carmichael acoustics

DEANS BAR, HAWICK 15th November 2018

REVIEW OF [redacted] NOISE IMPACT ASSESSMENT (REF 1285001DOM V1)

[redacted]

[redacted]

Noise Impact Assessment

1. The report considers the breakout noise through the Dean's Bar function room windows only but fails to consider the existing breakout noise through the roof of the function room or the fire exit door. It is not always the case that the windows are the weakest element of the structure of a building and depending on the sound reduction index and area of the roof. The profiled roof could therefore be significant in terms of the overall noise breakout from the premises.

2. The predicted noise breakout is based on an assumed reverberant sound level detailed in octave band frequencies for the playing of amplified music within the function room. The noise spectrum used was obtained from measurements of amplified music measured elsewhere and applied to Dean's Bar.

   Using an assumed noise spectrum can introduce significant uncertainty in the robustness of the noise impact assessment, unless there are proposed measures to control the noise level within the function room to a predetermined noise level. There is no mention as to how the source noise level (other than a recommendation) within the function room will be controlled to ensure source noise levels will be within the range used for the purposes of noise predictions.

3. It is also noted that the installed windows have hoppers and will therefore have the ability to be opened for purged ventilation. There is no mentioned of alternative ventilation measures which would prevent the necessity to have the windows opened. Breakout noise would be significantly greater when window hoppers are open and this is likely to result in non-compliance with the NR20 noise criterion within residential receptors.

4. The assessment criterion appears to be based on a planning condition which relates to a noise rating curve NR20. However the use of NR 20 in the planning consent only relates to plant and machinery and not amplified music. Generally NR 15 is commonly used by local authorities as the design criteria for internal noise levels within residential receptors due to the annoying characteristics of amplified music.

5. No account has been taken of the fire escape door which was described in the report as being a significant source of breakout noise. It is noted that there is no mention in either reports regarding any proposed specific sound insulation measures for the fire door.

6. The sound reduction for the function room windows is based on details supplied by Deans Bar and the consultants have used the sound reduction of similar glazing units. This introduces further uncertainty over the actual acoustic performance of the existing windows.

7. No consideration has been given to the potential breakout noise from the profiled steel roof and whether any breakout noise contributes significantly to the predicted noise levels at noise sensitive receptors.

8. Predicted indoor noise levels assumes 15dB reduction across an open window at all frequencies and also utilises room acoustics in the calculations based on an assumed typical reverberation time and approximate volumes of bedrooms within noise sensitive receptors.

   This introduces further uncertainty as a single reverberation time is applied to all the octave bands. Reverberation times will vary at different octave bands and therefore the predictions for room acoustics is likely to result in and underestimate of internal noise levels.

   It is arguable that room acoustics should not be taken into account unless there is sufficient robust information on room volumes and reverberation times at each octave band available. Notwithstanding the uncertainty of the actual room acoustics, the use of 15dB for attenuation across an open window should not be used for calculating internal levels. A more robust figure of 10dB should be utilised. In addition no façade correction has been applied at the receptors (+3dB)

   There are too many assumptions used in the calculations which would indicate that the predicted noise levels could be significantly underestimated.

9. The figures in the excel spreadsheet and Table 4 appear to be contradictory for the following reasons;
   - Appendix B calculation worksheet utilises a different sound reduction spectrum (R) for the function room windows than that used in the spreadsheet for 'noise break in'.
   - 'Above function Room Receptor' - Discrepancies/ confusing over 'building edge attenuation' on Appendix B worksheet (-3dB) and -6dB for edge of 'function room building' on 'noise break in' worksheet. This is similar for the southwest receptor.
   - No façade correction at noise sensitive receptors applied.
   - Justify angle of view correction in addition to building edge attenuation
   - In Table 4 Paragraph 3.09, the compliance verification figures are incorrect.
   - Room acoustic calculation provides, erroneously, a positive value in the calculation.

   Other assumptions
   - Same reverberation time used at all frequencies which is unlikely given the frequency spectrum of music noise.
   - Assumed room volumes for residences.
   - Sound reduction index of function room windows (assumed)
   - Assumed source noise level, and that it will be controlled.

The calculations and tables in the report are confusing and clarification on the above should be sought.

Summary

In summary the predicted noise levels utilises significant assumptions which, in the authors view, some of which are not justified.

It is recommended that only 10dB be utilised for open windows, no room acoustics should be utilised without sufficiently robust data, and attenuation by building edges need some justification/clarification.

I would not consider the noise report to be robust in its approach and a precautionary approach should be taken when considering the predicted noise levels quoted.

A sound test which measures the noise emitted from inside to outside the function room windows should be undertaken at some point to validate any noise predictions.

There is therefore significant uncertainty in the noise predictions for amplified music.

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