

**ENVIRONMENTAL ACOUSTIC
IMPACT ASSESSMENT**

**Park Drive Health Centre,
Park Drive,
Baldock
Hertfordshire
SG7 6EN**

**Reference : CS8775
Revision : Revision A
Status : Planning Issue
Issue Date: 19th June 2024**

Prepared By:

Stuart Metcalfe

Stuart Metcalfe MIOA

CLIENT:

**Bianco Sale Limited
Courtney House,
62 Jarvis Road,
Croydon,
Surrey
CR2 6HU**

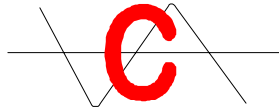
**bianco
sale limited**

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

Revision & Changes Log

Revision	Date	Comments/Summary of changes	Amended By:
A	24-06-2024	Operational Hours Changed	SJM

**CONTENTS**

1.0	Introduction
2.0	Summary
3.0	Acoustic Criteria
4.0	Plant Location and Measurement Position
5.0	Existing Sound Climate
6.0	Noise Survey
6.1	Measurements
6.2	Weather during Survey Period
6.3	Instrumentation
6.4	Survey Results
7.0	Plant Noise Assessment
7.1	Plant Noise Emissions Criteria
7.2	Proposed Plant
7.3	Plant Locations
7.4	Plant Noise Levels
8.0	Proposed Mitigation
9.0	Conclusion
10.0	Tabular Results
11.0	Results Graph
12.0	Appendix
	Glossary of Terms
	Calculations
	Plant Data
	Calibration Certificates

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912

sales@conabeare.co.uk

1 Introduction

Conabeare Acoustics Limited have been commissioned by Bianco Sale Limited, to undertake an Environmental Acoustic Survey and BS4142:2014 assessment in relation to noise emissions of proposed plant to Park Drive Health Centre, Park Drive, Baldock SG7 6EN.

The Survey was undertaken by Stuart Metcalfe MIOA who has been practicing in Building Services Acoustics and Noise Control Engineering for in excess of 30 years, is a Member of the Institute of Acoustics (MIOA) and is a Director at Conabeare Acoustics Ltd.

2 Acoustic Criteria

BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

BS4142:2014+A1:2019 gives a method for rating sound from industrial and commercial sources affecting people inside or outside dwellings or premises used for residential purposes.

An initial estimate of the significance of the sound from the industrial/commercial nature can be assessed by subtracting the measured background noise level from the rating level (this is the specific sound level of the source with any corrections or penalties for distinctive acoustic characteristics).

The site is located within the North Hertfordshire District Council who have adopted the National Planning Policy Guidelines and as such References and evaluations are to be made to the National Planning Policy Framework 2023 (NPPF) and the Noise Policy Statement for England 2010 (NPSE).

There are several key phrases within the NPSE aims and these are discussed below. “Significant adverse” and “adverse”

NOEL – No Observed Effect Level - This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level - This is the level above which adverse effects on health and quality of life can be detected. Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level - This is the level above which significant adverse effects on health and quality of life occur.

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

3 Plant Location and Measurement Position

The site is located on Park Drive, Baldock, Hertfordshire.

