

587c Stockport Road, Longsight**Technical Note – Noise Impact Assessment for Planning Purposes**

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1.0 INTRODUCTION

- 1.1 Acoustic and Engineering Consultants Limited (AEC) has been appointed by Royal Travel to assess the potential impact of noise emitted by four external plant units installed at 587c Stockport Road, Longsight, Manchester.
- 1.2 587 Stockport Road is a three-storey building with Royal Travel on the ground floor and apartments on the first and second floor.
- 1.3 Two of the external units are located on the roof of the building and two are located on the rear elevation on the ground floor, overlooking the car park.
- 1.4 The location of the items of plant, two Hitachi RAS-4HVRNS3E heat pumps and two Hitachi RAC-35WEB air conditioning pumps, are shown in Figure 3.1, below. There are no residential properties which are taller than 587c Stockport Road or located to the east of the site. Therefore, there are no noise sensitive receptors which would have direct line of sight to any of the external plant units, thus, the nearest receptors are on the first and second floor of the development.
- 1.5 AEC has been informed that the Hitachi units operate during the daytime only, anticipated to be between 0900 and 1700h, Monday to Friday. AEC understands that the air conditioning units will only turn on when the indoor temperature is above 25°C, however, the units can be operated manually if required.
- 1.6 Acoustic terminology is discussed in brief in Appendix A.

