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SEPP N-2 NOISE MEASUREMENTS AND NOISE CONTROL RECOMMENDATIONS

MERCHANT LANE

58 MAIN STREET

MORNINGTON

24 DEC 2016 AND 6 JAN 2017

COMMISSIONED BY

MERCHANT LANE

58 MAIN STREET, MORNINGTON VIC 3931

Prepared by:

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Ref 3089
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Summary

A DJ plays music at Merchant Lane, 58 Main Street until 1:00am Thursday and until 3:00am on Friday and Saturday nights.

A series of noise controls have recently been undertaken.

Noise Consulting & Management was contracted to set the processor to limit the noise levels and measure and report on noise levels in the vicinity of the site.

Measurements were performed in accordance with the EPA SEPP N-2 Policy Nighttime Noise Limits for an indoor venue.

The venue limiters have been set to control the music to comply with the noise limits. However a number of minor controls are required to maintain ongoing compliance.

General Information

Applicable Regulations

Measurements were performed in accordance with the mandatory EPA SEPP N-2 Policy, which specifies the Government's objectives for the control of music noise from public premises.

The policy is designed to protect normal domestic and recreational activities, particularly sleep in the night period, in residential areas.

This EPA policy states the noise measurement and calculation techniques to be applied for different venue types and operating times. Basically, an "effective noise level" is measured at a "noise sensitive area" while the venue is operating. The effective noise level is then compared with the "noise limits", which have been determined at the same location without the venue operating. Compliance with the policy is achieved if the effective noise level is below the noise limit.

Background measurements were updated on Fri 7 Jan 2017 (Thur night) from 1:20am. No music from any venue was operating during the measurements. There background level is higher than in the past due to continuous plant noise at the rear of Main St buildings. Limits were calculated from 15 continuous minutes of background measurement.

Noise measurements were performed under neutral conditions on the nature strip near the residences to the north, at 12 Drake Street and 3 Franklin Place and to the southeast at 9-11 Blake St (in Sumner Lane).

The required measurement position for the Blake St dwellings is inside the apartments as they do not have openable windows facing the venue. However, it was not possible to measure in this position and measurements were performed outside.

Personnel Present:

Andrew Rogers
Noise Consulting & Management Pty Ltd

Instrumentation:

Svantek 947 Type 1 precision octave band sound and vibration analyser
Serial No. 4277.

Bruel & Kjaer 4220 Pistophone Serial No. 169898.

A field calibration is performed before and after the analyser is used. Full calibration traceable to the national standard is completed annually for all instrumentation.

Site Description

The main dance floor utilises a “LAB 24 sound ceiling” sound system and 2 x Audac SMQ150 amps. There are 4 speakers in the front bar and 4 speakers in the craft bar area powered via a Crown XT2000 amp and Yamaha 350 Zone mixer.

The sub speakers in the front bar and dance floor and the outdoor speakers have been removed. There is no foldback monitor.

The music feed from the DJ console to the three sound systems is limited using a DBX ZonePro 640m limiter/processor. This limiter will only work on DJ and pre-recorded music playing through the house sound system and is not appropriate for live bands.

The IPOD feed from the front bar needs to be linked into the limiter. This is considered a low risk as the IPOD is used to play background music during restaurant service.

Results

Noise Limits

The policy defines different noise limits for different time periods. As Merchant Lane operates until 3am the indoor night period limit should be used to determine the operating music levels.

The location and time of background measurements and the noise limits calculated from these measurements are given below:

Location	Time	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
		Lowest Night Noise Level $L_{\text{Oct } 90}$						
12 Drake St, corner	01:20-01:35, 7/1/17	47	45	40	37	35	32	25
		Night Noise Limit ($L_{\text{Oct } 90} + 8\text{dB}$)						
	Night	55	51	48	45	42	40	33

Location	Time	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
		Lowest Night Noise Level $L_{\text{Oct } 90}$						
3 Franklin Place, distant car noise in measurement	01:40-01:55, 7/1/17	50	47	41	35	31	27	21
		Night Noise Limit ($L_{\text{Oct } 90} + 8\text{dB}$)						
	Night	58	55	49	43	39	35	29

