Northburn Acoustics
44 Lapford Drive
Cramlington
NE23 3GP

t 07739 463 091

Noise Report

Assessment of noise from proposed installation of condenser units on the rear wall of the property at 47-55, Ormonde Street, Jarrow.

Report number 25-51-1108

Prepared for:

SR Retailing Ltd.,
47-55, Ormonde Street,
Jarrow,
NE32 3PB.

Author:	M Johnson BEng (hons) MSc CEng MCIBSE MIOA	Checked by:	H Parkinson BSc
Signature:	[redacted]	Signature:	[redacted]

C:\Northburn Acoustics\Projects\2025\25-51-1108 (47-55 Ormonde Street)\25-51-1108_Noise Report_R2.docx

Revision	Description	Issued by	Date
1	Issued	MJ	2/4/2025
2	Client details amended	MJ	2/4/2025

Contents

1 Summary 4
2 Writer's qualifications 4
3 Source being assessed 5
4 Subjective Impressions 6
5 The existing context 6
6 Measurement location 7
7 Sound measuring system 7
8 Weather conditions 7
9 Reference time intervals 7
10 Background sound level 7
11 Specific sound level 8
12 Rating level 9
13 Excess of rating level over background 10
14 Discussion 10
15 Conclusions 10
Appendix - Glossary of acoustic terms 11

1 Summary

1.1.1 This report sets out the findings of a noise assessment in the vicinity of 47-55, Ormonde Street, Jarrow, in support of planning application reference 250072. The application is for the proposed installation of condenser units on the rear wall of the property.

1.1.2 The assessment has been carried out with reference to section 11 of the Tyneside Validation Checklist 2024.

1.1.3 Section 11 requires that an acoustic assessment be carried out for applications where development may create additional noise. The appropriate reference document for this application is BS4142:2014 +A2019.

1.1.4 This report addresses the requirements, and is based upon noise measurements in the vicinity of the site.

1.1.5 The report concludes that noise emitted from the proposed equipment, in it's current form, when assessed in accordance with BS4142:2014, exceeds the background sound level by 13 dB and 15 dB for daytime and night-time operation respectively.

1.1.6 Such an exceedance is likely to cause a nuisance to local residents.

1.1.7 However, the report recommends mitigation measures comprising of acoustic enclosures.

1.1.8 If the recommended mitigation measures are implemented, there should be no reason to object on the grounds of noise.

1.1.9 The report follows the format given in section 12 of BS4142:2014.

2 Writer's qualifications

2.1.1 This report has been compiled by Mr. M. Johnson, who has over 25 years experience in acoustics. His academic and professional qualifications include:

- MSc in Acoustics, vibration and noise control.
- BEng (hons) in Building Services Engineering.
- Corporate membership of the Institute of Acoustics.
- Corporate membership of the Chartered Institution of Building Services Engineers.
- Registered with the Engineering Council as a Chartered Engineer.

3 Source being assessed

3.1.1 The noise sources being assessed consist of 6 condensers to be located on the rear wall of 47-55, Ormonde Street, Jarrow. A condenser is the outdoor component of a refrigeration system, which emits heat to the atmosphere.

3.1.2 A location plan is shown in Figure 1, and a ground floor plan is shown in Figure 2.

3.1.3 4 of the 6 condensers will be set to operate at any time during normal daytime hours only and will be switched off at 20:00 hours daily. The other 2 condensers will be set to operate at any time, day or night.

