6A Oxford Road
Manchester

Plant Sound
Assessment Report
0594/PSA1
Revision 3

3 March 2025

For:

Shuaib Ishaq

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1.0 Introduction

Lighthouse Acoustics has been appointed by Shuaib Ishaq to undertake an environmental sound survey at 6A Oxford Road, Manchester and to assess operational sound emissions from the proposed plant items.

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

2.0 Objectives

To establish the Local Authority's acoustic requirements for the proposed development.

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

To undertake an assessment of atmospheric sound emissions from the proposed plant items to the nearest receptors and propose mitigation measures if required in order to achieve the requirements of the Local Authority.

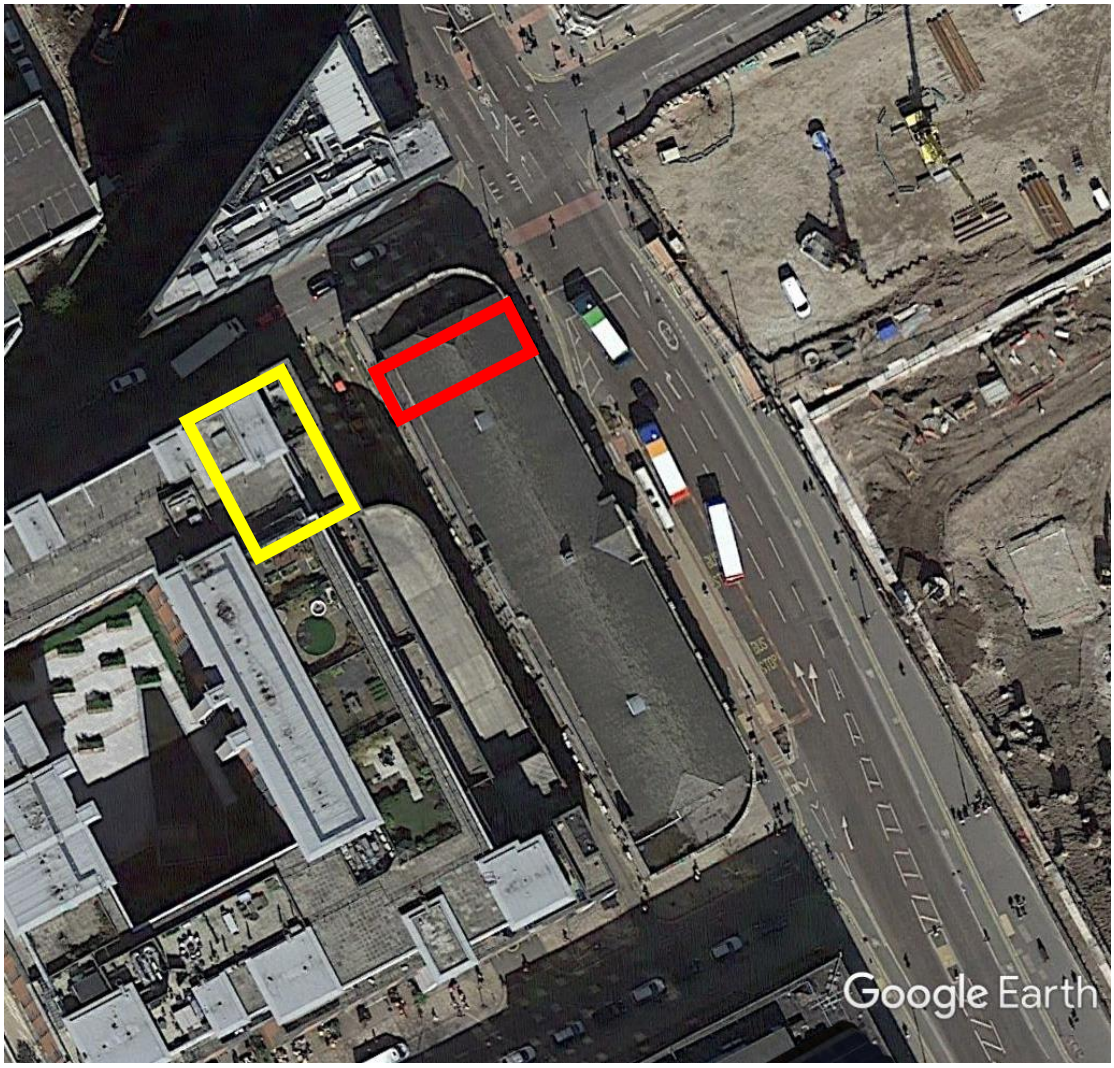
3.0 Site Description

6A Oxford Road is bound by commercial premises to the north, Oxford Road to the east, commercial premises to the south and Measham Mews to the west.