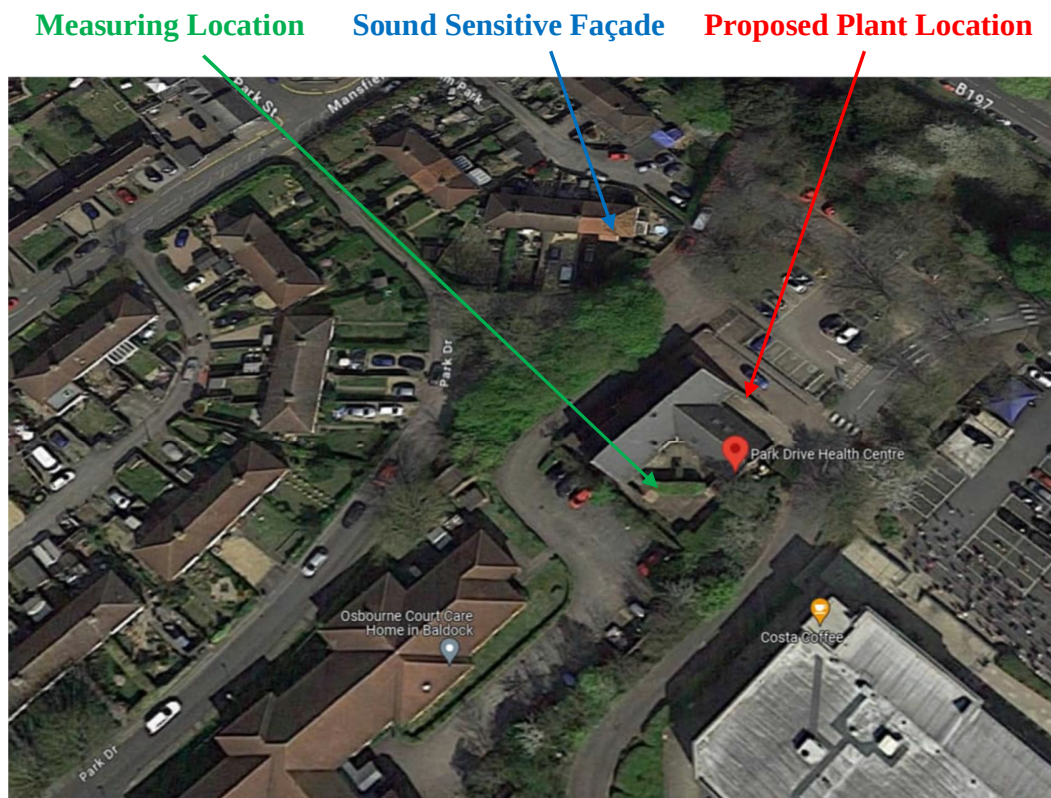
The area consists of a mixture of residential and commercial premises with the closest residential sound sensitive façade being adjudged to be 14 Park Drive at a distance of approximately 35 metres from the proposed Air Source Heat Pump location.

There is no direct line of sight from the sound sensitive façade to the plant location as this is screened by the building structure.

We have also considered the Health Centre itself as this will be the closest effected façade. This will be at a distance of 2 metres from the proposed Air Source Heat Pump location.

There is a Tesco store to the South of the plant with direct line of sight however is not considered to be a sound sensitive façade.

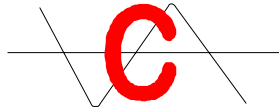
View A – Looking North



Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

CONABEARE



ACOUSTICS

Proposed Air Source Heat Pump Location

Sound Sensitive Facade



Measuring Location



Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA

Telephone 0118 930 3650 Facsimile 0118 930 3912

sales@conabeare.co.uk

4 Existing Noise Climate

The area is a mixture of residential and commercial premises with transportation and noise being adjudged to be the dominant source during the survey period.

5 Noise Survey

5.1 Measurements

The Survey commenced at approximately 10:50 hours on Thursday 13th June 2024 until approximately 11:15 hours on Friday 14th June 2024.

The Analyser was programmed to record 15 minute sampling periods over the survey duration.

The microphone was located on a tripod at approximately 1.5 metres above, and at a minimum of 1m from, a reflecting plane.

The measurements and their interpretation are in accordance with BS 7445: Parts 1 and 2. All readings are Sound Pressure Levels (Lp) in dB (re 20µPa).

5.2 Weather during Survey Period

The weather was warm and dry throughout the measuring period. The weather did not, in our opinion, adversely influence the readings obtained.

5.3 Instrumentation

The instrumentation used was a Type 1 Larson Davis LxT Sound Expert Sound Level Analyser confirming to IEC 651-1979 Type 1, EN60651 Type 1 and IEC 804-1985 Type 1, EN60804 Type 1.

- **Larson Davis LxT Sound Level Analyser, Serial Number 05588.**
- **Larson Davis PRMLxT1L Preamplifier, Serial Number 055664.**

The Sound Analyser and Preamplifier were calibrated on 6th November 2023, Certificate Number 16245.

The additional following equipment was also used

- **Larson Davis type CAL200 Calibrator, Serial Number 17720 calibrated on 8th November 2023, Certificate Number 16246.**
- **Extension Cable**

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

Field calibration checks were made using the Calibrator and no significant drift was noted against the Calibration level of $114.0\text{dB} \pm 0.2\text{dB}$ at $1000\text{Hz} \pm 0.2\%$.

