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PLANNING AND BUILDING CONTROL
10 APR 2014

Mr P Weisberg
Rammon Property Group
1 Portugal Street East
Manchester
M1 2WX

Dear Philip

Noise Impact Assessment – Indoor Children's Play Centre, Gorton

Further to our noise measurements undertaken at the proposed Unit 4 Froxmer Street site on Tuesday 15 October, please find our noise assessment presented below.

INTRODUCTION AND SITE DESCRIPTION

Acoustic & Engineering Consultants Ltd (AEC) has been instructed by Rammon Property Group, to provide undertake a noise impact assessment of the proposed new indoor children's play centre in the currently empty Unit 4 Froxmer Street, Gorton to accompany the associated planning application for the development.

Based on the information provided, it is understood that the children's indoor play centre would operate between 0830 and 1800h everyday of the week.

Unit 4 is located off Froxmer Street and is located on the southern boundary of a large industrial estate, identified on Figure 1. During the site visit the only unit adjacent to Unit 4 which was operational was Unit 1, Debona Ltd, who are manufacturers of wall paper. It is understood that some of the units in the industrial estate are operational 24h a day 7 days a week.

At this stage it is understood that there is no intention to alter the external envelope of the unit, currently the walls are a combination of masonry, up to 4m high, with lightweight metal cladding above and the roof consists of lightweight roofing panels. On the southern elevation of the property, facing the nearest noise sensitive properties, are two roller shutter doors.

The nearest houses to the proposed site are located 25m away on Eastwood Walk. The external areas of the properties on Eastwood Walk are surrounded by a combination of a 1.8m high brick wall and a similar height close boarded timber fence.

MEASUREMENTS

Baseline Noise Levels

The existing ambient, maximum and background noise levels were measured at one location, to represent the nearest noise sensitive properties, on Tuesday 15 October 2013 between 1000 and 1130h which was deemed to be representative of the quietest baseline period during which the proposed opening times of the centre. Acoustic terminology is presented in brief in Appendix A and full details of the noise surveys are presented in Appendix B, with a brief description provided below.

During the measurement period the main noise source affecting the ambient and maximum noise levels was road traffic on Froxmer Street. Over the hour period the ambient noise level was reasonably consistent and ranged from 47 to 50dB$L_{Aeq,\ 15minutes}$ with an overall hour $L_{Aeq,\ 1h}$ of 49dB. The maximum noise levels ranged from 57 to 61dBL_{Amax}. In relation to the background noise level, the main noise source was an industrial hum from beyond Unit 4 and the levels were consistently between 43 to 44dBL_{A90}. There was intermittent noise from the Debona unit, but this did not impact significantly on the measured noise level.

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Children Activity Noise

Noise measurements of children playing in a school playground have previously been measured by AEC. During the measurements periods the sound level meter was located at the edge of the playground which was full of playing children and the ambient and maximum noise level were measured as 69dBL_{Aeq} and 82dBL_{Amax} respectively.

CRITERIA

There are two potential noise sources associated with the proposed development, noise breaking out of the external envelope due to children playing and any potential external building services plant. These are discussed separately below.

Noise Break-out due to Children Playing

There is no specific guidance relating to noise levels from the activities of children playing either internally or externally. Therefore, it was agreed with Richard Knightly, an Environmental Health Officer at Manchester City Council (MCC), that achieving an external level of 50dBL_{Aeq} in the gardens would be acceptable. This is based on guidance in WHO document '*Guidelines for Community Noise*', which states "*To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50dBL_{Aeq}.*"

External Building Services Plant Noise

In relation to noise from fixed plant/equipment, this is covered in section 3.9.4 of MCC's '*Environmental and Public Protection Information for Developers, Version: 1.00*' dated February 2013 and provided below.

"Any application for fixed plant, equipment or machinery must demonstrate that the noise will:

a) Achieve a noise level (L_{Aeq}) of at least 5dB below the background noise levels (L_{A90}) at the nearest noise sensitive location at the quietest time the equipment will be in operation; and

b) Not contain any discernible tonal characteristics at the nearest noise sensitive location at the quietest time the equipment will be in operation."

ASSESSMENT

Noise Break-out Due to Children Playing

In order to take into account the potential increase in noise level between the measured external noise levels of children playing and the internal noise level with in the children's play centre a 5dB correction has been added to the measured level of 69dBL_{Aeq}.

