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Land to the East of Gould Street and Land to the South of Bilbrook Street, Manchester

Technical Note – Noise Impact Assessment of Two Pressure Reduction Stations

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1.0 INTRODUCTION

1.1 Acoustic and Engineering Consultants Limited (AEC) has been appointed by MCR Property Group to assess the potential impact of noise emitted by the proposed two pressure reduction stations to be installed on land to the east of Gould Street and land to the south of Bilbrook Street, Manchester.

1.2 The site currently a large open air car park, which is intended to be developed in a multi-block residential scheme. The scheme is designed to replace two existing pressure reduction stations which are located on the Gould Street carpark.

1.3 The location of the two pressure reduction stations is presented on Figure 3.1, along with the location of the nearest noise sensitive receptors on Gould Street to the west and Back George Street to the south. The pressure reduction stations will operate 24 hours a day and 7 days a week.

1.4 It should be noted that the residential receptors on Gould Street and Back George Street have been designed to provide suitable internal noise levels based on the current noise climate which includes the operational noise of the existing pressure reduction stations.

1.5 Based on the information provided by Cadent, the unit installed adjacent to Gould Street will be a Honeywell Governor and the unit installed to the site off Billbrook Street will be a Dresser Governor. Both units will be located within an acoustic kiosk (enclosure) and AEC has been provided with the “worst-case” operational noise levels i.e. at the highest operational duty.

1.6 Following a conversation with Cadent, the “worst-case” operation would only occur during a 1 in 20 year extreme cold winter event. During typical operations noise levels emitted by the Governor’s would be significantly lower than the levels presented below.

1.7 Acoustic terminology is discussed in brief in Appendix A.

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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 stats 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.*"

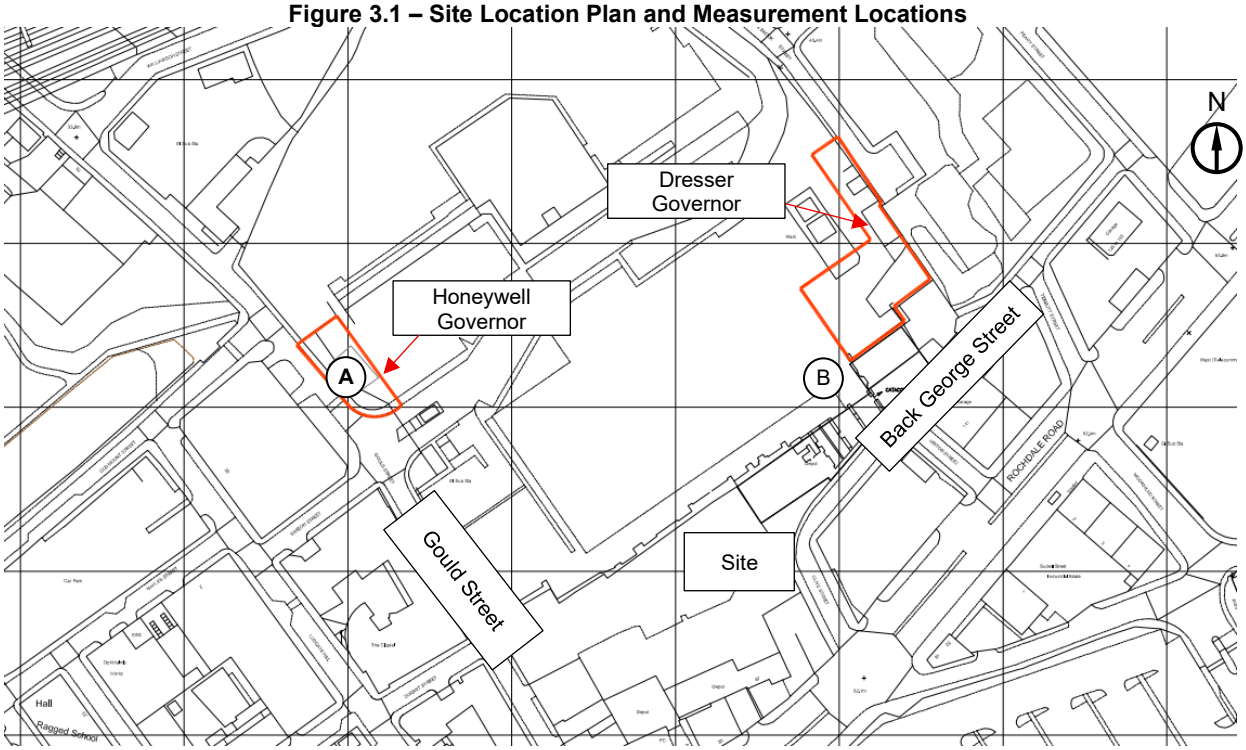
2.3 A 'rating' noise level ($dBL_{Ar,Tr}$) is obtained by applying a character correction to the 'specific' noise level ($dBL_{Aeq,Tr}$) of a noise source (e.g. plant noise). The correction is applied if the noise has a defined acoustic character such as being tonal, impulsive, distinctive or intermittent in nature.

