Highgate Newtown Community Centre and Fresh Youth Academy

Acoustic Report

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Community Investment Programme

Camden

HIGHGATE NEWTOWN COMMUNITY CENTRE

ACOUSTICS REPORT FOR PLANNING

Acoustics Report A973 R03B

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1 Introduction

Ion Acoustics is appointed to advise RCKa Architects, McBains and the applicant, London Borough of Camden Development Division on the redevelopment of the existing Highgate and Newtown Community Centre (HNCC). This report describes the noise impact of the scheme in relation to a Section 73 application which is being made to modify the extant consent following proposed revisions to an earlier redevelopment scheme, which was consented under application reference 2016/6088/P.

The proposed scheme will involve the demolition of the existing community centre facilities and will provide a replacement community centre and 41 residential units on the site. The scheme will be close to nearby existing housing on Bertram and Winscombe Streets. This report provides an addendum to the previously submitted report A973 R01A from 2016 and describes:

- The 2016 noise survey made to determine existing noise levels in the area
- Planning conditions and noise limits imposed by Camden Council
- Discussion of music noise emissions
- Discussion of plant noise emissions.

2 The Site and its Surroundings

The site and the development proposals are shown below in Figure 1.

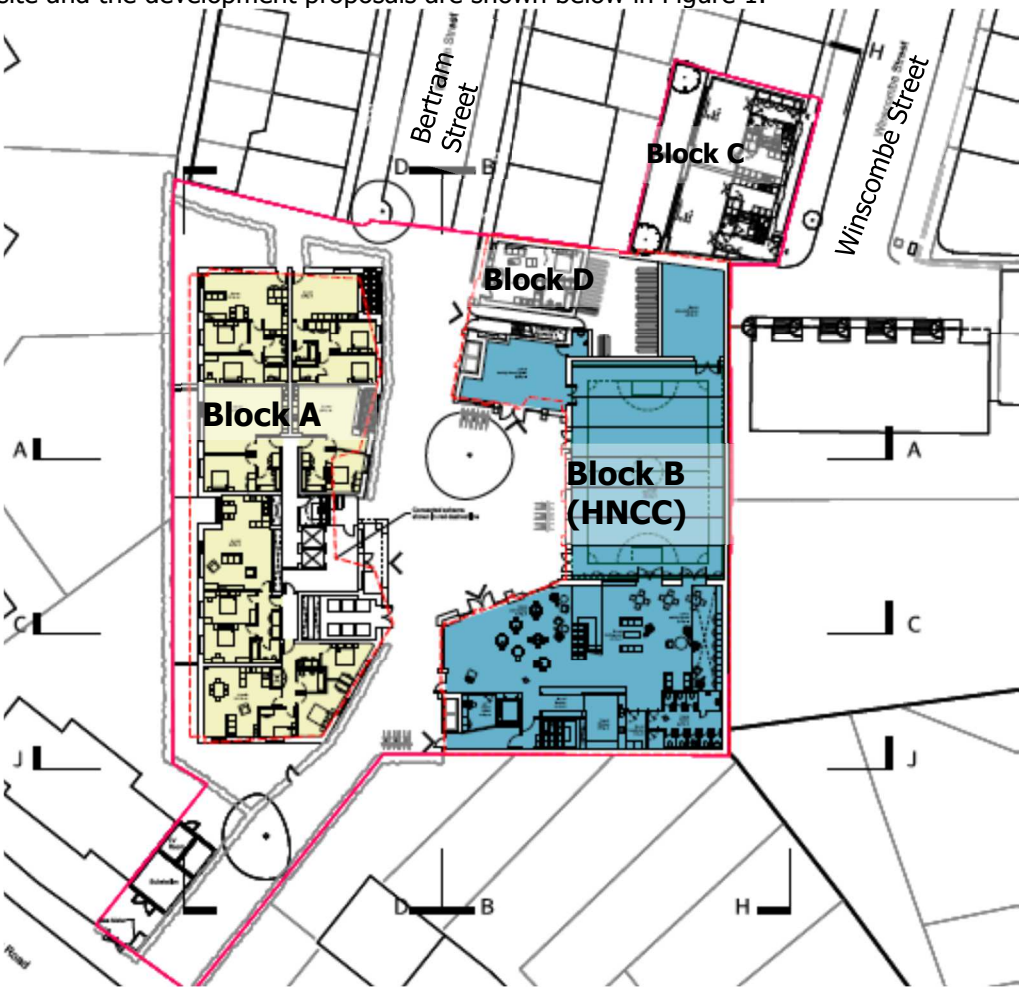

Figure 1 – Proposed Site Layout (Ground Floor)

