Our Reference: NIA/1232/24/283/v1.0/4 Newcastle Street, Mansfield

8th March 2024

Mr Dawid Kornata
DK Plans Architectural Services
Ransom Hall
Ransom Wood Business Park
Mansfield
NG21 0HJ

Dear Sir

NOISE IMPACT ASSESSMENT FOR A PROPOSED CHANGE OF USE FROM RESIDENTIAL TO CAFÉ (USE CLASS E) WITH A REAR EXTENSION AT 4 NEWCASTLE STREET, MANSFIELD, NG18 1TH

1.00 SCOPE OF ACOUSTIC CONSULTANCY SERVICES

1.01 RP Acoustics Limited has been commissioned to carry out a noise impact assessment for the proposed change of use from residential to café at 4 Newcastle Street, Mansfield, NG18 1TH (hereafter referred to as the application site).

1.02 The noise impact assessment has been undertaken to accompany a full planning application to be submitted to Mansfield District Council. The scope of works is as follows:

Determine ambient and background noise levels in order to establish permissible noise limits for any kitchen extraction plant and suggest a suitably worded planning condition
Assess the noise impact in accordance with relevant guidelines

1.03 This report sets out the methodology and findings of the noise impact assessment. It has been prepared on behalf of Mr Ardjan Shehu for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Mr Ardjan Shehu (applicant), DK Plans Architectural Services (applicant's agent) and RP Acoustics Limited as to the extent to which the findings may be appropriate for their use.

1.04 A glossary of acoustic terms is contained in Appendix 1 for reference.

2.00 APPLICATION SITE SETTING AND PROPOSED CHANGE OF USE

2.01 The application site is located at the top (western end) of Newcastle Street, adjacent to the A6009 Rosemary Street (which is part of the ring road around Mansfield town centre). The site location plan is reproduced in Appendix 2 for reference.

2.02 The application site is located in a mixed use setting. Newcastle Street is in residential use, however there is the Cooperative Funeral Care on the opposite side of Newcastle Street and a 24-hour petrol filling station with a Premier Convenience Store of the opposite side of the A6009 Rosemary Street.

2.03 The proposed change of use is from a residential dwelling house with a two storey rear extension (the proposed opening hours are 0700 to 2300 hours Monday to Saturday and 0700 to 2300 hours Sunday i.e. daytime hours only). The proposed café is to have 52 covers in total with 36 covers at ground floor and 16 covers at first floor. The majority of the covers (32 covers) are to be located within the two storey rear extension. Windows to the dining area are to be located on the western elevation overlooking the A6009 Rosemary Street (and not the neighbouring residential dwelling). The proposed floor plans are reproduced in Appendix 3 for reference.

2.04 Café's fall under Use Class E, which is a commercial class generally covering shops, offices, gyms, restaurants / cafés, workshops and other types of commercial buildings. It broadly incorporates the previous A1, A2, A3, B1 and part of both D1 and D2. For reference, Use Class B1 (business, light industry) was a use which could be carried out in any residential area without detriment to the amenity of that area by reason of noise, vibration, smell, fumes, smoke, soot, ash, dust or grit. As movement within Use Class E (for example light industry changing to a restaurant / café) does not require planning permission, it therefore follows that a restaurant / café is also suitable in a residential area without detriment to noise (subject to the control of the noise associated with plant and equipment).

Continued from page 1

3.00 BASELINE NOISE SURVEY

3.01 A 24-hour baseline noise survey was undertaken from 2100 hours on Wednesday 20th February 2024. For the purpose of the survey, a single noise monitoring position was adopted at the rear façade of the application site in a reflective free field position at first floor level. The noise monitoring position is shown in Appendix 4 for reference.

3.02 Baseline noise measurements were undertaken using NTi Audio XL2 Type 1 integrating sound level meters. A 90 mm windshield was fitted for all measurements. The measurement system calibration was verified immediately before and after measurement sessions and no drift in calibration level was noted. Calibration certificates are reproduced in Appendix 5 for reference.

3.03 Baseline noise measurements consisted of A–weighted broadband parameters, together with linear one-third octave band L_{eq} levels, with a logging interval of 1 second. The following table contains a summary of the data rounded to the nearest decibel (note: a – 3 decibel façade enhancement correction has been applied to the measurement data in order to establish free field noise levels).

