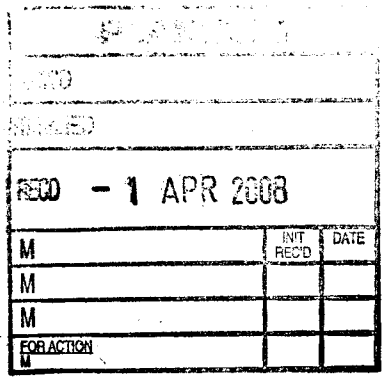

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ENCIA GROUP LTD

ENVIRONMENTAL NOISE ASSESSMENT
140 DEANSGATE MANCHESTER

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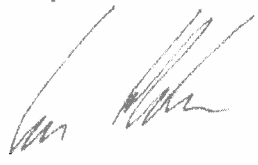

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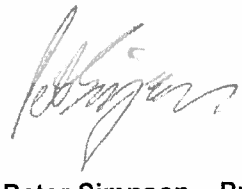

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1. INRODUCTION

ENCIA Group Ltd have commisioned Enviros Consulting Ltd to undertake an environmental noise assessment in support of a Planning application for the refurbishment and reuse of 140 Deansgate, Manchester. The scope of this assessment is to determine the site suitability of the chosen premises for a licensed premises with respect to noise.

The noise assessment has been based on a combination of measured noise levels to include existing noise climate, existing layout of the area surrounding the site and the proposed redevelopment layout as illustrated by Encia.

In the UK there is a lack of guidance on noise from the entertainments industry, and in particular noise from Pubs and Clubs. A validated UK method for carrying out noise assessments at these types of premises has not been agreed. Currently there are a number of pieces of legislation and guidance that are used by Environmental Health Officers and Consultants to try and quantify and rate noise from pubs and clubs. This assessment has been carried out with reference to PPG24, BS4142, the Clean Neighbourhoods and Environment Act 2005 and the Noise Act 1996 This report will use appropriate guidance to assess existing and predicted noise in the area surrounding 140 Deansgate.

1.1 Site Description and Scope

The building to be developed is at 140 Deansgate, Manchester. It is proposed that the ground, first, second and third floor will be redeveloped to create a bar/restaurant. For planning purposes the use of the building is to be established as 'Class A3 and A4; Restaurants & Cafes, Drinking Establishments'. It is expected that daytime business will be predominately restaurant based, so that noise levels will be minimal compared to in the evening when the bar uses will be the main activity. Of an evening there are no noise sensitive receptors.

The building is located in Manchester City Centre on a busy traffic junction between Deansgate, Bridge Street and John Dalton Street. In the basement of the building is a licensed premises and to either side of the building and across the road are licensed premises. The area is non residential and mainly consists of bars and clubs, with five other licensed premises within 150m, some of which have are licensed to open and provide entertainment until 6am.

There are offices to the rear and in the upper floors of properties adjacent to and across from 140 Deansgate. These offices operate predominantly during daytime periods only.

The development has the potential to generate additional noise to the area, however any additional noise will occur at night through bar use rather than in the day from the restaurant. The additional noise is unlikely to be a disturbance as the properties surrounding the premises at night cannot be classed as noise sensitive.

In this development, it is planned that amplified music will not be the main attraction for business. Amplified music will predominantly be background music and therefore it is unlikely that music will be the dominant source of noise from the venue.

Monitoring has been carried out in the area surrounding the proposed development during daytime and at night to establish existing background levels and determine whether the proposed development will have an effect on these levels.

1.2 Consultation

Contact was made with the Planning Department of Manchester City Council (MCC) to discuss the assessment methodology and scope of the work. The Planning department were in agreement with the methodology.

2. ASSESSMENT METHODOLOGY

2.1 Acoustic Terms and Definitions

Noise parameters

Noise is defined as unwanted sound. Human ears are able to respond to sound over the frequency range of about 20 Hz to 20 kHz and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, and is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates to the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear. The most widely used weighting mechanism that corresponds to the response of the human ear is the A-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90}, etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) of a steady source is generally regarded as the minimum difference needed to perceive a change.