The existing building is a community centre located in several rather dilapidated buildings and includes two residential units. The proposed development has new residential accommodation in three blocks: Block A; in Block C, a conversion of the former Peoples' Mission Gospel Hall; and, in Block D which adjoins the community and which is likely to feature a gym with a studio flat at ground floor level and six one-bedroom flats above. The community centre facilities occupy Block B and part of Block D and include:

- A café, activity area and a double-height multi-use hall at ground floor of Block B.
- A gym in the ground floor of Block D
- Activity rooms, meeting rooms and offices on the first and second floors;
- Further facilities for the Fresh Youth Academy (FYA) on the third floor including a small recording studio;

The proposed uses of the community centre generally replicate the wide range of activities already taking place at the existing centre. This includes football, basketball, keep-fit and yoga etc in the existing sports hall and various painting, pottery and wood-working activities in the art room and studios. There are also occasional community outdoor events which generally take place in the daytime; these would also continue in a similar form to currently. Therefore, the general use and activities of the centre will not change significantly from the existing baseline condition.

In respect of the consented scheme, similar facilities are being provided within Block B. However, the roof terrace, which was part of the consented development, is no longer part of the proposals. This will reduce the potential for outdoor noise.

The proposed main spaces within Block B are naturally ventilated however there will be some mechanical services plant in a basement plant room including CHP boilers. Above ground there are various small extract fans for the kitchen and toilet etc.

3 Planning Conditions

Planning conditions for the development are set out in the decision notice dated 30th June 2018. Those relevant to noise are Conditions 23 identified below.

23 Sound insulation

Prior to commencement of the above ground construction works, details shall be submitted to and approved in writing by the Council, of an enhanced sound insulation value DnT,w and L'nT,w of at least 5dB above the Building Regulations value, for:

i) the floor/ceiling/wall structures separating different types of rooms/ uses in adjoining dwellings, namely [eg. living room and kitchen above bedroom of separate dwelling].

ii) the floor/ceiling/wall structures separating the residential and community centre uses

Approved details shall be implemented prior to occupation of the development and thereafter be permanently retained.

Reason: To ensure that the amenity of occupiers of the development site is not adversely affected by noise.

24 Amplified music/voices

Neither music nor amplified loud voices emitted from the non-residential parts of the built development shall result in more than a 5dB increase from existing ambient noise levels to nearby residential properties.

Reason: To ensure that the amenity of occupiers of the development site/ surrounding premises is not adversely affected by noise in accordance with policy DP28.

Reason: To ensure that the amenity of occupiers of the development site is not adversely affected by noise.

25 Noise levels

The noise level in rooms in the residential development hereby approved shall meet the noise standard specified in BS8233:2014 for internal rooms and external amenity areas.

Reason: To ensure that the amenity of occupiers of the development site and surrounding premises is not adversely affected by noise and vibration.

26 Plant and equipment

The external noise level emitted from proposed plant, machinery or equipment at the development hereby approved shall be lower than the typical existing background noise level by at least 5dBA, by 10dBA where the source is tonal, as assessed according to BS4142:2014 at the nearest and/or most affected noise sensitive premises, with machinery operating at maximum capacity.
Reason: To ensure that the amenity of occupiers of the development site/ surrounding premises is not adversely affected by noise from mechanical installations/ equipment.

Reason: To ensure that the amenity of occupiers of the development site/ surrounding premises is not adversely affected by noise from plant/mechanical installations/ equipment.

The intention is for the current design to comply with the same planning conditions such that there is no significant change in the noise impact compared with the consented scheme. The planning conditions are now discussed in turn.

3.1 Condition 23 – Sound Insulation

Internal sound insulation in and between dwellings is usually a matter for building control but in this case the planning condition requires standards which are 5dB higher than those set out in Approved Document E. The condition applies to both residential block (A) and a section of wall

between the sports hall and the 1st floor of Block D where there is a living space of a flat. The required standards are set out in Table 1 below.

