

ASDA
Wild House
Botley
SO32 2GP

Plant Noise Survey

On behalf of

ASDA

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1.0 Introduction

- 1.1. Noise Solutions Ltd (NSL) has been commissioned by ASDA to investigate noise from plant at the ASDA store at Wild House, Botley.
- 1.2. To assist with the understanding of this report a glossary of acoustic terms can be found in [Appendix A](#). An in-depth glossary of acoustic terms can be viewed online at www.acoustic-glossary.co.uk.

2.0 Site layout

- 2.1. The ASDA store is located on Wild House Road to the east of a new estate off Winchester Road in Boorley Green. Back of house is located to the south of the site.
- 2.2. Plant comprises:
 - internal VRF unit with intakes and discharges in a separate room from a louvre on the south façade
 - two HRU fan units with intake and discharge on the east façade, along with the bakery extract.
 - Extract fans from the chiller and frozen goods room, with discharge louvres on the southeast façade.
- 2.3. A site plan showing the site and surrounding area, is presented in [Appendix B](#).

3.0 Noise sensitive receptor

- 3.1. The nearest noise sensitive properties are the flats above the store. For the purposes of this survey the impact of each louvre has been assessed at the closest residential window above the exhaust.
- 3.2. A marked-up site plan is given in [Appendix C](#).

4.0 Plant noise design criteria

Eastleigh Borough Council

- 4.1. Eastleigh Borough council originally granted permission to the development with the Decision Notice to Planning Application reference F/19/86233 which includes Condition 26:

"No fixed plant or equipment shall be installed in or on any commercial premises without prior written consent from the Local Planning Authority. To obtain prior consent a

submission shall be made to the Local Planning Authority demonstrating in accordance with the methodology set out in BS4142, that in combination, any fixed plant and equipment permitted under this condition will not emit sound above the following criteria at any residential property:

Between 07:00 hours and 23:00 hours: 37dBA L_{Ar} , 1 hour

Between 23:00 hours and 07:00 hours: 32dBA L_{Ar} , 15 minutes

Fixed plant and machinery for which prior consent has been granted shall be maintained to ensure that sound emission does not change so as to exceed the specified criteria

Reason: In the interests of residential amenity."

BS 4142:2014+A1:2019 'Methods for Rating and Measuring Industrial and Commercial Sound'

- 4.2. British Standard (BS) 4142:2014+A1:2019 describes a method for rating and assessing sound of an industrial or commercial nature, which includes:
- Sound from industrial and manufacturing processes;
 - Sound from fixed installations which comprise mechanical and electrical plant and equipment;
 - Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
 - Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.
- 4.3. The industrial or commercial sound is assessed outside a dwelling or premises used for residential purposes, upon which sound is incident.
- 4.4. The procedure contained in BS 4142:2014+A1:2019 is to quantify the "specific sound level", which is the measured or predicted level of sound from the source in question over a one hour period for the daytime and a 15-minute period for the night-time. Daytime is defined in the standard as 07:00 to 23:00 hours, and night-time as 23:00 to 07:00 hours.
- 4.5. The specific sound level is converted to a rating level by adding penalties on a sliding scale to account for either potentially tonal or impulsive elements. The standard sets out objective

methods for determining the presence of tones or impulsive elements, but notes that it is acceptable to subjectively determine these effects.

- 4.6. The penalty for tonal elements is between 0dB and 6dB, and the standard notes: *"Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible."*
- 4.7. The penalty for impulsive elements is between 0dB and 9dB, and the standard notes: *"Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible."*
- 4.8. The background sound level should be established in terms of the L_{A90} noise index. The standard states that the background sound level should be measured over a period of sufficient length to obtain a representative value. This should not normally be less than 15-minute intervals. The standard states that: *"A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value."*
- 4.9. The assessment outcome results from a comparison of the rating level with the background sound level. The standard states:
- a) Typically, the greater this difference, the greater the magnitude of the impact.*
 - b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
 - c) A difference of around +5 dB 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 sound level, this is an indication of the specific sound source having a low impact, depending on the context.*
- Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."*
- 4.10. The standard goes on to note that: *"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."*
- 4.11. In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 edition places emphasis upon an appreciation of the context, as follows:

"An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."

- 4.12. BS 4142:2014+A1:2019 requires uncertainties in the assessment to be considered, and where the uncertainty is likely to affect the outcome of the assessment, steps should be taken to reduce the uncertainty.