5.4 Survey Results

The following is a summary of the Background (L_{A90}) levels recorded in Daytime, Evening and Night-time Periods

- $L_{A90,15\text{min}}$ 45.8dB(A) between 07:00 hours to 19:00 hours.
- $L_{A90,15\text{min}}$ 43.4dB(A) between 19:00 hours to 23:00 hours.
- $L_{A90,15\text{min}}$ 35.1dB(A) between 23:00 hours to 07:00 hours.

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

6 Assessment Methodology: BS4142:2014+A1:2019

BS 4142:2014+A1:2019 “Methods for Rating and Assessing Industrial and Commercial Sound” addresses the likelihood of adverse impact from noise generated by plant equipment. In the standard, a noise rating is determined and compared with the existing local background sound level, and several cumulative acoustic feature corrections to the noise rating are available to apply where appropriate.

For example if the noise includes a distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristic, then additional cumulative penalties individually ranging from 0 to 9 dB may be applied depending on the type of noise.

BS 4142:2014 seeks to determine a “representative” background sound level, stating that “...the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods”.

The assessment of the impact depends upon the margin by which the rating level of the specific sound source exceeds the background sound level but also promotes a consideration of the context in which the sound occurs when making an assessment.

BS 4142:2014 states that an initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level, while considering the following points:

- 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.

It is also considered appropriate to consider other pertinent sources of guidance. The following sections consider absolute criteria advocated by both the World Health Organisation: 1999: “Guidelines for Community Noise” and BS 8233:1999: “Sound insulation and noise reduction for buildings – Code of practice”.

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

World Health Organisation: 1999: “Guidelines for Community Noise”

This document provides a review of the effects of noise and a description of the principles of the WHO health criteria and guidelines for Community Noise.

The effects of noise in dwellings are identified as sleep disturbance, annoyance and speech interference. For bedrooms, the critical effect is sleep disturbance. The indoor guideline value for continuous noise in bedrooms is 30 dB LAeq. To enable casual conversation indoors during the daytime, the sound level of the interfering noise should not exceed 35 dB LAeq.

Table 1 of the document summarises the guideline values for community noise in specific environments and includes the noise indices to be adopted. Significantly, the corresponding time base to be used for the assessment is also included.

The relevant extracts of Table 1 are reproduced thus:

Specific environment	Critical health effect(s)	LAeq [dB]	Time base [hours]	LAmx fast [dB]
Dwelling, indoors	Speech intelligibility & moderate annoyance daytime & evening	35	16	45
	Sleep disturbance, night-time	30	8	

This level should be a cumulative level from all plant running normally and makes allowance for any tonal or intermittent noise from the plant.

BS8233:2014

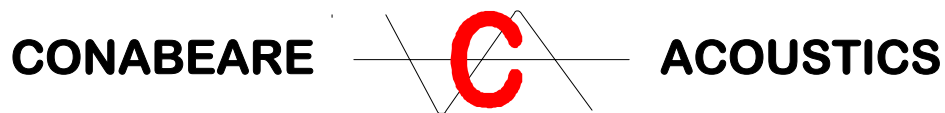
BS 8233: 2014 – “Guidance on sound insulation and noise reduction for buildings” provides information on achieving internal acoustic environments appropriate to their functions.

As part of this document, recommendations are given to the internal noise levels which are commensurate with achieving acceptable resting, dining and sleeping conditions within residential properties. The values given are generally in terms of an LAeq level although reference is also made with regards to maximum noise levels, although no criterion is specified in this recently revised version of the standard.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Room	35dB LAeq 16 hours	-
Dining	Dining Room	40dB LAeq 16 hours	-
Sleeping	Bedroom	35dB LAeq 16 hours	30dB LAeq 8 hours

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
 Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

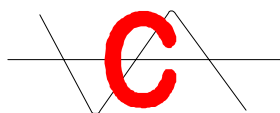


It is generally accepted that a partially open window will provide a level difference of 15dB and therefore the guideline levels to achieve 30dBA within a bedroom would indicate a level of 45dBA directly outside a bedroom window would be acceptable.