Table 1 – Sound Insulation Standards

Element	Sound Insulation Requirements	
	Approved Document E Requirement (New Build)	**Planning Condition 23 (5dB better than Building Regulations)**
New Build Separating walls	≥45 dB $D_{nT,w}+C_{tr}$ airborne	≥50 dB $D_{nT,w}+C_{tr}$ airborne
New-Build Separating floors	≥45dB $D_{nT,w}+C_{tr}$ airborne ≤62dB $L'_{nT,w}$ impact	≥50dB $D_{nT,w}+C_{tr}$ airborne ≤ 57dB $L'_{nT,w}$ impact
Walls in Converted Properties	≥43 dB $D_{nT,w}+C_{tr}$ airborne	≥48 dB $D_{nT,w}+C_{tr}$ airborne

Airborne sound describes sounds which travel through the air before entering the structure such as voices and televisions. Impact sound describes sounds which occur as a result of a direct impact on the structure such as footsteps. For airborne sound, the higher the $D_{nT,w}+C_{tr}$ value, the better the sound insulation whereas for impact sound insulation, the converse is true; the lower the $L'_{nT,w}$ value the better the impact sound insulation.

To discharge the planning condition, it is sufficient to submit a report demonstrating that the proposed construction should comply with the planning requirements (a commissioning test report is not required). However, for Building Regulations compliance pre-completion testing would be required unless "Robust Details" are used.

To achieve the planning condition, it would be possible to adopt certain Robust Detail constructions. Robust Details are constructions which have been devised and tested extensively to achieve a performance which is at least 5 dB better than the Approved Document E values *on average*, and with every individual result at least 2dB better. If Robust Details are used then pre-completion testing is not necessary. However the exact Robust Detail must be followed with the correct flanking conditions, proprietary products where relevant and junction details. There is also compliance procedure to be followed with a plot registration fee payable and a system of check-lists etc.

Although Robust Details can achieve a +5dB improvement *on average*, it is permissible for individual tests to be only 2dB better. Therefore the adoption of Robust Detail constructions will not necessarily ensure compliance with the planning condition. However the Robust Details website, also lists certain combinations of constructions which achieved +5dB improvement in all cases[1]. This is effectively the same numerical standard as the planning condition requires. Therefore one way to ensure compliance with the planning condition is to build Robust Detail constructions which comply (in combination of floors and walls) with a +5dB improvement. Again if the constructions and associated details are followed exactly and the plot is registered with Robust Details then pre-completion testing for Building Regulations would not be necessary.

[1] Robust Details Combinations for Credits under CfSH http://www.robustdetails.com/the-handbook/loadbearing-masonry-combinations

An enhanced separating wall will also be required between the converted houses in Block C and for the 1st floor interface between Block B and Block D.

3.2 Condition 24 Entertainment Noise

The noise limits for music and voices are set in relation to the existing ambient noise level dB L_{Aeq}. The wording of the limit "shall not increase by more than 5 dB" implies that existing ambient plus the additional music noise are compared to the noise with no music noise. By decibel addition, this required the music noise during the daytime and evening to be no greater than 4 dB over the existing ambient noise. We do not recommended that the centre operates after 23.00 at night although the planning condition does not indicate any time period.

It is proposed to interpret that the planning limit applies to all internal entertainment related activity with amplified music. However, occasional daytime outdoor events taking place at the community centre would not be required to meet this limit. Outdoor community events are currently held at the centre occasionally during the daytime and this is expected to continue in the future. These would take place in the courtyard as per the existing use. The roof terrace, which was part of the consented redevelopment, is no longer part of the proposals.

The existing ambient noise levels were determined from a noise survey. This is discussed in Section 4 below together with derived noise limits.

3.3 Condition 25 Noise Levels

Condition 25 requires noise levels in the residential part of the development to meet BS 8233: 2014 noise standards. There are set out in Table 2.

