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MEMO P23-320-M01v1

Project:	P23-320 - New Building, Martin Harris Centre, University of Manchester
Date:	15 November 2023
To:	Michael Hicks – University of Manchester
From:	Donald Quinn BSc FIOA, Managing Director
Subject:	**External plant and equipment – verification noise measurements**

Following our visit to site last week, I am writing with the findings of our verification noise measurements of the new external plant and equipment installed in connection with the new music practice building at the Martin Harris Centre at the University of Manchester Oxford Road campus.

Introduction

The new external plant/equipment installed in connection with the development comprises four identical Mitsubishi PUHZ-ZRP35VKA2 external air conditioning condensers. These are installed on the flat roof of the existing adjoining Martin Harris Centre building, adjacent to the new music practice building as shown below:

Photograph 1: Installed external equipment

Condition 15 of the planning consent for the development is as follows:

> *a) The externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with the Acoustic Design Report prepared by Tetra Tech dated 24 June 2022 received by the City Council as local planning authority on 23 September 2022. The scheme as detailed within this approved document shall be implemented in full before the use commences.*
>
> *b) Prior to first operation of the equipment hereby approved, a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the works conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.*
>
> *Reason - To safeguard the amenities of the occupiers of nearby accommodation, pursuant to saved policy DC26 of the Unitary Development*

Table 5.1 of the Tetratech report (ref. 784-B033892rev1 dated 24 June 2022) adopted the following source noise limits for the building services plant (BSP) in their assessment, stating that consequently no unacceptable noise impact would occur:

Table 5.1 Proposed Emission Limits for BSP as Modelled

BSP Location	Noise Emission Limit - Sound Pressure Level (Cumulative)	
	Daytime	Night-time
Rooftop Plant	62.5 dB(A) at 1m OR 52.9 dB(A) at 3m	62.5 dB(A) at 1m OR 52.9 dB(A) at 3m

Verification noise measurements have therefore been carried out to establish whether these noise limits have been achieved.

Site Visit & Noise Measurements

Hepworth Acoustics visited the site during the afternoon of 10 November 2023 in order to carry out a series of noise measurements close up to the equipment when in operation. The equipment was fully commissioned and operational at the time of the measurements. The equipment was switched on and off as required by a representative of the project MEP contractors.

Noise measurements were carried out at 1m and 3m from each of the front facing sides of the equipment with all in operation simultaneously.

Due to the presence of noise from existing plant and equipment (including other equipment installed elsewhere on the roof of the Martin Harris centre building and noise from the nearby Dental Hospital plant room building), as well as general residual noise from distant traffic and music noise break-out from the existing Martin Harris Centre building, a further set of measurements was undertaken of the residual noise levels at the same locations with all new equipment switched off.

The noise measurements were carried out using a B&K 2250 'Class 1' sound analyser (serial no. 3011706) as a series of multiple short-term periods at each location. The sound analyser was check-calibrated before and after the measurements with no variance observed. The weather conditions during the measurements were dry, overcast and cool/cold. The sound analyser was tripod mounted approximately 1.3m above roof level.

The results of the measurements can be summarised as follows, with the 'equipment operating' and 'equipment off' measurements shown. The contribution from the equipment alone has been calculated by logarithmic subtraction of the residual noise levels from the 'equipment operating' noise levels in octave bands:

Table 1: Summary of measured/calculated equipment noise levels in dB L_{Aeq}

Location	All new equipment operating	All new equipment switched off	Calculated contribution from new equipment
1m from western side of equipment	58	56	53
3m from western side of equipment	57	56	51
1m from eastern side of equipment	59	59	55
3m from eastern side of equipment	59	59	50

The highest measured/calculated noise levels from the new plant were 55 dB L_{Aeq} at 1m and 51 dB L_{Aeq} at 3m. We therefore conclude that noise levels associated with the installed equipment are within the noise emissions limits set out in the approved noise assessment report and hence the requirements of planning condition 15 have been achieved.