Noise Change (dBA)	Category
0	No Impact
0.1 to 2.9	Slight Impact
3.0 to 4.9	Moderate Impact
5.0 to 9.9	Substantial Impact
10.0 and above	Severe Impact

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk



7 Noise Assessment

The objective of any specification limiting new noises should therefore be to ensure that sound emission from the new building services plant and any other new sources, in particular, should not materially add to the existing sound climate.

We understand that the plant will operate during the hours of 07:00 to 19:00 and would recommend setting a target level at the nearest sound sensitive façades as below;

7.1 Plant Noise Emissions Criteria

- $L_{Aeq,15min}$ 36.0dB – 07:00 to 19:00 hours.

This level is 10dB(A) below the minimum measured background noise level.

We would also recommend setting a noise level at the Health Centre façade of 55dBA. This will then give a resultant noise level within the Health Centre of 40dBA/NR35 based upon BS8233 and CIBSE Guidelines.

7.2 Proposed Plant

The proposed plant being assessed is as detailed below;

- Air Source Heat Pump 1 number Mitsubishi CAHV-R450YA-HPB

7.3 Plant Locations

The fans are located within the top floor of the building with the condensing units on the side wall.

7.4 Plant Noise Levels

The manufacturers sound spectrums are reproduced below where available.

Item	Model	Parameter	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
			63	125	250	500	1k	2k	4k	8k	
ASHP	CAHV-R450YA-HPB	Lp @ 1m	64	66	67	60	54	51	52	47	63

We have detailed the noise levels for the above equipment, to the nearest sound sensitive façade, as well as the proposed mitigating measures, within our calculation sheets as below.

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
 Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

Specific Noise Level

The Specific Noise Level for the Air Source Heat Pump is 63dBA.

Acoustic Feature Correction

We have allowed a 3dB correction for the sound sensitive façade effect.

No allowance has been made for tonal noise as no items of plant are considered to be tonal in nature.

No allowance has been made for intermittency as no items of plant are considered to be intermittent in nature. As the plant provides heating it is envisaged that this will run on a continuous basis.

Distance Attenuation

The distance losses are shown on our calculation sheet.

Barrier Attenuation

There is no direct line of sight from the Residential facade to the ASHP Unit location so screening has been allowed.

There is direct line of sight from the Health Centre facade to the ASHP Unit location so no screening has been allowed.

Un-mitigated Noise Levels – Residential Facade.

The combined noise level for all items of plant with no mitigating measures, and with all suitable allowances made, will be 33dBA at 1 metre from the nearest residential sound sensitive façade on Park Drive.

This level is 3dBA lower than the target level and will give *NOEL – No Observed Effect Level*.

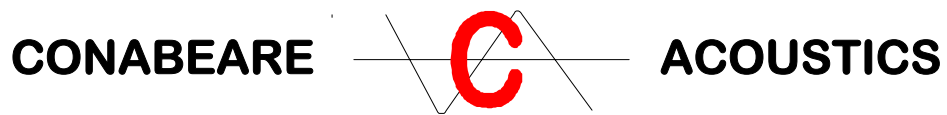
Un-mitigated Noise Levels – Health Centre Facade.

The combined noise level for all items of plant with no mitigating measures, and with all suitable allowances made, will be 56dBA at 1 metre from the nearest sound sensitive façade at the Health Centre.

This level is 1 dBA higher than the target level and will give *LOAEL – Lowest Observed Adverse Effect Level*. We do not believe it will be necessary to introduce any mitigating measures.

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk



8 Recommendations

No mitigating measures are required.

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

9 Conclusion

A background Noise Survey was carried during a typical day and night time period at a location representative of the nearest sound sensitive receivers.

An assessment in line with BS4142:2014+A1:2019 has been carried out and mitigating measures proposed.

In our opinion, the scheme should be acceptable to the Local Authority.

