

2 Chorlton Place Manchester

Acoustic Planning Report
0866/APR1

19 August 2021

For:

Reserve Wines
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1.0 Introduction

Lighthouse Acoustics has been appointed by Reserve Wines to undertake a detailed sound survey at the vacant retail unit situated at 2 Chorlton Place, Manchester and to assess typical operational sound from the proposed off license and bar to the nearest noise sensitive receptor.

In addition, to undertake an assessment of atmospheric plant sound emissions from the existing 4No. condenser units.

The survey methodology, results and assessments are presented in this report.

2.0 Objectives

To establish the Local Authority's acoustic requirements for the proposed off license and bar.

To undertake a detailed environmental sound survey in order to establish existing environmental sound levels at the site.

To undertake an assessment of operational sound breakout through the façade of the proposed off license and bar to the windows of the nearest noise sensitive receptor based on typical source noise levels and to propose mitigation measures where required.

To undertake an assessment of atmospheric sound emissions from the existing 4No. condenser units to the windows of the nearest noise sensitive receptor and to propose mitigation measures where required.

3.0 Site Description

The site is situated at 2 Chorlton Place, Manchester and comprises an end terrace 2 storey building. The off license and bar are proposed at ground floor level whilst office, storage and toilets are proposed at 1st floor level.

The site is bound by an adjoining retail unit to the north, access road to the east, Wilbraham Road (A6010) to the south and pedestrianised area to the west. The nearest noise sensitive receptor is understood to be the residential flat to the south west of the site opposite Wilbraham Road at 1st floor level above the Co-Op store.

The site plan overleaf indicates the site boundary and the surrounding environment.



Site plan indicating the site boundary and the surrounding environment

4.0 Local Authority Requirements

4.1 Operational Noise

Manchester City Council have stated the following requirements in Condition 4 of the Planning Permission for Application Number 130555/FO/2021:

"4) a) The premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as local planning authority. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

Before the use hereby approved commences, the premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as Local Planning Authority. The scheme proposed shall normally include measures such as acoustic lobbies

at access and egress points of the premises, acoustic treatment of the building structure, sound limiters linked to sound amplification equipment and specified maximum internal noise levels. Any scheme approved in discharge of this condition shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as Local Planning Authority.

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 occupation of the development a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria."

4.2 Building Services

Manchester City Council have stated the following requirements in Condition 6 of the Planning Permission for Application Number 130555/FO/2021:

"6) a) Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site.

b) Prior to occupation of the development a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria."

5.0 Environmental Sound Survey

5.1 Measurements

Automated environmental sound measurements were undertaken from 12:00 hours on Thursday 12 August 2021 to 12:00 hours on Friday 13 August 2021. During this period the L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels were measured continuously over 15 minute periods along with the corresponding octave band sound pressure levels.

5.2 Weather Conditions

At the start of the survey period there was a gentle southerly breeze (<5m/s) and the sky was clear. There was no rainfall and road surfaces were dry. The temperature was approximately 18°C.

At the end of the survey period there was a gentle southerly breeze (<5m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 19°C.

