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SRL Technical Services Limited

3 December 2013

C/30557/L02/JDH

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Dear Tom

163 Iverson Road – Review of Facade Specification

Further to our review of the Sol acoustic report done for the Iverson Road project (our report C/30557/L01/JDH dated 25 November 2013) and our subsequent meeting with Environmental Health at Camden Council, I have addressed below the items raised in our meeting and I hope that the information is to the satisfaction of the Environmental Health department.

1. Glazing Specifications to Control External Noise Break-in

The EHO requested that we present the highest performing glazing that is practicable for use on the Iverson Road building. Five glazing types have been proposed and these represent the highest sound insulation performances that the manufactures are able to offer for this project:

- Idealcombi Futura+ [8.4mm laminated glass / 20mm cavity / 10mm glass]
- Idealcombi Futura+ [8.4 lam glass / 16mm cavity / 4mm glass + 10mm glass]
- Reynaers CS 68 ac_3813 Gasket [12.8 lam glass / 20mm cavity / 8.8mm lam glass]
- Olsen IV 92 ALU 2+1 SOiD [build-up unknown]
- Rationel Aldus [6mm glass / 18mm cavity / 8.4mm lam glass]

The table below shows the internal maximum noise level (L_{AFmax}) that would be achieved in a typical bedroom using each type of window for each of the maximum noise levels measured during the 8 hour night time surveys done by Sol (details in their report ref P1498-REP01-SJF dated 27 June 2013).

Note that some internal levels in the table below may in some cases be higher for a corresponding lower external level. This is due to the frequency content of the particular maximum noise level recorded.

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Table 1 – Internal Maximum noise Levels on Railway Facade

Position 1 (Railway)		Internal L_{AFmax} with Glazing Unit, dB				
External L_{AFmax}, dB	No. Maxs recorded over 8 hour night‡	idealcombi futura+ 8.4-20-10	idealcombi futura+ 8.4-16-4+10	Reynaers CS 68 ac_3813 12.8-20-8.8	Olsen IV 92 ALU 2+1 SOiD	Rationel Aldus 6-18-8.4
86	2	48	43	45	49	50
84	1	44	41	43	44	47
82	1	47	43	45	48	49
80	4	46	41	43	49	49
79	2	45	40	42	47	47
78*	4	43	40	41	44	45

Table 2 - Internal Maximum noise Levels on Iverson Road Facade

Position 2 (Road)		Internal L_{AFmax} with Glazing Unit, dB				
External L_{AFmax}, dB	No. Maxs recorded over 8 hour night‡	idealcombi futura+ 8.4-20-10	idealcombi futura+ 8.4-16-4+10	Reynaers CS 68 ac_3813 12.8-20-8.8	Olsen IV 92 ALU 2+1 SOiD	Rationel Aldus 6-18-8.4
93†	1	50	47	49	50	55
86	1	48	45	46	49	51
84	1	48	45	46	51	50
82	1	50	48	48	51	52
81	1	43	40	41	46	46
80	3	43	41	42	46	46
79*	3	42	40	40	44	45

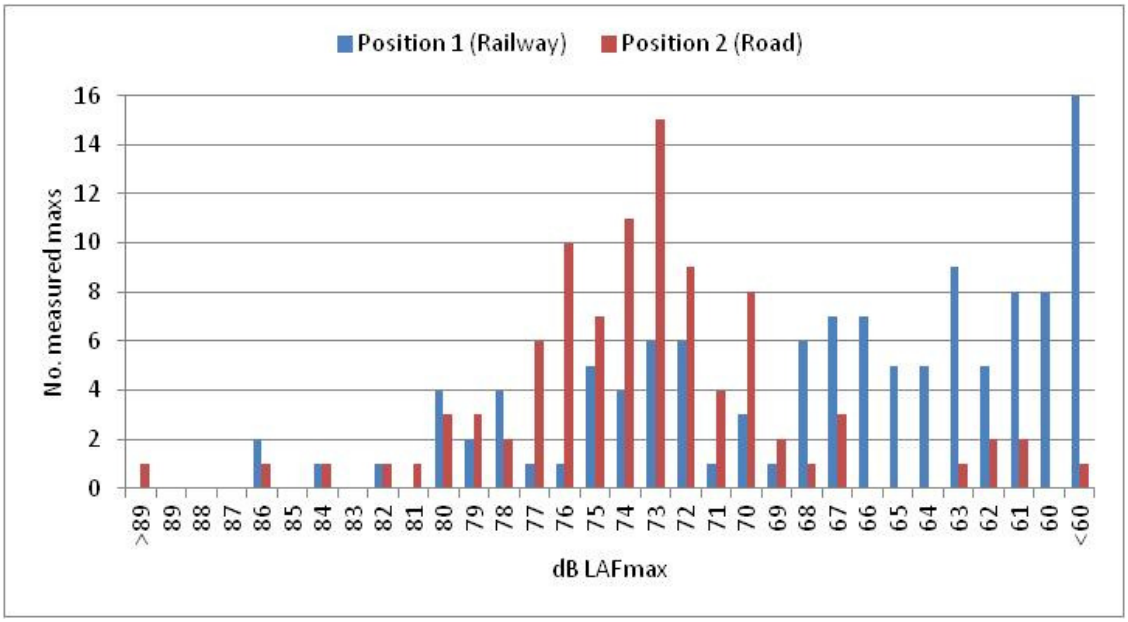
†The spectrum of this maximum shows more energy at higher frequencies and it is likely to be due to a siren on an emergency vehicle and as such is not considered typical.

