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PROJECT TECHNICAL MEMORANDUM

Project : 32-38 Oldham Road, Manchester

Our Ref : 25227-PTM2-AGJ-R1

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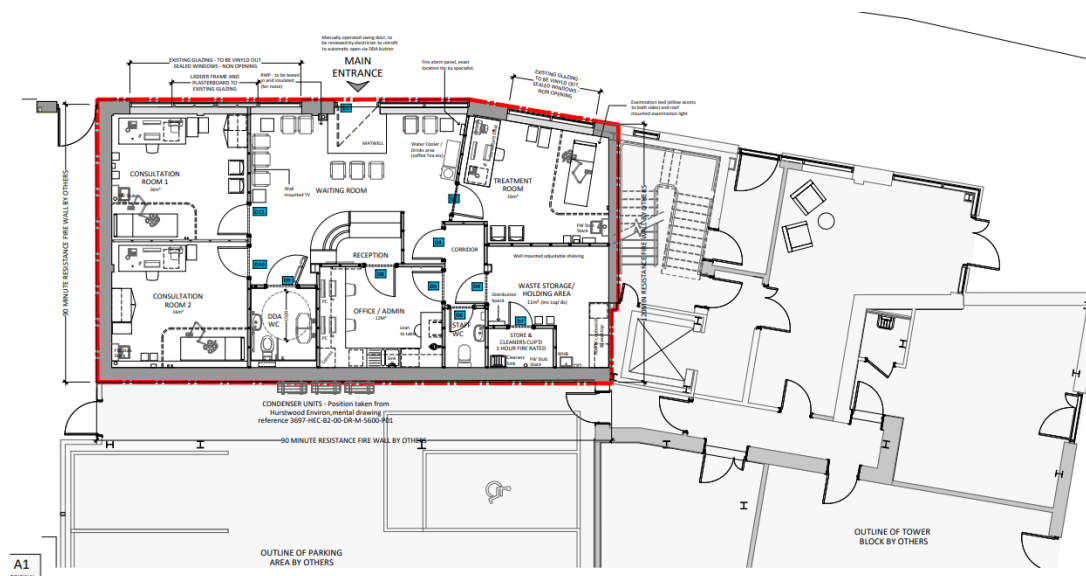
Issued to : ABGI Construction Limited

RE: OLDHAM ROAD URGENT CARE CENTRE EXTENDED OPERATIONAL HOURS: NOISE ASSESSMENT

This project technical memorandum considers the potential for noise impacts on first floor Deluna Apartment residents from the operation of the ground floor Urgent Care Centre should opening hours be extended to allow for 24/7 operation.

1.0 General Arrangement

The Urgent Care Centre occupies the ground floor commercial unit of the Deluna Apartments building on Oldham Road, Manchester. The facility is already in operation and comprises a large central waiting area with reception desk, 3nr medical consultation/treatment rooms, a staff office / kitchen, WCs and waste store room (see below).



Ground Floor Layout - Urgent Care Centre facility

The facility does not contain any specialist medical machinery capable of generating noise. The only notable sources of operational noise are understood to comprise:-



1. Ventilation & air-conditioning building services systems.
2. Background music in the waiting area.
3. Staff/customer conversations.
4. Use of staff kitchen (sink, coffee machine).
5. Use of WCs (sinks, toilet flushing, hand-dryers).

There are apartments directly above the facility (see below first floor plan). With the extended operational hours, the primary concern will be the potential for operational noise transfer into bedrooms at night.

The separating floor comprises a 140mm composite deck concrete floor slab and lay-in grid ceilings installed throughout the Care Centre.



First Floor Layout – Apartments within Footprint of Grd Flr Care Centre Highlighted

2.0 Operational Noise Level Survey

Hann Tucker visited site on 16 August 2022 to measure noise levels in various spaces within the operational Care Centre. The aim was to capture spatial octave band L_{eq} and L_{max} noise levels from typical worst-case operational activities, including waiting room conversations with background music and building services running at full duty, as well as the use of the kitchen and WC facilities.

All measurements were taken by Cameron Maskew – AMIOA, Assistant Acoustic Consultant – using a Type 1 sound level meter (calibration certificates available upon request).



