TECHNICAL NOTE IN RESPECT OF THE PROPOSED GLAZING SPECIFICATION FOR THE PROPOSED CHANGE OF USE DEVELOPMENT AT 20 CHURCH STREET, TWICKENHAM

This Technical Note has been produced in response to the refusal of the proposed change of use development at 20 Church Street, Twickenham, TW1 3NJ (Reference 24/2677/GPD26). The change of use will comprise of the conversion of the first floor Pilates Studio (Class E) and second floor offices (Class E) to four residential units (Class C3) in total.

ACCON previously carried out a Noise Impact Assessment (Reference A5356/N/01, dated 11th October 2024), which outlined measures to address entertainment noise from the Fox Public House (P.H). The noise related reasons for refusal of the change of use application are detailed below:

"*The Councils Environmental Health Officer has reviewed the submitted NIA and notes that whilst the approach is generally acceptable, a limit of NR 30 is normally sought during day time for habitable rooms, reducing to 25 NR where there is distinguishable tone such as from entertainment noise. Further, with the Premises License for the public house allowing for live music up to 23:30, the License Premises Holder confirms live music often goes into the nighttime period, for example during Match Days. For the night time period the Noise Rating Curve NR20 for bedrooms, taking account of potential tonality would be sought. The submitted Noise Impact Assessment does not assess noise for the period between 23:00 to 23:30.*"

ACCON note that the Premises Licence allows live music up to 2330 hrs and whilst the advertised music events are shown to finish at 2300 hrs and during those periods when ACCON carried out noise measurements (as detailed in the previous Noise Impact Assessment, Reference A5356/N/01), live music was not recorded beyond 2300 hrs. This Technical Note addresses the assumption that the live music noise could extend through to 2330 hrs and that the worst-case music noise levels as previously recorded could occur during the period 2300 hrs to 2330 hrs.

Target Sound Reduction in Respect of Entertainment Noise Arising from the Fox P.H.

The Environmental Health Officer (EHO) has specified that NR25 should be achieved during the daytime period (0700 hrs – 2300 hrs) and that NR20 should be achieved during the night-time period (2300 hrs – 0700 hrs). **Tables 1** and **2** below identify the target sound reduction to achieve NR25 and NR20 whilst entertainment noise is emanating from the Fox P.H. Ancillary noise was noted to occur regularly throughout the evening and into the early hours of the night on the Friday and Saturday (up until 0030 hours, the closing time of The Fox P.H. on Fridays and Saturdays), primarily consisting of people talking outside the premises.

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Table 1: Target Sound Reduction Indices for NR25

	Octave Band Frequency (dB)							
	31.5 Hz	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**
Music Noise Level Measured at MP1	56	73	80	75	73	66	63	57
NR25 Curve	72	55	44	35	29	25	22	20
Target Sound Reduction	Note 1	18	36	40	44	41	41	38

Note 1: No sound reduction is required as the event noise level is below the NR25 Curve.

Table 2: Target Sound Reduction Indices for NR20

	Octave Band Frequency (dB)							
	31.5 Hz	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**
Noise Level Measured at MP1	56	73	80	75	73	66	63	57
NR20 Curve	69	51	39	31	24	20	17	14
Target Sound Reduction	Note 1	22	41	44	49	46	46	43

Note 1: No sound reduction is required as the event noise level is below the NR20 Curve.

Mitigation

The proposed change of use site currently has a single glazed sash window system installed.

Table 3 presents the required sound reduction to achieve the NR Curves as identified in **Tables 1** and **2**, the octave band sound reduction of the current window system, and also the required octave band sound reduction in order to comply with the NR25 and NR20 target levels in all habitable rooms on the south façade which are affected by entertainment noise from The Fox P.H. **Table 3** also identifies the margin of exceedance of the required performance, with a negative value indicating that the required sound reduction value has not been met.

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Table 3: Current Window System

Glazing System	Octave Band Frequency (dB)							
	31.5 Hz	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**
Required sound reduction to achieve NR25 identified in **Table 1**	-16	18	36	40	44	41	41	38
Required sound reduction to achieve NR20 identified in **Table 2**	-13	22	41	44	49	46	46	43
Existing Standard Single Glazing (4mm Thickness)	Note 1	Note 2	17	20	26	32	33	26
Margin of Exceedance (NR25)	-	-	-19	-20	-18	-9	-8	-12
Margin of Exceedance (NR20)	-	-	-24	-24	-23	-14	-13	-17

Note 1: No additional requirement for acoustic performance to achieve NR25 or NR20.
Note 2: Likely to exceed performance requirement however no data available.

Table 3 indicates that the current window system (when closed) would not achieve the required sound reduction performance, and therefore the installation of an inner secondary double glazing window system is recommended in order to comply with the 'Agent of Change' principle.

In order to specify a secondary glazing window system, the existing single glazed windows need to be taken into account as part of the overall sound reduction. As a worst-case scenario it has been assumed that the existing single glazed windows will only provide an additional 5 dB reduction for each octave band frequency as part of the overall glazing sound reduction package. **Table 4** identifies the required reduction to meet the NR25 daytime criterion and the NR20 night-time criterion and a proposed glazing specification which takes into account the contribution of the existing single glazed window. Additionally, the exceedance i.e. overperformance of the proposed glazing system, over NR25 and NR20 is provided in **Table 4**.

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Table 4: Glazing Specifications

Glazing System	Octave Band Frequency (dB)							
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
Required Reduction to Achieve NR25	-	18	36	40	44	41	41	38
Required Reduction to Achieve NR20	-	22	41	44	49	46	46	43
AGC 88.2 st / 16mm / 66.2 st - Thermobel Stratophone with existing single glazed window system.	Note 1	Note 2	41	49	53	57	60	74
Margin of Exceedance (NR25)[3]	-	-	+5	+9	+9	+16	+19	+36
Margin of Exceedance (NR20)[3]	-	-	0	+9	+9	+11	+14	+31

Note 1: No additional requirement for acoustic performance to achieve NR25 or NR20.
Note 2: Likely to exceed performance requirement however no data available.
Note 3: Overperformance of Proposed Glazing System

Ventilation

Table 6.1 of the ACCON report (ref: A5356/N/01) demonstrated that the specified internal noise levels cannot be achieved by relying on open windows used for ventilation. It is recommended that an alternative ventilation strategy, such as a Mechanical Heat Recovery System (with cool air bypass), be implemented to ensure compliance with the ventilation requirements of Approved Document F of the Building Regulations.

Conclusions

Target façade octave band sound reductions have been identified specifically in respect of mitigating entertainment noise arising from the Fox P.H on the southern façade of the development. The target octave band sound reductions are based on achieving as a worst-case the noise rating curves NR25 and NR20 in habitable rooms. This is achieved through the use of the proposed secondary glazing system and AGC 88.2 st / 16mm / 66.2 st - Thermobel Stratophone installed behind the existing single-glazed sash window system, which has been deemed suitable for meeting these requirements. The implementation of the proposed glazing scheme would ensure that the 'Agent of Change' Principle is adequately addressed and is entirely in line with The Fox Public House agent's recommendations.

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