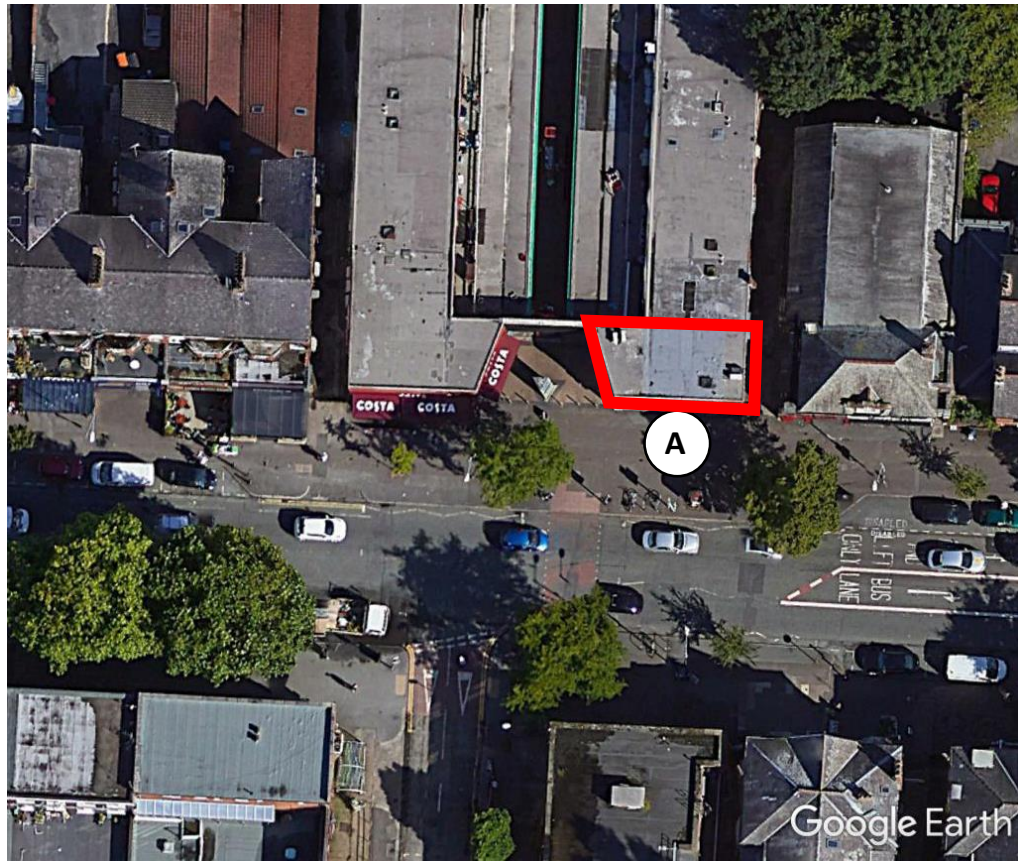
Based on publicly available weather data for the survey period it is understood that weather conditions remained similar for the duration of the survey with no significant periods of rainfall or strong breezes. The weather conditions during the survey period are therefore considered to be suitable for undertaking measurements of sound levels.

5.3 Measurement Position

Environmental sound levels were measured at a single position on-site as described in the table below.

Position	Description
A	Microphone at 1 st floor level at 1.0m from the south façade of the building overlooking Wilbraham Road.

The measurement position and site boundary are shown on the site plan below.



Site plan showing measurement position and site boundary

Measurement Position A was selected in order to assess typical environmental sound levels representative of those at the facade of the nearest noise sensitive receptor is understood to be the residential flat to the south west of the site opposite Wilbraham Road at 1st floor level above the Co-Op store.

5.4 Equipment

The following equipment was used to undertake the environmental sound survey.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Casella	633C	0721319	25/09/2019
Preamplifier	Casella	495	001446	25/09/2019
Microphone	Casella	251	1996	25/09/2019
Class 1 Sound Calibrator	Casella	120/1	3864878	15/11/2019
Environmental Noise Kit	Casella	6847	-	-
Microphone Extension Cable	Casella	C6717/5	-	-
Weather Protection System	Casella	6737	-	-

Field calibration checks were performed on the sound level meter prior to and on completion of the survey and were found to be within acceptable tolerance limits.

5.5 Results

5.5.1 Time History Graph

The results of the environmental sound survey are presented on Time History Graph 0866/THG1 enclosed at the rear of the report.

The presented results for Position A have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

5.5.2 $L_{A90,T}$ Background Sound Levels

The lowest representative $L_{A90,15min}$ background sound level measured at Position A during the proposed opening hours (08:00 to 23:00 hours) is detailed in the table below along with the corresponding octave band sound pressure levels.

Position	Period	Lowest Representative $L_{A90,15min}$ Background Sound Levels (dB) at Octave Band Centre Frequency (Hz)								dBA
		63	125	250	500	1k	2k	4k	8k	
A	08:00 to 23:00	60	56	55	51	51	46	39	31	55

The presented results for Position A has been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

5.6 Discussion of Sound Climate

At the start and end of the survey period the dominant sound source at Position A was noted to be road traffic along Wilbraham Road and passing pedestrians.

Whilst we are unable to comment on dominant sound sources or individual sound events during the survey period, based on the surrounding environment it is likely that road traffic remained the dominant sound source.

6.0 Facade Assessment

6.1 Introduction

Typical bar L_{Aeq} operational sound levels for similar size premises to that proposed are assessed to the windows of the nearest noise sensitive receptor against the lowest representative background $L_{A90,15min}$ octave band sound pressure levels measured at Position A during the proposed opening hours.

6.2 $L_{Aeq,T}$ Operational Sound Levels

Typical bar L_{Aeq} operational sound levels for similar size premises to that proposed are detailed in the table below along with the corresponding L_{eq} octave band sound pressure levels.