The plant items are proposed on the west façade of 6A Oxford Road, Manchester along Measham Mews. Existing plant items serving the adjacent commercial premises are situated along Measham Mews.

The nearest noise sensitive receptor is understood to be residential flats situated to the west of the site at the corner of Hulme Street and Measham Mews.

The site plan below indicates the extent of the site (red line), location of the nearest noise sensitive receptors (yellow line) and the surrounding environment.



Site plan indicating the extent of the site and the surrounding environment

4.0 Local Authority Requirements

With regard to noise and vibration from fixed plant/equipment, Section 3.6.1.5.1 of the Planning & Noise Technical Guidance document (dated December 2015) 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 10:30 hours on Tuesday 13 August 2019 to 10:30 hours on Wednesday 14 August 2019. 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 gentle westerly breeze (<5m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 15°C.

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

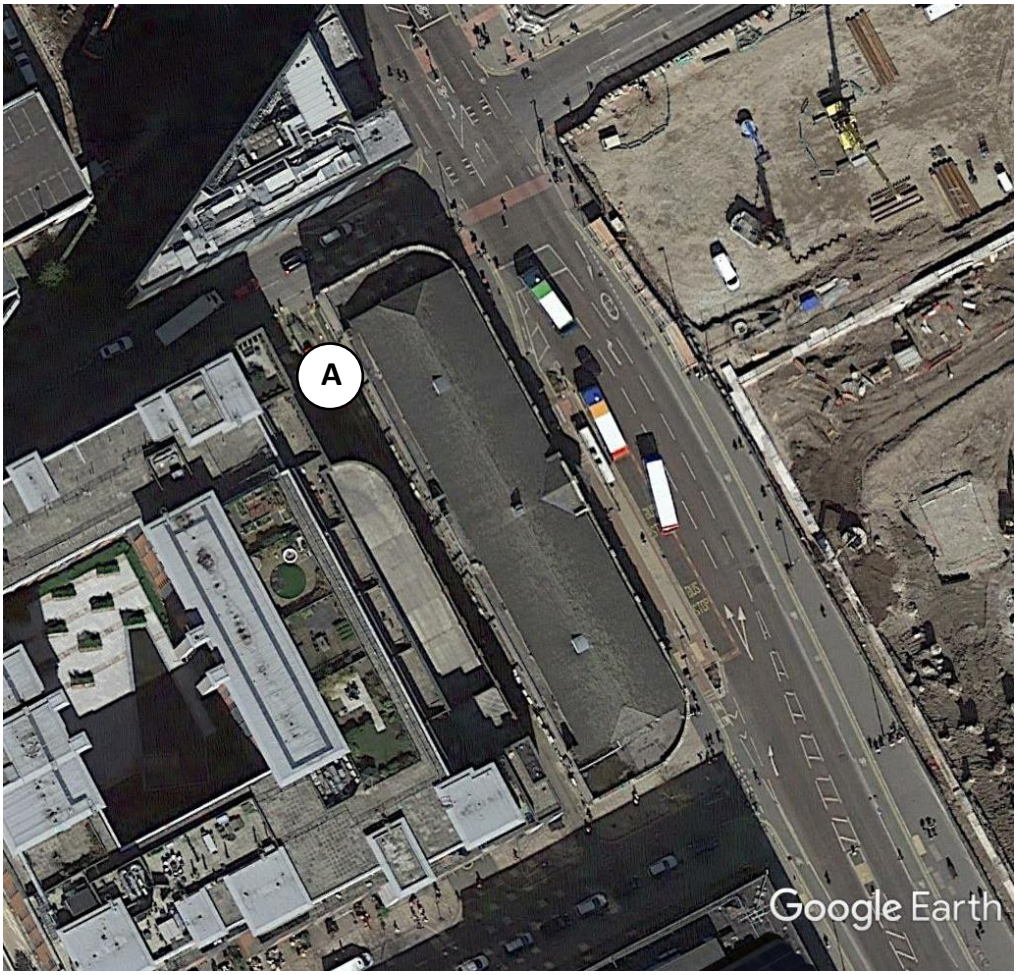
Based on publicly available weather data for the survey period it is understood that weather conditions remained similar for the duration of the survey with no periods of significant rainfall or strong breezes. The weather conditions during the survey period are therefore considered to be suitable for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