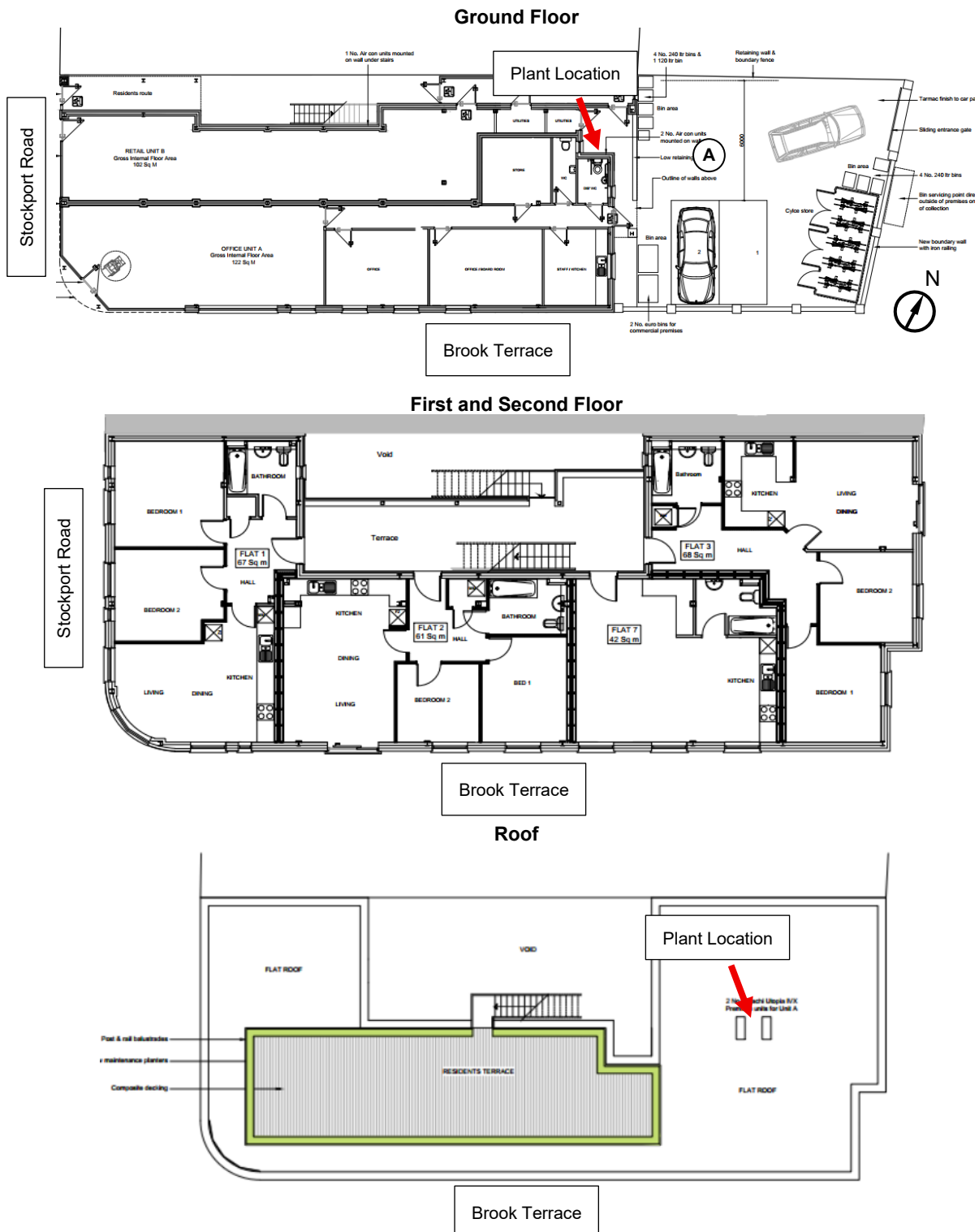
2.0 ACOUSTIC CRITERIA

- 2.1 The assessment of noise emitted by mechanical services plant in Manchester city centre is outlined in Manchester City Council's (MCC) document '*Planning and Noise – Technical Guidance*' (PNTG) issued in October 2022. PNTG states that noise from industrial sources should be assessed using British Standard 4142: 2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS4142).
- 2.2 In addition, in 'Section 3.7.1.5 Industrial / commercial developments' PNTG states "*The development should be 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.*"
- 2.3 A 'rating' noise level ($dB_{L_{Ar,Tr}}$) is obtained by applying a character correction to the 'specific' noise level ($dB_{L_{Aeq,Tr}}$) of a noise source (e.g. plant noise). The correction is applied if the noise has a defined acoustic character such as being tonal, impulsive, distinctive or intermittent in nature.

3.0 EXISTING NOISE CLIMATE

- 3.1 An attended daytime noise level survey was undertaken by AEC between approximately 0945 and 1100h on Thursday 06th November 2025. Measurements were undertaken in a single location, identified as A on Figure 3.1, in the car park to the rear of 587 Stockport Road.
- 3.2 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 B.1 of Appendix B and the measured data is presented in Table B.2.

Figure 3.1 – Site Location Plan and Measurement Locations



- 3.3 In summary, the background noise level was consistently around 50dB_{LA90,15min} due to train movements on the railway line to the east, existing plant serving other commercial units in the area and road traffic on Stockport Road.

4.0 ASSESSMENT OF EXTERNAL PLANT

- 4.1 Based on the background noise levels measured on-site, and the guidance presented in PNTG, noise from the four Hitachi units would need to be controlled to a rating level of no greater than 45dB_{LA_{r,Tr}} external to the nearest noise sensitive receptors.
- 4.2 It was not possible to access the roof to measure noise from the two Hitachi RAS-4HVRNS3E heat pumps. The manufacturers data sheet for the unit is presented in Appendix C. The data sheet indicates that each unit will emit a sound pressure level of 52dB(A) at 1m when running in heat mode (the noisiest of the three modes)
- 4.3 During the site survey, measurements were undertaken at 1m from the two Hitachi RAC-35WEB air conditioning pumps with and without them operating. Based on these measurements, 57dB(A) without them operating and 62dB(A) with them operating, it has been determined that the units operate at a sound pressure level of 60dB(A) at 1m (57dB(A) per unit).
- 4.4 As stated above, there is no clear line of sight between the nearest noise sensitive receptors and all of the units, therefore, the assessment has been based on screening attenuation of -10dB. This is a precautionary reduction taking into account reflections and other variables.
- 4.5 Taking into account distance attenuation of -10dB (the receptors are 3m away) and the -10dB for acoustic screening, the resultant noise levels from the four units are presented in Table 4.1, below.