5.0 Site visit Wednesday 29th July 2025

- 5.1. A site visit was undertaken on Wednesday 29th July 2026 between 19.00 and 21.00 hours to conduct on/off plant noise testing. A service engineer was present to operate plant as required.
- 5.2. Since a previous survey and assessment in November 2025 (NSL report 92807/PNS dated 13th November 2025) further noise mitigation has been implemented including an adjustment to the VRF and refrigeration running duties, and the installation of new attenuators to the refrigeration and HRU extracts.

Plant noise survey methodology

- 5.3. Thirty-second measurements of L_{A90} sound pressure levels were undertaken with a microphone on an extension pole one meter above the plant louvres. A distance correction has been applied to establish the noise levels at the windows above the plant.
- 5.4. Measurements were taken with plant off and running at the existing duty to establish specific noise levels from the plant.
- 5.5. Both broadband and one-third octave band frequency data was measured. Noise from the plant was found to be constant with no tonal or impulsive features. However, a penalty of 3dB as described in BS 4142:2014 has been applied during the daytime for the possible presence of *"...characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment..."*.
- 5.6. Table 1 presents the results of the survey and the calculated levels at the receptor windows.

Table 1 Measured levels and calculated levels at receptor

Plant	On (dB)	Off (dB)	Specific Level, (dB)	Resultant at Receptor (dB)
VRF Louvre	45	43	<42	<40
Refrigeration Extract	42	40	<37	<32
HRU + Kitchen Extract*	46	41	<45	<40

*The HRU Extract was inaudible in comparison to the kitchen extract and measurements have been combined.

- 5.7. Table 2 presents the results of the survey in comparison with the criterion set by Eastleigh Borough Council.

Table 2 Comparison against criteria

Plant	Time Period	Rating level, dB L _{Ar,Tr}	Criterion (dB)	Difference (dB)
VRF Louvre	Daytime (07:00 – 23:00)	<40	37	< +3
Refrigeration Extract	Daytime (07:00 – 23:00)	<32	37	< -5
	Night-time (23:00 – 07:00)	<32	32	< 0
HRU + Kitchen Extract	Daytime (07:00 – 23:00)	<40	37	< +3

- 5.8. The assessment finds that plant meets the criterion set in decision notice to planning application reference F/19/86233 at night. The assessment finds that plant running during the day could be at absolute worst 3dBA above the criterion. However, it should be considered that measurements of the plant were taken during high temperatures of 31°C when plant is running at its highest load. During regular temperatures the demand from plant will be lower.
- 5.9. Measurements of the HRU + Kitchen extract were dominated by the kitchen extract and could, at worst, be up to 3dBA above the criterion. It should be considered that the temperature and lighting controlled kitchen extract will only run to meet the demands of the store bakery and will not operate at all times.
- 5.10. Given the context it would be reasonable to argue that noise from plant results in a "low impact" level in accordance with BS4142:2014.

Assessment of uncertainties

- 5.11. Where possible uncertainty in this assessment has been minimised by taking the following steps:
- Measurements were taken at a time of day when residual noise is likely to be at its minimum.
 - The sound level meter and calibrator used have a traceable laboratory calibration and the meter was field calibrated before and after the measurements.
 - Uncertainty in the calculated impact has been reduced by the use of a well-established calculation method.
 - Care was taken to ensure that the measurement position was representative of the noise climate outside the nearby residential dwellings and not at a position where higher noise levels are present.

