



To:	Paul Mills	of:	T & M Real Estate
Cc:	As per email distribution list	of:	

Dear Paul,

34 Charlotte Street, Manchester – Noise Assessment

1.0 INTRODUCTION

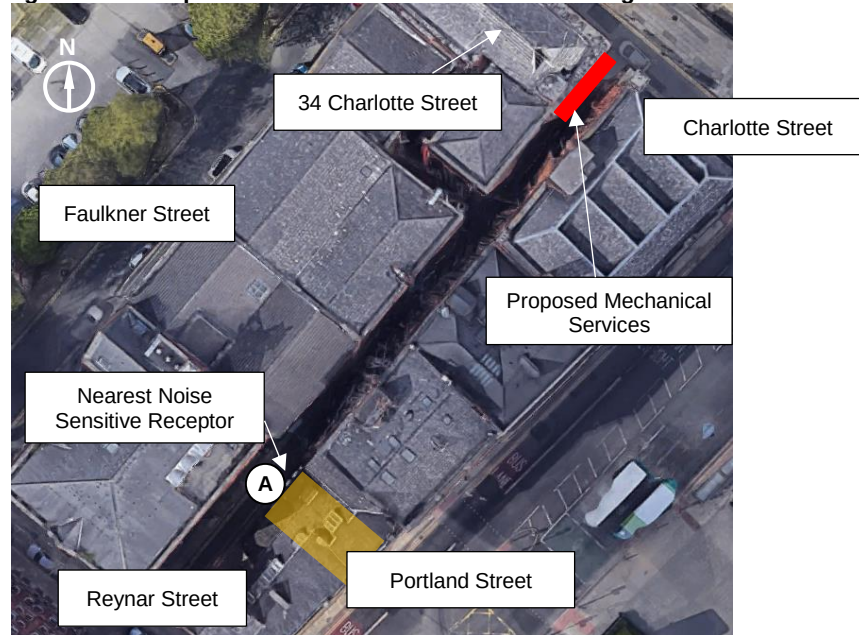
- 1.1 Acoustic & Engineering Consultants Limited (AEC) has been instructed by T & M Real Estate to undertake a noise assessment in relation to the proposed external mechanical services plant that are to be installed externally at 34 Charlotte Street, Manchester.
- 1.2 This assessment has been undertaken to demonstrate compliance with the requirements of Manchester City Council (MCC) as outlined below:

“a) 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 (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme 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 site. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.”
- 1.3 In order to ensure the above criteria is met, this report details the baseline noise levels measured external to the nearest noise sensitive receptor to the site, presents the above assessment criteria and discusses the implications of the proposed development on the nearest noise sensitive receptor in line with the guidance from the Local Authority.
- 1.4 Acoustic terminology is discussed in brief in Appendix A.

2.0 BACKGROUND & SITE DESCRIPTION

- 2.1 The proposed external mechanical services plant will be installed externally to the offices located at 34 Charlotte Street.
- 2.2 There will be four items of plant that are installed on the Reyner Street elevation of the building. Their location is identified on Figure 2.1, below. Currently, this street contains numerous items of plant that serve existing restaurants and takeaways in the area. Appendix B highlights this.
- 2.3 The nearest noise sensitive receptor to the proposed items of plant is located at the opposite end of Reyner Street, approximately 45m away, as identified on Figure 2.1, below.

Figure 2.1 – Proposed Location of Plant and Monitoring Location



Imagery @2022 Google, Imagery @2022 Infoterra Ltd & Bluesky, Maxar Technologies, The Geoinformation Group, Map Data @2022

- 2.4 As the proposed mechanical services plant items will serve offices, it is understood that these will only be operational during daytime hours, understood to be 0800 – 1800h, Monday to Friday. At this stage, the make and model of the plant units has not been confirmed.

3.0 BASIS OF ASSESSMENT

- 3.1 As stated in Section 1.0, MCC require that noise emitted from any external mechanical services plant should be designed so as to achieve a rating level that is 5dB below the typical background noise level at the nearest noise sensitive receptor.
- 3.2 The term '*rating level*' is defined in BS4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS4142) which describes a method for determining the potential impact of sound from an industrial and/or commercial source on a noise sensitive receptor.
- 3.3 The impact of the source on the receptor is assessed by comparing the rating noise level during its operation with the background noise level when it is not operating.
- 3.4 The term '*rating level*' is defined in BS4142 paragraph 9.1, which states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level. This can be approached in three ways:

- a) *Subjective method;*
- b) *Objective method for tonality;*
- c) *Reference method."*

- 3.5 Further details can be found in BS4142.