5.3 Measurement Position

Environmental sound levels were measured at a single position on-site as described in the table below.

Position	Description
A	Microphone situated at 1st floor level at 1m from the west façade of the building overlooking Measham Mews.

The measurement position is shown on the site plan below.



Site plan showing measurement position

Measurement Position A was selected in order to assess typical environmental sound levels representative of those at the nearest noise sensitive receptor to the proposed plant items.

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	5262813	07/06/2019
Preamplifier	Casella	495	003391	07/06/2019
Microphone	Casella	251	1031	07/06/2019
Class 1 Sound Calibrator	Casella	120/1	3864878	13/11/2018
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 meter 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 Graph

The results of the environmental sound survey are presented on Time History Graph 0594/THG1 enclosed at the rear of the report. The presented results have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

5.5.2 L_{A90} Background Sound Levels

The lowest representative daytime and night-time $L_{A90,15min}$ background sound levels measured at each 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	61	52

The presented results have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

5.5.3 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 the surrounding road network and low level building services plant from the surrounding commercial premises.

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 and building services plant remained the dominant sound sources.

6.0 Atmospheric Plant Sound Emission Limits

Based on the lowest representative daytime and night-time $L_{A90,15min}$ background sound levels measured during the environmental sound survey and the requirements of the Local Authority, cumulative atmospheric plant sound emissions should not exceed the following limits at the nearest existing noise sensitive receptor.

Receptor	L_{Aeq} Cumulative Atmospheric Plant Sound Emission Limits (dB) at Nearest Noise Sensitive Receptors	
	Daytime (07:00–23:00)	Night-time (23:00–07:00)
West	56	47

The above limits are subject to final approval by Manchester City Council.

7.0 Plant Sound Emission Assessment

7.1 Plant Sound Data

Atmospheric building services sound levels have been assessed based on the manufacturers sound data received for the proposed 1No. supply fan, 1No. extract fan and 4No. condenser units which indicates octave band sound data as detailed in the tables below.

1No. Supply Fan – FZAP560-41 at 3.03m³/s at 100Pa

Inlet Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dB
63	125	250	500	1k	2k	4k	8k	
85	79	77	76	76	75	72	66	88

1No. Extract Fan - Flakt Woods 63JM/20/4/6/18 at 2.67m³/s at 194Pa

Outlet Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dB
63	125	250	500	1k	2k	4k	8k	
78	84	82	79	76	76	72	67	88

2No. Condenser Units – LG ZUUW42GA0

Casing Sound Pressure Level (dB) at 1m at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
58	57	53	51	50	47	49	42	54

2No. Condenser Unit – J&E Hall JEHR-0135-B1-L-1

Casing Sound Pressure Level (dB) at 1m at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
-	53	50	46	41	37	31	26	47

1No. Supply Fan – Vent Axia ESP45014 at 1.46m³/s at 50Pa

Inlet Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dB
63	125	250	500	1k	2k	4k	8k	
69	76	73	72	70	71	70	62	81

1No. Extract Fan - Flakt Woods 56JM/20/4/6/32 at 3.45m³/s at 71Pa

Outlet Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dB
63	125	250	500	1k	2k	4k	8k	
85	86	80	79	77	74	71	66	90

2No. Condenser Units – Panasonic U-50PZ3E5

Casing Sound Pressure Level (dB) at 1m at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
45	47	45	44	41	38	31	31	46

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 tables 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.

7.2 Operating Hours

It is understood that the proposed plant items have the potential to operate between 11:00 to 23:00 hours Monday to Sunday.