Table 2 –Ambient Noise Levels from BS 8233: 2014

Location	Activity / Condition	Day (07:00 to 23:00)	Night (23:00 to 07:00)
Living rooms	Resting	35 dB $L_{Aeq,\ 16\ hour}$	--
Dining room/area	Dining	40 dB $L_{Aeq,\ 16\ hour}$	--
Bedrooms	Sleeping - night Resting - day	35 dB $L_{Aeq,\ 16\ hour}$	30 dB $L_{Aeq,\ 8\ hour}$
Outside	Daytime Desirable Limit	50 $L_{Aeq,\ 16\ hour}$	--
Outside	Daytime Upper Guideline Value	55 dB $L_{Aeq,\ 16\ hour}$	--

In this case, the residential accommodation is set back from busy roads and the apartments are being provided with an MVHR system which would enable windows to be kept closed. Therefore there will be no difficulty with achieving the internal noise levels from BS 8233: 2014. Note that noise from the MVHR system must also meet these limits. We would recommended specifying the MVHR system noise some 3 dB below the Table 2 noise limits (that is 27 dB L_{Aeq} in bedrooms and 32 dB L_{Aeq} in living rooms) to ensure that the combined level (MVHR noise + environmental noise transmitted from the exterior) meets the BS 8233: 2014 noise limits.

Based on the noise survey (discussed below), noise levels in a residential garden were 52 dB L_{Aeq} over a 16-hour day. Therefore noise levels in most external areas are likely to be within the upper guideline value of BS 8233.

3.4 Condition 26 Plant Noise Limits

According to the planning condition, the plant noise emissions limits are set in relation to the existing background noise (dB L_{A90}). For normal plant noise with no specific character corrections, the limit is 5dB below the typical background noise. Following the principles of BS 4142 this would apply to the period of operation and separate assessments are required for the day and night. It is likely that some of the plant including kitchen extract fans etc would not operate at night. Therefore different noise limits will be set for different time periods.

4 Noise Survey

A baseline external measurement survey was undertaken at the site on 10th and 11th March 2016. The survey included measurements of the background noise in the communal garden of Nos 24 to 32 Winscombe Street. It is not thought that there have been any significant changes to the area that would change the baseline noise levels since this time. Therefore the noise survey is still valid.

A noise meter was set up in the communal gardens of Nos 24 to 32 Winscombe Street to determine the existing background noise levels. The microphone was located to the west of the gardens, approximately 4m from the wall separating the gardens from the HNCC. Photos of the measurement position are provided in Appendix A.

A Larson-Davis LD820 sound level meter with 01 dB BAP 21 weatherproof wind shield was used for the survey and calibrated with a Brüel & Kjær Type 4231 calibrator. The sound level meter was set to log various noise indices in consecutive 15-minute periods including the ambient noise level dB L_{Aeq} and the background noise dB L_{A90}. The monitoring procedure followed the principles of BS 4142:2014.

4.1 Background Noise Results

The results are shown in Figure 2 below and reported in Table 3 for the daytime, evening and night-time periods.