Based on this corrected noise internal noise level of 74dBL_{Aeq}, and the assumed sound reduction index of 19dBR_w for the roller shutter door, 23dBR_w for the roof and 27dBR_w for the lightweight wall panels, the noise level in the gardens of the houses on Eastwood Walk has been calculated as below 35dBL_{Aeq}. This is significantly below the requirement of 50dBL_{Aeq} and, it should be also be noted that this is significantly below the existing ambient noise level of 49dB$L_{Aeq,\ 1h}$, therefore, this demonstrates that this would be acceptable to the Local Authority. Even if one of the roller shutter doors was open for ventilation purposes the resultant noise level would be below 50dBL_{Aeq}.

In relation to maximum noise levels, based on an internal maximum noise level of 85dBL_{Amax}, the maximum noise level in the gardens of the properties on Eastwood Walk would be less than 40dBL_{Amax}, which is significantly below the existing maximum noise levels of between 57 to 61dBL_{Amax} and should, therefore, be acceptable.

Building Services Plant

In order to achieve the first part of MCC's external building services plant noise requirements the plant would need to be controlled to 5dB below the measured background noise level of 43dBL_{A90} at the properties on Eastwood Walk. Therefore, the total noise level due to all plant operating simultaneously should be controlled to 38dBA at 25m.

It is understood that currently the type and number of items of plant to be installed on site has not been determined. Based on the required noise level limit, above, this would only be onerous if all the items of plant were installed on the southern elevation of the unit. Therefore, to ensure that the total plant noise level is met it would be prudent to install some of the plant on the roof and at a location where there is no direct line of sight between the plant and the properties on Eastwood Walk.

In regards to the second part of MCC's requirement, evidence would need to be provided by the supplier of building services plant to ensure that there is no acoustic tonal characteristic.

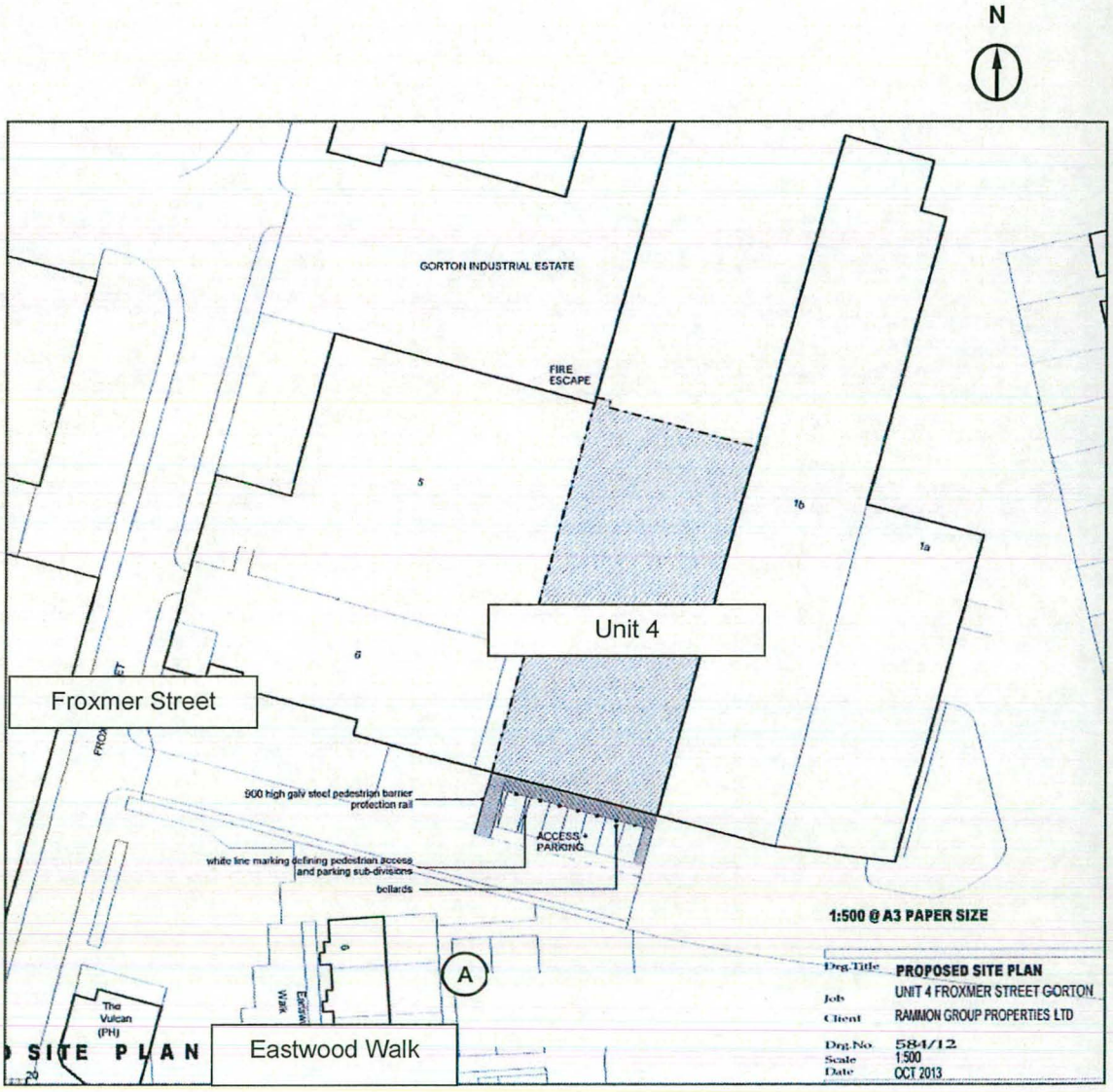
I hope this is helpful.

