TECHNICAL MEMO

Our Ref: 7537SV

To: Salt n Vinegar Ltd

From: Pablo Soler, BEng, MIOA, MIET

Senior Acoustic Consultant & Project Manager

NOVA Acoustics Ltd

Date: 12/04/2022

Subject: Extraction System Validation Testing

Site Address: 20 North Road, Lancing BN15 9AE

Brief: NOVA Acoustics Ltd has been commissioned to undertake validation testing of the extraction system associated with an existing pub located at the above address. An initial noise survey was carried out from the 5th to the 7th of January 2022. The assessment reference number is 7090SA.

Review: The results of the initial assessment indicated that the noise levels from the plant unit fell 26 dB above the background sound level. The report outlined mitigation measures in order to reduce the noise from the extraction and satisfy the Local Council's requirements.

In order to validate the mitigation measures outlined in ref. 7090SA, a second visit to the site was undertaken on the 4th of April 2022. The client has demonstrated that the extraction fan has been relocated on the roof and it has been fully enclosed. Please, refer to the images below:



Figure 1.0 – Fan and Ductwork Location

The measurements were undertaken at two positions. The first monitoring position (MP1) was at the same location as in the previous report. This location was representative of the Noise Sensitive Receptor (NSR1) that was identified and assessed in the previous report due to the previous location of the fan. As the fan has been relocated, another NSR (NSR2) will be also assessed. MP1 was positioned on a drainpipe approximate 3.0m from the ground and it recorded noise levels with the fan ON and OFF. A spot measurement was also undertaken at the noise source (MP2), approximately 2m from the fan. As both MPs were insatlled approximatelly at 150mm form the façade, a façade correction has been applied. The measurement positions can be found highlighted in Figure 1.0.

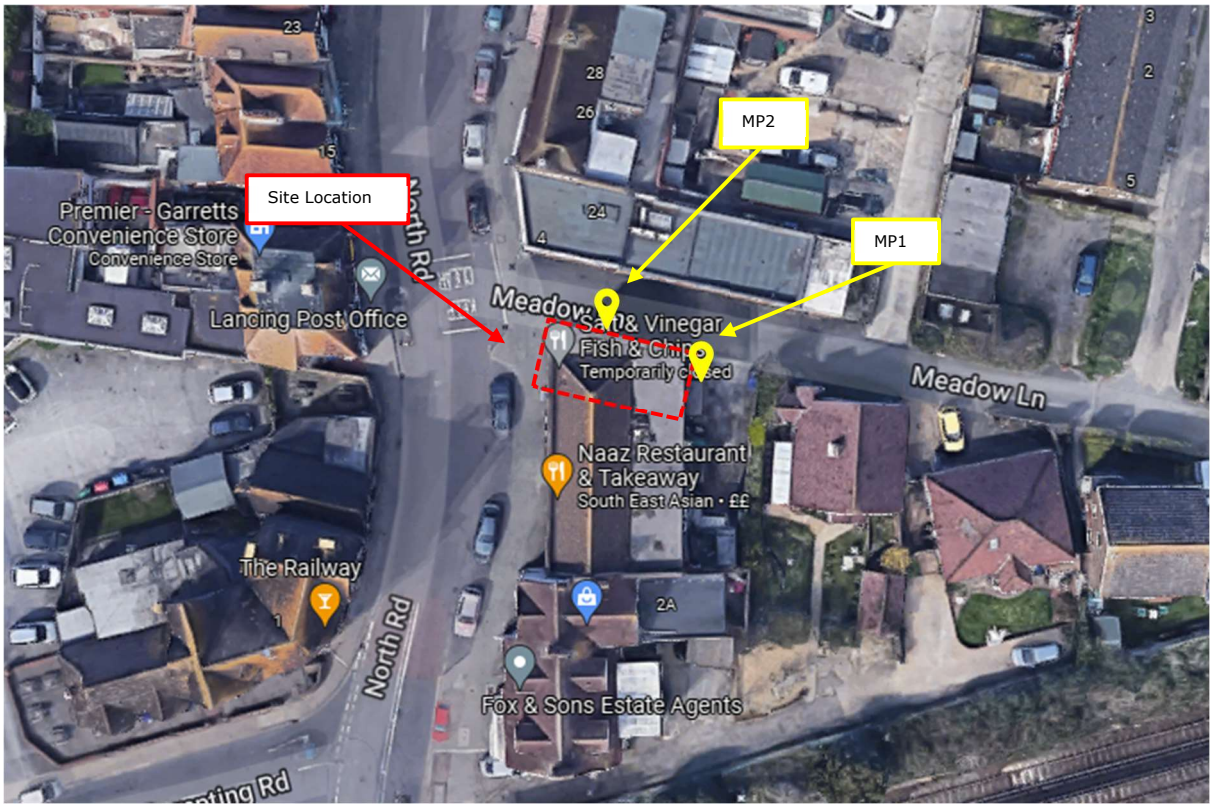

Figure 2.0 - Site and MPs Location

Measurement Position 1

Measurements were undertaken with both the extraction fan On and OFF at MP1. The results of both measurements can be found in the table below.