Table 3.1 – Baseline Noise Mesurément Data

Time	LAeq (dB)	LA90 (dB)	Time	LAeq (dB)	LA90 (dB)
0700–0800	64	55	1500–1600	65	57
0800–0900	66	60	1600–1700	65	56
0900–1000	66	59	1700–1800	64	54
1000–1100	65	57	1800–1900	63	54
1100–1200	65	57	1900–2000	64	50
1200–1300	65	58	2000–2100	61	49
1300–1400	65	56	2100–2200	59	49
1400–1500	64	56	2200–2300	58	43
Day Time Ambient Noise Level = 64 dB LAeq (0700–2300) **BS 4142 Most Commonly Occurring Day Time Background Noise Level = 56 dB LA90, 1 hour**					
2300–0000	55	39	0300–0400	49	36
0000–0100	54	35	0400–0500	52	38
0100–0200	51	35	0500–0600	60	50
0200–0300	52	36	0600–0700	62	54
Night Time Ambient Noise Level = 53 dB LAeq (0700–2300) **BS 4142 Most Commonly Occurring Night Time Background Noise Level = 36 dB LA90, 15 minutes**					

3.04 The daytime and night time ambient noise levels at the application site are moderately high at 64 dB LAeq (0700–2300) and 56 dB LAeq (2300–0700), respectively, and entirely commensurate with the setting being in close proximity to the A6009 Rosemary Street (which is part of the ring road around Mansfield town centre and relatively constantly trafficked).

3.05 The daytime background noise levels at the application site are moderately high at 56 dB LA90 (0700–2300, 1 hour) and entirely commensurate with the setting being in close proximity to the A6009 Rosemary Street (which is part of the ring road around Mansfield town centre and relatively constantly trafficked).

Continued from page 2

4.00 GOVERNMENT POLICY, ACOUSTIC STANDARDS AND GUIDANCE

National Planning Policy Framework – Planning Practice Guidance on Noise

4.01 The NPPF Planning Practice Guidance on Noise states that the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include the source and the absolute level of noise together with the time of day it occurs, the spectral content of the noise and the general character of the noise. The guidance presents a table of noise exposure hierarchy, which relates the No Observed Adverse Effect Level (NOAEL), the Lowest Observed Adverse Effect Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL) to the subjective perception of noise and examples of outcomes (reproduced in the table below).

Table 4.1 – Summary of Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Adverse Effect Level (NOAEL)			
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

BS 4142 Methods for Rating and Assessing Industrial and Commercial Sound

4.02 British Standard 4142:2014+A1:2019 is a method to assess the impact on humans in residential premises. It is appropriate for assessing sound levels outside a building that are from industrial and/or commercial premises, manufacturing premises or fixed installations. The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. Typically, the greater this difference, the greater the magnitude of the impact:

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

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

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.

Continued from page 3

5.00 NOISE IMPACT ASSESSMENT

5.01 The noise sources and transmission pathways considered relevant to the assessment are as follows:

Internal noise of patrons within the café impacting upon the adjoining residential dwelling (note: this dwelling is in the same ownership as the application site)
External noise of kitchen extraction plant and/or refrigeration chiller(s) impacting upon existing residential dwellings in the locality

5.02 It is considered that given the application site is located in an area with moderately high road traffic noise levels, the arrival and departure of patrons will not change the character of the area and is therefore such activity is considered to be at the No Observed Adverse Effect Level (NOAEL). Furthermore, by definition, Use Class E is suitable in a residential area without detriment to noise (subject to the control of the noise associated with plant and equipment).

Existing Party Wall to Adjoining Residential Dwelling

5.03 Based on measurements made at other premises, the reverberant internal ambient noise levels within busy cafés and restaurants (including background music) are of the order of 70 dB L_{Aeq}.

5.04 Based on testing of identical constructions, the airborne sound insulation of the 250 mm solid masonry party wall between the proposed café and the adjoining residential dwelling (note: this dwelling is in the same ownership as the application site) will be at least 55 dB $D_{nT,w}$. The resultant noise level within the adjoining residential dwelling due to transmission via the separating wall will be of the order of 15 dB L_{Aeq}. This is considered wholly negligible is the context that British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction in Buildings' (BS 823) sets 35 dB L_{Aeq} as the standard for good internal ambient levels within residential dwellings during the daytime period.

Permissible Plant Rating Noise Levels

5.05 Detailed information regarding items of kitchen extraction plant and/or refrigeration plant was not available at the time of writing (as the procurement of such items will only occur during the fit-out phase). Notwithstanding this, given the likely nature and location of such items, it is considered that this future part of the proposals can be satisfactorily controlled by the following planning condition which is commonly adopted by local planning authorities:

Details of all plant and equipment to be installed in or located on the premises, which is audible outside of the premises, shall be submitted to the local planning authority for approval. These details shall include average sound levels (L_{Aeq}), octave band noise levels and any proposed noise mitigation measures. The machinery, plant or equipment, and any approved noise mitigation measures shall be fully implemented and operational before the use first opens and shall be appropriately maintained thereafter.

