlow Moor Road) both feature covered external seating areas to the front of the properties.

The site plan below indicates the site boundary and the surrounding environment.



Site plan indicating the site boundary and the surrounding environment

4.0 Local Authority Requirements

4.1 Operational Sound Breakout

Whilst the Planning & Noise Technical Guidance document (dated October 2022) produced by Manchester City Council states requirements for entertainment venues, they are applicable to venues where music is the dominant sound source of operational activities.

We are unaware of any requirements that Manchester City Council have for venues where conversation is the dominant sound source of operational activities with background music only.

As such, for sound breakout it is proposed that L_{Aeq} restaurant/shisha lounge operational sound levels are designed to achieve the representative L_{A90} background sound levels at the window of the nearest noise sensitive receptor.

4.2 External Operational Sound

Whilst the Planning & Noise Technical Guidance document (dated October 2022) produced by Manchester City Council states requirements for entertainment venues, they are applicable to venues where music is the dominant sound source of operational activities.

We are unaware of any requirements that Manchester City Council have for sound emissions from external seating areas due to people talking.

As such, for external seating areas it is proposed that L_{Aeq} operational sound levels should not exceed the representative L_{A90} background sound level at the window of the nearest noise sensitive receptor by more than 5dB.

4.3 Building Services Sound

With regard to noise and vibration from fixed plant/equipment, Section 3.7.1.5 of the Planning & Noise Technical Guidance document (dated October 2022) produced by Manchester City Council states the following:

> *"The noise assessment should be based on BS 4142: 2014 and any application for fixed plant, equipment or machinery must demonstrate that:*
>
> ***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 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location."***

5.0 Environmental Sound Survey

5.1 Measurements

Automated environmental sound measurements were undertaken from 12:00 hours on Friday 17 April 2026 to 16:00 hours on Monday 20 April 2026. During this period the L_{Amax}, L_{Aeq} and L_{A90} sound pressure levels were measured continuously over 15 minute periods.

5.2 Weather Conditions

At the start of the survey period there was a light southerly breeze (<3m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 13°C.

At the end of the survey period there was a light northerly breeze (<3m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 14°C.

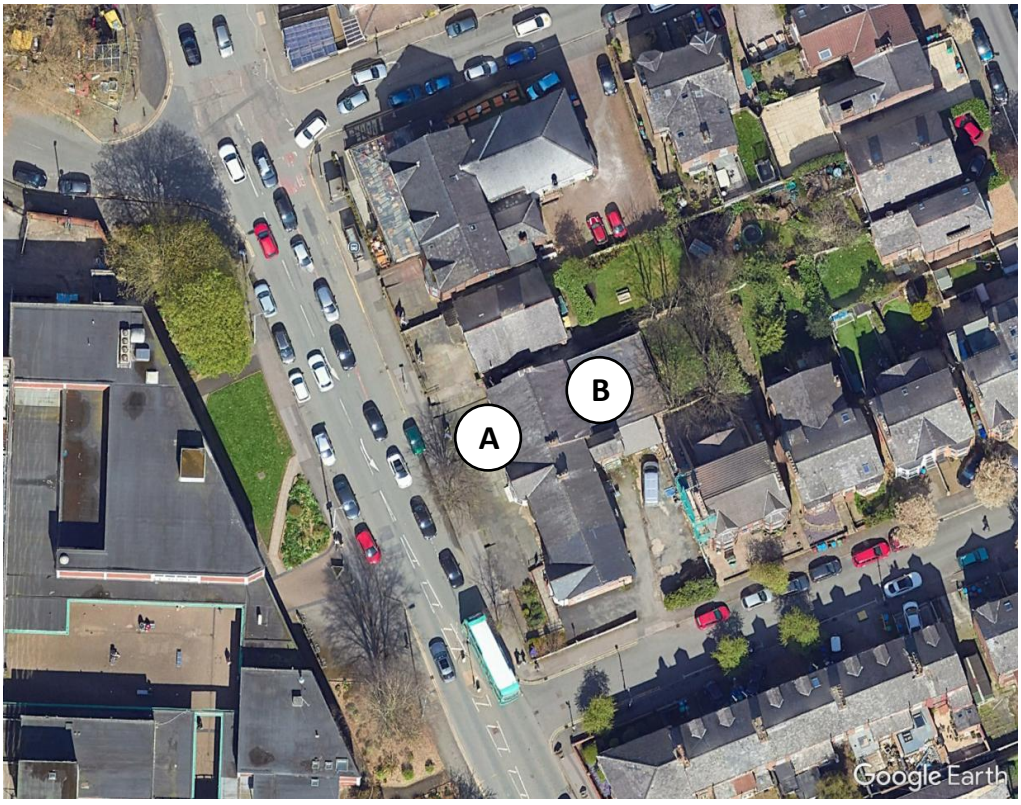
Based on publicly available weather data for the survey period it is understood that weather conditions remained similar for the duration of the survey with no significant periods of rainfall or strong breezes. The weather conditions during the survey period are therefore considered to be suitable for undertaking measurements of sound levels.