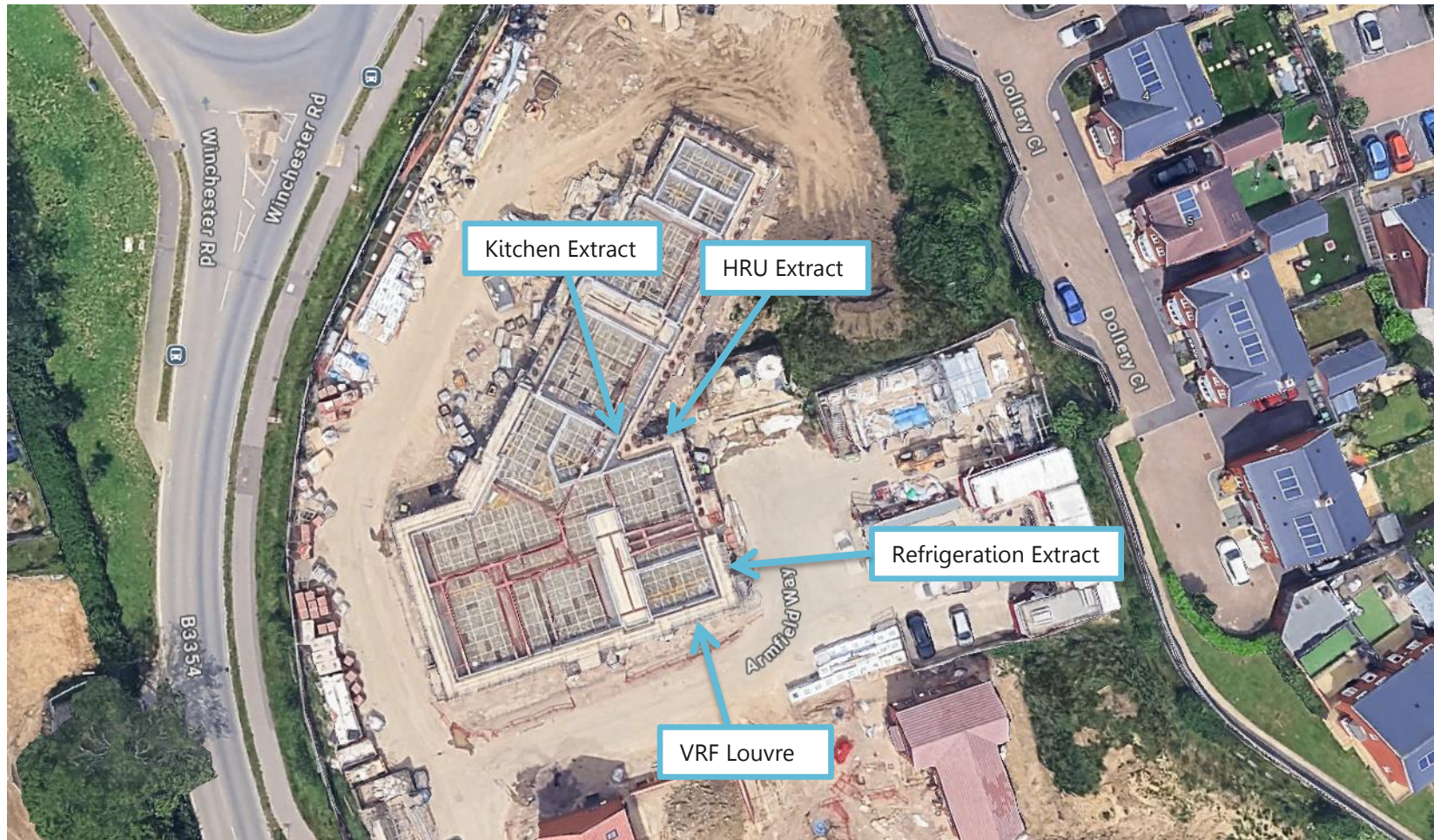
6.0 Summary

- 6.1. Noise Solutions Ltd (NSL) has been commissioned by ASDA to investigate noise from plant at the ASDA retail store in Botley.
- 6.2. Measurements of plant have been taken to establish its existing impact at the nearest receptors. Results from this survey show that the representative noise level of plant in accordance with BS4142:2014 at the nearest residential receptors is at worst 3dBA above the criterion set out in the planning condition by Eastleigh Borough Council but does however likely meet a "low impact" rating level.