MP1				
Measurement Time (t)	**$L_{Aeq,t}$**	**$L_{Amax,t}$**	**$L_{A90,t}$**	**$L_{A10,t}$**
Plant ON – 04/04/2022 – 11:26 – 12:12	56.0	74.0	52.0	59.0
Plant OFF – 04/04/2022 – 12:22 – 13:07	54.0	77.0	44.0	56.0

Table 1.0 – Survey Summary Results – MP1

As can be seen in the results the noise levels from the period with the plant on produced analogous noise levels to that of the plant off and as such no specific plant noise could be fully defined at the

measurement position. BS4142:2014 stipulates residual and ambient noise levels need to be a minimum of 3 dB difference in order to calculate specific noise levels. Therefore, it can be concluded that the mitigation measures implemented (fan relocation and enclosure) have provided enough sound reduction to protect the amenity of NSR1.

Measurement Position 2

One short-term measurement was taken at 2m of the extraction end with the extraction system ON. The measurement is assumed to record both the noise breaking out the fan box and the noise from the end of the exhaust.

To calculate the specific sound emissions from the extraction system, the residual sound level without the system in operation, measured at MP1, is subtracted from the ambient noise level measured with the system operating at MP2.

Description	$L_{Aeq,t}$ (dB)
MP2 - Ambient Sound Level – 04/04/22 – 12:14 to 12:21	61.0
MP1 - Residual Sound Level – 04/04/22 – 12:22 to 13:07	54.0
Specific Sound Level @2m	60.0
Specific Sound Level @1m	66.0

Table 1.0 – Measured Short-Term Noise Levels

BS4142:2014 Noise Assessment – NSR2

Due to the relocation of the fan itself and the end of the ductwork, a new Noise Sensitive Receptor needs to be assessed (NSR2). Its location can be seen in Figure 2.0 of this technical letter.

The following section of the report analyses the expected impact of the noise emissions associated with the extraction system

Location	Plant Equipment	Specific Noise Level @ 1m	Distance to NSR	Shielding *2	Specific Noise Level at NSR *3	Acoustic Feature Correction *4
NSR1	Extraction Fan	66.0 *1	6.0	-10.0	40.0	--
NSR2			4.0	-10.0	44.0	
Cumulative Rating Noise Level $L_{AR,TR}$ @ NSR1				40.0 dB		
Cumulative Rating Noise Level $L_{AR,TR}$ @ NSR2				44.0 dB		

Table 2.0 – BS4142:2014 Assessment

**1 Refer to Table 1.0.*

**2 A shielding correction has been added as a solid body e.g. building edge blocks the line of sight between the noise of the source and the NSR.*

**3 The noise level at the NSR has been calculated using the following equation 20log(r1/r2).*

[4] No perceptible acoustic character was found audible during the site visits.

The BS4142 Assessment of the extraction system is outlined in the table below.

Results	NSR1 Sound Level (dB)	NSR2 Sound Level (dB)	Notes
Rating Sound Level	40.0	44.0	Acoustic feature corrections as shown in Table 2.0.
Background Sound Level	50.0	50.0	As shown in Table 1.0 of ref. 7090SA
Excess of Rating over Background Sound Level	- 10.0	- 6.0	The assessment indicates; Significant Adverse Impact Dependant on Context

Table 3.0 – BS4142:2014 Noise Assessment

Discussion

NSR1 - The assessment above indicates that the rating level falls a minimum of 10dB below the background sound level at the Noise Sensitive Receptor 1. This indicates Low Impact, Dependant on Context impact on the surrounding residential Noise Sensitive Receptors. This is in line with the outcome of the comparison of the measurements taken and MP1 and indicates low impact in accordance with BS4142:2014 and 'No Observed Effect Level' when assessed in accordance with the NPSE and NPPF.

NSR2- The assessment above indicates that the rating level falls a minimum of 6dB below the background sound level at the Noise Sensitive Receptor 2. This indicates Low Impact, Dependant on Context impact on the surrounding residential Noise Sensitive Receptors. This indicates low impact in accordance with BS4142:2014 and 'No Observed Effect Level' when assessed in accordance with the NPSE and NPPF.

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