

**ABRAHAM MOSS LIBRARY & LEISURE CENTRE
CONDITION 11 – NOISE BREAK OUT****LP44107-RAM-B01-XX-RP-Y-43003**

Project name **Abraham Moss Leisure Centre**
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1. Introduction

Planning permission 125033/VO/2019 was granted in March 2020 for Abraham Moss Leisure Centre. The following condition relates to noise break-out from the leisure centre:

- 11) *Notwithstanding the noise assessment prepared by Ramboll (dated 2/08/2019) stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019, (a) prior to the first use of the development hereby approved, a scheme to secure a reduction in the level of noise emanating from the building shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved scheme shall be implemented prior to the first use of the development hereby approved.*

Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 10dB below the LA90 (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63Hz and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB, respectively.

(b) Prior to the first use of the development a verification report will be required to validate that the work undertaken throughout the development conforms to them recommendations and requirements in the approved acoustic consultant's report.

The report shall also undertake post completion testing to confirm that acceptable criteria has been met. Any instances of non-conformity within the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Reason - To safeguard the amenities of the occupiers of nearby accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.

The Leisure Centre will not be used for entertainment (e.g. school discos or parties), but music is expected in the dance studio and gym, and has therefore been assessed against these criteria to address Part a) of the condition.

Nearest Properties

The nearest noise sensitive properties are shown on Figure 1 and listed below:

- Houses on Greenstead Avenue, approximately 45m from the leisure centre
- Houses on Woodlands Road, approximately 90m from the leisure centre

It is noted that the ground level at these houses is lower than ground level of the leisure centre site. There will therefore be a significant degree of screening to lower floor rooms and gardens, though in the case of Greenstead Avenue at least, there are dormer windows at upper floors that will have some view of the site.

At Woodlands Road there is a solid existing timber fence along the tramline that provides further screening.

2. Noise Survey

Ramboll measured noise levels at positions representative of the nearest noise sensitive properties.

Daytime measurements were made between 15:00 and 18:00h on Wednesday 20 March 2019 and night time (early morning) measurements between 06:00 and 07:00h on Tuesday 21 May 2019. The levels measured in the early morning are expected to be similar to those that could be expected in the late evening (up to 22:00h) based on our observations of activity in the local area.

Noise levels were measured at the locations shown below.



Figure 1 – Noise Measurement Positions and Results

3. Predicted Noise Break-out

There is likely to be amplified music in the dance studio and possibly the gym, though this would not be at the level of a nightclub or bar for example. We have assessed this against the criteria of 10dB lower than the background level, L_{90} , in each octave band, measured at the nearest noise sensitive location.

A typical noise spectrum for a dance studio from Ramboll library data, adjusted to a level of 85dB L_{Aeq} inside the studio, is given below. It is very unlikely that noise levels in the dance studio, or the gym, would be as high as this in practice. Such levels would also require noise exposure of staff to be considered.

The glazing proposed for the dance studio and gym is Guardian LamiGlass with a 6mm outer pane, 16mm cavity and 8.8mm inner pane. The sound insulation performance of this glazing is 33dB R_w+C_{tr} . The glass manufacturers octave band sound insulation performance is shown in the table below. The certificate of Acoustic Performance is included in Appendix B. The space is mechanically ventilated and cooled.

The roof of the dance studio and gym is a 100mm insulated Kingspan panel, with a plasterboard ceiling in the Dance Studio (12.5mm Knauf Wallboard) and a lay in grid ceiling in the Gym rated at 31dB R_w (Ecophon Combison Duo A). Sound reduction test data for a Kingspan KS1000 RW/40 with particle board ceiling (11.7kg/m²) has been used to represent the sound insulation of these roofs.

External walls are also a 100mm Kingspan insulated panel with an internal lining of 1 layer of 15mm dense plasterboard on independent framing. Sound reduction test data for a Kingspan AWP/60 with plasterboard lining (10kg/m²) has been used to represent the sound insulation of the external façade.

The octave band L_{90} is shown for the lowest night time (early morning) background noise level measured (at 06:08) at Position 3, representative of the houses on Greenstead Avenue.

	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	dB(A)
Typical Dance Studio noise levels, dB L_{Aeq}	81	86	86	83	80	69	67	85
Sound insulation of 6/16/8.8 glazing, dB SRI	23*	26	27	36	43	42	53	33dB $R_w + C_{tr}$
Sound insulation of facade, dB SRI	14	17	31	40	48	46	56	31 dB $R_w + C_{tr}$
Sound insulation of roof, dB SRI	17	27	39	44	49	57	67	48 dB R_w
Noise level expected at Greenstead Avenue, dB L_{Aeq}	35	34	27	15	6	0	0	22
Lowest measured background level, dB L_{90}	50	46	41	40	37	31	25	43
Difference	-15	-12	-14	-25	-31	-31	-25	-21

*performance at 63Hz estimated based on data for similar build-ups

Table 2 – Approximate music levels from Dance Studio at nearest receptor (Greenstead Ave)

4. Conclusions

It can be seen from the above that with the glazing, façade and roof at the Leisure Centre, noise from music etc. in the Dance Studio and Gym would be more than 10dB lower than the typical background noise level at the nearest noise sensitive properties approximately 45m away on Greenstead Avenue, even with levels much higher than would typically be expected in these spaces.

The levels above do not include the benefit of any screening between the Leisure Centre and houses, which may provide additional attenuation.

Appendix A – Noise Survey Details

Time and Date: 20/03/2019 15:30 – 18:31
Equipment: NTi XL2 TA Sound Level Analyser (serial #A2A-09209-E0)
Calibrator CAL200 (serial #16089)
Personnel Present: Dominic Young (Ramboll)

Time and Date: 21/05/2019 05:57 – 06:37
Equipment: Bruel & Kjaer 2270 Sound Level Analyser (serial #2644605)
Calibrator type 4231 (serial #2642788)
Personnel Present: Ryan McNulty (Ramboll)

During both surveys the weather was dry, with no standing water on the roads. Wind speeds were low during all periods.

A summary of survey results is given in this report (see figure), and full survey results are available on request.

Appendix B – Glazing Test Certificate



Certificate of Acoustic Performance

Guardian LamiGlass

The following data is provided as an indicative performance of the sound reduction indices in an insulating glass unit configuration as follows;

6mm Float glass

16mm 90% argon 10% air

8.8mm (44.2) PVB Laminated float glass

The data contained within this certificate relates to the insulating glass unit only.

Sound Reduction Indices - dB									
Frequency - Hertz						$R_w(C;C_T)$	R_w	$R_w + C$	$R_w + C_T$
125	250	500	1000	2000	4000				
26	27	36	43	42	53	38(-1;-5)	38	37	33

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