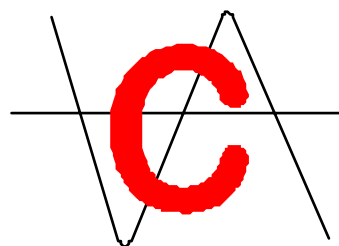
Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

CS8775 - Park Drive Health Centre, Park Drive, Baldock SG7 6EN

- Period result profile -

Overload occurred	No
Low battery occurred	No
Pause was used	No
Frequency weighting	A
Band	Broadband
Period time	15 min
Periods too short for LNs	No
First period listed	1 : 99
Measurement Description	
Start	13/06/2024 10:53
Stop	14/06/2024 11:16
Duration	24:23:18
Run Time	24:23:18
Pause	00:00.0
Pre Calibration	13/06/2024 10:52

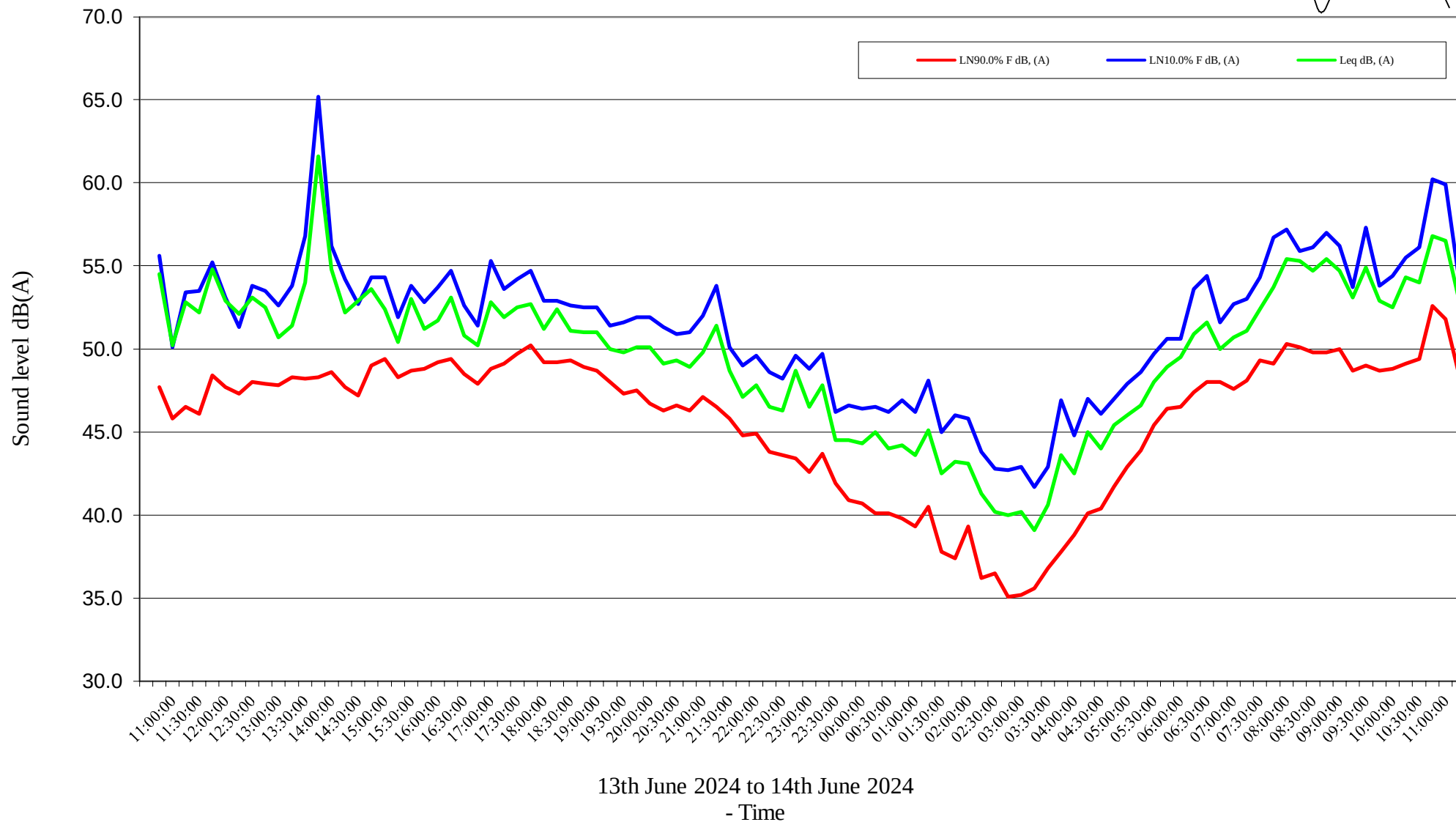
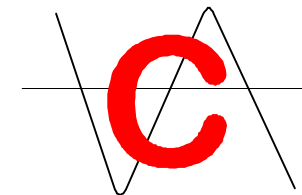


