



Ref: P4017/L02/PJK

10 September 2021

To:	Steve West	of:	Studio Neo
Cc:	Distribution List	of:	

Dear Steve,

45-47 Newton Street, Manchester – Plant Noise Assessment

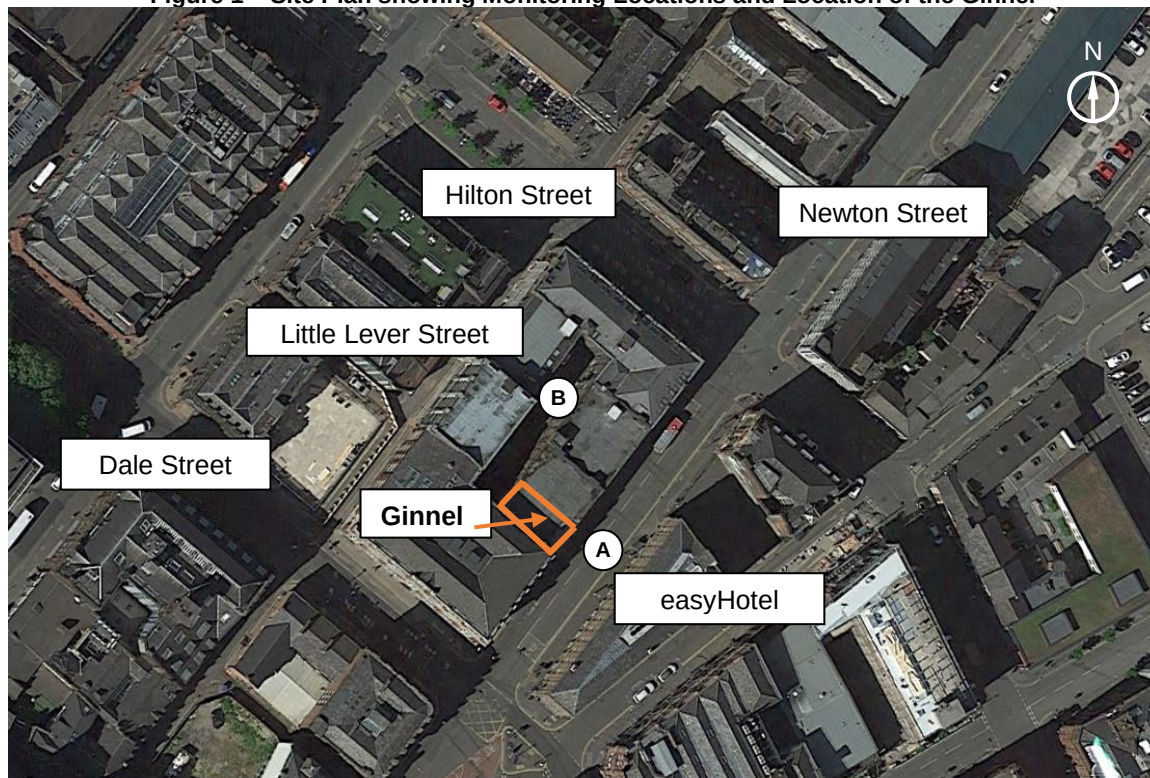
Acoustic & Engineering Consultants Ltd (AEC) has been appointed by Studio Neo, on behalf of Pugh Davies (Northern Quarter) Ltd, to assess noise from mechanical plant serving the proposed office development at 45-47 Newton Street, Manchester.

Introduction and Site Description

AEC understand that two items of external plant have been proposed to serve the ground floor office at 45-47 Newton Street, Manchester, as indicated on the attached Figure 1. The current plan is to install the plant in the ginnel between the enclosed rear courtyard and Newton Street.

There are a number of existing items of building services plant and kitchen extract flues in the ginnel and courtyard, that serve restaurants/coffee shops and offices on Newton Street, Dale Street, Little Lever Street and Hilton Street.

Figure 1 – Site Plan showing Monitoring Locations and Location of the Ginnel



Map data @2021 Google United Kingdom

It is understood that the proposed mechanical plant will only operate during typical office hours, e.g. 0800 to 1800h Monday to Friday. Therefore, baseline noise levels have been measured at locations representative of the nearest noise sensitive receptors during these periods only.