5.3 Measurement Positions

Environmental sound levels were measured at two positions on-site as described in the table below.

Position	Description
A	Microphone at 1st floor level on the western façade overlooking Barlow Moor Road.
B	Microphone at 1st floor level on the eastern façade overlooking the rear of the premises.

The measurement positions are shown on the site plan below.



Site plan showing measurement positions

Measurement Position A was selected in order to assess typical environmental sound levels representative of those at the window of the nearest residential receptor to the front of the premises along Barlow Moor Road.

Measurement Position B was selected in order to assess typical environmental sound levels representative of those at the window of the nearest residential receptor to the rear of the premises.

5.4 Equipment

The following equipment was used to undertake the environmental sound survey.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Casella	633C	0721320	06/11/2025
Preamplifier	Casella	495	001414	06/11/2025
Microphone	Casella	251	1025	06/11/2025
Class 1 Sound Level Meter	Casella	633C	2811231	15/09/2025
Preamplifier	Casella	495	001239	15/09/2025
Microphone	Casella	251	1841	15/09/2025
Class 1 Sound Calibrator	Casella	120/1	3864878	05/11/2025
Environmental Noise Kit	Casella	6847	-	-
Microphone Extension Cable	Casella	C6717/5	-	-
Weather Protection System	Casella	6737	-	-

Field calibration checks were performed on the sound level meters prior to and on completion of the survey and were found to be within acceptable tolerance limits.

5.5 Results

5.5.1 Time History Graphs

The results of the environmental sound survey are presented on Time History Graph 1599/THG1 and 1599 THG2 enclosed at the rear of the report.

5.5.2 $L_{A90,T}$ Background Sound Levels

The lowest representative daytime and night-time $L_{A90,15min}$ background sound level measured at each measurement position during the survey period are detailed in the table below.

Position	Lowest Representative $L_{A90,15min}$ Background Sound Levels (dB)	
	Daytime (07:00–23:00)	Night-time (23:00–07:00)
A	50*	40
B	39*	35

* Excluding periods detailed in Section 5.6.

5.6 Discussion of Sound Climate

At the start and end of the survey period the dominant sound sources at Position A were noted to be frequent road traffic along Barlow Moor Road and passing pedestrians.

Elevated sound levels can clearly be seen on Time History Graph 1599/THG1 between 11:00 and 16:00 hours on Sunday 19 April 2026. This is understood to be due to the Manchester Marathon which passed along Barlow Moor Road. Measurements during this period will therefore be excluded from the subsequent assessments.

At the start and end of the survey period the dominant sound sources at Position B were noted to be frequent road traffic from the surrounding road network. Elevated sound levels can clearly be seen on Time History Graph 1599/THG1 up to 22:30 hours on Friday 17 April 2026, between 10:00 to 23:00 hours on Saturday 18 April 2026, between 09:00 to 22:00 hours on Sunday 19 April 2026 and from 12:00 hours on Monday 20 April 2026.