The results have been tabulated in full in Appendix A. The following table summarises the highest recorded operational $L_{\max}$ noise levels.

Room	Activities	Index	Highest Measured Reverberant Sound Level (dB) at OCBF (Hz)						
			63	125	250	500	1k	2k	4k
All Spaces	Ventilation & A/C at full duty, Background music in waiting room, conversations (including laughter), kitchen use (including coffee machine), WC toilet flushing	$L_{\max}$	69	66	79	74	77	72	70
WCs	Hand-dryer in use	$L_{\max}$	70	72	80	85	87	86	84

3.0 Noise Transfer Assessment

3.1 Criteria

In accordance with commercial-tenant noise criteria advised in the design of the Development, operational noise transfer into structurally connected apartments should not exceed a level at least 5 dB below the L_{90} 'background' noise level in the apartments in each octave band (63Hz-4kHz).

Background noise levels were measured within partially-finished and unoccupied apartments on the evening of 27 January 2021. The purpose was to verify the operation of MVHR units complied with Local Authority internal ambient noise limits. Shortened measurements were taken with MVHR units operating at normal trickle duty. Traffic noise intrusion excluded as far as reasonably possible in order to obtain 'true' (i.e. night-time) background noise level conditions.

The following table presents the lowest background L_{90} noise levels recorded in the 6nr test apartments (Apts 201, 206, 304, 306, 403 and 406) with corrections applied for reverberation times (normalising results to 0.5 seconds, akin to finished and furnished bedrooms).

Room	Conditions	Index	Sound Level (dB) at OCBF (Hz)							dBA
			63	125	250	500	1k	2k	4k	
Bedrooms	Replicating night-time : MVHR units at trickle duty, minimal traffic noise contribution	L_{90}	36	29	24	23	18	14	12	24

Based on the above, the operational noise limits that should be not be exceeded within adjacent apartments would be as follows.



Receive Room	Condition	Index	Sound Limit (dB) at OCBF (Hz)							dBA
			63	125	250	500	1k	2k	4k	
Bedrooms	Operational noise limit 24/7	L _{max}	42*	36*	19	18	13	9	7	23

* Restricted to 5 dB below limit of virtual inaudibility (ref. DEFRA)

Note: the above criteria (23 dBA) is more onerous than the criterion of 30 dBA which we understand Manchester City Council would usually adopt.

3.2 Separating Floor Sound Insulation Test

Hann Tucker Associates attended site on 7 April 2022 to undertake an airborne sound insulation test across the separating floor between the L00 Care Centre and L01 Apartment 105. At the time of the test, the Care Centre was fully fitted out (incl. ceilings) and the apartment was complete but unoccupied.

The tests were undertaken in full accordance with BS EN ISO 140-4:1998. The test was carried out by Cameron Maskew – UKAS accredited sound insulation tester No. 4083/72 – using a Type 1 sound level meter (calibration certificates available upon request).

The results of the test are summarised below.

Source Room	Receive Room	Index	Sound Level Difference (dB) at OCBF (Hz)						
			63	125	250	500	1k	2k	4k
L00 Waiting Room	Apt 105 Bedroom	D _{nT}	45	53	58	63	67	>70	>70

3.3 Commercial to Apartment Noise Transfer Calculations

The following tables present our noise transfer calculations to determine compliance with the 24/7 operational noise limits based on the maximum recorded L_{max} noise levels from general operational activities and due to the operation of hand-dryers.

Source Room: All spaces

Activities: Ventilation & A/C at full duty, Background music in waiting room, conversations (including laughter), kitchen use (including coffee machine), WC toilet flushing

Receive Room: Level 1 Bedrooms

Desc.	Sound Level (dB) at OCBF (Hz)							dBA
	63	125	250	500	1k	2k	4k	
Source Room Noise Level, L _{max}	69	66	79	74	77	72	70	80
Room-to-room Sound Level Difference	45	53	58	63	67	>70	>70	-
Receive Room Noise Level, L _{max}	24	13	21	11	10	<2	<0	16
Limit	42	36	19	18	13	9	7	23
Compliance/Exceedance	✓	✓	✓	✓	✓	✓	✓	✓