In relation to the nearest noise sensitive receptors which overlook the ginnel, these include the easyHotel on the opposite side of Newton Street and the offices and seating areas of restaurants/coffee shops overlooking the courtyard.

Noise Climate

Baseline noise level measurements were carried out by AEC on between approximately 1200 and 1310h on Tuesday 7 September 2021 on Newton Street and between approximately 0900 and 1030h on Thursday 14 November 2019 in the courtyard, identified as A and B on Figure 1.

Full details of the noise surveys are presented in Appendix A with measured noise data presented in Table A1.

All measurements were undertaken in general accordance with BS7445-1: 2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'.

Noise levels measured at Location A were undertaken under façade conditions, and therefore, in compliance with BS7445-1: 1991 '*Description and measurement of environmental noise. Part 2: Guide to the acquisition of data pertinent to land use*' a -3dB correction has been applied to give the free-field noise levels. Measurements at Location B were undertaken in free-field conditions.

At Location A, representative of the easyHotel guest bedrooms overlooking the ginnel, the ambient and background noise levels ranged from 59 to 62dB_{L_{Aeq,15min}} and 52 to 54dB_{L_{A90,15min}}, respectively. The noise climate at this location was due to road traffic on Newton Street and the surrounding roads. The variation in noise levels was due to the number of HGVs and buses waiting at the traffic lights during the measurements.

In the courtyard at Location B, the ambient and background noise level ranged from 54 to 57dB_{L_{Aeq,15min}} and 51 and 53dB_{L_{A90,15min}}, respectively. The main source of ambient and background noise was road traffic on Hilton Street and existing plant in the courtyard.

The octave band centre frequency spectrum for the lowest measured background noise level at each location is presented in Table 1, below.

Table 1 – Measured Background Noise Octave Band Centre Frequency Spectrum

Location	Noise Level, dB @ Octave Band Centre Frequency, Hz						
	63	125	250	500	1k	2k	4k
easyHotel	60	51	51	49	46	43	36
Courtyard	57	53	52	50	48	41	34

Basis of Assessment

The assessment of noise from the external plant has been requested by Manchester City Council (MCC) in their letter dated 18 August 2021. The letter states that:

“Cumulatively plant will achieve a background noise level of 5dB below the existing background (La90) in each octave band at the nearest noise sensitive location shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the equipment”

Based on the noise levels presented in Table 1, and MCC’s requirement, the noise level limit to be achieved external to the easyHotel guest bedrooms on Newton Street and the rooms overlooking the courtyard are presented in Table 2, below.

Table 2 – Noise Level Limits

Location	Noise Level, dB @ Octave Band Centre Frequency, Hz						
	63	125	250	500	1k	2k	4k
easyHotel	55	46	46	44	41	38	31
Courtyard	52	48	47	45	43	36	29

Assessment of Proposed Plant

Based on the information provided by Studio Neo, it is understood that a Daikin REYQ10 VRV condenser (floor standing/top fan) and a server room condenser Daikin RXM50 (wall mounted/ front fan) will be installed within the ginnel.

The sound pressure levels provided by the manufacturer, measured at 1m from each condenser, are presented in Tables 3 and 4. The data sheets are presented in Appendix B for both units.

The easyHotel and the nearest window in the courtyard are approximately 20m and 15m away respectively.

The calculated plant noise level with both units operating simultaneously external to easyHotel and the nearest window in the courtyard are presented in Tables 3 and 4, respectively, below. The noise level limits have been provided for comparison purposes.

Table 3 – Calculated Noise Level External to easyHotel

Daikin Condenser	Noise Level, dB @ Octave Band Centre Frequency, Hz						
	63	125	250	500	1k	2k	4k
REYQ10 VRV	63	65	57	58	51	48	41
RXM50	50	50	48	46	45	40	35
Combined noise level @1m	63	65	58	58	52	49	42
Distance attenuation (20m)	-26	-26	-26	-26	-26	-26	-26
Noise Level External to easyHotel	37	39	31	32	26	23	16
Noise Level Limit	55	46	46	44	41	38	31
Exceedances*	-17	-7	-14	-11	-16	-15	-15