In order to undertake a worst case assessment, it is assumed that the proposed plant items will operate for the full 1 hour daytime period.

7.3 Plant Location

The location of the proposed plant items has been taken from the following drawings.

Author	Drawing No.	Revision	Date
Hay Interiors	19-129-2	B	10.07.19
	19-129-1	B	10.07.19
Brawn Design Limited	2334 218	T2	04.11.24

The Hay Interiors drawings indicate that the 4No. proposed condenser units are to be situated on the west façade (replacing 2No. of the 3No. existing condenser units). It is understood that the 1No. existing condenser unit to be retained will be decommissioned and it is assumed that this already has approval. The 1No. supply fan and 1No. extract fan are to be situated internally at 2nd Floor level and ducted to fresh air and exhaust air grilles situated at 2nd floor level on the west façade.

The Brawn Design Limited drawing indicates that the 2No. proposed condenser units are to be situated on the west façade below the existing units. The 1No. supply fan and 1No. extract fan are to be situated internally at 2nd Floor level and ducted to fresh air and exhaust air grilles situated at 2nd floor level on the west façade above the existing fresh air and exhaust air grilles.

7.4 Nearest Receptor

It is understood that the nearest noise sensitive receptor is residential flats situated approximately 10m to the west of the proposed plant items.

7.5 Vibration Isolation

The proposed plant items shall be fitted with suitable vibration isolation mounts in order to minimise structure borne noise transfer. Proposals should be forwarded in order to review the suitability for the proposed installation.

7.6 Attenuation Proposals

The proposed 2No. supply fans and 2No. extract fans shall be fitted with an atmospheric silencer as specified in the Silencer Schedule 0594/SS2 enclosed at the rear of the report.

7.7 Assessment

The table below details the calculated cumulative L_{Aeq} atmospheric plant sound emission levels at the nearest receptors along with the proposed cumulative atmospheric plant sound emission limits and the differences between them.

Receptor	Descriptor	Period	
		Daytime	Night-time
West Residential Flats	Calculated Cumulative Atmospheric Plant Sound Emission Level L_{Aeq} (dB)	50	N/A Plant items only operate 11:00 to 23:00 hours
	Cumulative Atmospheric Plant Sound Emission Limits L_{Aeq} (dB)	56	
	Difference (dB)	-5	

The calculated cumulative L_{Aeq} atmospheric plant sound emission levels at the nearest receptors are 5dB below the proposed daytime cumulative atmospheric plant sound emission limit. The assessment therefore indicates that the building services proposals are likely to achieve the proposed daytime cumulative atmospheric plant sound emission limit at the nearest receptors with the incorporation of the specified attenuation proposals.

8.0 Operational Noise Breakout

With regard to operational noise breakout from within the premises, an assessment is not considered to be necessary on this occasion due to the following points:

- Operational noise is limited to cooking activities and staff/customer conversations (up to 56 covers);
- There is no amplified music proposed within the premises;
- There are no external seating areas proposed;
- There are no openable windows to the unit;
- The entrance door will be fitted with an automatic closer;
- The operating hours are limited to daytime only (11:00 to 23:00 hours).

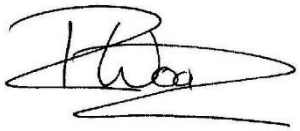
9.0 Conclusion

The Local Authority's acoustic requirements for the proposed development have been established.

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

An assessment of atmospheric sound emissions from the proposed plant items to the nearest receptor has been undertaken.

The assessment indicates that the proposed plant items are likely to achieve the proposed cumulative atmospheric plant sound emission limits at the nearest receptor with the incorporation of the specified attenuation proposals.



