Site at Former B&Q, Great Stone Road, Trafford

Rebuttal Proof of Evidence
Noise

Prepared For: Accrue (Forum) 1 LLP

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e: [redacted]
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1.0 Introduction

1.1 This document presents a written rebuttal of some of the technical issues raised in the noise evidence relied upon by Trafford Borough Council (the Council) and Lancashire County Cricket Club (LCCC). For the avoidance of doubt, the document does not present a full response in respect of all issues raised in that evidence. On that basis it should not be understood that I accept a particular proposition simply because I do not address it in this rebuttal proof.

1.2 In order to be concise this single document will address both the LCCC Noise Proof prepared by Dani Fiumicelli and the Council Noise Proof prepared by Mathew Robinson.

1.3 This Rebuttal Proof has been prepared by James Patterson BEng, MSc MIOA, Director of Holtz Acoustics. I have 12 years' experience in Building Acoustics and Planning Noise. I am an elected member of the Institute of Acoustics and hold a Master's Degree in Engineering Acoustics. Holtz Acoustics were appointed by Accrue (Forum) 1 LLP ('the Appellant') in 2017 to provide noise advice in support of an application for planning permission for residential development at the site of the former B&Q store off Great Stone Road, Stretford.

2.0 Trafford Council Noise Evidence Rebuttal

2.1 Concerning paragraph 6.3.

2.1.1 Groundborne re-radiated noise was not assessed in the initial application as the vibration levels recorded during the survey of tram passes were particularly low. Given the nature of the passenger trams and the distance to the proposed building a full assessment was not deemed necessary. Since 2017 neither I nor the Appellant has been asked by the Council to provide a re-radiated noise assessment.

2.1.2 If the Council is now concerned with re-radiated noise levels from tram passes then this can be covered by condition using the criterion in 2.1.4 below. Condition 10 of the draft conditions proposed by the Council includes references to noise and vibration from the Metrolink line which would include re-radiated noise. This condition could be amended to expressly include re-radiated noise from the Metrolink line.

2.1.3 The Association of Noise Consultants (ANC) Measurement and Assessment of Groundborne Noise and Vibration Guidance give details of the likely significant effect associated with ground-borne noise and vibration and provides examples of ground-borne noise criteria adopted on recent major railway infrastructure projects in the UK.

2.1.4 The document classifies groundborne noise levels below 35 dB L_{ASmax} as a 'negligible' impact. This would be the appropriate criterion to adopt for the proposal.

2.1.5 A short re-radiated noise assessment based on results from the spot measurements taken during the vibration survey is included in Appendix A.

2.1.6 Based on PPV spot readings the worst case tram pass did not exceed 35 L_{ASmax} at ground level. I therefore consider a full re-radiated noise assessment is not required. If the Council would like to have a comprehensive re-radiated noise survey undertaken then this can be covered by the Condition referenced in 2.1.2

2.2 Concerning paragraph 7.2.

2.2.1 Maximum noise levels were assessed during the initial application as mentioned in the planning report however the additional detail below should serve to address any additional concerns the Council may have.

2.2.2 Appendix B of this document shows the noise time history of the noise survey undertaken for the initial planning application.

2.2.3 The horizontal line on the noise time history shows the L_{Amax} level which would typically be exceeded more than 10 times a night at the survey position; note these are 5-minute measurement periods. This level is 67 dB L_{Amax}. This is 7dB higher than the ambient noise level used in the noise model therefore the following L_{Amax} levels predicted on each façade are shown below in Table 1.

Table 1. Predicted maximum noise levels not typically exceeded more than 10 times a night, on each façade

Facade	L_{Amax} not typically exceeded more than 10 times a night (dB)
South West	72
South East	68
North West	70
North East	63

2.3 Concerning paragraph 7.14.

2.3.1 Modelling the speakers as a point source offers a worst-case scenario when predicting the noise levels at the façade when using my concert noise survey location as a calibration point.