Source Description	Leq Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Bar with background music (no subwoofers)	69	69	69	74	73	69	63	56	77

The above includes background music (no subwoofers) and customer/staff conversations.

6.3 Operating Hours

It is understood that the proposed opening hours of the off license and bar are 08:00 to 23:00 hours.

6.4 Nearest Receptor

The nearest noise sensitive receptor is understood to be the residential flat approximately 30m to the south west of the site opposite Wilbraham Road at 1st floor level above the Co-Op store.

6.5 Existing Construction

It is understood that the existing ground floor front façade of the proposed cafe comprises the following constructions.

Element	Typical Construction
Facade	Solid masonry wall
Windows	Single glazed windows
Door	Single glazed door

The following Sound Reduction Indices have been allowed for the existing ground floor front façade constructions.

Element	Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Facade	34	41	44	48	55	55	55	55
Windows	16	22	25	28	31	26	31	33
Door	9	12	13	14	15	18	24	26

The total area of the front facade is understood to be approximately 40m².

6.6 Calculation

The sound pressure level radiated from the front façade due to cafe operational sound levels has been calculated using the following formula:

$$L_p = L_{prev} + 10 \log S - 6 - SRI + 10 \log Q - 20 \log R - 11 - D$$

Where:

L_p is the sound pressure level at the receiver, dB;

L_{prev} is the reverberant sound pressure level in the source room, dB;

S is the surface area of the separating element, m²;

SRI is the sound reduction indices of the separating element, dB;

Q is the directivity factor for the separating element, dB;

R is the distance in meters between the separating element and the receiver, m;

D is the directivity correction for the separating element, dB.

6.7 Assessment

The table below details the calculated typical bar L_{Aeq} operational sound levels incident upon the window of the nearest noise sensitive receptor due to breakout through the façade along with the lowest representative $L_{A90,15min}$ background sound level and the differences between them.

Door Closed

Receptor	Descriptor	Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
		63	125	250	500	1k	2k	4k	8k	
Residential Flat to the South West	Calculated Typical bar Operational Sound Level L_{eq} (dB)	27	22	20	23	19	17	6	0	24
	Lowest Representative Background Noise Level L_{90} (dB)	60	56	55	51	51	46	39	31	55
	Difference (dB)	-33	-34	-35	-28	-32	-29	-33	-34	-31

Door Open

Receptor	Descriptor	Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
		63	125	250	500	1k	2k	4k	8k	
Residential Flat to the South West	Calculated Typical bar Operational Sound Level L_{eq} (dB)	31	30	30	34	33	29	23	12	37
	Lowest Representative Background Noise Level L_{90} (dB)	60	56	55	51	51	46	39	31	55
	Difference (dB)	-29	-26	-25	-17	-18	-17	-16	-15	-18

The assessment indicates that typical bar L_{eq} operational sound levels incident upon the window of the nearest noise sensitive receptor due to breakout through the front façade will be greater than 10dB below the L_{90} in each octave band with door closed and with door open.

This is therefore likely to comply with the Local Authority's requirement to achieve 10dB below the L_{A90} in each octave band at the facade of the nearest noise sensitive location.

6.8 Music Level Limits

For the bar in-house loudspeaker system, amplified music levels should be limited by means of an electronic noise limiter/compressor. The device should be capable of limiting individual octave bands over the frequency range 20Hz to 20kHz and controlling the number of speakers/zones required.

In order to set the device to achieve the proposed requirements a commissioning visit will be required in conjunction with an acoustic consultant upon completion of the fit-out works and prior to the operation of the bar. The devices should be lockable once set to prevent tampering. Upon completion, a commissioning report should be issued to the Local Authority specifying details of the devices installed and the limits that they have been set to.

7.0 Plant Sound Emission Assessment

7.1 Plant Location

The existing 4No. condenser units are situated externally on the flat roof of the of the building. 2No. units are situated towards the eastern edge of the roof whilst 2No. units are situated towards the north western edge of the roof.

7.2 Plant Sound Data

Access was not available to the flat roof to obtain the model numbers of the existing 4No. condenser units. However, it was possible to see the model number of 1No. condenser unit from the 1st floor walkway to the rear fire escape. This was a Toshiba RAV-GM561ATP-E unit. The remaining 3No. condenser units are of a similar size to this unit. For the purposes of the assessment it is assumed that these units generate the same level of noise as the Toshiba unit which is considered to be a reasonable assumption.

Manufacturers sound data for the Toshiba RAV-GM561ATP-E unit is detailed in the table below.