This is understood to be due to the operation of the existing kitchen extract fan serving the adjoining commercial premises to the south (488 Barlow Moor Road). Measurements during these periods will therefore be excluded from the subsequent assessments.

Whilst we are unable to comment on dominant sound sources or individual sound events during the survey period, based on the surrounding environment it is likely that road traffic remained the dominant sound source in the absence of the sound sources stated above.

6.0 External Seating Assessment

6.1 Drawings

The assessment has been based on the following drawings.

Author	Drawing No.	Revision	Date
NADA Architects Ltd	25-1380 (01)001	PL3	12.10.26
	25-1380 (04)001	PL4	13.10.26
	25-1380 (04)002	PL3	13.10.26
	25-1380 (05)001	PL3	29.09.26

The proposals include the conversion of the existing vacant ground floor office space and 1st floor flat to form a restaurant/shisha lounge at ground floor, offices/storage at 1st floor and external seating area to the front.

6.2 Operating Hours

The restaurant/shisha lounge is proposed to operate between 07:00 and 23:00 hours 7 days a week during which time the external seating area to the front of the premises have the potential to be occupied.

Typical external seating area $L_{Aeq,T}$ operational sound levels are therefore assessed to the windows of the nearest residential receptor (1st floor 488 Barlow Moor Road) against the lowest representative $L_{A90,15min}$ background sound level measured at Position A during this period.

6.3 Sound Sources

It is understood that the external seating area will not feature any amplified music and that the only sound source will be that of people talking. The drawings indicate 22No. seats in the external seating area. For the purpose of the assessment it is assumed that up to 22No. people may be in the external seating area.

6.4 Sound Source Data

For the external seating area, it is assumed that half of the people in the space will be talking at any one time. Of these people it is assumed that half will be talking with a normal voice whilst half will be talking with a raised voice.

The sound pressure levels for 1No. person talking with normal and raised voices at 1m are detailed below and will each be applied to a quarter of the total number of seats in the spaces.

Source Description	L_{eq} Sound Pressure level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
1No. person talking with normal voice at 1m	42	47	57	60	54	49	44	39	60
1No. person talking with raised voice at 1m	46	51	62	66	62	57	51	43	67

6.5 Proposed Canopy

A fixed canopy is proposed to the external seating area comprising a non-retractable metal panel roof and fixed non-opening glazed windows along the southern elevation. This will provide screening attenuation of approximately 10dB between the external seating area and the windows of the nearest residential receptor (1st floor 488 Barlow Moor Road).

6.6 Calculation

The operational sound level from the external seating area due to people talking has been calculated using the following formula:

$$L_p = L_{p1m} + 10 \log N - 20 \log R - C$$

Where:
L_p is the sound pressure level at the receiver, dB;
L_{p1m} is the sound pressure level of 1No. person talking at 1m, dB;
N is the total number of people talking within the external space, m^2;

R is the distance in meters between the external space and the receiver, m;
C is the screening attenuation provided by the proposed canopy, dB.

6.7 Results

The calculated external seating area L_{Aeq} operational sound level incident upon the windows of the nearest residential receptor is presented in the table below.

Nearest Noise Sensitive Receptor	Calculated L_{Aeq} (dB)
Nearest residential property (1st floor 488 Barlow Moor Road)	51

The assessment indicates that external seating area L_{Aeq} operational sound levels incident upon the windows of the nearest residential receptor will be up to 51dB.

External seating area L_{Aeq} operational sound levels are therefore likely to achieve the proposed requirement to achieve no more than 5dB above the representative daytime L_{A90} background sound level (55dB) at the windows of the nearest residential receptor.

7.0 Bi-Folding Doors Assessment

7.1 Drawings

The assessment has been based on the following drawings.