4.0 NOISE MEASUREMENTS

- 4.1 In order to measure the typical background noise level at the nearest noise sensitive receptor, an attended noise level survey was undertaken by AEC between 1019 and 1100h on Tuesday 22 November 2022. Measurements were undertaken at a single location representative of the nearest noise sensitive receptor and the measurement location is identified as A on Figure 2.1, above.
- 4.2 All measurements were undertaken under free-field conditions and in general accordance with BS7445-1: 2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. A full measurement procedure for the survey is presented in Table C.1 of Appendix C and the measured data is presented in Table C.2.
- 4.3 During the survey, the noise climate was solely affected by plant noise from the mechanical services plant located along Reynar Street. The background noise level throughout the survey was typically 69dBL_{A90,T}.

5.0 ASSESSMENT

- 5.1 Based on the measured background noise level highlighted in Section 4.3, in order to comply with the MCC criteria, the rating level from the proposed mechanical services plant should be designed to achieve a rating level of 64dBL_{Ar,Tr}.
- 5.2 In order to ensure this figure isn't exceeded, the total noise level with each item of plant operating simultaneously would need to be controlled to no greater than 97dBL_{Ar,Tr} at a distance of 1m from the equipment. This is the equivalent of four items of plant with a sound pressure level of 91dB(A) at 1m.
- 5.3 While the make and model of any equipment has not been selected, this is not an onerous requirement and should be readily achieved with suitably selected units.

I hope the above is clear and of assistance at this stage.

Yours sincerely



Ross Chamberlain

Checked by: 

APPENDIX A – Acoustic Terminology in Brief

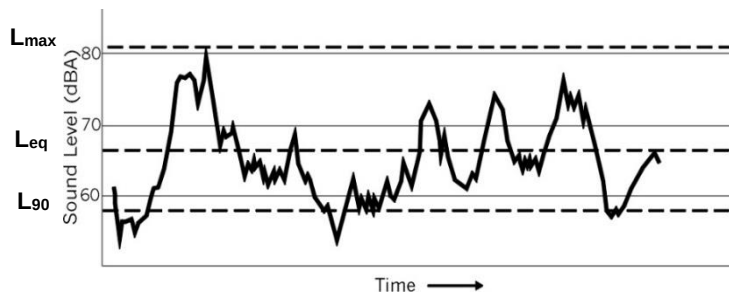
General

Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz (*Hz*), that is, cycles per second. The human ear is sensitive to sounds from about 20 Hertz to 20,000 Hertz. Although sound can be of one discrete frequency - a 'pure tone' - most noise is made up of many different frequencies.

The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA*, normally used to assess the effect of noise on people. The dBA weighting emphasizes or reduces the importance of certain frequencies within the audible range

Sound / Noise Units

The figure below shows an example of sound level varying with time. Because of this variation over time the same period of noise can be described by several different levels. The most common of these are described below.



Commonly Used Descriptors for Sound / Noise

Free-field Level	This refers to the sound level measured outside, away from reflecting surfaces.
Background Sound Level, L_{A90}	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels.
Rating Level, L_{A,r,T,r}	Specific sound level plus any adjustment for the characteristic features of the sound

APPENDIX B – Reyner Street – Mechanical services plant Items



APPENDIX C – Measurement Details

TABLE C1 – Measurement Procedure

Date & Time of Survey:	Tuesday 22 November 2022, 1019 to 1100h					
Personnel:	Ross Chamberlain (AEC).					
Equipment Used:	B&K 2250 Real Time Analyser (AEC Kit 1)					
Calibration:	The sound level analysers, which conforms to BS EN 61672-1: 2013 ' <i>Electroacoustics – 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
	22/11/22	Day	Dry	6°C	Negligible	80%
Measurement Locations:	Measurements were undertaken at a single around the development site, identified as A on Figure 4.1 and described below. A – Measured in the middle of Reyner Street, approximately 20m away from Nicholas Street to the south-west.					
Measurement Details:	Measurements were undertaken over various periods in terms of L_{eq} , L_{10} , L_{90} , and L_{max} .					
Façade / Free-Field:	A - 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 C2 – Measured Noise Levels

Location	Period, h	Noise Level, dB		Comments
		L_{Aeq}	L_{A90}	
A	1019 – 1032	69.7	68.2	Noise levels solely due to plant equipment.
	1035 – 1050	70.0	69.1	
	1050 – 1052	69.5	68.0	
	1054 - 1100	69.7	69.0	