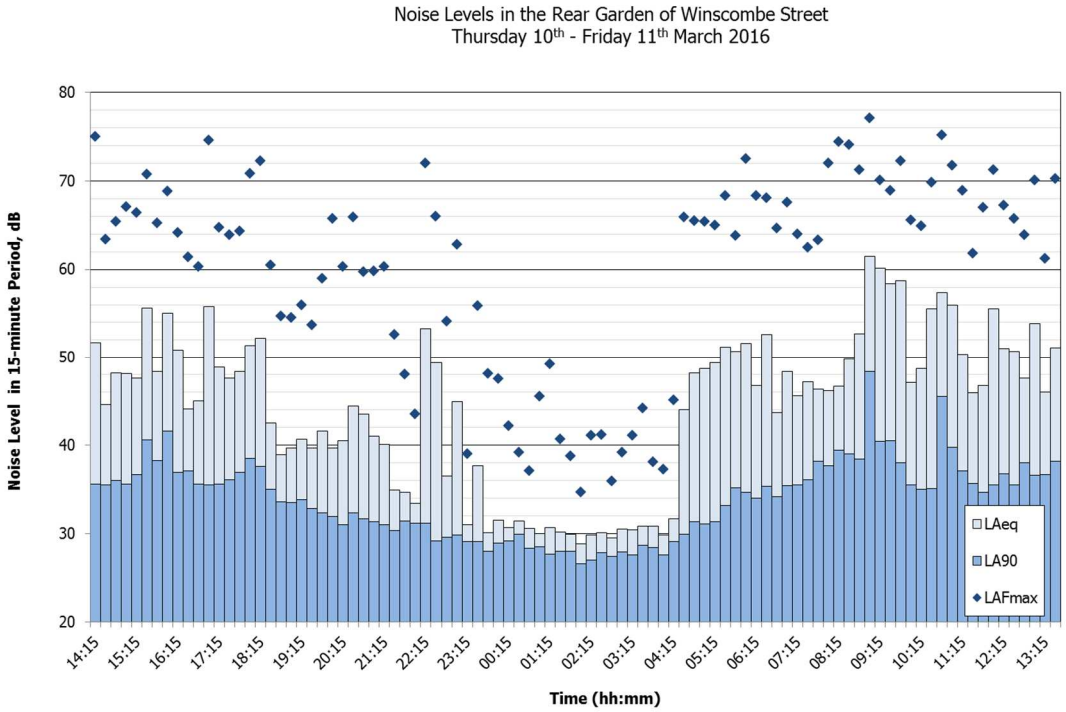

Figure 2 – Time History Showing Noise Levels in the Rear Garden of Winscombe Street

Table 3 – Measured Noise Levels at 24 to 32 Winscombe Street

Period	Average[1] Ambient $L_{Aeq,T}$, dB	Minimum Ambient $L_{Aeq,15min}$ dB	Maximum $L_{AMax,\ F}$ dB	Average[1] Background Noise L_{A90}, dB
Day	53	39	77.1	37
Evening 19:00 to 23:00	45	33	72.0	32
Night-time 23:00 to 07:00	45	29	72.5	30
Note 1: The ambient noise level is reported as the logarithmic average, whereas the background noise is reported as the arithmetic average. The maximum level is simply the maximum instantaneous level during the time period.				

Noise levels are relatively low for an urban location. Ambient and maximum noise levels during the night include the effect of the dawn chorus.

4.2 Plant Noise Limits

At this stage in the project, the plant required to service the building has not been selected, However based on the noise survey and planning condition No 26, the plant limits at the nearest housing can be determined. Table 4 shows the limits at the nearby housing; these would apply at 1m outside the windows of noise sensitive rooms. Note these limits will also apply at the new residential accommodation provided as part of this development

Table 4 – Proposed Plant Noise Limits

Period	Average Background Noise L_{A90}, dB	Noise Limit dB L_{Ar}
Day 07:00 to 19:00	37	32
Evening 19:00 to 23:00	32	27
Night-time 23:00 to 07:00	30	25

The proposed noise limits are very low and will provide a good standard of amenity as noise levels inside dwellings will be significantly below upper guidance noise levels from BS8233:2014. In addition complying with these limits will also enable a BREEAM credit to be achieved under Pol05 which concerns plant noise emissions.

For these limits to apply, the plant must not exhibit tonal characteristics; according to the planning condition, tonal plant noise would have noise limits 5 dB below these. Standard mechanical plant as is expected to be proposed here has noise levels that are typically broadband in nature and the lower limits would not be expected to apply.

4.3 Noise Survey – Internal Activity Measurements

During the survey, noise measurements were made within the sports hall of the existing HNCC during what is typically considered one of the noisier activities, football practice. There were two consecutive football sessions; the first catering for 16 children, around 5 years of age between 16:00hrs and 17:00hrs, the second was approximately 30 children up to 11 years of age between 17:00hrs and 18:00hrs. It is noted that the one of the external doors of the sports hall was open during the activity; all windows were closed for the duration of the survey.

The measurements were made in consecutive 5 minute periods in terms of the L_{Aeq}, L_{A90}, L_{Amax} parameters and frequency data. A Norsonic 140 Sound Level Meter was used, calibrated with a Brüel & Kjær Type 4231 calibrator. The meter was set up in a corner of the room where it was out of the way of the activity. The noise levels of the two football sessions are presented separately in Table 5 to identify the difference between the noise level generated by the number / age of the participants. Noise levels have been reduced by 3dB as the corner location would have increased noise levels relative to a location in the centre of the room.