Author	Drawing No.	Revision	Date
NADA Architects Ltd	25-1380 (01)001	PL3	12.10.26
	25-1380 (04)001	PL4	13.10.26
	25-1380 (04)002	PL3	13.10.26
	25-1380 (05)001	PL3	29.09.26

The proposals include the conversion of the existing vacant ground floor office space and 1st floor flat to form a restaurant/shisha lounge at ground floor, offices/storage at 1st floor and external seating area to the front.

7.2 Operating Hours

The restaurant/shisha lounge is proposed to operate between 07:00 and 23:00 hours 7 days a week during which time the bi-folding doors situated in the front facade of the premises have the potential to be opened.

Typical restaurant/shisha lounge $L_{Aeq,T}$ operational sound levels are therefore assessed to the windows of the nearest residential receptor (1st floor 488 Barlow Moor Road) against the lowest representative $L_{A90,15min}$ background sound level measured at Position A during this period.

7.3 $L_{Aeq,T}$ Operational Sound Levels

Typical operational sound levels measured within a similar sized restaurant/shisha lounge premises to that proposed are detailed in the table below along with the corresponding L_{eq} octave band sound pressure levels.

Position	$L_{eq,T}$ Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Internal	58	59	61	66	67	57	52	42	69

The dominant sound sources included background music (no subwoofers) and customer/staff conversations.

7.4 $L_{A90,T}$ Background Sound Level

The lowest representative $L_{A90,15min}$ background sound level measured at Position A during the proposed operating hours of the restaurant/shisha lounge is detailed in the table below.

Position	Lowest Representative $L_{A90,15min}$ Background Sound Level (dB)
	Daytime (07:00 to 23:00)
A	50

7.5 Existing Constructions

It is understood that the ground floor front façade comprises the following construction.

Element	Typical Construction
Facade	Masonry wall & glazed windows/doors

The following Sound Reduction Indicies have been allowed for the ground floor façade elements.

Element	Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Masonry wall	32	40	44	45	51	56	56	56
Glazed windows/doors	20	22	25	34	37	35	39	46

The area of the bi-folding doors when open is understood to be approximately 12m^2.

7.6 Proposed Canopy

A fixed canopy is proposed to the external seating area comprising a non-retractable metal panel roof and fixed non-opening glazed windows along the southern elevation. This will provide screening attenuation of approximately 10dB between the external seating area and the windows of the nearest residential receptor (1st floor 488 Barlow Moor Road).

7.7 Calculation

The sound pressure level radiated from the bi-folding doors due to restaurant/shisha lounge operational sound levels has been calculated using the following formula:

$$L_p = L_{prev} + 10 \log S - 6 - SRI + 10 \log Q - 20 \log R - 11 - D - C$$

Where:
L_p is the sound pressure level at the receiver, dB;
L_{prev} is the reverberant sound pressure level in the source room, dB;
S is the surface area of the separating element, m^2;
SRI is the sound reduction indicies of the separating element, dB;
Q is the directivity factor for the separating element, dB.
R is the distance in meters between the separating element and the receiver, m;
D is the directivity correction to the receiver, dB;
C is the screening attenuation provided by the proposed canopy, dB.

7.8 Results

The calculated restaurant/shisha lounge L_{Aeq} operational sound level incident upon the windows of the nearest residential receptor due to the bi-folding doors being open is presented in the table below.

Nearest Noise Sensitive Receptor	Calculated L_{Aeq} (dB)
Nearest residential property (1st floor 488 Barlow Moor Road)	43

The assessment indicates that restaurant/shisha lounge L_{Aeq} operational sound levels incident upon the windows of the nearest residential receptor due to the bi-folding doors being open will be 43dB.

Restaurant/shisha lounge L_{Aeq} operational sound levels are therefore likely to achieve the proposed requirement to achieve the representative daytime L_{A90} background sound level of 50dB at the windows of the nearest residential receptor.

7.9 Background Music

For the in-house loudspeaker system, amplified music levels should be limited by means of an electronic noise limiter/compressor. The device should be capable of limiting individual one third octave bands over the frequency range 20Hz to 20kHz and controlling the number of speakers/zones required.