*This is the level SRL have proposed to use as the typical maximum level, based on the WHO guidance that 10-15 occurrences of 45dB L_{AFmax} in bedrooms is acceptable.

‡Total number of L_{AFmax} levels recorded over 8 hour night: Position 1 – 469, Position 2 – 95.

The distribution of the maximum noise levels recorded is shown in the graph below for information.

Figure 1 – Maximum Levels from Sol Noise Survey (night time)



2. Railway-side Acoustic Fence

The Sol report specifies a “close-boarded, gap-free, 2.4m height... perimeter fence along the entire northern boundary and garden boundary...”

A concern was raised by the EHO that while the barrier would reduce railway noise levels in the garden areas, the barrier may increase the noise level at the facade of the building above the level of the top of the barrier.

This is not the case. A barrier will offer a reduction in noise level within its “Shadow Zone” and can also provide some reduction in level within its “Illuminated Zone” (see diagram in Appendix A). Outside of these zones, the barrier will have no effect on the sound propagating from the source.

Note that Chart 6(a)(ii) of Calculation of Railway Noise (HMSO) shows that for the illuminated zone, where the path difference is greater than 0.4m, the correction is zero. This is the case for the facade areas of the first floor and above of the Iverson Road building which the barrier will have no effect upon.

We have calculated the approximate reduction in railway noise that would be experienced in the gardens based on the barrier proposed by Sol, assuming the following:

- Source height: approx 3m
- Barrier height: 2.4m
- Receiver height: 1.5m
- Source-to-barrier distance: 24m (mid way between the 4 railway lines)
- Barrier-to-receiver distance: approx 5m

The gardens would be in the “shadow zone” and the barrier correction would be approximately 8dB. Based on a daytime noise level of 65.9dB $L_{Aeq,16hour}$, at Position 1 of the Sol report, the level in the gardens would be approximately 58dB $L_{Aeq,16hour}$.

3. Maximum Noise Level Measurement Periods

Details of the noise survey can be found in the Sol report and the maximum noise levels measured are also presented in our previous letter.

Sol measured in 1 minute periods at Position 1, overlooking the railway and in 5 minute periods at Position 2 overlooking Iverson Road. The data therefore presents the single highest noise level (L_{AFmax}) measured during the 1 or 5 minute period. It is noted that a better representation of the noise would have been a full time trace which would allow every occurrence over a given level to be seen in any time period.

However because a whole 8 hour night time period has been measured, we consider that there is a sufficient number of L_{AFmax} levels recorded to represent the type of events and the noise levels that typically occur.

It is clear that the highest maximum levels recorded, shown in Tables 1 and 2 above, are a small percentage of the total number of maximum levels and the distribution of maxima in Figure 1 shows that the vast majority are significantly lower.

The total number of *maxima* throughout the night may in reality be slightly higher than the data presents but the number of *events* that cause the maxima is likely to be well represented by the data and is therefore a reasonable indicator of the number of times that sleep disturbance may occur in an 8 hour period.

For example a train passing which produces a maximum level of 86dB L_{AFmax} may also produce slightly lower maxima during the duration of its passing by, but it is the *event* of the train passing and producing a high maximum that may cause sleep disturbance, not necessarily the number of maxima that occurred within the period of that event.