Since environmental noise usually varies continuously from second to second it is impractical to specify the sound level of each second. As such human response has been related to various indices, which allow for the fluctuating nature of sound. These indices include;

- $L_{Aeq,\ T}$ - The A-weighted equivalent continuous sound pressure level. A representation of a continuous sound level containing the same amount of sound energy as the measured varying noise over the measurement period, t.
- $L_{A90,\ T}$ - The A-weighed sound pressure level that is exceeded for 90% of the measurement period, t. This is commonly used as the 'Background Noise Level' for assessing the effects of industrial noise in the UK.
- $L_{A10,\ T}$ - The A-weighted sound pressure level that is exceeded for 10% of the measurement period, t. This is commonly used in the UK for describing traffic noise levels.
- L_{Amax} - The highest A-weighted noise level recorded during a noise measurement period.
- L_{Ae} – The noise level that would be generated if all the energy from a discreet event (e.g. a train pass by) was compressed into 1 second. This measurement is used to compare the noise energy contained in discreet events that may last different lengths of time.

2.2 Legislation and Policy

The Government's policies on noise related planning issues are set out in PPG24. It gives guidance to local authorities in England on the use of their planning powers to minimise the adverse impact of noise. Specifically, it:

- *outlines the considerations to be taken into account when determining planning applications for both noise-sensitive developments and for those activities which will generate noise; and,*

- *introduces the concept of Noise Exposure Categories for residential development, encourages their use and recommends appropriate levels for exposure to different sources of noise.*

PPG24 refers mainly to the proposed development of residential dwellings rather than those developments which will create noise. In relation to the assessment of *"noisy developments"* PPG24 is limited in guidance and assessment criteria. PPG24 states:

"Much of the development which is necessary for the creation of jobs and the construction and improvement of essential infrastructure will generate noise. The planning system should not place unjustifiable obstacles in the way of such development. Nevertheless, local planning authorities must ensure that development does not cause an unacceptable degree of disturbance."

Reference is made in PPG24 to noise from entertainment premises, but only briefly, advising that not only should the entertainment noise be considered but also indirect noise sources such as transport and customers.

PPG42 refers to a number of British Standards and other guidance documents however none of these are directly relevant to noise assessments of *entertainment* developments, as in this report. PPG24 does refer to BS4142:1997, which although relates to *Rating Industrial Noise Affecting Mixed Residential and Industrial Areas,* can be adapted to indicate likelihood of complaints from entertainment premises.

Other guidance such as the Noise Act 1996 gives guidance on assessing noise from licensed premises, that give rise to complaints. This guidance uses a similar method to BS 4142 by assessing existing background levels in comparison with predicted/operational levels.

2.3 British Standard BS4142 Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas

The basic method for BS4142 requires that noise from the industrial noise source(s) concerned is compared with the background noise level prevailing in the absence of the specific noise; The greater the differences the greater the likelihood of complaints. BS4142 advises that:

- A difference of around +10 dB or more indicates that complaints are likely;

- A difference of around +5 dB is of marginal significance; and

- If the rating level is more than 10 dB below the measured background noise level then this is a positive indication that complaints are unlikely.

Although BS4142 is for industrial noise, it is widely used to assist in assessing noise from entertainment developments. It advises of similar values to that of the Noise Act, below.

2.4 Noise Act 1996 *(Amended under The Clean Neighbourhoods' & Environment Act 2005 and Anti-Social Behaviour Act 2003)*

The Noise Act 1996 was introduced to assist in addressing complaints from residential properties relating to noise. It was initially focussed on noise from residential noise however it has recently been ammended by the Clean Neighbourhoods and Environment Act 2005 and the Anti-Social Behaviour Act 2003 to take into account noise from licensed premises. The Noise Act states that for a complaint relating to night time noise to be justified, in areas where background levels are higher than 25dB, sources of noise should not exceed 10dB above the measured background.

Although this relates to residential complaints, it can be used to indicate the likelihood of complaints in non-residential areas.