In order to set the device to achieve the requirements of the Local Authority a commissioning visit will be required in conjunction with an acoustic consultant upon completion of the fit-out works and prior to the operation of the restaurant/shisha lounge. The devices should be lockable once set to prevent tampering. Upon completion, a commissioning report should be issued to the Local Authority specifying details of the devices installed and the limits that they have been set to.

8.0 Atmospheric Plant Sound Emissions Assessment

8.1 Plant Sound Data

Atmospheric building services sound levels have been assessed based on the manufacturers sound data for the proposed 1No. extract fan which indicates octave band sound data as detailed in the tables below.

Extract Fan – Flakt Woods MaXfan 40 Compac – 0.65m³/s at 542Pa

Induct Outlet Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
84	85	91	88	88	85	82	77	92

Extract Fan – Flakt Woods MaXfan 40 Compac – 0.65m³/s at 542Pa

Breakout Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
76	71	74	68	63	57	58	55	70

Whilst it is not possible to assess plant irregularity or impulsiveness based on manufacturer's sound data, BS 4142: 2014 provides an objective method for assessing the audibility of tones in sound. The one-third octave method states that if the level of a one third octave band exceeds the level of both adjacent one third octave bands by the following amounts, then a tonal component may be identified as present:

- 15dB in the low-frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in the mid-frequency one-third-octave bands (160Hz to 400Hz);
- 5dB in the high-frequency one-third-octave bands (500Hz to 10kHz).

However, one third octave band sound data is rarely available from manufacturers as is the case in this instance.

By applying the same principal to the octave band sound data in the table above, a review indicates that these items are unlikely to exhibit a tonal component. As such, no character correction has been applied to the specific sound level for these items.

Should one third octave band sound data become available a revised assessment should be undertaken.

8.2 Plant Location

The location of the proposed 1No. extract fan has been taken from the following drawings.

Author	Drawing No.	Revision	Date
NADA Architects Ltd	25-1380 (01)001	PL3	12.10.26
	25-1380 (04)001	PL4	13.10.26
	25-1380 (04)002	PL3	13.10.26
	25-1380 (05)001	PL3	29.09.26

These indicate that the proposed 1No. extract fan is situated internally within the ground floor kitchen with the exhaust duct penetrating the ground floor flat roof and rising up the east façade to 1st floor roof level where it terminates vertically.

8.3 Operating Hours

It is understood that the proposed 1No. extract fan has the potential to operate between 07:00 and 23:00 hours 7 days a week.

In order to undertake a worst case assessment, it is assumed that the proposed 1No. extract fan operates for the full 1 hour daytime assessment period.

8.4 Nearest Noise Sensitive Receptor

The nearest noise sensitive receptor to the proposed 1No. extract fan is understood to be the adjacent residential flat situated at 1st floor level at 488 Barlow Moor Road. The table below details the approximate distance between the proposed 1No. extract fan and the window of the nearest noise sensitive receptor.

Nearest Noise Sensitive Receptor	Plant Item	Approximate Distance (m)
To the south	Extract Fan Exhaust	10

8.5 Calculation

The assessment has been undertaken in accordance with generally accepted acoustic principles for building services plant items and includes corrections for duct dimensions, grille dimensions, end reflections, directivity and distance loss.

8.6 Attenuation Proposals

The proposed 1No. extract fan shall be fitted with an atmospheric silencer as specified in the Silencer Schedule 1599/SS1 enclosed at the rear of the report.

Any exhaust ductwork between the penetration of the ground floor flat roof and any externally mounted atmospheric silencers should be acoustically lagged comprising 50mm (min.) mineral wool slab (min. 16kg/m^3) wrapped with a polymeric heavy mass barrier material of at least 10kg/m^2.

8.7 Assessment

The results of the assessment are summarised in the following table.

