

Acoustic Assessment at



Deans Yard, South Road

Baldock

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Executive Summary

Ned Johnson Acoustic Consultants Limited has been appointed to undertake an acoustic assessment for the proposed development at Deans Yard.

This report provides the results of the acoustic survey, which covers the sound sources affecting the proposed new dwellings.

As a result of the survey, this report makes recommendations for sound insulation performance of glazing for the new dwellings that will adequately protect future occupants from noise. This will ensure that the internal sound recommendations in BS8233:2014 and the $L_{AF\ Max}$ metric in the World Health Organisation Guidelines for Community Noise are met.



Contents

Executive Summary	2
1. Introduction	4
2. Site Description	5
3. Planning Reference Documents	8
4. Methodology	13
5. Acoustic Survey Results	14
6. Evaluation of Results	17
7. Mitigation	20
Appendix 1 Glossary of Terms	25
Appendix 2 Calibration Certificates	27
Appendix 3 Data	32



1. Introduction

- 1.1 Ned Johnson Acoustic Consultants Limited has been appointed to undertake an acoustic assessment for the proposed development at Deans Yard, Baldock.
- 1.2 The development is for the erection of 9 residential units at Deans Yard. This report looks at all noise sources affecting the proposed dwellings.
- 1.3 This report uses acoustic data from the site to assess the impact of local noise sources upon the proposed dwellings and makes proposals for sound insulation.
- 1.4 The assessment takes account of the existing sound environment, which has been quantified using direct measurement. The predicted sound levels inside the building have been compared to the internal sound recommendations contained in BS8233:2014 and the World Health Organisation *Guidelines for Community Noise*. The detailed method in BS8233:2014 was used to calculate the necessary level of glazing for bedrooms and the living rooms.

2. Site Description

- 2.1 The development site is currently a small industrial estate with multiple buildings. As part of the development they will be demolished and new dwellings constructed.
- 2.2 Figure 1 below shows the location of the development. MP1 and MP2 are the monitoring positions.

Figure 1.



- 2.3 The main noise source is road traffic travelling along the local road network. The industrial units at the site will be removed, leaving R & D Marine at the north west of the site as a source of commercial noise along with Hen & Chickens pub at the south east side of the site. There is a petrol station proposed to the north of the site.

2.4 MP1 and MP2 were set-up where the dwellings will be and are representative of the noise sources that will impact the new units and are the points where the sound pressure levels will be highest. The results of the survey will be used to propose glazing for the various facades of the new dwellings (see Section 7).

2.5 Figure 2 below shows the proposed site layout.

Figure 2.



2.6 In terms of the commercial noise sources R & D Marine operate Monday – Friday 08:00 – 17:00. The proposed petrol station would open 06:00 – 22:00 and the Hen & Chickens is open Monday – Friday 15:00 – 23:00 and at weekends 12:00 – 23:00.



- 2.7 At the proposed development road traffic noise will arise from Clothall Road to the north and South Road to the east.



3. Reference Documents

National Planning Policy Framework

3.1 The Department of Housing, Communities and Local Government published the National Planning Policy Framework (NPPF) in December 2024.

3.2 Paragraphs 187 (e) 198(a), (b) and 200 refer to noise in terms of policy approach:

187. Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason

200. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

Noise Policy Statement for England

- 3.3 The Department for Environment, Food and Rural Affairs published the *Noise Policy Statement for England* (NPSE) in March 2010. The explanatory note of NPSE defines the terms used in the NPPF:

"2.20 There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

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.

2.21 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.”

- 3.4 The NPSE does not define the SOAEL numerically, stating at paragraph 2.22:

“2.22 It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”

- 3.5 There is no local or national guidance on how the three terms should be defined numerically.
- 3.6 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development.
- 3.7 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur.

- 3.8 This aim seeks, where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.

British Standard 8233:2014

- 3.9 The scope of British Standard 8233: 2014 *Sound insulation and noise reduction for buildings – Code of practice* is the provision of recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new or refurbished buildings undergoing a change of use.
- 3.10 The standard suggests suitable internal noise levels for residential dwellings, as shown in Table 1. Below.

Table 1.

