Chartered Building Consultancy

Acoustic South East

Planning Condition
Acoustic Assessment

Client:	**Izabela Michna-Altunatmaz**
Site Address:	**Village Taverna, Storrington**
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Report by: George Orton BEng(Hons) MIOA

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1 Summary and Conclusion

Acoustic South East have been appointed to undertake an acoustic assessment of the Village Taverna restaurant plant. The development description can be seen below:

Installation of extractor flue for a commercial kitchen. (Retrospective).

The development has gained planning approval albeit with certain conditions. The planning conditions, which relates to noise, can be seen below.

2: Within 3 months of the date of the permission hereby approved, a noise assessment shall be submitted to and approved in writing by the Local Planning Authority which demonstrates the plant noise levels for daytime operation will not exceed background levels as measured at a position on the western boundary between the application site and the dwelling at 3A High Street. The assessment shall be undertaken in accordance with BS 4142: 2014 (or subsequent superseding equivalent) and current best practice and shall include full spectrum analysis to confirm that there is no tonality or other acoustically distinctive features present in the noise and detail any mitigation measures required to achieve background sound level.

3: Within 1 month of the noise assessment required by condition 3 being approved in writing by the Local Planning Authority, a Post Installation Noise Assessment shall be submitted to the Local Planning Authority for its approval in writing. This shall identify the mitigation measures undertaken to achieve background sound levels, including any additional mitigation measures necessary and a timetable for implementation. These measures shall be permanently retained thereafter.

Existing environmental noise levels have been measured close to the adjacent noise sensitive receptors (NSR). Extract plant noise levels have been assessed using a computer noise model and on site sound survey data.

As the rating level is below the representative background sound level it is considered that the planning condition criteria has been achieved.

2 Context and Noise Criteria

2.1 Site Description

The extract plant has been installed at the rear of the restaurant. The roof layout and survey location can be seen below:



Figure 1: Site Layout

2.2 BS4142(2014+A1:2019): Method for rating and assessing industrial and commercial sound

This document provides a means of assessing the impact of industrial or commercial sound upon nearby noise-sensitive receptors, including residential properties. It does this by comparing the Rating Level of the noise from the industrial or commercial source with the pre-existent L_{90} background noise level affecting the same noise-sensitive premises. The Standard provides guidance that:

a) Typically, the greater the difference, the greater the magnitude of the impact.

b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact, depending on the context.

3 Noise Survey Baseline Conditions & Results

A noise survey was carried out between the 29/05 and the 03/06/2025 to assess the existing noise levels affecting the nearby noise sensitive receptors.

The free-field survey location can be seen in the previous section (2m above flat roof) All noise levels in this report will be free-field noise levels unless stated otherwise (including noise model predictions)

3.1 Noise Survey Details

- Survey carried out by: George Orton BEng (Hons) MIOA
  Josh Robison
- Equipment used: Svantek 971 - Type 1 Sound Level Meter (LT1)
- Weather conditions: Mixed with wind speed average mostly under 5m/s

3.2 Noise Survey Results LT1

3.2.1 Ambient/Residual Sound Levels

A summary of the results can be seen below

		$L_{Aeq,16/8Hr}$	
Day	**Date**	**Day**	**Night**
Thu	29/05		49.8
Fri	30/05	53.4	48.0
Sat	31/05	52.8	47.2
Sun	01/06	53.9	48.6
Mon	02/06	53.4	49.0
AVERAGE:		**53**	**49**

Table 1: Sound Survey All Days

3.2.2 Background Sound $L_{A90,15min}$

The most commonly occurring (modal) background sound levels ($L_{A90,15min}$) can be seen below. The graph below relates to the full daytime dataset:

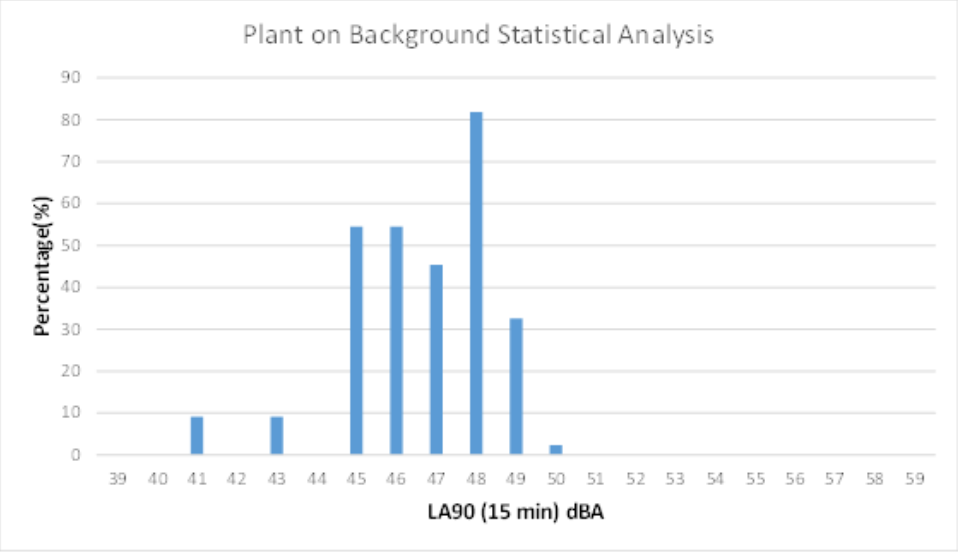

Figure 2: Daytime L90

As the extract system was operating this could have affected the daytime background sound level. The survey data was reviewed to show that the extract plant operates from approximately 11:00-23:00hrs (also confirmed by the restaurant manager). The background survey data, without extract running, were also reviewed to calculate the modal value:

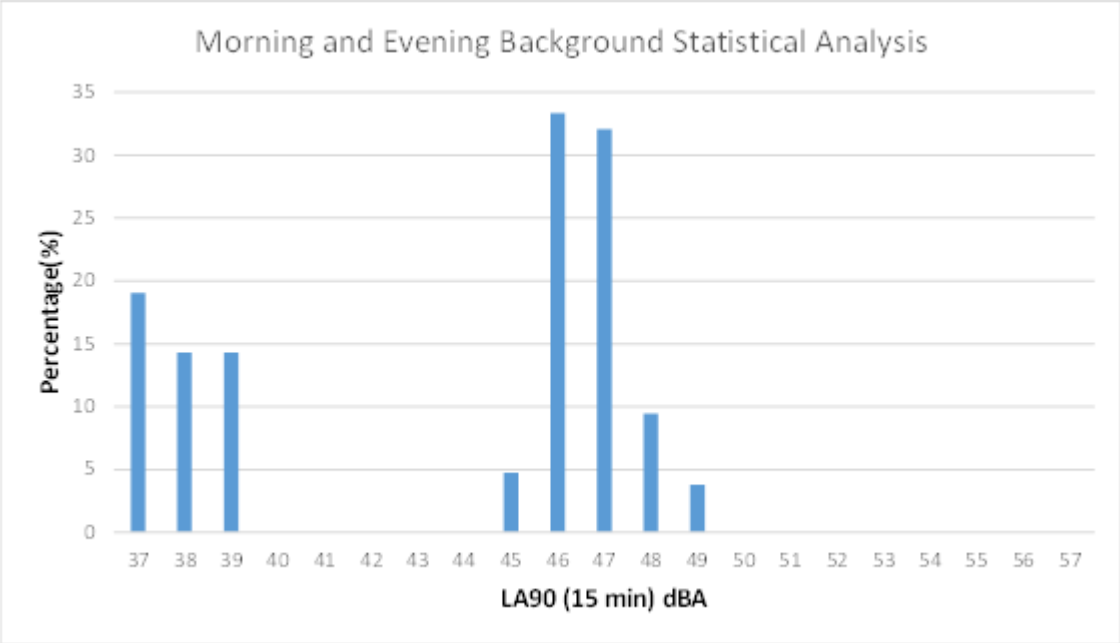

Figure 3: Daytime L90 (plant off)

3.3 Additional Noise Survey Details

During the survey setup visit measurements on 29/05/2025 specific noise measurements were also completed. When the extract system was operating the sound level was measured at 1m from the extract discharge point (subjectively noted to be the dominant sound source due to the fan housing construction):

	L_{Aeq}	L_{A90}
1m Measurement 1	59	58
1m Measurement 2	59	58

Table 2: Extract Sound Survey

4 Noise Model

4.1 Details

In order to see how noise varies at different positions around the proposed development it is possible to produce a noise contour map. A computer noise model has been completed using the computer package IMMI. IMMI faithfully implements the propagation method of ISO-9613:1996; Acoustics – Attenuation of sound during propagation outdoors. The development and surrounding buildings were added to the model along with various reception points (RPs). The RPs predict the noise level (incident free-field noise level) at a discrete position within the noise model

4.2 Extract Sound Source

The extract sound source was added just above the flat roof in the model The sound power was adjusted until the level at 1 was equal to the specific sound level of 59dBA (1/3 profile was as measured at 1m)