3.0 EXISTING NOISE CLIMATE

3.1 An attended night-time noise level survey was undertaken by AEC between approximately 2300 and 0030h on Sunday 8th June 2025. Measurements were undertaken in two locations, Location A was adjacent to Gould Street and Location B was adjacent to the properties on Back George Street, as identified on Figure 3.1 below.

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 at Gould Street (Location A) and Back George Street (Location) B was consistently around 43$dBL_{A90,15m}$ and 48$dBL_{A90,15m}$, due to existing plant noise and distant road traffic.

4.0 ASSESSMENT OF PRESSURE REDUCTION STATIONS

4.1 AEC has been provided with noise levels of 75dBA and 77dBA at 1m from the regulator of the Honeywell and Dresser Governors, respectively. As stated above, these are “worst-case” noise levels that would only be generated during a 1 in 20 year extreme cold event.

4.2 Drawings of the acoustic kiosk which will contain the Governors has been prepared by Industrial GRP. The kiosks are designed with openings for ventilation purposes, and AEC has assumed that these will not have acoustic louvres.

4.3 Noise levels external to the nearest residential properties, which are 20m from the Honeywell Governor on Gould Street and 30m from the Dresser Governor on Back George Street, have been calculated based on the reverberant build-up of noise levels within the kiosks, the unattenuated free area of the kiosk facing the adjacent properties, and distance attenuation.

4.4 Based on these calculations, the “worst-case” noise levels emitted by the two pressure reduction stations would be 43dB$L_{Aeq,T}$ and 42dB$L_{Aeq,T}$ external to the properties on Gould Street and Back George Street, respectively.

4.5 As the existing noise climate is due to noise of an industrial nature, no acoustic correction has been applied, and the rating noise levels would be 43dB$L_{Ar,Tr}$ and 42dB$L_{Ar,Tr}$ external to the properties on Gould Street and Back George Street, respectively.

4.6 This would meet the existing background noise level on Gould Street and be 6dB below the existing background noise level at Back George Street.

4.7 As stated, Cadent has confirmed that the Governors would emit noise levels significantly lower than the levels presented above during typical operations. This is expected to be at least 5dB lower, hence, typical noise levels should be -5dB below background, and meet MCC’s requirement. In addition, the noise levels would be no higher even during “worst-case” operation than the existing climate and the surrounding residential blocks have been designed to control noise from the existing sources to meet suitable internal noise level limits.

4.8 The above assessment demonstrates that noise from the proposed two pressure reduction stations would meet MCC’s requirements and therefore, would not result in no observed adverse effect.

APPENDIX A – Acoustic Terminology in Brief

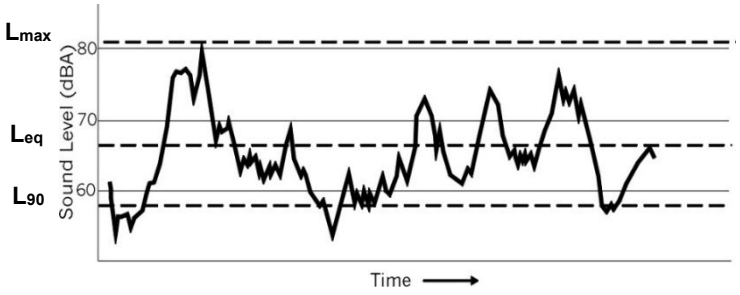
General

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 discreet 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:	2300 – 0030h Sunday 08 June 2025.					
Personnel:	Paul Knowles (AEC).					
Equipment Used:	B&K 2260 Real Time Analyser (AEC Kit 2).					
Calibration:	The sound level analyser, which conforms to BS EN 61672-1: 2013 *'Electroacoustics – Sound level meters - Part 1 Specifications'* 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**
	08/06/24	Day	Dry	12°C	Negligible	1-0%
Measurement Locations:	Measurements were undertaken at two location Identified as A and B on Figure 3.1 and described below. Location A – 5m from Gould Street on the car park. Location B – 10m from the retaining wall of the Gould Street car park.					
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	2300-2315	55.6	43.6	72.8	Noise climate due to industrial noise source distant road traffic.
	0001-0016	50.1	43.0	71.3	
	0016-0031	49.9	43.1	70.2	
B	2316-2331	50.0	48.2	59.1	Noise climate due to industrial noise source distant road traffic.
	2331-2346	50.3	48.1	68.6	
	2346-0001	50.6	47.8	60.2	