2.5 Methodology

There are no residential dwellings in the area so this assessment will look at the effect the development will have on the area in general, and in particular on neighbouring office buildings during the daytime. The assessment will predict noise levels that the development is likely to generate and then compare these to the criteria in the Noise Act and BS4142.

3. NOISE MONITORING

Night time and daytime noise monitoring of the existing noise climate was undertaken on Thursday 13th March 2008 and Tuesday 25th March 2008, respectively.

Noise was monitored at 6 locations surrounding the premises, as listed in Table 1. From general observations during the monitoring, the main source of noise during day and night periods was traffic movement on Deansgate. Additional noise was also created by customers using the licensed premises adjoining 140 Deansgate and from other pedestrians.

As there is a lack of guidance on monitoring of noise relating to entertainment venues, measurements were undertaken to give a fair representative of the noise environment surrounding the proposed development. Daytime measurements were conducted over 15 minute durations as the noise levels in each location were relative high and consistent; mainly due to regular traffic movement.

Night time measurements were undertaken over 5 minute periods as specified by BS 4142 to give a good indication of the night time noise climate. Night time noise levels were consistent with daytime levels and rarely fluctuated.

All measurements were taken under suitable weather conditions of no rain and wind speeds below $5ms^{-1}$.

The measured noise levels are shown in Tables 1 and 2 for Daytime and night time respectively. Daytime measurements were taken between 14.30 and 16.30. Night time measurements were taken between 21.45 and 00:00.

Table 1 Daytime noise levels /dB(A)

Location	Co-ordinates	LAeq 15mins	LAmax	LA90	Comments/Observations
140 Deansgate Entrance	383615,398245	73.4	88.1	65.0	Predominantly Road traffic noise from Deansgate junction Occasional pedestrian noise, mainly from Hogshead
Corner of Deansgate/John Dalton St	383650,398240	75.4	87.6	64.8	Road traffic noise from Deansgate junction
Rear of 140 Deansgate	383600,398248	63.8	75.5	60.8	Background road traffic noise. Occasional extractor fan from rear of Hogshead.
Bridge Street	383595,398267	71.8	84.5	61.2	Road traffic noise from Deansgate junction , occasional pedestrian noise
Wood Street	383550,398240	61.4	77.5	54.1	Background road traffic noise, occasional passing vehicle. Distant construction noise from West
64A Bridge Street (off main street)	383588,398252	69.2	82.0	59.3	Passing RTN predominantly, some pedestrian noise.

Table 2 Night time noise levels/dB(A) (No wind - clear sky – no rain)

Location	Co-ordinates	LAeq 5mins	LAmax	LA90	Comments/Observations
140 Deansgate Entrance	383615,398245	74.1	84.3	64.2	Road traffic noise from Deansgate junction main source of noise. Customers leaving Premises either side of 140 Deansgate added to noise. General movement of people up street .
Corner of Deansgate/John Dalton St	383650,398240	71.8	82.5	63.7	Road traffic noise from Deansgate junction main source of noise. Noise from people shouting in street whilst passing.
Rear of 140 Deansgate	383600,398248	60.6	70.4	52.1	Road traffic main noise (distant). Occasional start up of extractor/cooling fan on back of 138 Deansgate.
Bridge Street	383595,398267	71.7	83.8	65.1	Road traffic noise main source of noise. Occasional passing of people.
Wood Street	383550,398240	62.7	71.2	54.1	Road traffic noise main source of noise. Extractor fan noise heard infrequently.
64A Bridge Street (off main street)	383588,398252	58.2	71.1	52.7	Road traffic noise from Bridge Street only

The data obtained shows little difference between measured daytime and night time noise levels. This consistency and relatively high levels are as would be expected adjacent to a premises located in a busy city centre

4. ASSESSMENT

4.1 External Impact

It can be assumed that the development during the day time will not be operating to full capacity and will operate similarly to the licensed premises on either side. The noise levels shown in Table 1 and Table 2 are mainly a result of traffic noise and therefore it can be assumed that noise produced from the development during the daytime will be below monitored levels. As the daytime noise levels generated by the development are unlikely to increase ambient noise levels in the area, they are unlikely to generate a significant impact on the surrounding offices.