Source Room: WCs

Activities: Hand-dryer

Receive Room: Level 1 Bedrooms

Desc.	Sound Level (dB) at OCBF (Hz)							dBA
	63	125	250	500	1k	2k	4k	
Source Room Noise Level, L_{max}	70	72	80	85	87	86	84	92
Room-to-room Sound Level Difference	45	53	58	63	67	>70	>70	-
Receive Room Noise Level, L_{max}	25	19	22	22	20	<16	<14	25
Limit	42	36	19	18	13	9	7	23
Exceedance	✓	✓	+3	+4	+7	+<7	+<7	+2

3.4 Summary

The assessment indicates that, with the exception of the use of the WC hand-dryers, noise levels produced during 24/7 operation should satisfy the noise limits and therefore represent a low risk of adverse noise impact on residents above.

Exceedances of the operational noise limit at night are predicted due to the use of the WC hand-dryers, which suggests the potential risk of adverse noise impact on residents above.

We would therefore advise that hand-dryers are not used during night-time hours 23:00-07:00.

For and on behalf of
HANN TUCKER ASSOCIATES

Andrew Jameson

Appendix A

Tabulated Results of Operational Noise Level Measurements

Ref	Room	Event	Index	63	125	250	500	1k	2k	4k	dBA
1	Waiting Room	Background Music, Loud Chat	Leq	57	51	52	51	48	47	41	54
2	Waiting Room	Background Music, General Chat	Leq	55	48	50	47	47	45	39	52
3	Waiting Room	Background Music, General Chat	Leq	54	48	50	51	52	50	43	56
4	Consultant Room 1	Background, Vent & A/C On	Leq	47	45	50	49	36	31	25	48
5	Consultant Room 2	Background, Vent & A/C On	Leq	45	50	48	45	41	33	26	46
6	W/C	Toilet Flush	Leq	52	53	64	60	64	64	64	70
7	W/C	Hand Dryer On (full 20 sec)	Leq	66	74	77	84	85	85	81	90
8	W/C	Hand Dryer On (full 20 sec)	Leq	60	69	76	83	85	84	81	90
9	Office/Admin	Coffee Machine Grinding Beans	Leq	61	56	59	59	55	54	53	62
10	Office/Admin	Coffee Machine Pouring / General Chat	Leq	56	51	53	50	49	46	49	55
11	Office/Admin	Coffee Machine Pouring / General Chat	Leq	58	57	58	54	50	44	43	56
12	Office/Admin	General Chat & A/C On Full	Leq	47	45	50	54	45	39	36	52
13	Office/Admin	General Chat & A/C On Full	Leq	47	46	58	59	58	53	48	62
14	Office/Admin	Water Running in Sink	Leq	62	54	59	62	63	59	57	67
Ref	Room	Event	Duration	63	125	250	500	1k	2k	4k	dBA
1	Waiting Room	Background Music, Loud Chat	Lmax	64	58	61	65	55	55	52	64
2	Waiting Room	Background Music, General Chat	Lmax	60	53	57	56	55	54	45	57
3	Waiting Room	Background Music, General Chat	Lmax	62	53	55	60	61	60	53	64
4	Consultant Room 1	Background, Vent & A/C On	Lmax	50	47	51	51	38	33	27	49
5	Consultant Room 2	Background, Vent & A/C On	Lmax	55	58	51	48	43	35	31	48
6	W/C	Toilet Flush	Lmax	67	63	79	71	77	72	70	78
7	W/C	Hand Dryer On (full 20 sec)	Lmax	70	79	80	85	87	86	83	94
8	W/C	Hand Dryer On (full 20 sec)	Lmax	65	72	80	85	86	86	84	93
9	Office/Admin	Coffee Machine Grinding Beans	Lmax	69	62	66	66	61	60	59	68
10	Office/Admin	Coffee Machine Pouring / General Chat	Lmax	60	54	57	64	60	52	53	64
11	Office/Admin	Coffee Machine Pouring / General Chat	Lmax	65	61	63	61	64	55	55	66
12	Office/Admin	General Chat & A/C On Full	Lmax	50	63	67	74	64	57	53	72
13	Office/Admin	General Chat & A/C On Full	Lmax	52	54	70	73	70	64	57	74
14	Office/Admin	Water Running in Sink	Lmax	65	66	69	73	76	70	69	77