Period number	Date	Time	LN90.0% F dB, (A)	LN10.0% F dB, (A)	Leq dB, (A)
1	13/06/2024	10:53:09	47.7	55.6	54.5
2	13/06/2024	11:00:00	45.8	50.1	50.2
3	13/06/2024	11:15:00	46.5	53.4	52.8
4	13/06/2024	11:30:00	46.1	53.5	52.2
5	13/06/2024	11:45:00	48.4	55.2	54.8
6	13/06/2024	12:00:00	47.7	53.1	52.9
7	13/06/2024	12:15:00	47.3	51.3	52.1
8	13/06/2024	12:30:00	48.0	53.8	53.1
9	13/06/2024	12:45:00	47.9	53.5	52.5
10	13/06/2024	13:00:00	47.8	52.6	50.7
11	13/06/2024	13:15:00	48.3	53.8	51.4
12	13/06/2024	13:30:00	48.2	56.8	54.0
13	13/06/2024	13:45:00	48.3	65.2	61.6
14	13/06/2024	14:00:00	48.6	56.2	54.8
15	13/06/2024	14:15:00	47.7	54.2	52.2
16	13/06/2024	14:30:00	47.2	52.7	52.9
17	13/06/2024	14:45:00	49.0	54.3	53.6
18	13/06/2024	15:00:00	49.4	54.3	52.4
19	13/06/2024	15:15:00	48.3	51.9	50.4
20	13/06/2024	15:30:00	48.7	53.8	53.0
21	13/06/2024	15:45:00	48.8	52.8	51.2
22	13/06/2024	16:00:00	49.2	53.7	51.7
23	13/06/2024	16:15:00	49.4	54.7	53.1
24	13/06/2024	16:30:00	48.5	52.6	50.8
25	13/06/2024	16:45:00	47.9	51.4	50.2
26	13/06/2024	17:00:00	48.8	55.3	52.8
27	13/06/2024	17:15:00	49.1	53.6	51.9
28	13/06/2024	17:30:00	49.7	54.2	52.5
29	13/06/2024	17:45:00	50.2	54.7	52.7
30	13/06/2024	18:00:00	49.2	52.9	51.2
31	13/06/2024	18:15:00	49.2	52.9	52.4
32	13/06/2024	18:30:00	49.3	52.6	51.1
33	13/06/2024	18:45:00	48.9	52.5	51.0
34	13/06/2024	19:00:00	48.7	52.5	51.0
35	13/06/2024	19:15:00	48.0	51.4	50.0