Extract Fan

Nearest Noise Sensitive Receptor	Cumulative Rating Level $L_{Ar,15min}$ at Receptor (dB)	Lowest Representative L_{A90} Background Sound Level at Nearest Noise Sensitive Receptor (dB)	Difference (dB)	Local Authority's Requirements Achieved
To the south	32	39	-7	Yes

The assessment indicates that the L_{Ar} rating levels are likely to achieve 7dB below the lowest representative L_{A90} background sound level L_{A90} at the nearest noise sensitive receptor.

As such, atmospheric plant sound emissions from the proposed 1No. extract fan are likely to have a low impact at the nearest noise sensitive receptor and achieve the requirements of the Local Authority with the incorporation of the proposed mitigation measures.

9.0 Additional Guidance

In order to minimise sound emissions from the premises the following guidance should be incorporated.

- All staff should be trained on the noise management measures employed by the venue to minimise operational sound emissions from the premises.

- External windows/bi-folding doors to the rear of the building should be kept closed during operational hours between 07:00 and 23:00 hours.

- All external entrance/escape doors should be fitted with self-closing devices. Staff should ensure that the entrance/escape doors are not kept open unnecessarily in order to minimise sound emissions from the premises.

- Internal loudspeakers should face away from external doors and windows and the use of subwoofers should be prohibited.

- Staff should regularly monitor and manage external areas to ensure that customers are not causing a disturbance to local residents. Rowdy behaviour from customers should not be tolerated and anyone behaving in an anti-social way should be asked to leave the premises.

- Deliveries, refuse collections and storage/disposal of waste/recyclables in external areas should be restricted to normal working hours between 08:00 and 18:00 hours Monday to Friday and 08:00 and 13:00 Saturdays.

- A contact telephone number should be made available to local residents/businesses which they can use to report noise disturbances to the venue as and when they occur.

10.0 Conclusions

The Local Authority's acoustic requirements for the proposed restaurant/shisha lounge premises have been established.

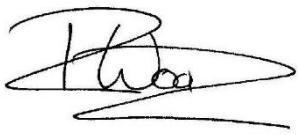
A detailed environmental sound survey has been undertaken in order to establish existing environmental sound levels at the proposed development.

An assessment of operational sound from the proposed external seating area has been undertaken to the windows of the nearest noise sensitive receptor.

An assessment of operational sound breakout through the proposed open bi-folding doors has been undertaken to the windows of the nearest noise sensitive receptor.

An assessment of atmospheric plant sound emission levels from proposed the 1No. extract fan has been undertaken to the nearest noise sensitive receptor.

Mitigation measures have been proposed where required in order to achieve the requirements of the Local Authority.