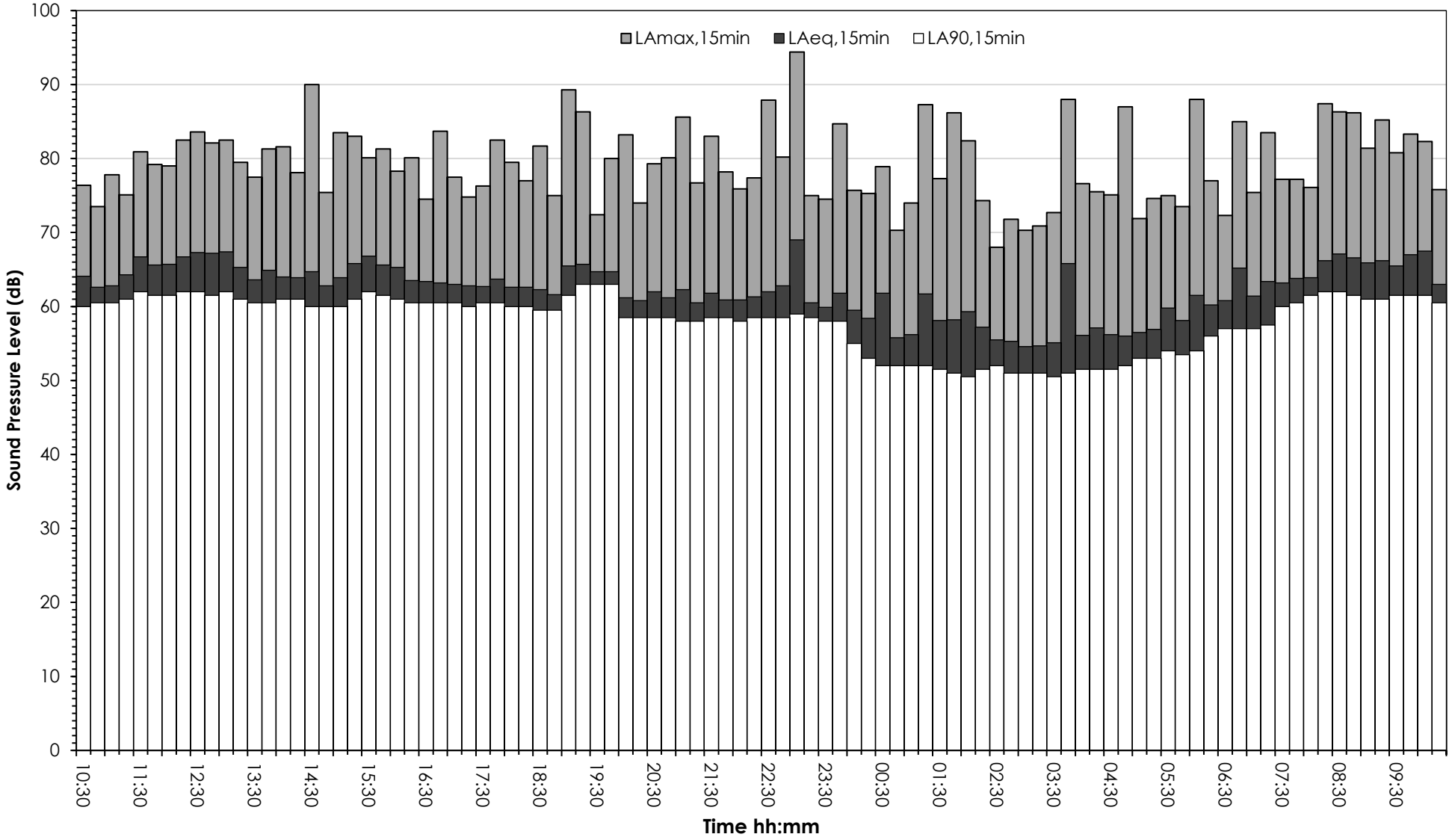
Robin Wood
LIGHTHOUSE ACOUSTICS

0594THG1

6A Oxford Road, Manchester

Time History Graph - Tuesday 13 August 2019 to Wednesday 14 August 2019

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



Ref: 0594/SS1

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Comments: -

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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
-	Supply Fan ZAP560-41	Inlet	3.03	1200	<5.0	<55	5	9	16	29	34	26	18	11
-	Extract Fan Flakt Woods 63JM/20/4/6/18	Outlet	2.67	1200	<5.0	<55	5	9	16	29	34	26	18	11
-	Supply Fan Vent Axia ESP45014	Inlet	1.46	1200	<5.0	<55	5	9	16	29	34	26	18	11
-	Extract Fan Flakt Woods 56JM/20/4/6/32	Outlet	3.45	1200	<5.0	<55	5	9	16	29	34	26	18	11