The road to the front of the Development is a busy traffic and pedestrian route into the centre of Manchester. A significant increase in pedestrian movement due to the premises is unlikely, and any increase will not add to existing noise levels. The development does not have a car park and therefore an increase in traffic noise is not expected.

For evening periods it will be assumed that the premises will be playing amplified music of some description. The level the music is played at inside the venue will determine the level of noise created outside the venue. We can assume windows at the development will have minimum of 25dB attenuation, assuming windows are kept closed.

Background noise levels at the front of the development during evening periods are close to 64dB, LA90. If we are to look at this level with regard to the Noise Act and BS4142, noise levels inside the premises would have to exceed 99dB(A) (based on the background noise level plus window mitigation taking account of the upper advisory level of Noise Act of 10dB) to indicate a likelihood of complaints in *Residential Properties*. In practice this level is unlikely to be reached as it the proposed amplified entertainment at the development is to be background music to create atmosphere rather than music to entertain.

At the rear of the premises the existing ambient noise level is 52dB, LA90. Again, if we are to look at this level in relation to the Noise Act and BS4142, the internal music levels would have to exceed 87dB(A) internally. Music at the premises will be played at background levels to accompany conversation; music played at anything above 60dB(A) will make speech unintelligible and therefore make additional noise to the rear of the premises unlikely

Although there is an increased chance that existing night time noise levels at the rear of the development may be increased by music played at high levels inside the development, there are no noise sensitive receptors in this area. In addition, the rear of the premises backs on to a closed courtyard which will contain most noise emanating from the development.

To the front area of the premises, night time and daytime levels reached in excess of 64dB, LA90. These levels are already in excess of suggested WHO Community Noise levels of 55dB for outside living spaces.

4.2 Internal Impact

External noise levels are relatively high surrounding the premises and therefore the structure and glazing at the property are likely to play a key part in internal noise levels. BS8223:1999 ' Sound insulation and noise reduction for buildings – Code of Practice' advises internal levels, to ensure reasonable acoustic privacy, between 45 and 55dB for Restaurants and 45dB for Public Houses/Night clubs.

To be able to meet the lower end of these advisory levels, in the majority of the proposed development, it is unlikely that any enhanced mitigation measures would be required. According to BS8233:1999, single glazed units typically have a sound reduction index of between 22 and 30 which is more than sufficient to attenuate external L90 levels (background noise levels) of up to 65dB.

Areas of the development which require lower internal noise levels and face Deansgate may require thermal double glazing which typically attenuates between 33 and 35dB. This would be a precautionary measure to ensure the development is not effected by traffic noise.

5. CONCLUSIONS

The development at 140 Deansgate is located on a busy road in the centre of Manchester City Centre. The existing noise climate around the premises is relatively high during both the day and the night. Currently the main sources of noise are from traffic and pedestrian noise. During the daytime there are offices in close proximity but these are unlikely to notice any increase in noise due to the development of a bar/restaurant at 140 Deansgate.

At night time, depending on music volumes, there may be a slight increase in external levels at the rear of the premises. However, this will not have a detrimental effect on the area as there are no night time noise sensitive receptors in this area. Any additional noise created here is likely to be contained within the courtyard.

Any increase in pedestrian and traffic movement in the area, due to the development, will be minimal and insignificant in comparison to the existing situation.

With reference to PPG24, this development has the potential to create noise to the rear of the building; however it is considered that any noise created will not cause *an unacceptable degree of disturbance* .since no sensitive receptors have been identified by the local authority.

The scope of this assessment is to determine the site suitability of the chosen premises for licensed premises with respect to noise. The findings of this report show that from the existing noise climate and the classification of neighbouring premises, it is unlikely that the development will have a detrimental affect on the location. It is therefore considered that the site is suitable, on noise grounds, for licensed premises.