

## Note

<b>Title</b>	Plant Noise Commissioning		
<b>Project</b>	Domino's, Honiton		
<b>Reference</b>	2881.NT.1.1	<b>Author(s)</b>	BHo
<b>Date</b>	26 January 2024	<b>Reviewer</b>	FD

## Overview

### Summary

1. 86 High Street, Honiton holds full planning permission to operate as a hot food takeaway under application 23/1508/FUL, with several planning conditions attached.

2. Condition 4 is as follows:

*Prior to the first use of the kitchen associated with the hot food takeaway hereby permitted the extraction system serving the kitchen must be fully tested by an acoustic engineer and a validation report, which demonstrates that the extraction system is operating at the specified decibel level indicated in the Plant Noise Assessment report by Suono dated 13 July 2023, shall have been submitted to and approved in writing by the Local Planning Authority. The extraction system shall be thereafter cleaned and maintained in accordance with the manufacturer's recommendations.*

3. Suono have attended site and undertaken commissioning measurements of all external mechanical services plant items. To confirm, Suono are acoustic engineers as required by the condition; all staff are registered with the Institute of Acoustics and the company is a member of the Association of Noise Consultants.

4. This note sets out that the measured noise levels from all items except the Extract Fan termination are below that reported within the referenced Plant Noise Assessment report by Suono dated 13 July 2023 (reference 2881.RP.1.0; 'the original assessment') which can be seen in Appendix A attached to this note for ease of reference.

5. It is understood that the installed extract fan is different to that detailed within the original assessment and includes an in-duct attenuator.

6. By applying either of the attenuator options specified within this note, all items would then be expected to be within the agreed plant noise limits.

7. Alongside written confirmation that one of the specified attenuators has been installed, this note can be taken as the condition-referenced validation report to support discharge of Condition 4.

### Methodology

8. Plant noise limits have been set at 5 dB below representative background noise levels. It is therefore not possible to undertake commissioning measurements of plant items at the three Assessment Positions used within the original assessment, as noise levels would be below ambient noise from other sources within the general noise climate.

9. When on site for the commissioning measurements, the attending staff member confirmed that plant equipment was inaudible at the Assessment Positions. For context, a noise rating level at 5 dB above the representative background (10 dB higher than the plant noise limits) is expected to be the threshold for adverse effects, as set out in BS 4142.

10. Measurements were undertaken of each item running individually, which have then been calculated to each assessment position through corrections in the same manner as the original assessment.

11. As was noted in section 6.9 of the original assessment, screening losses between noise sources and assessment positions are complex due to the intervening buildings and structures. Only nominal screening losses have been used within the assessment and noise levels are expected to be significantly lower at the assessment positions as a result. This point also applies to the results presented below.

12. Measurements were taken over third-octave bands to identify whether character corrections need to be applied. No such character corrections are applied as a result of this review, which marries with the experience of the staff member undertaking the measurements.

13. All measurements were undertaken on 10 January 2023 with a Class 1 NOR140 sound level analyser. The measurement equipment was calibrated before and after measurements to ensure an acceptable level of accuracy; no drift was noted. Weather conditions were suitable for measurements, being cold and dry with no notable wind.

### Extract Fan Mitigation

14. It is understood that an atmospheric side in-duct attenuator is installed in the extract fan duct run. This attenuator has a length of 900 mm and 43% free area with a melinex faced coating.

15. In addition to this, more attenuation will be required. This can either be done by adding an additional attenuator or by replacing the existing attenuator of the extract fan duct run.

16. The necessary insertion losses for each attenuator are set out in **Table 1** below; these insertion losses outlined within the table must be achieved as a minimum.

**Table 1** Required mitigation insertion losses

Attenuator	Mitigation Type	Equipment	Minimum Required Insertion Loss (dB) at octave band centred frequency (Hz)							
			63	125	250	500	1k	2k	4k	8k
Additional	In-duct	Extract	5	8	14	15	15	8	6	4
Replacement	In-duct	Extract	8	13	26	32	35	25	19	14

17. To provide guidance on selecting and allowing for such mitigation, we would expect an attenuator 900 mm long and with 47% open area to be suitable to achieve the losses for the additional attenuator. We would expect an attenuator 1200 mm long and with 33% open area to be suitable to achieve losses for the replacement attenuator.

18. Installed attenuators should have a melinex coating for cleaning purposes. It is again noted that the insertion losses set out above are the requirement, not the example sizes or free areas.

19. In-duct silencers should be mounted internally, to avoid break out noise from the silencer casing, and as close to the fan as practicable.

20. Any pressure drops from the attenuators (or the atmospheric duct termination grille) should be limited to 40 Pa to avoid regenerated noise.

## Results

21. The following plant noise rating levels are calculated at the three assessment positions, including the above mitigation, with both options resulting in the same outcomes. These are compared against the plant noise limits set out in the original assessment.

**Table 2** Noise emission levels at assessment positions with assessed noise levels

Location	Rating Noise Level, $L_{ATr}$ dB [Limit]	
	Outlet Opening Hours (1100 – 2300)	Outlet closed (2300 – 1100)
AP1 – to south	29 [34]	11 [30]
AP2 – to east	34 [34]	20 [30]
AP3 – to east	31 [34]	16 [30]

22. With either an additional or replacement attenuator for the extract fan, noise levels measured on site will lead to noise levels within the plant noise limits. Noise levels are therefore demonstrated to be within the specified decibel level indicated in the original assessment.



**Appendix A: Suono Plant Noise Assessment**  
**'The original assessment'**