Table 4.1 – Resultant Noise Level External to the Nearest Noise Sensitive Receptors

Units	Noise Level, dB				
	Source at 1m	No. of Units	Screening	Distance Attenuation	Resultant Noise Level
Hitachi RAS-4HVRNS3E heat pumps	52	+3	-10	-10	35
Hitachi RAC-35WEB air conditioning pumps	57	+3	-10	-10	40
Total					41

- 4.6 During the operation of the unit, it was observed that it did not have a tonal character, will not be intermittent or impulsive and based on the existing noise climate, would not be distinctive. Therefore, it is considered that no acoustic character correction is required to be applied to this noise source in determining the rating level.
- 4.7 Therefore, the rating level would be 41dB_{LA_{r,Tr}} which is more than 5dB below the measured background noise level.
- 4.8 The above assessment demonstrates that noise from the four Hitachi units comply with MCC's requirements, and therefore, would result in no observed adverse effect.

APPENDIX A – Acoustic Terminology in Brief

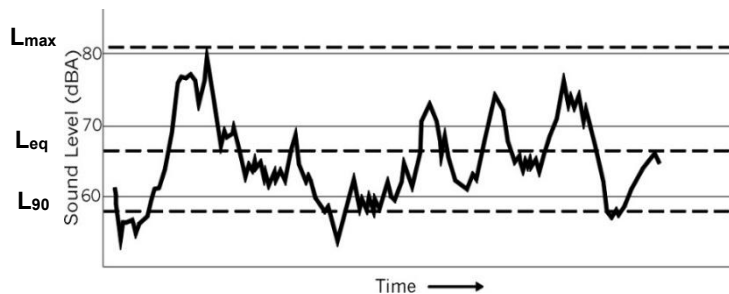
General

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

L_{Amax,F/S}	The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited.
Free-field Level	This refers to the sound level measured outside, away from reflecting surfaces.
Façade Level	This refers to the sound level measured outside, at 1m from a hard reflecting surface, typically 3dB greater than the free-field level.
Ambient Sound Level, L_{Aeq, T}	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
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_{Ar,Tr}	Specific sound level plus any adjustment for the characteristic features of the sound
Residual Sound, L_{Aeq, T}	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

APPENDIX B – Noise Survey Details

Table B.1 – Environmental Measurement Procedure

Date & Time of Survey:	0945 to 1100h on Thursday 06 th November 2025.					
Personnel:	Paul Knowles (AEC).					
Equipment Used:	Cirrus CR:171B Real Time Analyser (AEC Kit 5).					
Calibration:	The sound level analyser, 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 checked 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
	06/11/25	Day	Dry	16°C	Negligible	0%
Measurement Locations:	Measurements were undertaken at a single location identified as A on Figure 3.1 and described below. Location A – in the car park of 587 Stockport Road.					
Measurement Details:	Measurements were undertaken over various periods in terms of L_{eq} , L_{90} , and L_{max} .					
Measured Data:	Full results for the attended measurements are given in Table B.2.					
	Full octave band centre frequency data was obtained for all measurements.					

Table B.2 – Measured Daytime Noise Levels

Location	Period, h	Noise Level, dB			Comments
		L_{Aeq}	L_{A90}	$L_{Amax, F}$	
A	0945-1000	61.3	49.4	77.1	Noise climate due to train movements, plant noise from other commercial units and distant road traffic.
	1000-1015	63.7	49.7	86.0	
	1015-1030	59.3	49.9	79.6	

APPENDIX C – Hitachi RAS-4HVRNS3E Heat Pumps Manufacturers Data Sheet