Activity	Location	07:00 - 23:00 L _{Aeq} , 16 hour	23:00 - 07:00 L _{Aeq} , 8 hour
Resting	Living Rooms	35	-
Dining	Dining Area	40	-
Sleeping	Bedrooms	35	30

- 3.11 In terms of this development the internal noise levels have been compared to the internal noise levels in Table 1. It is suggested in this

report that by meeting these noise levels the development would be classed as NOAEL.

3.12 In respect of outdoor amenity areas BS8233:2014 states:

'For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.'

3.13 With respect to the night-time noise levels, the World Health Organisation guidelines state:

"Where noise is continuous, the equivalent sound pressure level should not exceed 30dB_A indoors if negative effects on sleep are to be avoided.'

'For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LAF max more than 10-15 times per night."

No specific day time indoor noise levels are proposed but in terms of interference of speech there is reference to a figure of 35dB_A.



4. Survey Methodology

- 4.1 The survey was conducted over a 72-hour period from November 14th to November 17th, 2025. The measurement points can be seen in Figure 1.
- 4.2 The instruments used for the survey were a Svantek 971A and a Bruel & Kjaer 2260 sound level meters.
- 4.3 The sound level meters were calibrated immediately before and after use with a Bruel & Kjaer 4231 Acoustic Calibrator producing 94dB at 1KHz and no drift was noted in calibration readings. Both calibration results were 93.8dB for the 2260 and 93.9 for the 971A.
- 4.4 The measurements at MP1 were taken with the 971A microphone housed in an outdoor microphone kit, with a 3-metre extension cable mounted on a tripod on a roof of garages at first floor level, facing Clothall Road and were representative of the nearest facades of the proposed dwellings to Clothall Road.
- 4.5 The measurements at MP2 were taken with the 2260 microphone housed in an outdoor microphone kit, with a 3-metre extension cable mounted on a tripod on a roof of a building at first floor level, facing South Road and were representative of the nearest facades of the proposed dwellings to South Road. The measurements at this location were 51 hours due to a battery shut down.
- 4.6 The weather during the survey was predominantly dry with some showers on Saturday November 15th. The temperature ranged between 5°C - 15°C with wind speed less than 5m/s.



5. Acoustic Survey Results

5.1 The tables below show the results of measurements taken during the survey.

Table 2. Summary of measured noise levels at MP1

Start Date	Duration	$L_{Aeq,T}$	10 th Highest $L_{AF\ Max}$
14/11/2025	20:30 – 23:00	54	N/A
14/11/2025	23:00 – 07:00	50	70
15/11/2025	07:00 – 23:00	57	N/A
15/11/2025	23:00 – 07:00	51	69
16/11/2025	07:00 – 23:00	57	N/A
16/11/2025	23:00 – 07:00	51	70
17/11/2025	07:00 – 20:10	58	N/A

Table 3. Summary of measured noise levels at MP2

Start Date	Duration	$L_{Aeq,T}$	10 th Highest $L_{AF Max}$
14/11/2025	20:30 – 23:00	58	N/A
14/11/2025	23:00 – 07:00	52	73
15/11/2025	07:00 – 23:00	62	N/A
15/11/2025	23:00 – 07:00	54	74
16/11/2025	07:00 – 23:00	61	N/A
16/11/2025	23:00 – 23:45	51	72

- 5.3 The next sections discuss the sound insulation required based on calculations made using the detailed method in BS8233:2014. The full measured data can be seen in Appendix 3.
- 5.4 The north-western area of the site there is R & D Marine and the northern boundary of the site is likely to border a new petrol station, there may also be commercial impacts from the Hen & Chickens pub. The following table is a BS4142 assessment of the commercial impacts of these sources on the future dwellings.

Table 4. BS4142 summary

Extraction System	Correction
Correction for tonality	0
Correction for intermittency	3
Correction for impulsivity	0
Other sound characteristics	0

- 5.5 The correction for intermittency is on the basis that at all dwellings there may be intermittent sound from the petrol station and R & D Marine. As the commercial activities are daytime only the penalty is only applied to the daytime sound pressure levels.



