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Our Ref: CSGA-C2072-T2-01Rev01

FAO: Jodi Carr

Emailed to: jcarr@hallidaymeeham.com, OliverCotton@hallidaymeeham.com,
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Dear Jodi,

Re: Roof Top Plant Post Completion Noise Survey – University of Manchester, BSE

CSG Acoustics Ltd have been commissioned by Halliday Meeham Architects to carryout Plant Noise verification measurements at University of Manchester, Booth Street East Building, Manchester.

The site plant noise has a Planning Condition requiring post completion testing of the installed plant equipment submitted to the Local Authority.

This letter details noise measurements of the operational installed plant at the site, carried out on the 26th March 2024.

Based on the measured rooftop levels, the plant noise levels at the NSR are below the set limits (47dBA) and therefore are compliant with Planning Condition 3.

Yours Sincerely,



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1 INTRODUCTION

1.1 External Plant noise – Planning Condition 3

The planning decision notice '138979/JO/2024' dated 10/01/2024 details the planning conditions and condition 3 relates to external plant noise, as follows:

Planning Condition 3

3) (a) The development hereby approved shall be carried out in accordance with CGS Acoustic's 'Plant Noise Impact', dated 23rd November 2023, ref: CSGA-C2072-T1Rev04, received by the City Council, as Local Planning Authority, on the 10 January 2024

b) Prior to the first operation of the development a verification report shall be submitted for approval in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report approved in part (a) of this planning condition. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of nonconformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

1.2 Plant Noise Limits

The Plant Noise Report issued by CSG Acoustics Ltd, as referenced above in the planning condition, details the plant noise limits based on the background noise survey.

The following table details the plant noise limits:

Table 1.1: Plant Noise Limits

Location	Period	Plant Noise Limit
Nearest Façade on Oxford Road or Booth Street East	Day (07:00-23:00)	47dB
	Night (23:00-07:00) *	41dB

* This is an office development and the night-time limits have not been considered. The plant will be turned off and will not be operational during the night-time hours. The sensitive receptors only operate during the day.

1.3 Noise Sensitive Receptor (NSR)

The closest worst-affected noise sensitive windows to the external plant equipment is the Royal Northern College of Music (RNCM) on Oxford Road. The nearest/worst affected façade is approximately 35–40m away, beyond Oxford Road.

2 NOISE SURVEY

Plant noise measurements have been carried out on 26th March 2024. Measurements of operation plant was undertaken at the roof level to compare against design predictions and confirm compliance with the Planning Condition. The plant noise limits are set below the existing background noise level at the nearest sensitive property, therefore it is impossible to measure compliant plant noise levels at the NSR.

Therefore, noise levels are taken at the rooftop next to the plant and at the roof edge to allow prediction back to the NSR and therefore demonstrate compliance by measurement and prediction.

2.1 Equipment

The equipment used for the survey was as follows:

Table 2.1: Equipment

Equipment	Model	Serial No.	Certificate No.	Calibration Date
Class 1 SLM	01dB SOLO	60672	06215/1	02/05/2023
Microphone	01dB - MCE212	80836		
Preamplifier	01dB - PRE21S	13541		
Calibrator	Cirrus 511E	33927	06418/1	16/08/2023

2.2 Weather

The weather during the noise survey was dry (no precipitation) with low wind speeds (below 5m/s) and therefore suitable for the noise survey.

2.3 Noise Survey Results

Noise measurements were taken with a handheld sound level meter to allow prediction back to the NSR. The installed plant included 3 ASHPs in three different locations on the roof, two AHUs and six small condensers. The ASHPs were the dominant noise source and the AHU and small were not really audible due to the running ASHPs.

Figure 2.1 and Table 2.2 below detail the measurement positions and levels.