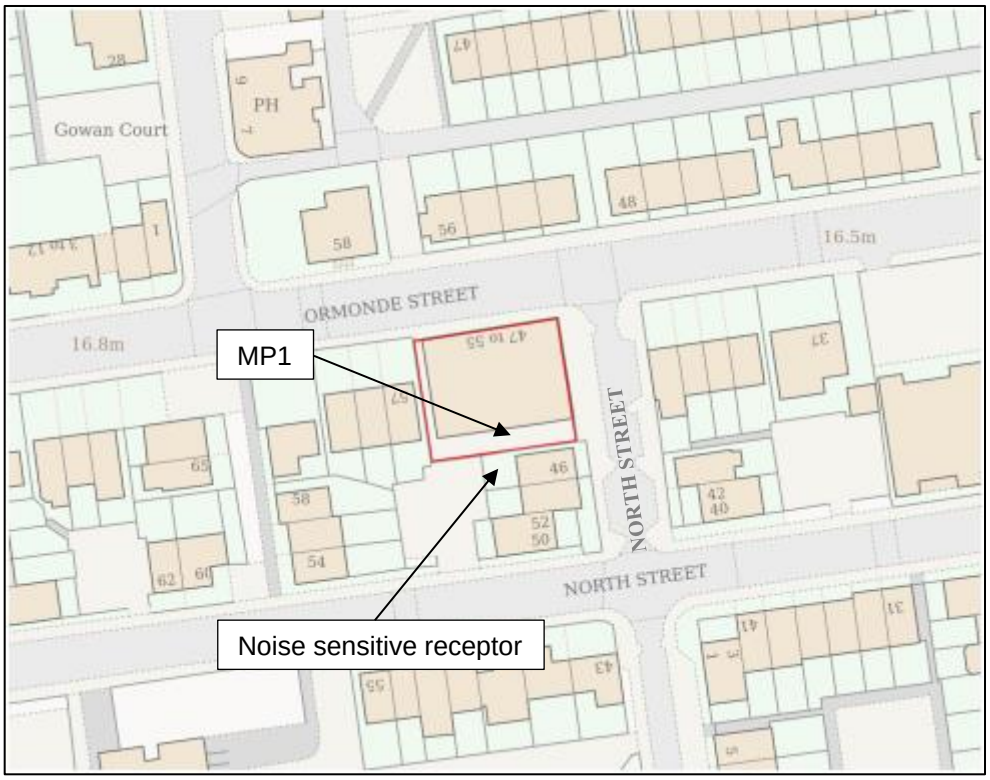


Figure 1: Location plan

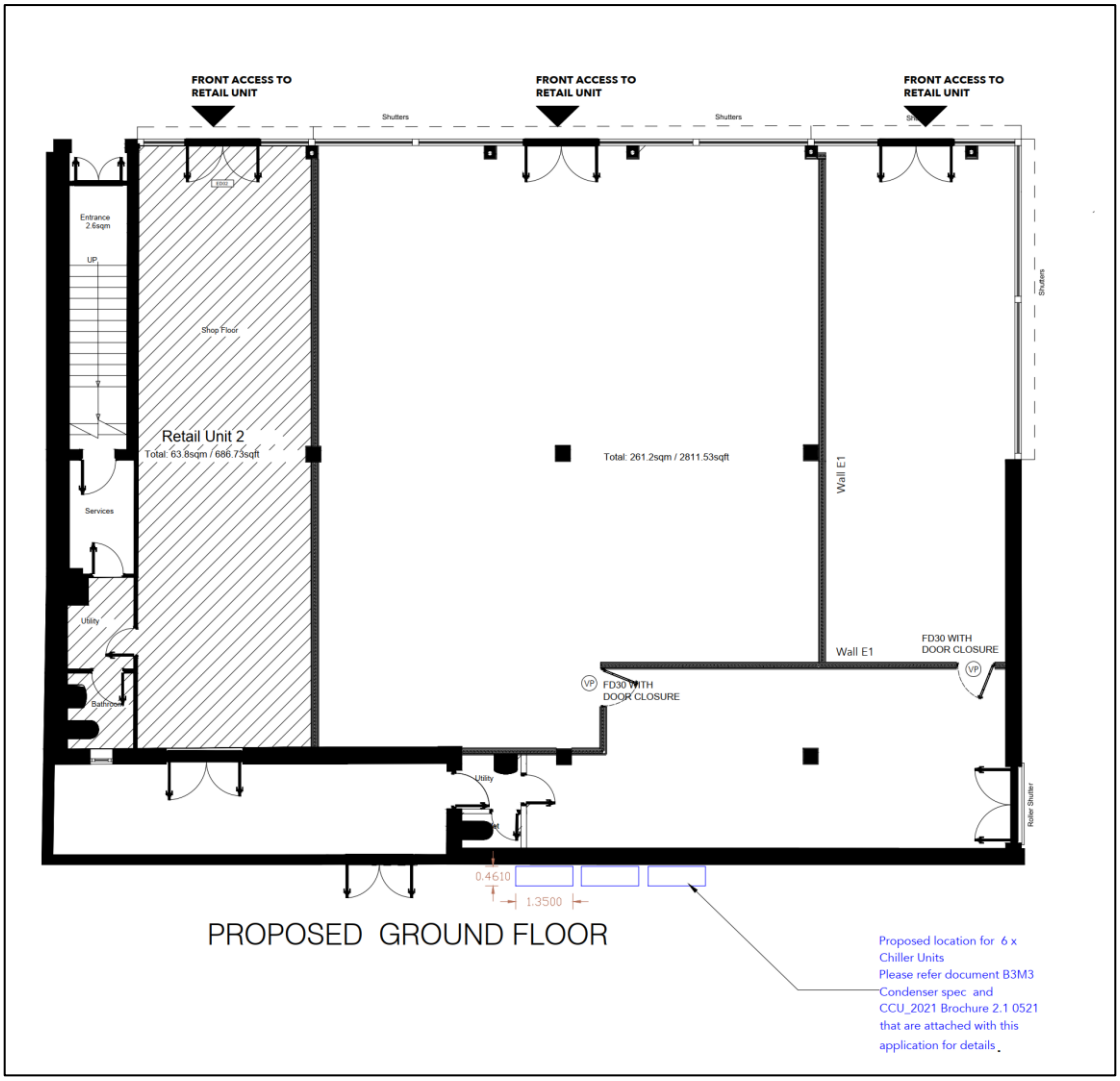


Figure 2: Ground floor plan

4 Subjective Impressions

4.1.1 From a subjective viewpoint, the proposed location of the condensers is approximately 4m from the boundary fence of the rear garden of a residential dwelling.

4.1.2 The residual sound level is typical for residential areas in an urban environment.

5 The existing context

5.1.1 The existing context is that of introducing a new noise source to an area that is predominantly residential.

5.1.2 The nearest noise sensitive receptor has been identified as the rear garden of 46, North Street.

6 Measurement location

6.1.1 Residual sound measurements were made at MP1, as shown in Figure 1.

6.1.2 The microphone was positioned at a height of 1.5 m above ground level.

7 Sound measuring system

7.1.1 The sound measuring system consisted of the items detailed in Table 1:

Equipment	Type	Serial number
Svantek 959	Type-1 sound analyser	11261

Table 1: Sound measuring systems

7.1.2 The sound analyser was checked before and after use, using an acoustic calibrator.

7.1.3 The acoustic calibrator has an output of 94 dB (re: $2x10^{-5}$ Pa) at 1 kHz.

7.1.4 The sound analyser showed a reading of 94 dBA, both before and after use. This indicates that the sound analyser was reading correctly.

8 Weather conditions

8.1.1 The weather conditions during the measurement period were:

Wind speed:	6 m/s;
Wind direction:	Not applicable;
Precipitation:	Zero;
