Appendix 3

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Anglia Ruskin, Howes Close Sports Ground

Comments on the Noise Assessment submitted In connection with a Planning Application for increased use of the Sports facility

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1 INTRODUCTION

At the request of Rachel Garrard, Terence Montgomery, Dorothy Stirling, Mike Chamley and Marie Ratcliffe a critique has been carried out, on the Noise Assessment Report submitted by Adrian James Acoustics Ltd dated 27 July 2016, in connection with the Planning Application by Anglia Ruskin University for upgrading and increased use of the Howe's Close sports ground, Whitehouse Lane, Cambridge.

The residents of Thornton Close are concerned about noise from the existing facility and are thus even more concerned about the effects of intensification of use. This report comments on the methodology and conclusions of the Noise Assessment Report submitted in support of the Application.

The assessment has been carried out by John Hyde, a Member of the Institute of Physics, Chartered Physicist and Member of the Institute of Acoustics who has over 30 years experience as a noise and acoustics consultant.

2 NOISE CRITERIA

Sections 2.4, the Sport England Design Guidance Note, and 2.5, the criteria agreed with South Cambridgeshire District Council, of the report suggest the use of WHO Guidelines and BS8233 upper limit for external noise limit of 50dB(A). This is not considered the 'robust approach' referred to in the report. The WHO and BS8233 criteria are intended for anonymous sources of noise such as road traffic.

Noise from sporting activities cannot be described as anonymous as it is more likely to provoke an adverse reaction at a much lower level than would be the case for an anonymous source such as traffic. It consists of impulsive sources including shouting, whistles and balls banging all of which produce a more startling effect than an anonymous source. Therefore the criteria of WHO and BS8233 are not considered an adequate method for assessing the impact of this type of noise.

Paragraph 7.6.1.2 of BS8233 states:
"*For dwellings, the main criteria are for reasonable resting/sleeping conditions in bedrooms and good listening conditions in other rooms. Occupants will usually tolerate higher levels of anonymous noise, such as road traffic, than noise from neighbours which may trigger complex emotional reactions that are disproportionate to the noise level.*"

3 NOISE SURVEY

It is considered that the background noise survey should have been carried out at the boundary of the Thornton Close properties. It is not clear how or why additional data

has been added to the summary distribution Figures 3 and 4. Table 2 shows 5x12 hours of weekday measurements (60) whereas Figure 3 show 69 data values. Table 2 weekday evenings covers 5x3 hours of measurements (15) whereas Figure 4 shows 16 data values. The additional suspect data adds uncertainty to the chosen background noise levels.

While the difference between the attended measurements and unattended measurements was small, the measurements at the boundary were nearly all lower than those at the hotel site (Table 1). In addition, a 15 minute sample was a very short time period over which to make a comparison.

Noise levels at the boundary of the properties are likely to be lower, as was demonstrated in the 2014 Cass Allen report where a $L_{Aeq,1hr}$ of 45dB was measured. It is therefore considered that the chosen background noise levels at Thornton Close have been overestimated.

In a separate noise report by AcousicAir Ltd, the background noise level at the Howes Close site boundary with the proposed Darwin Green One development was reported as less than L_{Aeq} 48dB. This is also consistently less than the background noise level measured at the hotel.

Table 2 summarises the results of the background noise measurements at the hotel. It is not clear why a 12 hour average was used as the daytime sports use is likely to be 10 hours from 0900 to 1900; this could have affected the results. It would seem logical to take the background level as that recorded on the quietest day, that is, 47dB. While this is a 12 hour average it would seem reasonable to assume that this value would represent a worst case $L_{Aeq,1hr}$ rather than the 51dB derived from a complex frequency distribution assessment. On the basis that the noise level at the boundary with Thornton Close is 1.6dB lower (from Table 1) a more realistic worst case background level would be 45dB, similar to that measured in the 2014 Cass Allen report.

Similarly, the evening $L_{Aeq,1hr}$ could be taken as 47dB from Table 2 to represent a worst case rather than the assessed value of 51dB. The over estimation of background levels could clearly reduce the impact of the sports noise.

3 NOISE FROM SPORTS

It is not clear why no assessment has been made of noise levels from the existing sports activities at the site, as it is specified that these have been moved closer to the Thornton Close boundary in order to accommodate the proposed new pitches. The proposals considerably extend the operating hours of the facility, thus even if the noise level from existing pitches remains the same, the overall noise exposure would be increased. However noise from existing pitches has not been assessed.