6 Evaluation of results

- 6.1 The suitability of the site for residential development has been determined by comparing the measured noise levels with the criteria set out in Section 3 of this report.
- 6.2 When comparing the results at MP1 and MP2 to the Noise Risk Assessment in ProPG, the site, with no mitigation, is in the medium-risk category for daytime and night-time.
- 6.3 In terms of good acoustic design the Pro PG states that the following aspects should be properly considered be:
- Check the feasibility of relocating, or reducing noise levels from relevant sources
 - Consider options for planning the site or building layout
 - Consider the orientation of proposed building(s).
 - Select construction types and methods for meeting building performance requirements.
 - Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc.
 - Assess the viability of alternative solutions.
- 6.4 In terms of the proposed dwelling there is no way of reducing noise exposure further. Changing the orientation of the layout would not make a difference to noise exposure. This layout is the best design for the space provided. There are no alternative solutions in this development to adequate sound insulation of the dwellings to be constructed.
- 6.5 The development, with suitable glazing and sound insulation, will be able to meet the recommendations in BS8233:2014 for internal sound.



The sound pressure levels, incident upon the facades of the proposed dwelling are not unusual for such an environment and appropriate glazing and sound insulation is proposed in the next section. The next section makes recommendations for glazing arrangements to meet the internal noise levels recommended in BS8233:2014.

- 6.6 The internal sound levels with windows open during the day and night would exceed the internal sound levels recommended in BS8233:2014. For this reason, alternative ventilation will be required at the development in order to allow cooling of the dwellings without compromising the internal sound levels. The next section provides more detail on proposed ventilation of the development. The ventilation will not involve sealed facades.
- 6.7 With suitable glazing and sound insulation installed the internal sound levels at the property are considered acceptable for residential development, as they will be within the range of values deemed to be NOEL. This is consistent with the Noise Policy Statement England. Considering the noise levels as NOEL is justified here as the internal sound levels will meet those recommended in BS8233:2014, which is judged to be the point where there will be no adverse effect on human health.
- 6.8 In terms of other relevant issues, as stated above, with suitable sound insulation the proposed dwellings will comply with national planning guidance and meet the recommended internal noise levels set out in BS8233:2014. The dwellings will be compliant with Pro Pg in that future residents will be adequately protected from external noise.
- 6.9 In terms of unintended adverse consequences the likeliest would-be ventilation. However, as the development will not have a sealed façade



there will not be prevention of control of the personal environment.

- 6.10 The sound pressure levels in the external amenity areas may exceed 55dB $L_{Aeq\ 16\ hour}$ recommended in BS8233:2014 and therefore mitigation is necessary. The gardens will be further from the roads than the monitoring points and screened by the houses but a precautionary approach is recommended. The drawings show a boundary fence 2m high, recommendations for the mass of the fencing are made in the next section.

7. Mitigation

- 7.1 The following noise control measures form the noise mitigation strategy for the development.
- 7.2 The main structures will have a sound reduction of at least 45R_w dB. The roofs will have a sound insulation performance of at least 40R_w dB (figure taken from BS8233:2014).
- 7.3 The minimum glazing performance for all façades must be a minimum of 33R_w dB (30 R_w+C_{tr} dB) as this is the level of sound reduction needed to meet the recommended sound pressure levels as set-out in BS8233:2014 for L_{Aeq-T} and the L_{AF Max} in the WHO guidance for bedrooms and living rooms and is calculated using the detailed method in BS8233:2014. This can be achieved with double-glazing using an arrangement of (for example) 6/16/6, which will be sufficient for the purposes of this building in this location. The following table shows the minimum performance required in each octave band centre frequency:

Table 5. Acoustic performance of windows for all facades

	Octave band centre frequency, Hz					
	125	250	500	1000	2000	4000
Acoustic Performance	20	30	30	40	35	44

- 7.4 Any glazing manufacturer should provide certificates that their windows will meet the required sound insulation standard; the performance must be for the whole window and not just the glass.