Note: At the nearest existing residential use, the combined rating level of any building services noise associated with plant or equipment at the application site should not exceed the representative L_{A90} 1 hour during the hours of 07:00 to 23:00 or representative L_{A90} 15 minutes during the hours of 23:00 to 07:00 at 1 metre from the nearest noise sensitive facades when assessed in accordance with BS 4142:2014, inclusive of any acoustic feature corrections associated with tonal, impulsive or distinctive or intermittent characteristics. Reason: To protect the amenity of nearby properties and the environmental qualities of the area.

5.06 It is considered that the above condition is readily achievable with judicious siting, selection and attenuation of plant and equipment. In a residential area to minimize noise emissions, an extraction system for a commercial kitchen would typically include:
:

Extract fan located internally or externally but installed on anti-vibration mounts to minimize structural transmission and connected to ductwork with flexible couplings
In-duct silencer fitted on canopy side of extract fan (to control noise breakout to the kitchen area
In-duct silencer fitted to discharge side of the extract fan to control noise breakout

5.07 For reference, the background noise levels have been determined in accordance with BS 4142 at 56 dB $L_{A90\ (1\ hour,\ daytime)}$ and 36 dB $L_{A90\ (15\ minutes,\ night\ time)}$. Based on these background noise levels, and the proposed hours of operation being daytime only, it is considered that compliance with the aforementioned noise-related planning condition will be readily achievable.

Continued from page 4

6.00 CONCLUSIONS

6.01 An appropriately worded planning condition is suggested in order protect noise amenity for a proposed change of use to a café at 4 Newcastle Street,. Mansfield, NG18 1TH. As a consequence, noise should not pose a material constraint to the granting of planning permission.

If we can be of any further assistance, please do not hesitate to contact us.

Yours sincerely

[redacted]

Member of the Institute of Acoustics
For RP Acoustics Ltd

APPENDIX 1
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:

$L_p = 20 \log_{10}(p/p_0)$ where

L_p = 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 in a sound level meter, which approximates under defined conditions 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 noise.

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. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$

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

$L_{AF\ max}$

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

Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events that occur over different lengths of time.

Building Regulations ADE 2003 Standard ($D_{nT,w} + C_{tr}$)

A single-number quantity which characterises the airborne sound insulation between rooms using noise spectrum No. 2 as defined in BS EN ISO 717–1:1997.

Flanking Element

Any building element that contributes to sound transmission between rooms in a building that is not a separating floor or separating wall.

Flanking Sound

Sound transmitted between rooms via flanking elements instead of directly through separating elements or along any path other than the direct path.

APPENDIX 2
APPLICATION SITE LOCATION PLAN

Legend:
Application site.
Adjacent sites in same ownership.

DK Plans
Architectural Services

DK-Plans Architectural Services,
Ransom Hall, Ransom Wood Business Park, Mansfield, Notts, NG21 0HJ
M.07455050346
www.dk-plans.co.uk

Location Plan

1:1250 at A4

0m 12.5m 25m 50m

PROJECT:
Rear extension and change of use.