Toshiba RAV-GM561ATP-E

Sound Pressure Level (dB) at 1m at Octave Band Centre Frequency (Hz)								dB
63	125	250	500	1k	2k	4k	8k	
52	52	49	45	44	38	33	28	48

Whilst it is not possible to assess plant irregularity or impulsiveness based on manufacturer's sound data, BS 4142: 2014 provides an objective method for assessing the audibility of tones in sound. The one-third octave method states that if the level of a one third octave band exceeds the level of both adjacent one third octave bands by the following amounts, then a tonal component may be identified as present:

- 15dB in the low-frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in the mid-frequency one-third-octave bands (160Hz to 400Hz);
- 5dB in the high-frequency one-third-octave bands (500Hz to 10kHz).

However, one third octave band sound data is rarely available from manufacturers as is the case in this instance.

By applying the same principal to the octave band sound data in the table above, a review indicates that these items are unlikely to exhibit a tonal component. As such, no character correction has been applied to the specific sound level for these items.

Should one third octave band sound data become available a revised assessment should be undertaken.

7.3 Operating Hours

It is understood that the existing 4No. condenser units have the potential to operate between 08:00 to 23:00 hours.

In order to undertake a worst case assessment, it is assumed that the existing 4No. condenser units will operate for the full assessment period.

7.4 Nearest Receptor

The nearest noise sensitive receptor is understood to be the residential flat approximately 30m to the south west of the site opposite Wilbraham Road at 1st floor level above the Co-Op store.

7.5 Assessment

The table below details the calculated cumulative L_{Aeq} atmospheric plant sound emission level at the nearest noise sensitive receptor along with the lowest representative $L_{A90,15min}$ background sound level and the differences between them.

Receptor	Descriptor	Period
		(08:00–23:00)
Residential Flat to the South West	Calculated Cumulative Atmospheric Plant Sound Emission Level L_{Aeq} (dB)	23
	Lowest Representative Background Noise Level L_{A90} (dB)	55
	Difference (dB)	-32

The calculated cumulative L_{Aeq} atmospheric plant sound emission level at the nearest noise sensitive receptor is 32dB below the lowest representative $L_{A90,15min}$ background sound level.

The assessment therefore indicates that the existing 4No. condenser units are likely to achieve the Local Authority's requirement to achieve a rating level of 5dB L_{Aeq} below the typical background L_{A90} level at the nearest noise sensitive location.

8.0 Additional Guidance

In order to minimise sound emissions from the premises the following guidance should be incorporated.

- All staff should be trained on the noise management measures employed by the venue to minimise operational sound emissions from the premises.
- All external entrance/escape doors should be fitted with self-closing devices and good fitting seals. Staff should ensure that the entrance/escape doors are not kept open unnecessarily in order to minimise sound emissions from the premises.
- Internal loudspeakers should face away from external doors and windows and the use of subwoofers should be prohibited.

- Staff should regularly monitor and manage external areas to ensure that customers are not causing a disturbance to local residents. Rowdy behaviour from customers should not be tolerated and anyone behaving in an anti-social way should be asked to leave the premises.
- Deliveries, refuse collections and storage/disposal of waste/recyclables in external areas should be restricted to normal working hours between 08:00 and 18:00 hours Monday to Saturday with none on Sundays/Bank holidays.
- A contact telephone number should be made available to local residents/businesses which they can use to report noise disturbances to the venue as and when they occur.

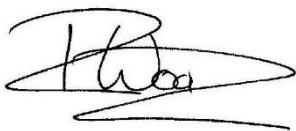
9.0 Conclusions

The Local Authority's acoustic requirements for the proposed off license and bar have been established.

A detailed environmental sound survey has been undertaken in order to establish existing environmental sound levels at the site.

An assessment of operational sound breakout through the façade of the proposed off license and bar to the windows of the nearest noise sensitive receptor has been undertaken and mitigation measures have been proposed where required in order to achieve the requirements of the Local Authority.

An assessment of atmospheric sound emissions from the existing 4No. condenser units to the windows of the nearest noise sensitive receptor has been undertaken and mitigation measures have been proposed where required in order to achieve the requirements of the Local Authority.



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0866/THG1

2 Chorlton Place, Manchester
Time History Graph - Thursday 12 August 2021 to Friday 13 August 2021
 $L_{Amax,15min}$, $L_{Aeq,15min}$ & $L_{A90,15min}$ Noise Levels at Position A