2.3.2 There appears to be a misunderstanding regarding the differences between the line source and point source propagation when applied to my particular model. I believe this misunderstanding is caused by my calibration point being behind the proposed façade rather than in front of it. My model is predicting noise from the calibration point **towards** the noise source whereas conventionally the noise would be predicted from the calibration point **away** from the noise source. I am satisfied that my assessment is entirely robust in this regard.

Figures 1 & 2 below demonstrate the position:

Figure 1. Line source propagation diagram.

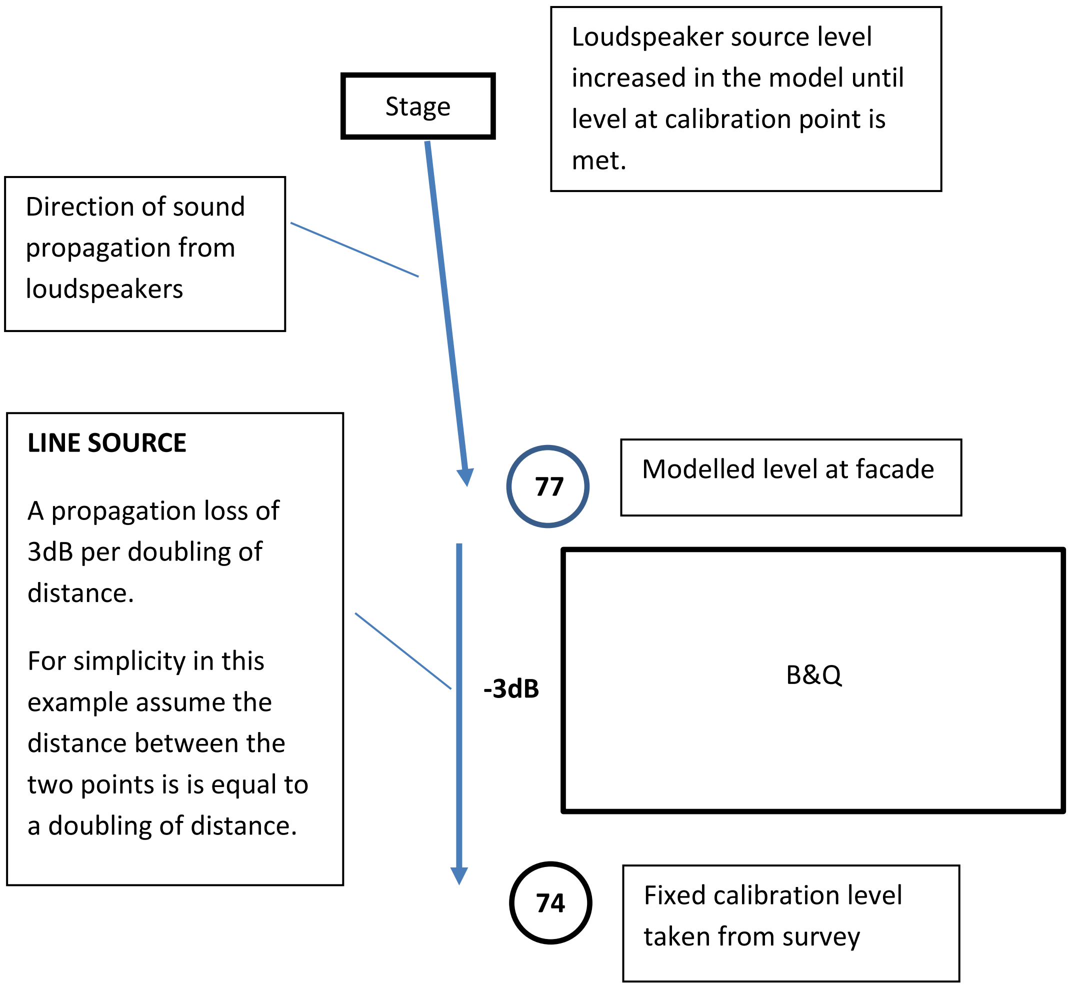
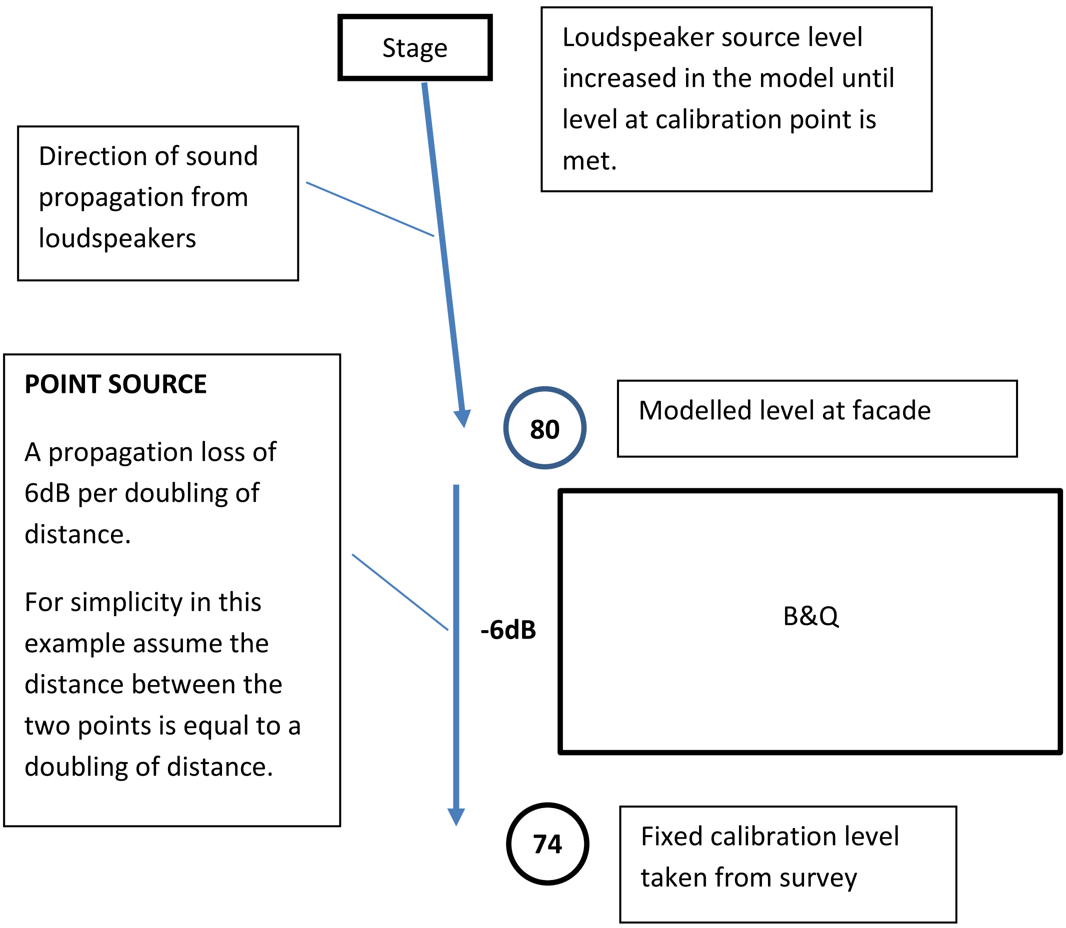