*Rounding error during calculations

Table 4 – Calculated Noise Level External to Courtyard

Daikin Condenser	Noise Level, dB @ Octave Band Centre Frequency, Hz						
	63	125	250	500	1k	2k	4k
REYQ10 VRV	63	65	57	58	51	48	41
RXM50	50	50	48	46	45	40	35
Combined noise level @1m	63	65	58	58	52	49	42
Distance attenuation (15m)	-24	-24	-24	-24	-24	-24	-24
Noise Level External to Courtyard	40	42	34	35	28	25	18
Noise Level Limit	52	48	47	45	43	36	29
Exceedances*	-12	-7	-13	-10	-15	-11	-10

*Rounding error during calculations

Tables 3 and 4 demonstrate that noise from the plant would be significantly below the noise level limit, external to both easyHotel and the nearest window in the courtyard. Therefore, noise should not be considered a determining factor in relation to any planning permission being sought.

I trust the above is clear and of assistance at this stage, if you require further information, please get in contact.

Yours sincerely



Paul Knowles

Checked by: **RDC**

APPENDIX A – Noise Survey Details

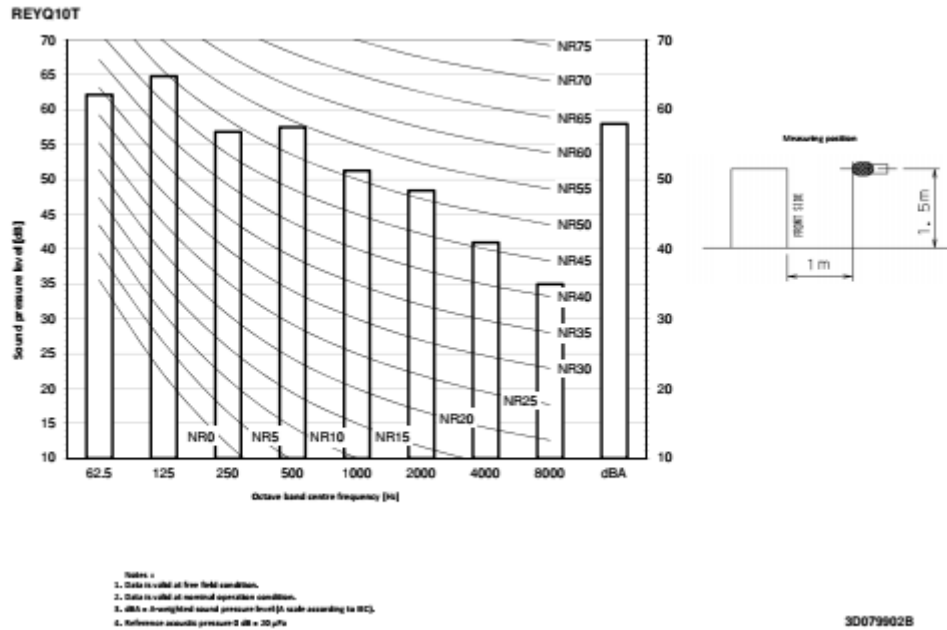
Date & Time of Survey:	2021 – 1200 to 1310h on Tuesday 07 September 2021. 2019 – 0900 to 1030h on Thursday 14 November 2019.					
Personnel:	2021 – Paul Knowles (AEC) 2019 – Naveen Ramesh Simha (AEC).					
Equipment Used:	2021 – B&K 2260 Real Time Analyser (AEC Kit 2) 2019 – Cirrus CR:171B Real Time Analyser (AEC Kit 3).					
Calibration:	The sound level analysers, which conforms to BS EN 61672-1: 2003 ' <i>Electro acoustics – sound level meters - Part 1 Specifications</i> ' for Class 1 Type Z meters, was in calibration and check calibrated before and after the measurement periods using a Brüel & Kjær type 4231 (94dB) calibrator. There was no significant drift of calibration. Calibration certificates are available on request.					
Weather Conditions:	Date	Period	Wet/Dry	Temp°C	Wind Speed & Direction	Cloud Cover
	07.09.21	Day	Dry	22°C	calm	0/%
	14.11.19	Day	Dry	3°C	south-west and speed m/s	80%
Measurement Locations:	Measurements were undertaken at two locations around the development site. Identified as A and B on Figure 1 and described below. A – 1m from the façade of easyHotel, 2m from the nearest carriageway of Newton Street, opposite the ginnel. B – In the courtyard of the site building.					
Measurement Details:	Measurements were undertaken over various periods in terms of L_{eq} , L_{90} , and L_{max} .					
Façade / Free-Field:	A – façade B – free-field.					
	Full results for the attended measurements are given in Table B1.					
Measured Data:	Full octave band centre frequency data was obtained for all measurements.					