DRAWING TITLE:
Location Plan

PROJECT ADDRESS:
4 Newcastle St,
Mansfield
NG18 1TH

CLIENT:
Mr Ardjan Shehu

SCALE:	DATE:
1:1250 @ A4	2023.12

DRAWING NUMBER:	REVISION:
DK211_LP	-

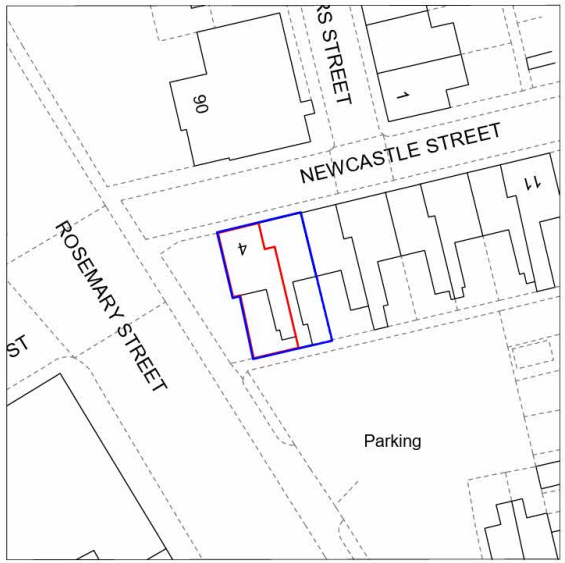
PLANNING

A4

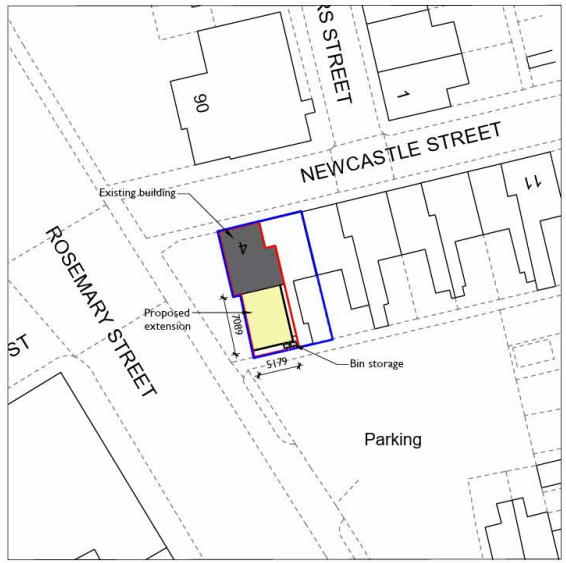
APPENDIX 3
PROPOSED LAYOUT AND FLOOR PLANS

DK Plans
Architectural Services

DK-Plans Architectural Services,
Ransom Hall, Ransom Wood Business Park, Mansfield, Notts, NG21 0HJ
M.07455050346
www.dk-plans.co.uk



Existing Site Plan
1:500 at A3
0m 5m 10m 25m



Proposed Site Plan
1:500 at A3
0m 5m 10m 25m

PROJECT:
Rear extension and change of use.

DRAWING TITLE:
Existing and Proposed Site Plan.

PROJECT ADDRESS:
4 Newcastle St,
Mansfield
NG18 1TH

CLIENT:
Mr Ardjan Shehu

SCALE:	DATE:
1:500 @ A3	2023.12

DRAWING NUMBER:	REVISION:
DK211_300	-

PLANNING

A3

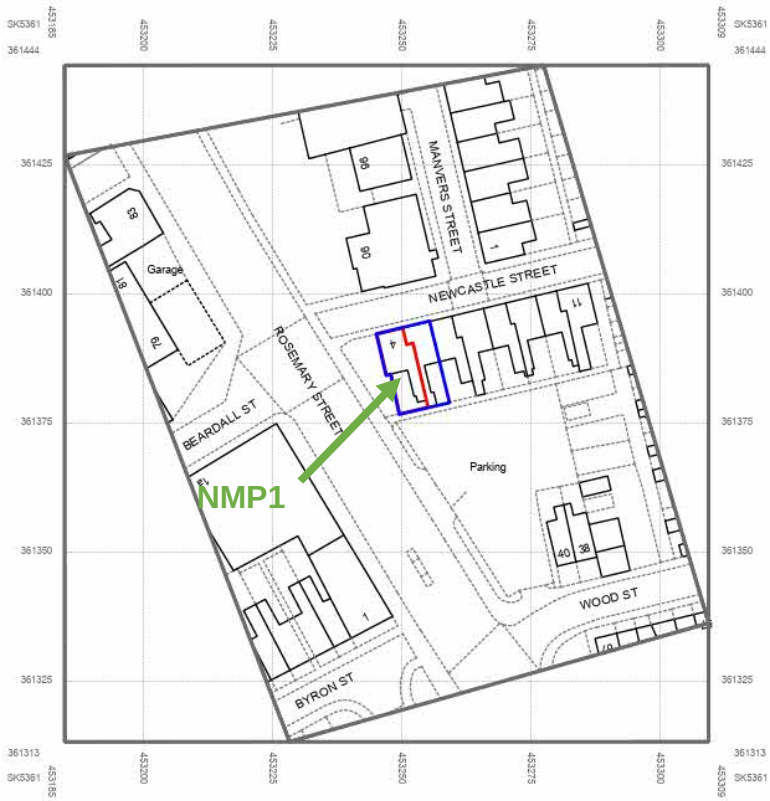
APPENDIX 3
PROPOSED LAYOUT AND FLOOR PLANS

APPENDIX 4
NOISE MONITORING POSITION

Legend:
Application site.
Adjacent sites in same ownership.

DK Plans
Architectural Services

DK-Plans Architectural Services,
Ransom Hall, Ransom Wood Business Park, Mansfield, Notts, NG21 0HJ
M.07455050346
www.dk-plans.co.uk



Location Plan

1:1250 at A4

0m 12.5m 25m 50m

PROJECT:
Rear extension and change of use.