Figure 2.1: Roof Top Plant Measurement Positions

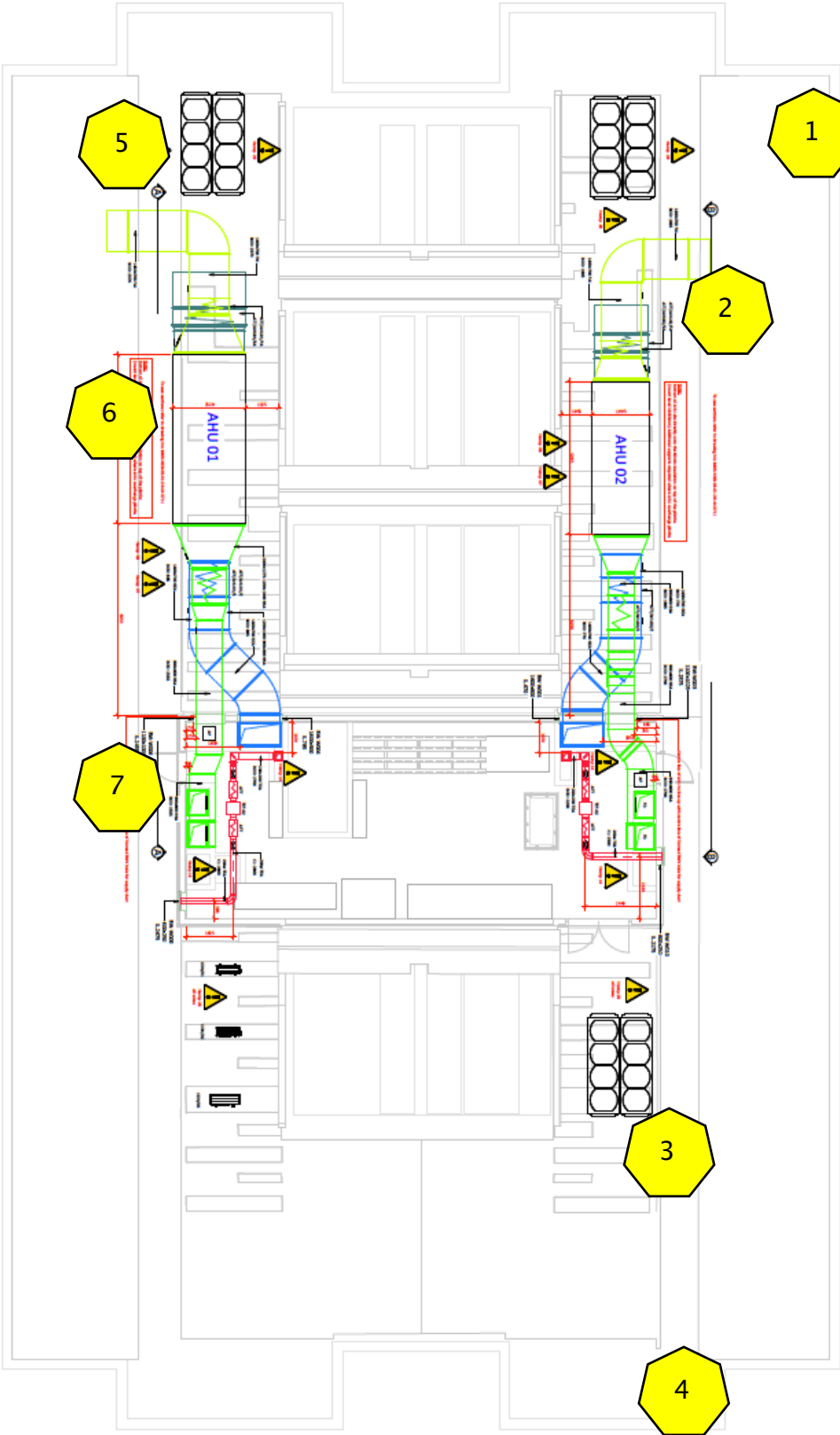


Table 2.2: Measured Plant Noise Levels

Position	Description	dBA
1	North Eastern Corner – Approx 4.5m from AHU and ASHP	55.1
2	1m from AHU termination	59.4
3	1m from ASHP	64.5
4	South Eastern Corner – Approx 6m from ASHP Road Traffic noise contributing to level.	57.5
5	1 m from ASHP and AHU also contributing to level	66.8
6	1m from AHU termination	58.1
7	1m from small condenser	53.6

Note building edge measurements were not possible on all sides due to building edge protection. Measurements at 1m from units has been used to demonstrate levels at the NSR, as shown below.

Table 2.3 below summarises the predictions back to the NSR to demonstrate compliance with Planning Condition 3.

Table 2.3: Planning Condition 3 Compliance Demonstration

Description	dB ref 2×10^{-5}
Worst case plant noise level at source	66.8 dB
Geometric divergence (distance loss 33m)	-30.4 dB
Plant Noise Level at NSR	36.4 dBA

Based on the measured plant levels and predicted distance loss, the plant noise level at the NSR is **36.4dBA**.

The plant noise levels at the NSR are below the set limits (47dBA) and therefore are compliant with Planning Condition 3.