Yours sincerely

Paul Knowles

Checked by PEJ

FIGURE 1 – Existing Site Layout Showing Monitoring Location



APPENDIX A – Acoustic Terminology in Brief

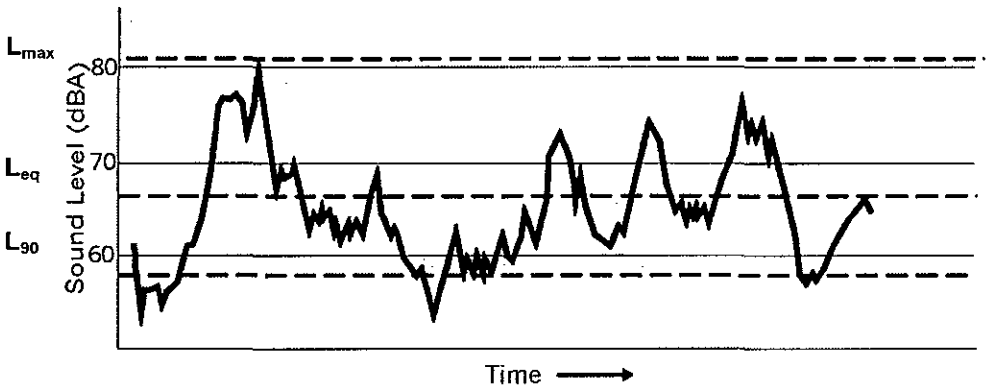
Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz *(Hz)*, that is, cycles per second. The human 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 emphasises or reduces the importance of certain frequencies within the audible range.

Noise Units

In order to assess environmental noise, measurements are carried out by sampling over specific periods of time, such as fifteen minutes or one hour, the statistically determined results being used to quantify various aspects of the noise.

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



Example of Sound Level Varying With Time

$L_{Aeq,T}$	The equivalent continuous (A-weighted) sound level may be considered as the "average" sound level over a given time, T. It is used for assessing noise from various sources including transportation, industrial and construction sources and can be considered as the "ambient" noise level.
L_{A90}	The (A-weighted) sound level exceeded for 90% of a measurement period. It is the value used to describe the "background" noise.
L_{Amax}	The maximum (A-weighted) sound level during a measurement period.
R_w	Single number rating used to describe the on site airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
Free-field Level	This refers to the sound level measured outside, away from reflecting surfaces.

APPENDIX B – Measurement Procedure

Dates & Times of Survey	Tuesday 15 October 2013, 1000 to 1130h
Personnel Present	Paul Knowles (AEC)
Equipment Used	B&K 2260 Real Time Analyser (AEC Kit 2)
Weather Conditions	15°C, overcast and calm.
Measurement Procedure	Baseline noise levels were measured at 1 location, identified as A on Figure 1, and described below. A – On the grass to the rear of the properties on Eastwood Walk. Locations A was selected to measure baseline noise levels, which were measured in terms of L_{Aeq}, L_{90} and L_{Amax} (fast response) typically over 5 to 15 minute periods. All the measurements were taken at a height of 1.5m above ground and all were free field measurements. The sound level analyser, which conforms to BS EN 61672-12003 *'Electro acoustics – sound level meters - Part1Specifications'* 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.
Measured Data	A summary of the results are presented in Table B1.

TABLE B1 – Measured Noise Levels

Location	Period, h	Noise Level, dB			Comments
		L_{Aeq}	L_{A90}	$L_{Amax,\,F}$	
A	1006-1021	47.4	43.8	56.6	The ambient and maximum noise levels were due to road traffic on Froxmer Street. The background noise level was due to an industrial hum from the industrial units.
	1021-1236	49.8	44.3	61.5	
	1037-1052	48.5	42.8	59.8	
	1053-1108	48.1	42.6	60.7	