DRAWING TITLE:
Location Plan

PROJECT ADDRESS:
4 Newcastle St,
Mansfield
NG18 1TH

CLIENT:
Mr Ardjan Shehu

SCALE:	DATE:
1:1250 @ A4	2023.12

DRAWING NUMBER:	REVISION:
DK211_LP	-

PLANNING

A4

APPENDIX 5
CALIBRATION CERTIFICATE FOR SOUND LEVEL METER (CALIBRATION EVERY 2 YEARS)

Laboratory Location
Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
Phone 01371 871030

0789

Certificate of Calibration and Conformance

Certificate number: **U46717**

Test Object:	**Sound Level Meter, BS EN IEC 61672-1:2013 Class 1** **Associated Frequency Analyser to BS EN IEC 61260:1996 Class 1**
Producer:	**NTi Audio**
Type:	**XL2-TA**
Serial number:	**A2A-17283-E0**
Customer:	**RP Acoustics Ltd**
Address:	**1 Dobcroft Close,** **Sheffield. S11 9LL.**
Contact Person:	**Richard Pennell**
Order No:	**RPA/24/CAL/01**

Introduction:
Calibration has been performed as set out in CA Technical Procedures which are based on the procedures for periodic verification of sound level meters as per the **Test Object** listed above. Results and conformance statement are overleaf and detailed results, where appropriate, are provided in the attached Measurement Report.

Tested:	*Producer*	*Type*	*Serial No*	*Certificate No*
Microphone	NTi Audio	MC230A	A23655	46716
Calibrator*	Larson Davis	CAL200	17115	U46700
Preamplifier	NTi Audio	MA220	11174	Included

* The calibrator was complete with any required coupler for the microphone specified.

Additional items that have also been submitted for verification:

Wind shield	N/A
Attenuator	N/A
Extension cable	N/A

These items have been taken into account wherever appropriate.

Instruction Manual: NTi-Audio XL2 Operating Manual v3.11.02 August 2016 Firmware Version: V4.71 The test object is a single channel instrument.

Conditions	*Pressure kPa*	*Temperature °C*	*Humidity %RH*
Reference conditions	101.325	23	50
Measurement conditions	97.15 ±0.02	22.30 ±0.4	43.48 ±0.65

Calibration Dates:

Received date:	23/01/2024	Reviewed date:	09/02/2024
Calibration date:	09/02/2024	Issued date:	09/02/2024

Technicians: (Electronic certificate)

Calibrated by: *Palaniwel Marappan B.Eng (Hons), M.Sc*

Reviewed by: *Darren Batten*

APPENDIX 5
CALIBRATION CERTIFICATE FOR SOUND CALIBRATOR (CALIBRATION EVERY YEAR)

Laboratory Location
Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
Phone 01371 871030

0789

Certificate of Calibration and Conformance

Certificate number: **U46700**

Test Object: **Sound Calibrator**

Producer: **Larson Davis**
Type: **CAL200**
Serial number: **17115**
Customer: **RP Acoustics Ltd**
Address: **1 Dobcroft Close,**
Sheffield. S11 9LL.
Contact Person: **Richard Pennell**
Order No:

Measurement Results	Level dB	Frequency Hz	Distortion %
Measurement 1	114.11	1000.36	0.37
Measurement 2	114.11	1000.36	0.37
Measurement 3	114.12	1000.37	0.37
Result (Average):	**114.11**	**1000.36**	**0.37**
Expanded Uncertainty:	0.1	1	0.3
Degree of Freedom:	>100	>100	>100
Coverage Factor:	2	2	2

The stated level is relative to 20µPa. The level is traceable to National Standards.
The stated level is valid at measurement conditions

Conditions	*Pressure kPa*	*Temperature °C*	*Humidity %RH*
Reference conditions	101.325	23	50
Measurement conditions	98.28 ±0.01	21.63 ±0.35	45.58 ±1.8

Calibration Statement
The reported expanded uncertainty of measurements is based on a standard uncertainty multiplied by the coverage factor of k=2, providing a level of confidence of approximately 95%. Where the degrees of freedom are insufficient to maintain this confidence level, the coverage factor is increased to maintain this confidence level. The uncertainty has been determined in accordance with UKAS requirements.

Multi Level Multi Frequency
Refer to page 3 for details of additional levels and frequencies calibrated.

Calibration Dates:

Received date:	23/01/2024	Reviewed date:	09/02/2024
Calibration date:	08/02/2024	Issued date:	09/02/2024

Technicians: (Electronic certificate)
Calibrated by: *Kathryn Brown*
Reviewed by: *Darren Batten*