Noise measurements of football and hockey matches have been undertaken,

providing useful reference data that was used in the calculations. However, the calculations have assumed that the noise attenuation with distance from the pitch behaves as though the sports noise was a point source. In other words the noise from the spectators and players effectively emanated from one point at 10m from the edge of the pitch. This is not considered appropriate because there are multiple noise sources from multiple positions. Point source attenuation means that noise reduces by 6dB for each doubling of distance.

However, in section 4.2.2.1 of the report, data is quoted for noise at football matches which shows a level of 57.9dB at 20m and 54.4 at 40m from the pitch. This clearly shows an attenuation rate of 3.5dB per doubling of distance and is considered to be a more realistic figure to use for noise attenuation for an area noise source.

This means that for the hockey, the source noise level measured at 7m should be corrected to 10m by the deduction of 1.5dB rather than the 3dB by assuming point source attenuation, giving a rounded level of 64dB rather than the 62dB assumed in the report.

Taking an example of a typical property distance of 110m and the source $L_{Aeq,1hr}$ of 67dB at 10m, as used in the report, the calculated noise level at the property would be 46dB using the point source method of 6dB attenuation per doubling of distance. However using the area source attenuation rate of 3.5dB per doubling of distance, the noise level at the property would be 55dB, that is, 9dB higher.

It is worth noting that road traffic noise attenuates at a rate of 3dB per doubling of distance as this is considered to be a line noise source and it is reasonable to expect the noise from a sports pitch to attenuate in a similar way.

It is also worth noting that the calculated noise level at 110m corresponds to the distance of the rear façade of 30-32 Thornton Close from the nearest proposed pitch. The point source attenuation method gave a level of 46dB at this distance, however, the value in Table 8 of the report for this property was 40dB, 6dB lower, and 15dB lower than the value derived from the area source attenuation method.

Taking the assessment at these properties further, Table 9 gives the attenuation that would be achieved by the proposed acoustic barrier, showing a 4dB reduction from 40dB (Table 9) to 36dB (Table 8) at the house. This means that the 55dB level of sports noise derived above would be attenuated to 51dB by the barrier. If the worst case background noise level of $L_{Aeq,1hr}$ 45dB is then added to the sports noise, a combined level of 52dB is obtained. Using the IMEA assessment method described in 2.3, this means that the resultant noise level would be 7dB above the background.

Referring to the effect descriptors, a change of 5 to 9.9dB is regarded as ‘substantial’ at a receptor of high sensitivity to noise. This can be compared to the assessment at this property, of a 0.3dB change shown in the AJA report at Table 10, with an impact effect assessment of ‘None’.

As stated above, noise from the newly located existing pitches has not been taken into account. These are closer to the properties and if all four pitches were in simultaneous use during the daytime, the predicted noise levels would be considerably higher than those estimated in the AJA report.

The report states that the pavilion would not be used for functions with amplified music and no public address system would be used, thus while noise from this source is not expected to be significant, it is worth noting that noise from people shouting on the outdoor gallery could be audible at 100m at a noise level of up to 49dB(A), based on the level of 89dB(A) for a male shouting at 1m.

Noise from slamming car doors in the car park are likely to be audible at the nearest properties on Thornton Close at a level of up to 48dB(A), over a background level of 38dB(A). A solid 2.2m boundary fence along the northwest boundary of the car park would reduce the impact of this noise source.

5 SUMMARY

It has not been possible to assess every calculation but the example above shows a serious discrepancy in the impact assessment due to overestimation of the worst case background noise and underestimation of the sports noise at the properties. This has resulted in significant underestimating the impact of the proposals.

The assessment also fails to add noise from the existing pitches which have been moved closer to the Thornton Close boundary to make way for the new pitches and noise from these pitches should be considered as part of the proposed development.

The assessment is based on methodologies for noise from anonymous sources, such as road traffic and does not attempt to take account of the '*complex emotional reactions that are disproportionate to the noise level'* referred to in BS8233, that arise from the identifiable sports sources such as shouting and whistles.

The proposed acoustic barrier goes some way to reducing noise within gardens of Thornton Close but has no effect on evening noise levels at first floor level where children may be sleeping or studying.