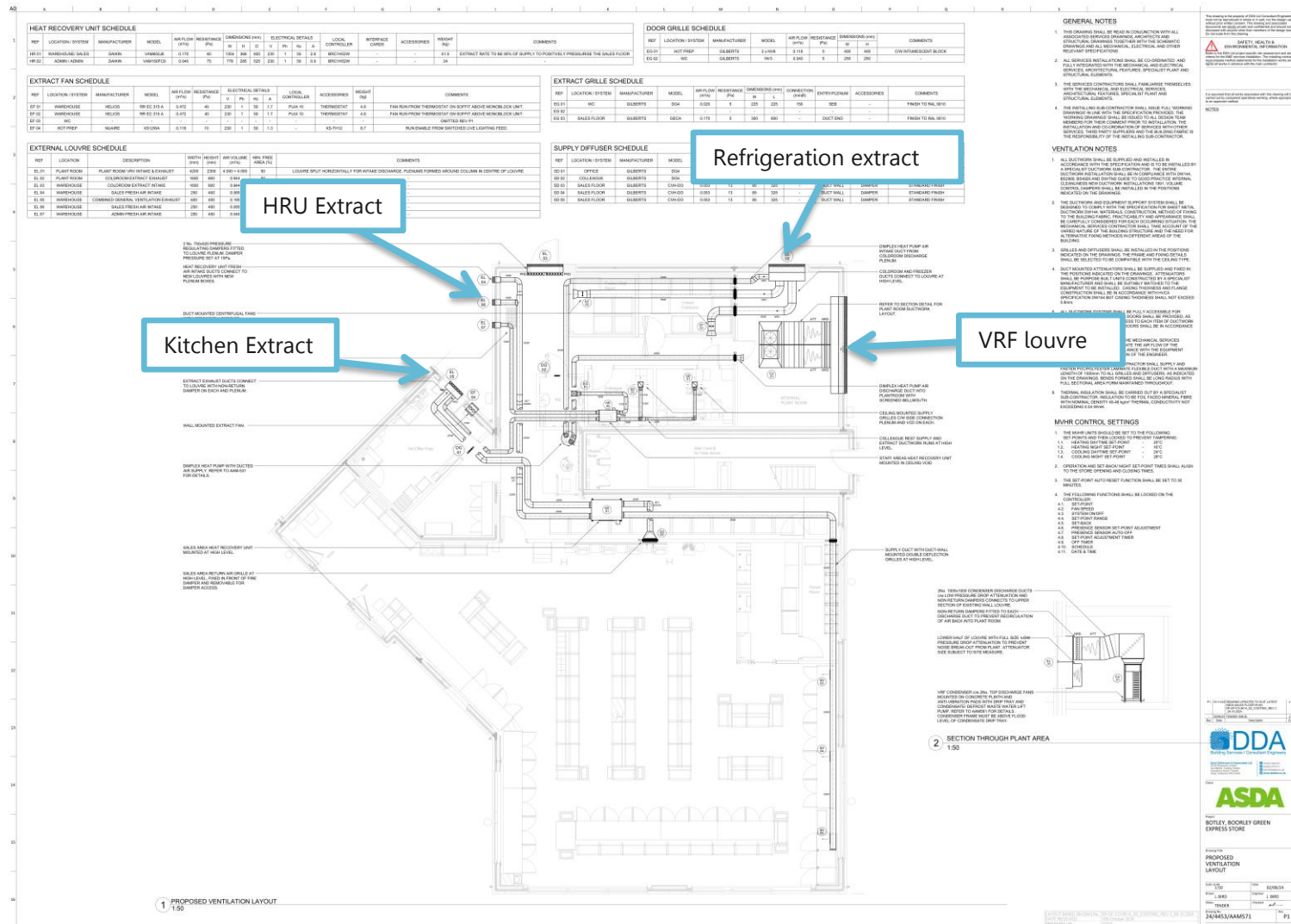
Appendix A Acoustic terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1/s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Fast Time Weighting	Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level recorded during a noise event with a period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A-weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. Generally used to describe background noise level.

Appendix B Photograph of site showing areas of interest



Appendix C Plant layout



Appendix D Calculations

Plant	Measured ambient (dB)	Measured residual (dB)	Measured specific (dB)	Measurement location (m)	Distance from plant to receptor (m)	Correction (dB)	SPL at receptor	BS4142:2014 Feature Correction (dB)	Rating Level at Receptor
VRF Louvre	45	43	<42	1	2.5	-8	<37	3	<40
Refrigeration Extract	42	40	<37	1	2.5	-8	<29	3	<32
HRU + Kitchen Extract	46	41	<45	1	2.5	-8	<37	3	<40

Appendix E Survey Details

- E.1 A plant noise survey at the ASDA in Wild House, Botley was undertaken on Wednesday 29th July between 19:00 – 21:00, to establish noise levels from plant. Measurements were taken in the evening when residual noise levels on site were low, the weather was measured at a temperature of 31 degrees with a no cloud cover and minimal wind. The conditions were therefore considered appropriate to conduct the survey.
- E.2 Details of the equipment used during the survey are provided in the table below. The sound level meter was calibrated before and after the survey; no significant change (+/-0.2 dB) in the calibration level was noted.

Description	Model / serial no.	Calibration date	Calibration certificate no.
Class 1 Sound level meter	Svantek 977D / 99071	13/05/2025	1512255-1
Condenser microphone	Microtech MK255 / 25430		
Preamplifier	Svantek SV12L / 129686		
Calibrator	Svantek SV 33B / 83850	06/11/2025	1515201-2