Period number	Date	Time	LN90.0% F	LN10.0% F	Leq
			dB, (A)	dB, (A)	dB, (A)
36	13/06/2024	19:30:00	47.3	51.6	49.8
37	13/06/2024	19:45:00	47.5	51.9	50.1
38	13/06/2024	20:00:00	46.7	51.9	50.1
39	13/06/2024	20:15:00	46.3	51.3	49.1
40	13/06/2024	20:30:00	46.6	50.9	49.3
41	13/06/2024	20:45:00	46.3	51.0	48.9
42	13/06/2024	21:00:00	47.1	52.0	49.8
43	13/06/2024	21:15:00	46.5	53.8	51.4
44	13/06/2024	21:30:00	45.8	50.1	48.7
45	13/06/2024	21:45:00	44.8	49.0	47.1
46	13/06/2024	22:00:00	44.9	49.6	47.8
47	13/06/2024	22:15:00	43.8	48.6	46.5
48	13/06/2024	22:30:00	43.6	48.2	46.3
49	13/06/2024	22:45:00	43.4	49.6	48.7
50	13/06/2024	23:00:00	42.6	48.8	46.5
51	13/06/2024	23:15:00	43.7	49.7	47.8
52	13/06/2024	23:30:00	41.9	46.2	44.5
53	13/06/2024	23:45:00	40.9	46.6	44.5
54	14/06/2024	00:00:00	40.7	46.4	44.3
55	14/06/2024	00:15:00	40.1	46.5	45.0
56	14/06/2024	00:30:00	40.1	46.2	44.0
57	14/06/2024	00:45:00	39.8	46.9	44.2
58	14/06/2024	01:00:00	39.3	46.2	43.6
59	14/06/2024	01:15:00	40.5	48.1	45.1
60	14/06/2024	01:30:00	37.8	45.0	42.5
61	14/06/2024	01:45:00	37.4	46.0	43.2
62	14/06/2024	02:00:00	39.3	45.8	43.1
63	14/06/2024	02:15:00	36.2	43.8	41.3
64	14/06/2024	02:30:00	36.5	42.8	40.2
65	14/06/2024	02:45:00	35.1	42.7	40.0
66	14/06/2024	03:00:00	35.2	42.9	40.2
67	14/06/2024	03:15:00	35.6	41.7	39.1
68	14/06/2024	03:30:00	36.8	42.9	40.6
69	14/06/2024	03:45:00	37.8	46.9	43.6
70	14/06/2024	04:00:00	38.8	44.8	42.5
71	14/06/2024	04:15:00	40.1	47.0	45.0
72	14/06/2024	04:30:00	40.4	46.1	44.0
73	14/06/2024	04:45:00	41.7	47.0	45.4
74	14/06/2024	05:00:00	42.9	47.9	46.0
75	14/06/2024	05:15:00	43.9	48.6	46.6
76	14/06/2024	05:30:00	45.4	49.7	48.0
77	14/06/2024	05:45:00	46.4	50.6	48.9
78	14/06/2024	06:00:00	46.5	50.6	49.5
79	14/06/2024	06:15:00	47.4	53.6	50.9
80	14/06/2024	06:30:00	48.0	54.4	51.6
81	14/06/2024	06:45:00	48.0	51.6	50.0
82	14/06/2024	07:00:00	47.6	52.7	50.7
83	14/06/2024	07:15:00	48.1	53.0	51.1
84	14/06/2024	07:30:00	49.3	54.3	52.4
85	14/06/2024	07:45:00	49.1	56.7	53.7
86	14/06/2024	08:00:00	50.3	57.2	55.4
87	14/06/2024	08:15:00	50.1	55.9	55.3
88	14/06/2024	08:30:00	49.8	56.1	54.7
89	14/06/2024	08:45:00	49.8	57.0	55.4
90	14/06/2024	09:00:00	50.0	56.2	54.7
91	14/06/2024	09:15:00	48.7	53.7	53.1
92	14/06/2024	09:30:00	49.0	57.3	54.9
93	14/06/2024	09:45:00	48.7	53.8	52.9

Period number	Date	Time	LN90.0% F	LN10.0% F	Leq
			dB, (A)	dB, (A)	dB, (A)
94	14/06/2024	10:00:00	48.8	54.4	52.5
95	14/06/2024	10:15:00	49.1	55.5	54.3
96	14/06/2024	10:30:00	49.4	56.1	54.0
97	14/06/2024	10:45:00	52.6	60.2	56.8
98	14/06/2024	11:00:00	51.8	59.9	56.5
99	14/06/2024	11:15:00	48.4	54.1	52.9

CS8775 - Park Drive Health Centre, Park Drive, Baldock SG7 6EN



Glossary of Terms

L_{A90}	The sound pressure level in dB(A) which is exceeded for 90% of the time and is taken to be the effective lowest background sound level for the period by such methods of sound rating as that recommended in BS4142:2014. It will also be used as a basis for selecting limiting sound levels from new plant by Local Planning Authorities when setting Planning Consent Conditions.
L_{Aeq}	The “equivalent continuous sound level” for the measuring period, defined as the level in dBA which, if held constant over the measuring period, would produce the same amount of sound energy as does the actual varying ambient sound level. It is a measure of the amount of sound energy affecting the site from sources other than new plant or operations.
L_{A10}	The sound level exceeded for 10% of the time over the sample period. Originally used as a measure of subjective reaction to traffic noise in particular, it can also be taken as an indication of the practical maximum sound level that the building envelope will have to protect against.
dBA	Describes 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 dBA broadly agree with people’s assessment of loudness. A change of 3dBA is the minimum perceptible under normal conditions, and a change of 10dBA corresponds roughly to halving or doubling the loudness of a sound.