4.3 Noise Model Predictions

The noise model can be seen below:

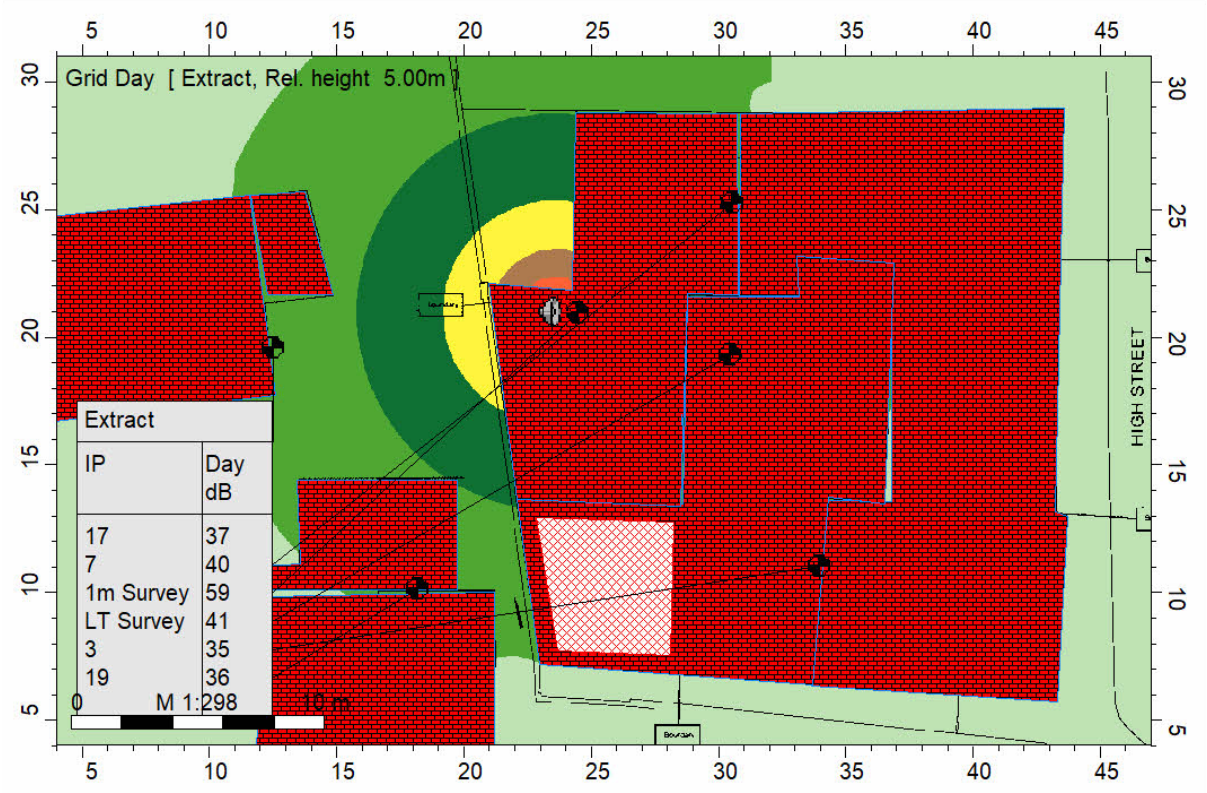

Figure 4: Refrigeration Plant Noise Model

At 3a Highstreet (property named in the condition) the predicted extract sound level is 35dBA

5 Assessments

5.1 BS4142 Assessment

A BS4142 assessment has been completed to predict the significance of impact upon the nearby residential receptors. As the plant rarely operates into the night time a daytime assessment has been completed

5.1.1 Background Sound Level

The morning/late evening (extract plant not affecting the data) survey data was used to express the daytime period background sound level. Representative $L_{A90,15min}$ = 46dBA

5.1.2 Rating Level

The predicted level, at location detailed in the condition, was 35dBA however BS4142 states the following: *"Identify tones using the method given in Annex C, then add a correction of 6 dB if a tone is present."*

The extract sound levels were measured in 1/3 octaves which did not show any tonal components.

To err on the side of cation a 3dB "other sound" correction will be added resulting in a noise rating level of 38dB

5.1.3 Day Time Assessment

The predicted sound level is 8 dB below the background sound level which achieves the condition criteria. The reasoning for the condition criteria is detailed within BS4142:

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact, depending on the context.