- 7.5 The full sound insulation value of any window cannot be realized if there are air gaps. These commonly occur around frames due to insecure fixing, shrinkage of wood and poor maintenance. A double-glazed unit must be used in a frame with good seals to realize its full insulating potential. Any gaps or poor fitting could reduce the glazing performance by up to 10dB.
- 7.6 The above glazing recommendation would ensure that during the daytime and night-time noise levels in the property would be 35dB_A and 30dB_A respectively due to external sources.
- 7.7 The minimum specification for all entrance doors is Rw 35(dB) This can be achieved by a solid core timber door with a high-quality acoustic perimeter and threshold seals. Interfaces between walls and all other adjacent elements should be built to ensure that the sound insulation performance of the wall is not compromised. All gaps should be tightly packed with mineral wool and all joints should be sealed with a flexible sealant, such as frame grade acoustic sealant.
- 7.8 BS8233:2014 also states that if internal noise recommendations are achieved only with windows closed an alternative means of ventilation should be provided. The aforementioned British Standard states that an open window will provide 15db of sound attenuation, this means that if façade levels are more than 50dB_A during the day or 45dB_A during the night then the internal noise targets will be exceeded with windows open and alternative ventilation is required.
- 7.9 Approved Document F of the Building Regulations has four template systems for ventilation of a dwelling and the description of these systems is in the table below.

Table 6.

Ventilation System	Whole Dwelling Ventilation	Extract Ventilation	Purge Ventilation
System 1: Background ventilators and intermittent extract fans	Background ventilators (trickle vents)	Intermittent extract fans	Typically provided by opening windows
System 2: Passive stack (natural)	Background ventilators (trickle vents) and passive stack ventilation	Continuous via passive stack	Typically provided by opening windows
System 3: Continuous mechanical extract (MEV)	Continuous mechanical extract – minimum low rate Trickle vents provide inlet air	Continuous mechanical extract – minimum high rate Trickle vents provide inlet air	Typically provided by opening windows
System 4: Continuously mechanical supply and extract with heat recovery	Continuous mechanical extract – minimum low rate	Continuous mechanical extract – minimum high rate	Typically provided by opening windows

7.10 In regard to the development, the monitoring data shows that during the day and night the dwellings will have façade noise levels, which are above 50dB_A and 45dB_A respectively. As the façade noise levels are exceeded an alternative means of ventilation to just opening windows should be incorporated into the design to allow residents to ventilate the rooms without having to open the windows.

7.11 Should the developer choose to install trickle vents as part of the ventilation plan the minimum acoustic performance is shown in the tables below.

Table 7. Acoustic performance of trickle vents

	Octave band centre frequency, Hz					
	125	250	500	1000	2000	4000
Acoustic Performance	31	26	30	39	48	64

7.12 The noise from mechanical ventilation systems should be controlled so as not to cause an unacceptable rise in internal noise levels. The following table proposes indoor ambient noise levels from mechanical services.

Table 8. Noise from mechanical services.

Ventilation Condition	Possible ADF System	Desirable Internal Ambient Noise Levels from Mechanical Services
ADF- Whole Dwelling Ventilation	System 4	Bedrooms $\leq L_{Aeq}$ 26dB Living Rooms $\leq L_{Aeq}$ 30dB
ADF- Extract Ventilation	System 4	Bedrooms $\leq L_{Aeq}$ 26dB Living Rooms $\leq L_{Aeq}$ 30dB Bathroom/WC/Kitchen $\leq L_{Aeq}$ 45dB
ADF- Purge Ventilation	Manually controlled by opening windows	No desirable noise levels are proposed



Appendix 1: Glossary of Terms

Daytime Defined in BS8233 and BS4142 as the period 07:00-23:00 hours.

Night-time Defined in BS8233 and BS4142 as the period 23:00-07:00 hours.

Decibel (dB): A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure levels the reference quantity is 20 uPa. 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 : 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 is the minimum perceptible under normal conditions, and a change of 10 dB 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 .

$L_{A10,T}$: The A weighted noise level exceeded for 10% of the measurement period, T. It gives an indication of the upper limit of fluctuating noise such as that from road traffic.

$L_{A90,T}$: The A weighted noise level exceeded for 90% of the measurement period, T. This is defined in BS 4142 as the background noise level.



L_{AE} : The sound exposure level – the level of a sound with a period of 1 second that has the same sound energy as the event considered.

$L_{Aeq,T}$: The equivalent continuous sound level – the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T).

$L_{A\ Max}$: The highest A weighted noise level recorded during a noise event. The time weighting (slow or fast) should be stated.



