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ADDENDUM TO NOISE IMPACT ASSESSMENT

at

PROPOSED EXTENSION TO LICENSED PREMISES, HORSE & JOCKEY PUBLIC HOUSE, CHORLTON GREEN, MANCHESTER.

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1.0 **Summary and Conclusions**

Our report dated 7th April 2009 provided an assessment of the noise impact of a proposal to extend the floor area of the Horse & Jockey public house at Chorlton Green, Manchester. It is now proposed to relocate the outlet flue of a wood burning stove at the premises which will incorporate a fan at the flue outlet. This addendum to the original report provides an assessment of the noise impact of the relocated flue and fan. The outdoor sound levels at the nearest dwellings are predicted from data provided by the fan manufacturer and compared to the background levels in accordance with the method of BS 4142.

1.1 Sound from the proposed extraction flue and fan is predicted to cause outdoor sound levels of 34 dB LA_{eq} at the nearest dwelling to the rear of the premises and 14 dB LA_{eq} at the nearest dwelling to the front.

1.2 The existing background level was measured at 40 dB LA_{90} at night.

1.3 After adding a 5 dB correction for the character of the fan sound, which is expected to be tonal, the predicted sound from the extraction system is rated at 1 dB to 21 dB below the night background.

1.4 It is concluded that complaints are unlikely about noise from the proposed extraction system.

2.0 Acceptance Standard on Noise

Sound from the fan at the flue outlet will travel over the outdoor distances to the nearest dwellings. The usual noise assessment method for this type of source is a rating in accordance with BS 4142, which is used here and summarised below.

BS 4142: 1997

The method recommended by BS 4142 is to measure outdoor sound levels at noise-sensitive premises during the emission of noise from the commercial premises under investigation and measure the background level at the same location in the absence of the commercial noise. A correction factor is applied if appropriate to the measured levels for some specific factors which affect its acceptability, described as “a distinguishable, discrete, continuous note (whine, hiss, screech, hum, etc.) or if there are distinct impulses in the noise (bangs, clicks, clatters, or thumps), or if the noise is irregular enough in character to attract attention”. The corrected measured level, the rating level, is compared with the background.

- complaints are likely if the rating level exceeds the background by around 10 dBA or more,
- a difference of around 5 dBA is 'of marginal significance',
- if the rating level is more than 10 dB below the background level then this is a positive indication that complaints are unlikely.

3.0 Sound From Proposed Flue and Fan

3.1 Sound Source

The revised flue layout will consist of a horizontal extension from the existing internal flue, a 90 degree bend, then a vertical flue with a fan at its top outlet. The only source of sound will be the fan which will radiate sound energy from its outer case, its outlet direct to outdoors and its inlet back along the flue towards the interior of the premises. The dominant sound path of these three will be the direct sound radiation from the fan outlet. Sound from the fan case will be secondary and sound breakout through the horizontal and vertical flue runs will be negligible if the fan is mounted correctly. The fan manufacturer has

provided test data on the sound emitted to outdoors if it is mounted at a flue outlet, as proposed here. The test data thereby includes sound from the fan outlet and from its outer case. The proposed fan is RSV 'Exhausto' type RSV 014-4 with the following outlet sound power spectrum:

Sound power levels dB linear, Leq:

Frequency (Hz)	125	250	500	1k	2k	4k	8k
At fan outlet	71	70	68	61	56	50	44

3.2 Sound Paths to Dwellings

The nearest dwellings are located:

1. On Whitelow Road and St. Clements Road at the rear of the public house. The rear elevations of the dwellings will be 14m from the flue outlet and fan and will have a direct sightline to it.

2. On Chorlton Green directly adjacent to the front/ west corner of the public house. The nearest part of the rear elevation of this dwelling will also be 14m from the flue outlet but will be shielded from it by the roof of the public house.

3. On Whitelow Road diagonally opposite the front elevation of the public house, ie. facing Chorlton Green, at a distance of 40m from the flue outlet and shielded from it by the roof of the public house...

4.0 Sound Predictions at Dwellings

The fan will act as a point source of sound radiating into spherical space at the top of the vertical flue The sound pressure level at a distance d is given by the formula:

$$SPL = SWL - 20 \log d - 11 \quad dB$$

The dwellings at positions 2 & 3 described above will receive sound attenuation from the roof of the public house estimated at:

Shielding attenuation dB:

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
Dwelling posn 2	5	5	5	6	7	9	11	14
Dwelling posn 3	8	10	12	15	18	20	20	20

After subtracting the sound dispersion and distance decay given in the above formula and the shielding attenuation where appropriate the sound levels at dwellings are predicted at:

Dwelling	Dispersion/ Decay	Shielding Attenuation	Predicted at Dwelling
1 At rear of pub	34 dB	none	34 dBA
2 At side of pub	34 dB	5 dBA	29 dBA
3 At rear of pub	43 dB	11 dBA	14 dBA

5.0 Assessments for Planning Purposes

Noise Rating Levels

The rating method of BS 4142 calls for a 5 dB correction to be added when the character of the noise contains certain features, summarised in 2.2 of this report. Although we do not have one-third octave spectra to show whether the fan has tonal characteristics it is likely to be the case and for this reason 5 dB is added to the specific noise levels shown above.

Background Sound Levels

The rating levels are compared with the background levels. These were measured during our 2009 survey between 11.00pm and midnight. The results were 47.2 dB LA_{90} at the rear of the premises and 40.4 dB LA_{90} at the front. The higher background result at the rear of the premises was audibly being caused by a noisy extraction fan at the nearby Beech public house. Since the true background was around 40 dB LA_{90} at this location generally, this value is used in the BS 4142 rating at all dwellings.

Background Comparison

A comparison of the rating levels with the background levels is shown overleaf.

Dwelling	Rating Level dB	Background Level LA_{90}	Comparison v. Background
1. At rear	39 dB	40 dBA	1 dB below
2. At side	34 dB	40 dBA	6 dB below
3. At front	19 dB	40 dBA	21 dB below

BS 4142 Conclusion

It is concluded from the BS 4142 rating that complaints are unlikely from the residents of dwellings since the noise from the extraction system is rated below the background.