Conabeare Acoustics Limited

11 Chiltern Enterprise Centre, Station Road, Theale, Berkshire. RG7 4AA
Telephone 0118 930 3650 Facsimile 0118 930 3912
sales@conabeare.co.uk

Item	Calculation 02 - Noise To Health Centre Facade - Proposed Plant - Target Level - 55dBA											
ASHP01	Air Source Heat Pump - Atmospheric Noise			63	125	250	500	1k	2k	4k	8k	dBA
	Unit Lp at 1 metre - Mitsubishi CAHV-R450YA-HPB - Manufacturers Data			64	66	67	60	54	51	52	47	63
	Additional Distance to Listener			2	m	-13	-13	-13	-13	-13	-13	-13
	Additional Surfaces (1)					3	3	3	3	3	3	
	Façade Effect					3	3	3	3	3	3	
	Estimated Lp at Listener Condensing Unit Only					57	59	60	53	47	44	45

Acoustic Calibration Services Limited
Unit 6H Diamond Industrial Centre
Works Road Letchworth Garden City
Hertfordshire SG6 1LW
Tel: 01462 677 197 Mobile: 0771 886 4944
Email: trevjohnlewis@aol.com



CERTIFICATE OF CALIBRATION

Model: LD LxT1L

Serial Number: 0005588

Organisation: Conabeare Acoustics Limited, 11 Chilton Enterprise Centre
Station, Road, Theale, Berkshire RG7 4AA

Job Number: 2963

Customer Order Reference: S Metcalfe

The Sound Level Meter was assessed for conformance with International Standard BS EN 61672-3:2006 as modified by TPS 49 Edition 1. The manufacturer claims Class 1 accuracy conformance and it was against these requirements that all the results were evaluated.

The sound level meter was fitted with a **PCB 377B02** Serial No. **304334** measurement microphone and a **LD PRMLxT1L** preamplifier Serial No. **055664**. The microphone was replaced with a suitable input device in order to apply electrical signals to the preamplifier.

The sound level meter passed all tests carried out with no deviations from Class 1 specification, in accordance with the modified BS EN 61672-3:2006.

The meter was adjusted to read correctly in response to a laboratory B&K 4231 sound calibrator, producing a sensitivity reading of **-27.7 dB rel 1V/Pa**. When applying the associated **LD CAL200** sound calibrator serial no: **17720**, and referencing its current certification, the calibration set-up level would be **113.7 dB** when corrected to reference atmospheric pressure.

All ACSL's calibration instrumentation is fully traceable to National Standards. The acoustic references are calibrated by laboratories which are UKAS accredited for the purpose.

Certificate No: 16245

Date of Issue: 6th November 2023

Signature:

Print Name:

A handwritten signature in black ink, appearing to read 'Trevor Lewis', is written over a light blue circular stamp.

Trevor Lewis

Acoustic Calibration Services Limited
Unit 6H Diamond Industrial Centre
Works Road Letchworth Garden City
Hertfordshire SG6 1LW
Tel: 01462-677 197 Mobile: 0771 886 4944
Email: trevjohnlewis@aol.com



CERTIFICATE OF CALIBRATION

Model: LD CAL200

Serial Number: 17720

Organisation: Conabeare Acoustics Ltd, 11 Chilton Enterprise Centre
Station Road, Theale, Berkshire RG7 4AA

Job Number: 2964

Customer Order Reference: S Metcalfe

The acoustic calibrator was run for a period of time until a stable level was achieved. The output level was compared to the certified level of the laboratory measurement references. The calibrator was applied to the meter, removed, then reapplied to provide five separate readings, with the average value of these measurements recorded and certified.

The ambient temperature during calibration was **21.4 ± 1°C**.
The barometric pressure was **99.5 to 99.6 kPa**.
The relative humidity was **49 to 59 %**

The sound pressure level output from the Acoustic Calibrator was measured in its half inch configuration using a B&K 4134 microphone. The mean level output of the acoustic calibrator was 113.9 dB at the reference setting and 93.9 dB at the -20dB setting.

The output frequency signal of the acoustic calibrator is 1000Hz.

All ACSL's calibration instrumentation is fully traceable to National Standards. The acoustic references are calibrated by laboratories which are UKAS accredited for the purpose.

Certificate No: 16246

Date of Issue: 8th November 2023

Signature:

Print Name:

Trevor Lewis

A handwritten signature in black ink, appearing to read 'Trevor Lewis', is written over a white background.