Noise Levels

Simultaneous noise measurements were taken at the noise sensitive areas and inside the venue. The venue was not open at the time and the test music was said to be much louder than music is normally played. The music levels measured are given below:

Location / Comments	Time	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
Old Sound System	24/10/16	Effective Noise Levels ($L_{\text{Oct } 10}$)						
12 Drake St,		64	61	46*	*	*	*	*
3 Franklin Place		67	59	48*	*	*	*	*
9-11 Blake St		66	63	55*	*	*	*	*
		Music Noise Levels (L_{eq})						
Main dance floor		101	104	99	102	101	104	97
Front bar/entrance		99	104	98	96	93	95	88
Craft bar		94	99	94	97	95	97	88

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*No correlation between music from venue and measured level

Location / Comments	Time	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
Sound Ceiling, removal of Subs	24/12/16	Effective Noise Levels (L_{oct10})						
12 Drake St, Music not measurable								
3 Franklin Place, Music not measurable								
9-11 Blake St		60	51	45	*	*	*	*
		Music Noise Levels (L_{eq})						
Main dance floor		99	101	105	106	101	100	94
Front bar/entrance		83	93	92	90	84	78	62
Craft bar		84	90	92	92	87	81	63
Approximate improvement of controls, all sound systems running		4	9	16	*	*	*	*

*No correlation between music from venue and measured level

The processor was set to limit the highest music levels that can be played in each area of the venue to the following compliant levels.

Location / Comments	Time	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
	Night period	Compliant Music Noise Levels (L_{eq})						
Main dance floor		96	101	101	99	96	97	92
Front bar/entrance		83	93	92	90	84	78	62
Craft bar		84	90	92	92	87	81	63

*Conservative estimate as no data available

Additional compliance measurements were undertaken while the venue was operating on Fri 7 Jan 2017 (Thur night) and the results are given below.

Location / Comments	Time	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
		Effective Noise Levels (L_{oct10})						
12 Drake St	12:00-12:20, 7 /1	53	50	43	40	38	35	28
3 Franklin Place	12:54-01:09 7 /1	50	47	41	35	31	27	21

These results show that the venue complies with the noise limits.

Recommendations and Maintaining Compliance

To ensure ongoing compliance the following measures are required:

- If replacements or additions to any speaker or amplifier or zone mixer occurs, the system must be recalibrated
- The system must be checked / recalibrated every 12 months to allow for possible drift in system components
- The limiter/ processor and amplifiers should be placed in a lockable enclosure
- The upstairs Zone mixer and amplifier should be placed in a lockable enclosure
- The IPOD feed should be patched through the limiter processor.

Operation of the Limiter/ Processor

The limiter /processor must be operating for any music to be emitted from the speakers. There are no controls that can be tampered with or adjusted without a computer running the appropriate software and a password. The unit cannot be bypassed without reconnecting cables hidden behind the system.

After the lockable enclosure has been installed, the entire system is relatively tamper proof as tools, rewiring of the system and the password or key are required to alter the limiting.

The noise limiting is achieved by analysing the input music within the limiting unit. When the signal reaches a level just below that which could cause exceedance of the SEPP N-2 noise limit, the output music signal is limited at that level no matter how high the input signal may go.

This type of limiting works well with a DJ and house sound system but is not suitable for bands that bring their own equipment.

Conclusion

Merchant Lane at 58 Main Street, Mornington complies with the SEPP N-2 nighttime noise limits and the limiter is functioning correctly. A number of measures are required to maintain compliance.

Terminology

dB(A)	Unit of sound level, weighted to approximate the response of the human ear.
Leq	The continuous level over a period of time that is equal in sound energy to the varying sound level measured over the same period.
L90	A statistical measure that is equivalent to the sound level that is exceeded for 90% of the measurement period. This level represents the background noise level.
L10	A statistical measure that is equivalent to the sound level that is exceeded for 10% of the measurement period. This level represents the loudest noise level that occurs.
Ambient Sound	All sound at a point being a composite of sounds from near and far.
LAm _{ax}	The maximum A weighted sound pressure level measured using a particular time constant setting
LC Peak	The highest of the levels when measured over very short time intervals during the measurement period