Figure 2. Point source propagation diagram.



2.3.3 It can be clearly seen that using the point source propagation method results in a higher predicted level at the façade and therefore offers a worst-case scenario. Note that the scenario would be reversed if the calibration point and the prediction point were reversed, as in the case of LCCC's survey and model.

2.3.4 The model is only used to predict the level difference between the calibration point and at the proposed façade. The exact levels, placement, number and size of each speaker system are not required to be known. A calibration point takes away this uncertainty.

2.3.5 So long as there is a noise source in the proximity of the stage area and the directivity of the speakers are approximately correct the exact specification and placement of the speakers is not of great significance. This is discussed in Appendix A of my Proof of Evidence, in contrast no modelling details are presented in the Council (or indeed the LCCC) evidence.

2.3.6 I have not presented any stage, speaker or mixing desk levels in the main proof, the noise maps in Appendix G and H were only provided to demonstrate reductions in level at existing buildings to the south. The documents should be read as a whole and the noise maps in the Appendix should not be used out of context to infer levels at speakers, stage or mixing desk. As such the assumption apparently made by Mr Robinson at paragraph 7.12 of his report (and indeed by Mr Fiumicelli in his report) that I have assumed a particular noise level at the mixing desk is incorrect.

2.4 Paragraph 7.17.

2.4.1 A façade grid noise map showing predicted noise levels at all floors is included in Appendix F of my proof of evidence.

3.0 LCCC Noise Evidence Rebuttal

3.1 Concerning paragraph 6.19.

3.1.1 This is the same issue raised by Trafford Council's evidence and it is addressed in 2.3 above.

3.2 Concerning paragraph 7.30.

3.2.1 Table 4 in the Holtz report is labelled as a 'summary table'. The paragraph above this table states that internal noise levels were calculated in accordance with the methodology of BS8233:2014 which requires octave band levels are used. In addition paragraph 4.2.5 points to a sample calculation in the Appendix which also shows that octave band levels were used for calculations.

3.2.2 Therefore, it is misleading to say that only broad band value were used in the calculations in Table 4. I can confirm that full octave band calculations in accordance with the methodology described in BS8233:2014 was used for all of the levels shown in Table 4

3.3 Concerning paragraph 7.38

3.3.1 The noise level at the mixing desk is irrelevant in terms of how my model was used; this is noted also in paragraph 2.3 above. I have not formally presented levels at the mixing desk or anywhere else around the cricket ground as this is outside of the scope of my model which is only concerned with predicting levels between the calibration point and the proposed facade.

3.3.2 The issues raised regarding the point source and line source propagation are also addressed in 2.3 above.

3.3.3 LCCC’s evidence suggests that the speaker system I modelled was ‘not visible from the development’. This is not the case, the stage right speaker has a clear line of sight to the development (at levels above the height of the cricket shop). This is shown in Appendix F where the stage left speaker is shown as an asterisk.

3.4 Concerning paragraphs 7.39 and 7.40

3.4.1 It is generally unclear what parameters were used in this model particularly what calibration level and frequency spectrum was used. It appears the model is independent of the survey data in Table 1 and was instead calibrated using the license limit at Trent Bridge Walk. I question why the concert survey which was taken close to the proposed façade was not used as the calibration level.

3.4.2 7.40 states that in reality the levels in Table 4 would be 2 to 3dB higher due to not modelling a line array and that this would be similar to the level measured during concert survey. If one were to add 3dB to the levels in the Table 4 one would arrive at 89 dBA which is higher than any of the 15min periods shown in Table 1.

Appendix A. Re-Radiated Noise Calculations

Re-radiated noise can be calculated using the Kurzweil method the formula from which is shown below.

$$L_p = L_v - 27$$

Where:

L_p (dB re 20 µPa) is the predicted sound pressure level (L_{ASmax})

L_v (dB re 1 nm/s) is the measured RMS velocity

Many vibration meters do not output RMS velocity or need significant additional signal processing to obtain it. Peak Particle Velocities (PPVs) were taken during the vibration survey, these will be used instead. PPVs are typically much higher than RMS values. The calculations below therefore represents a worst-case scenario, I expect the predicted levels to be significantly lower when using an RMS velocity.

Measurements were taken at the same time and location as the vibration survey detailed in the Acoustic Design Statement included in the planning submission. The highest measured PPVs in each axis during the 1-hour measurement are shown below in Table 2. The corresponding calculated re-radiated noise levels are also shown.

Table 2. Highest measured PPVs and calculated re-radiated noise levels.

Parameter	X-axis	Y-axis	Z-axis
Highest measured PPV	1.1	0.7	1.1
Predicted re-radiated sound level (L_{ASmax})	33	31	33

Appendix B. Noise Time History from Environmental Noise Survey