Table 5: Internal Noise Measurement Summary

Session	Time	Noise Description	Average L_{Aeq}, dB	Max L_{Amax}, dB	Mean L_{A90}, dB
1st Session Up to 5yrs	16:00 to 17:00	Identified noise sources include shouting by the coach, whistles and occasional 'yells' from children. Not much in the way of impact noise of footballs against the walls etc.	72.6	97.5	57.3
2nd Session Up to 11yrs	17:00 to 18:00	Similar to the preceding session though the children were more 'boisterous' and were subjectively considered louder. Activity included a number of events where balls were kicked against walls.	73.8	99.8	62.6

Table 5 above indicates a small increase in the ambient noise level between the 1st and 2nd sessions with the second, older age group slightly louder than their younger counterparts in this particular instance, although only a 1dB difference is not significant.

5 Compliance with Planning Conditions

5.1 Condition 23 – Sound Insulation

As discussed above, the strategy for complying with this condition will be to use those Robust Details that can achieve a 5 dB improvement over the Approved Document E standards. A report will be submitted to the Council to discharge this condition when the design details are finalised.

5.2 Music / Activity Noise

In general most of the activity of the building is relatively quiet and will be similar to existing activities that take place. However, there are some areas where higher music-type noise levels will occur at times. These are the main hall, the gym and the recording studio.

The recording studio is a small enclosed space with mechanical ventilation provided with no openings in the facade and no windows. Part of the principle of the design for this space is to provide good sound insulation to control noise from other parts of the centre being heard inside the studio. This will also provide good sound insulation and noise emissions can therefore be contained.

Similarly, the gym will be mechanically ventilated and is located away from existing residents. This space could therefore be used for moderate levels of amplified music. Amplified music however would not be permitted in activity rooms which are ventilated with openable windows. Most of these activity rooms appear to have a dedicated function such as pottery and woodworking and therefore amplified music is unlikely to be a part of the activity. Some background music may however be permissible.

The Main Hall activities will include sports activities and potentially some third party lettings which could include some music use such as aerobics (although not parties, weddings, DJs, live bands etc). This main hall music use is the most significant music source and calculations will be necessary to determine the sound insulation required of the building envelope, especially the roof. This is likely to feature a relatively light-weight construction with sky lights. It will also be

necessary to investigate how some form of attenuated natural ventilation can be accommodated within the building envelope. This will be developed with the design team.

It is recommended that the main hall be fitted with a noise limiter to control music noise levels. For best results an in-house sound system could be installed with its own dedicated compression / limiter.

In addition, it is recommended that an absorptive ceiling is provided in the hall. This would typical comprise slatted or perforated timber treatments with mineral fibre behind. This should typically provide quite high absorption (ideally Sound Absorption Class C or better).

5.3 Noise Levels incident on the residential parts.

As stated above, in Section 3.3, existing ambient noise levels are not particularly high and an MVHR system is to be provided such that noise levels in the rooms can meet the BS 8233: 2014 noise limits. There is no additional work required to meet the planning condition.

5.4 Plant Noise

To meet the planning condition plant noise levels should meet the limits set out in Section 4.2. Calculations can be carried out to determine compliance and specify noise control treatment once details of the plant are known. Alternatively, these limits could be specified in tender documents so that the contractor and their M&E subcontractor is made responsible for meeting the limits.

6 Summary

This report describes noise issues relating to the Section 73 application for the revised HNCC proposal. It will be possible to meet the four existing planning conditions relating to noise.

- Condition 23 requires enhanced sound insulation and a report to be submitted to the Council when construction details are finalised.
- The building is in a quiet area such that existing external environmental noise does not require any special mitigation to meet Condition 24 for in respect of the new housing especially as an MVHR system will be provided such that windows can be kept closed.
- Noise from amplified music and voices generated internally can also be controlled by the provision of appropriate sound insulation to the building envelope. Further calculations will be required to determine the sound insulation required, especially for the hall.
- Planning condition No 26 in respect of plant noise can be addressed by setting plant noise limits which have been derived from the noise survey. Noise control treatment can be specified when plant selections are available to ensure these limits are met.

Appendix A – Noise Monitoring Location

External Monitoring Location

Monitoring Location Looking West

Monitoring Location Looking North

Appendix A – Noise Monitoring Location

Monitoring Location Looking East

Monitoring Location Looking South West