Of course, two or more distinct events may occur within the 1 minute or 5 minute measurement period and only the single highest level is recorded, but at night it is unlikely that multiple “events” would occur in the same measurement period regularly and therefore the data from the Sol report is considered a good representation of the number of potential sleep disturbance events over the night.

I trust the above is clear. Please contact me if you have any queries.

Yours sincerely

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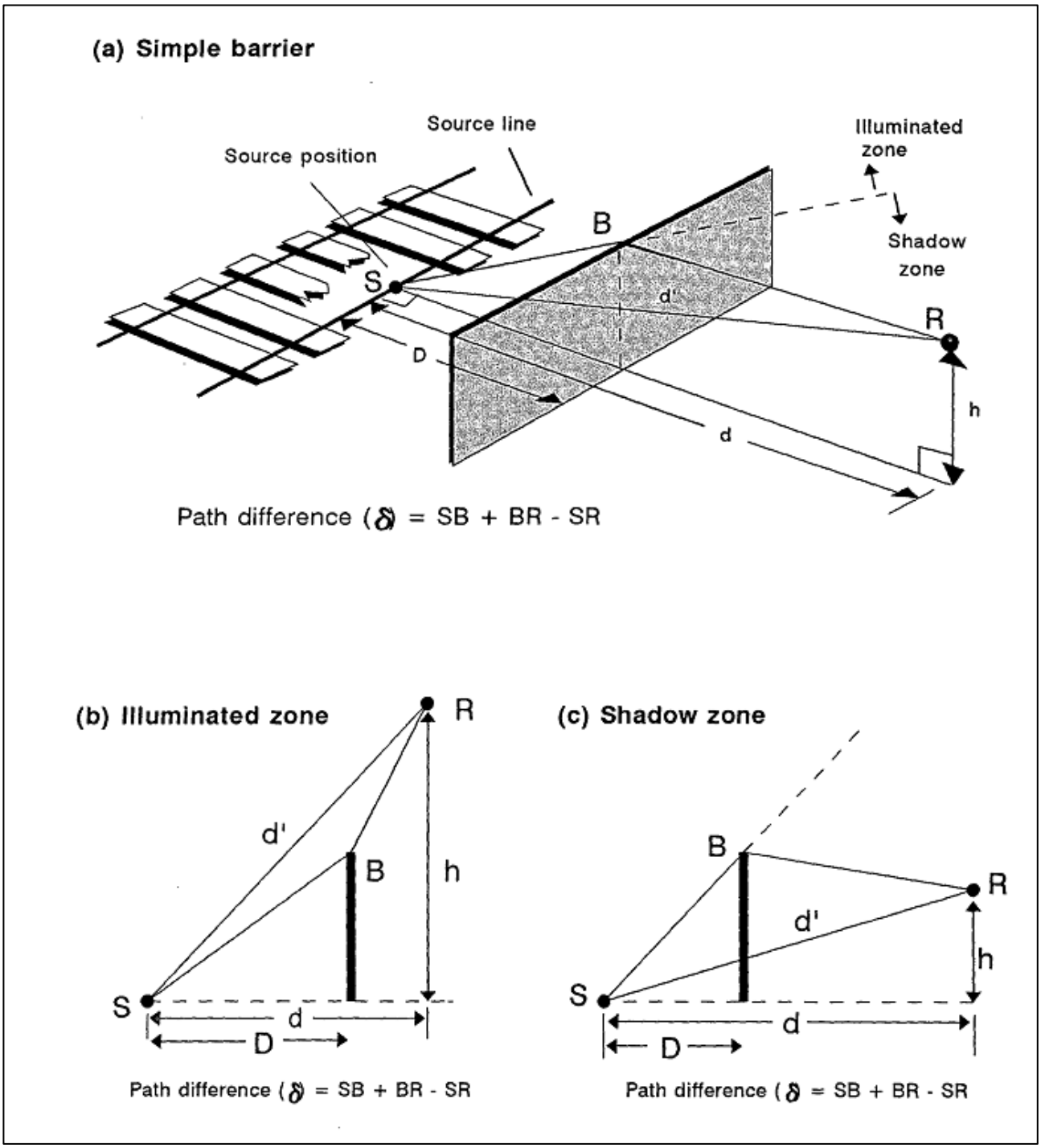
Appendix A – Diagram showing barrier corrections taken from Calculation of Rail Noise 1995



(HMSO)