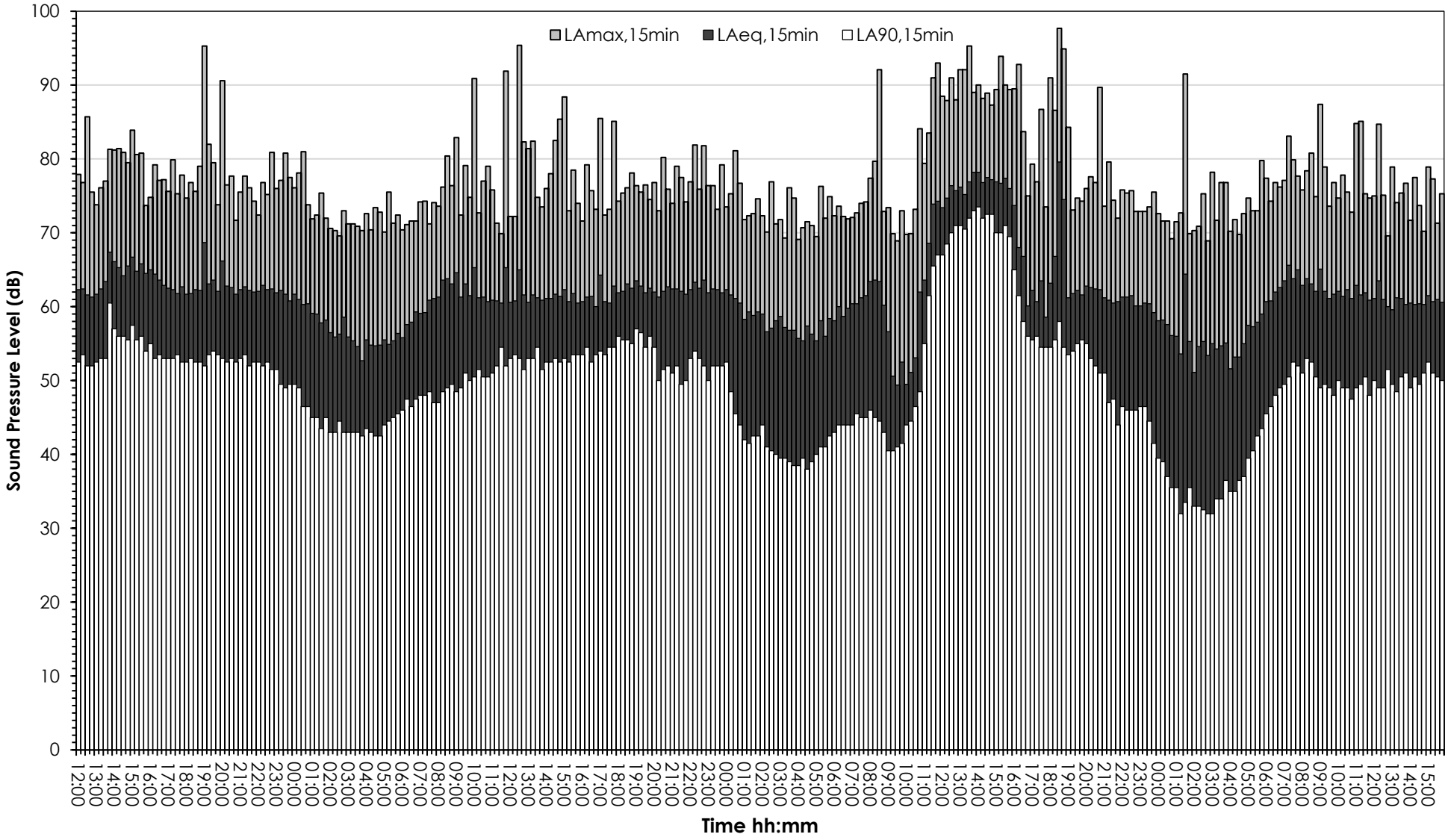
Robin Wood
LIGHTHOUSE ACOUSTICS

1599/THG1

450 Barlow Moor Road, Manchester

Time History Graph - Friday 17 April 2026 to Monday 20 April 2026

$L_{Amax,15min}$, $L_{Aeq,15min}$ & $L_{A90,15min}$ Noise Levels at Position A

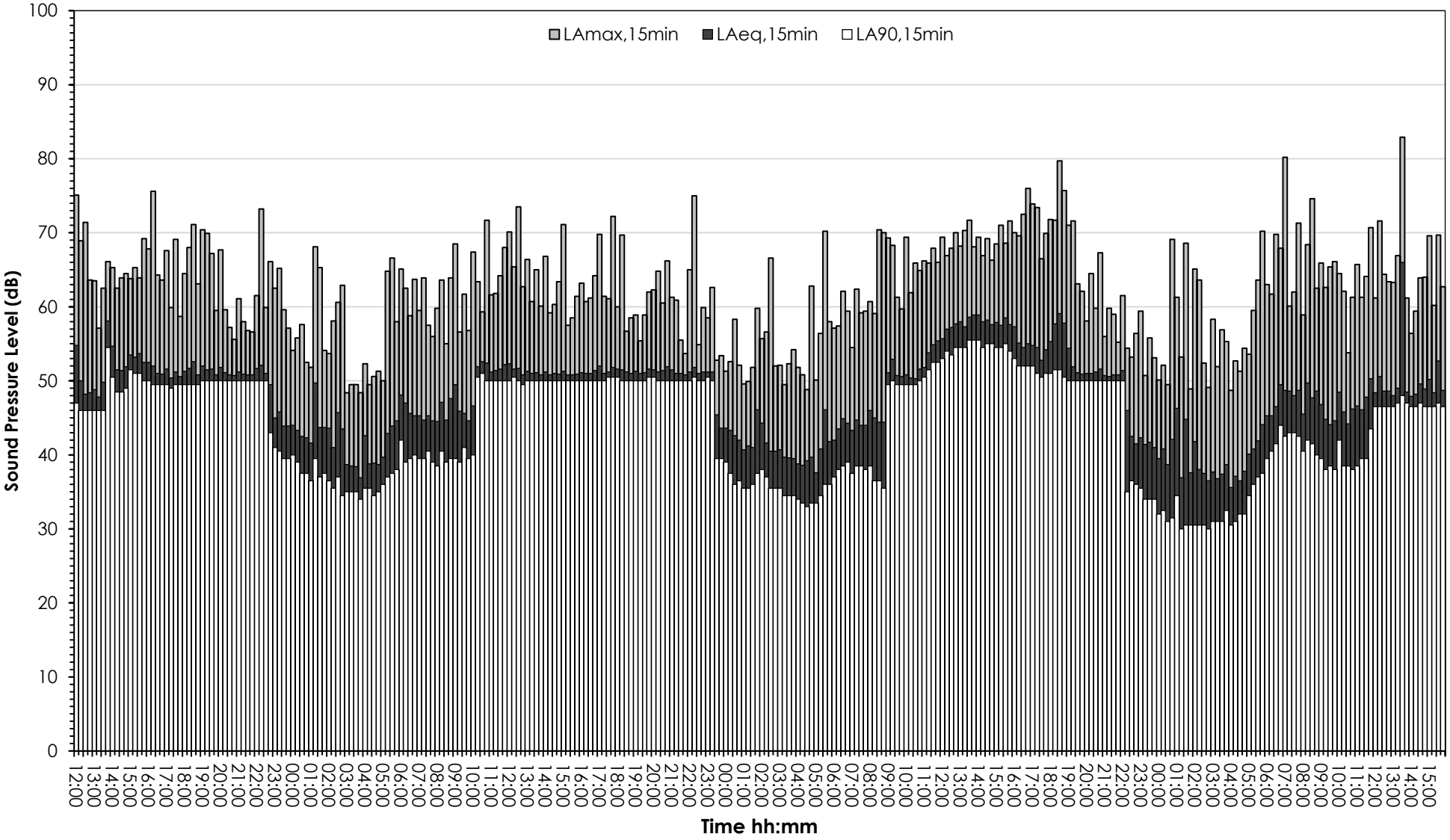


1599/THG2

450 Barlow Moor Road, Manchester

Time History Graph - Friday 17 April 2026 to Monday 20 April 2026

$L_{Amax,15min}$, $L_{Aeq,15min}$ & $L_{A90,15min}$ Noise Levels at Position B



Ref: 1599/SS1

Date: 25 September 2026

Revision: -

Comments:

450 Barlow Moor Road
Manchester

LIGHTHOUSE ACOUSTICS

2nd Floor 3 Hardman Square
Spinningfields Manchester M3 3EB

☏ 0161 457 0515 ▪ 07415 151 901
✉ Enquiry@LighthouseAcoustics.co.uk
www.LighthouseAcoustics.co.uk

Plant Ref.	Description	Inlet/Outlet	Vol. (m^3/s)	Typical Length (mm)	Face Velocity (m/s)	Pressure Drop (Pa)	Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
							63	125	250	500	1k	2k	4k	8k
-	Extract Fan Flakt Woods MaXfan 40 Compac	Exhaust	0.65	1800	<4.5	<55	9	17	27	43	48	43	36	23