TABLE A1 – Measured Daytime Noise Levels

Location	Period, h	Noise Level, dB			Comments
		L_{Aeq}	L_{A90}	$L_{Amax, F}$	
A	1206-1221	65.0	57.1	81.5	Noise climate due to road traffic on Newton Street and the surrounding roads. The variation in noise levels due to the number of HGVs and buses waiting at the traffic lights during the measurements.
	1221-1236	61.6	56.7	81.2	
	1236-1251	63.2	54.6	87.8	
	1251-1306	64.7	55.9	87.8	
B	0911-0926	57.0	51.8	72.9	Background noise level was due to plant from Ezra & Gil, BAB NQ and nearby offices. Ambient noise level was due to distant road traffic from Hilton Street.
	0926-0941	54.9	50.5	73.5	
	0942-0957	54.0	51.0	69.2	
	0957-1012	54.9	52.8	67.9	
	1012-1027	54.6	52.1	77.1	

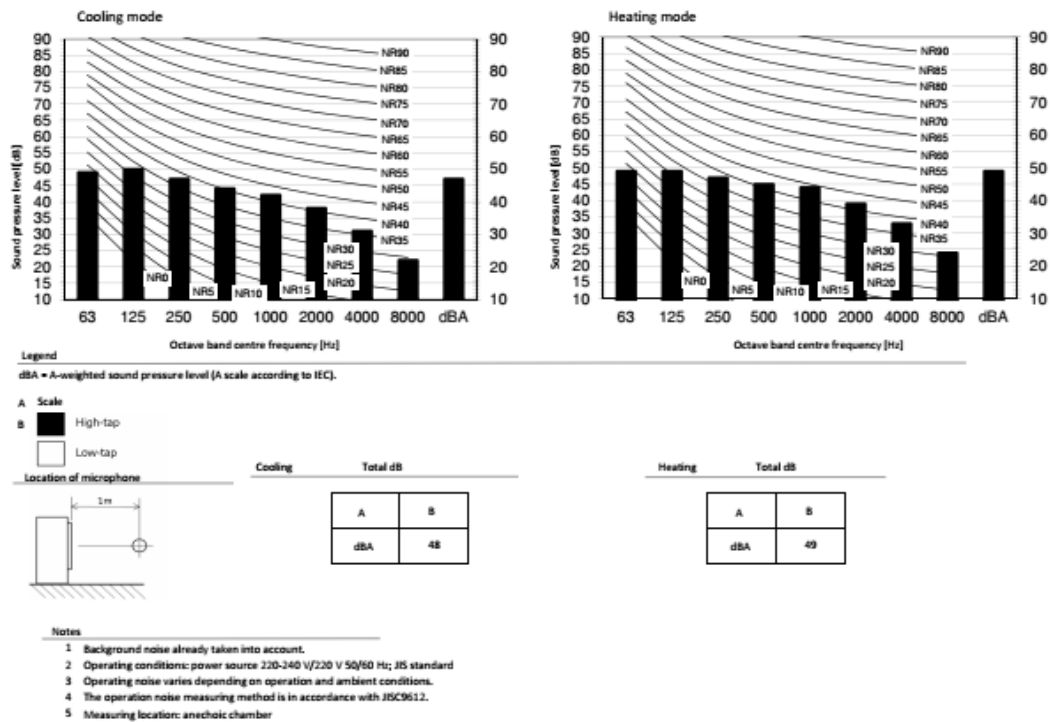
APPENDIX B – Sound Pressure Levels of Daikin Condensers

Daikin REYQ10 VRV



Daikin RXM50

RXM50M



3D098036A