5.1.4 Discussion

The assessment above was completed for the 3a NSR as required by the condition. Other NSRs were subject to higher predicted levels however the predictions would all be below the measured background sound level of 46dBA.

In terms uncertainty the simplified noise model may slightly underpredict the sound level at 3A (model just predicted extract discharge sound propagation). However it should be noted that the modal value, at the LT survey point which is closer to the plant than the closest 3a window, was 48dBA (including contributions from the extract system and environmental sounds). Based on the above it is likely that the extract plant noise rating level would be only occasionally above the background sound level for times later in the day when the road noise is lower. However the rating level would be lower than the representative background sound level that takes into account all times when the extract operates (I.E. the lowest background sound level for the period would not be considered to be implied by the wording "representative" in BS4142).

6 Appendix

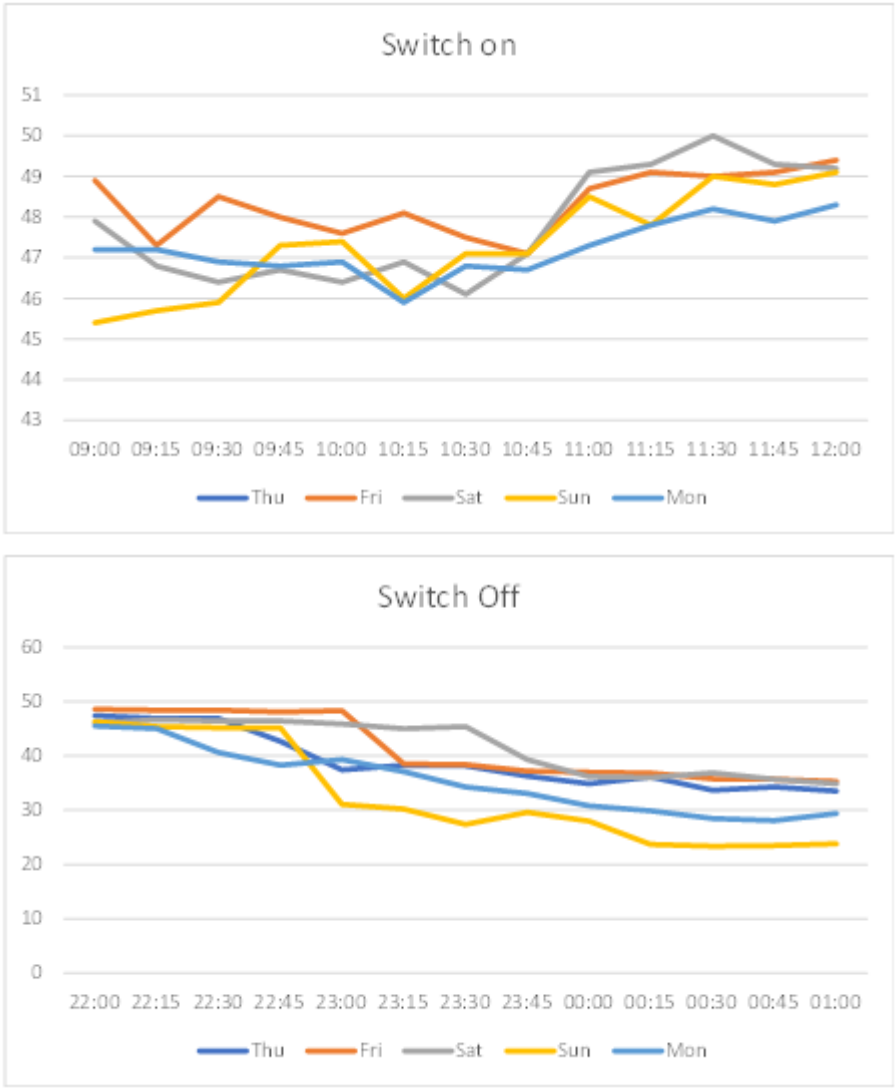

Figure 5: Extract Plan on/off graphs

	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1.0 kHz	1.25 kHz	1.6 kHz	2.0 kHz	2.5 kHz	3.15 kHz	4.0 kHz	5.0 kHz
1m	63.7	62.7	61.2	62.5	58.7	56.5	59.5	54.4	53	51.8	51.3	52.7	51	49	46.8	44.7	43	41.5	39.1	35.6	34.3
1m	65.7	62.9	60.3	60.8	57.9	55.7	59.1	53.8	52	50.3	53.2	51.6	51	48	46.3	44.7	44.1	41.2	37.7	34.1	32.3

Figure 6: Extract at 1m 1/3 Octave Sound Levels