Fog;	Zero;
Ground condition:	Dry;
Temperature:	Approximately 15 °Celsius;
Cloud cover:	25%;
Date of measurements:	27/28 March, 2025.

Note: Environmental noise measurements can be affected by air movement, temperature, cloud cover, and fog. The effects of the above climatic conditions were minimal, if not zero.

9 Reference time intervals

9.1.1 The reference time interval is 1-hour for daytime operation, and 15-minutes for night-time operation, according to BS4142:2014.

10 Background sound level

10.1.1 Measurements from the residual sound survey are presented in Table 2.

Time	L_{A90} (dB)
20:22 - 21:22	40
00:14 - 01:14	33

Table 2: Residual sound levels

10.1.2 The L_{A90} is the sound level prevailing for 90% of the time, which is generally used as an indicator of background sound level.

11 Specific sound level

11.1.1 The equipment to be installed comprises J & E Hall JEHS-0250-B2-M-1 condensers.

11.1.2 The specific sound level has been determined by calculation from the manufacturers published data. The manufacturer has rated the equipment as having a sound pressure level of 34 dB L_{Aeq} at 10m from the equipment in anechoic conditions.

11.1.3 Adjustments were necessary to correct for distance, quantity of condensers, surface directivity, and diversity.

11.1.4 The distance correction has been applied by adding 20Log(10/4) to correct for the fact that the noise source is rated at 10m, whereas the noise sensitive receptor is only 4m from the source. The correction is +8 dB.

11.1.5 The quantity correction has been applied by adding 10Log(n), where n is the total number of condensers. The correction is +8 dB for daytime, and +3 dB for night-time operation.

11.1.6 The surface directivity correction is applied by adding 3 dB since the equipment will be in hemi-anechoic conditions, rather than anechoic.

11.1.7 The diversity correction is applied by adding 10Log(t), where t is the ratio of time that the equipment is on. In this case it would be reasonable to assume that the equipment runs for 50% of the reference time-period, hence t = 0.5, and the correction is -3 dB.

11.1.8 The calculation steps for daytime and night-time operation are presented in Table 3 and Table 4 respectively.

Rated sound pressure level		34 dB L_{Aeq}
Rated distance	10m	
Actual distance	4	+8 dB
Surface directivity		+3 dB
Sound pressure level at boundary		45 dB L_{Aeq}
Quantity	6	+8 dB
Diversity	0.5	-3
Specific sound pressure level		50 dB $L_{Ar,Tr}$

Table 3: Specific sound level (daytime)

Rated sound pressure level		34 dB L_{Aeq}
Rated distance	10m	
Actual distance	4	+8 dB
Surface directivity		+3 dB
Sound pressure level at boundary		45 dB L_{Aeq}
Quantity	3	+3 dB
Diversity	0.5	-3
Specific sound pressure level		45 dB $L_{Ar,Tr}$

Table 4: Specific sound level (night-time)

12 Rating level

12.1.1 The rating level is determined by adding certain penalties, where applicable, to the specific sound level. These penalties are added when the specific sound contains certain acoustic features such as:

- Intermittency; and/or
- Tonality; and/or
- Impulsivity.

12.1.2 The equipment is neither tonal nor impulsive, but it is intermittent, therefore, a penalty of 3 dB is applicable.

12.1.3 The rating levels are:

53 dB $L_{Ar,Tr}$ during daytime, and

48 dB $L_{Ar,Tr}$ during night-time.

13 Excess of rating level over background

13.1.1 A simple subtraction of the background sound level from the rating level returns values of:

13 dB for daytime operation, and

15 dB for night-time operation.

14 Discussion

14.1.1 BS4142:2014 suggests that an exceedance of 5 dB is indicative of marginal significance, and that the lower the exceedance the better.

14.1.2 The rating levels will be 13 dB and 15 dB higher than the background sound level. This is an indication that adverse comment, nuisance, and loss of amenity is likely.

14.1.3 However, this can be mitigated by enclosing the equipment in acoustic enclosures. The enclosures should be selected such that they reduce the sound level by at least 20dB.

14.1.4 A 20dB reduction would reduce the exceedances to -7 dB during daytime and -5 dB during night-time.

14.1.5 This means that the rating level would be lower than the background sound level by at least 5 dB, which is a good indication of low impact according to BS4142:2014.

14.1.6 Suitable enclosures can be supplied by:

https://www.ice-ltd.co.uk/air-conditioning/air-conditioning-acoustic-enclosures/

15 Conclusions

15.1.1 The report concludes that noise emitted from the proposed extract equipment, in it's current form, when assessed in accordance with BS4142:2014, exceeds the background sound level by 13 dB and 15 dB for daytime and night-time operation respectively.

15.1.2 Such an exceedance is likely to cause a nuisance to local residents.

15.1.3 However, the report recommends mitigation measures comprising of acoustic enclosures.

15.1.4 If the recommended mitigation measures are implemented there should be no reason to object on the grounds of noise.

Appendix - Glossary of acoustic terms

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 µPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$L_p = 20 \log10(p/p_0)$

Where Lp = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 µPa).

A-weighting Network

A frequency filtering system, which approximates the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to sound.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time.

$L_{AN, T}$

The A-weighted sound pressure level in decibels exceeded for N% of the measurement period, T.

$L_{AF\ max}$

The maximum A-weighted sound level recorded during the measurement period. The subscript ‘F’ denotes fast time weighting, slow time weighting ‘S’ is also used.

Background sound level $L_{A90, T}$

The A-weighted sound pressure level of the residual sound in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background sound.

Specific sound level $L_{Aeq, Tr}$

The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific sound source over a given reference time interval.

Rating level $L_{Ar, Tr}$

The specific sound level plus any adjustment for the characteristic features of the sound.