Appendix 2: Calibration Certificates

Laboratory Location

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



Certificate of Calibration

Certificate number: 51044

Test Object: Sound Calibrator

Producer: Brüel & Kjær
Type: 4231
Serial number: 2039392
Customer: Ned Johnson Acoustic Consultants Ltd
Address: 378 Church Street, London. N9 9HS.
Contact Person: Ned Johnson.
Order No:

Measurement Results	Level dB	Level Stability dB	Frequency Hz	Distortion %
Measurement 1	94.00	0.01	999.86	0.45
Measurement 2	94.00	0.01	999.86	0.46
Measurement 3	94.00	0.01	999.86	0.45
Result (Average):	94.00	0.01	999.86	0.45
Expanded Uncertainty:	0.1	0.02	1	0.25
Degree of Freedom:	>100	>100	>100	>100
Coverage Factor:	2	2	2	2

The stated level is relative to 20µPa. The level is traceable to National Standards. The stated level is valid at reference conditions. The following correction factors have been applied during the measurement

Pres:0.0008 dB/kPa Temp:0.0015 dB/°C Humi:0.001 dB/%RH Load volume: 0.0003 dB/mm3

Conditions	Pressure kPa	Temperature °C	Humidity %RH
Reference conditions	101.325	23	50
Measurement conditions	101.582 ±0.042	22.9 ±0.1	38.5 ±0.9

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.

Records: K:\C A\Calibration\Nor-1504\Nor-1018 Cal\Cal\Current Year\BNK4231_2039392_M1.nmf

Preconditioning

The equipment was preconditioned for more than 4 hours in the specified calibration environment.

Method

Calibration has been performed as set out in the current version of CA Technical procedure TP01

Calibration Dates:

Received date: 16/05/2025 Reviewed date: 20/05/2025
Calibration date: 20/05/2025 Issued date: 20/05/2025

Technicians: (Electronic certificate)

Calibrated by: *Michael Tickner*
Reviewed by: *Lauren Chitty*

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Doc ref: Calb-V6-Cert-Master-V3-09

CALIBRATION CERTIFICATE		AcSoft												
Issued By AcSoft Limited Calibration Laboratory														
Date Of Issue:	02-01-2025	Certificate No: 1510886-1												
Calibrated By: W. Jay														
Approved By: W. Jay														
CUSTOMER	Ned Johnson Acoustics London Ng gHS													
INSTRUMENT DETAILS	Manufacturer: SVANTEK Model: SV971A Serial No.: 154237 Firmware Version: 1.09.4 Description: Sound Level Meter Performance Class: 1 Type Approved to IEC 61672-1:2013: No (If Yes, there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013)													
SENSOR DETAILS	<table border="0"> <tr> <td>Manufacturer:</td> <td>ACO</td> <td>SVANTEK</td> </tr> <tr> <td>Model:</td> <td>7152</td> <td>SV18A</td> </tr> <tr> <td>Serial No.:</td> <td>92768</td> <td>155350</td> </tr> <tr> <td>Description:</td> <td>Microphone</td> <td>Preamplifier</td> </tr> </table>		Manufacturer:	ACO	SVANTEK	Model:	7152	SV18A	Serial No.:	92768	155350	Description:	Microphone	Preamplifier
Manufacturer:	ACO	SVANTEK												
Model:	7152	SV18A												
Serial No.:	92768	155350												
Description:	Microphone	Preamplifier												
P/O NUMBER	N/A													
DATE RECEIVED	02-01-2025													
DATE CALIBRATED	02-01-2025													
CALIBRATION RESULTS	The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class Y specifications in IEC 61672-1:2013 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.													
REPORTED RESULTS	The results contained in this Certificate refer only to the measurements made at the time of test for the instrument detailed above. These results do not reflect the instrument's ability to maintain calibration.													
Page 1 of 8 This calibration was performed by AcSoft Ltd, 11 Abbey Court, Fraser Road, Priory Business Park, Bedford, MK44 3WH T: 01234 639550 W: www.acsoft.co.uk E: sales@acsoft.co.uk WSP 07/09/2024 Issue No 99														

CALIBRATION CERTIFICATE		AcSoft
Issued By AcSoft Limited Calibration Laboratory		Noise • Vibration • Air Quality
Date Of Issue: 02-01-2025	Certificate No: 1510886-1	
ENVIRONMENTAL CONDITIONS		
	Start - End	
Temperature:	22.3 - 22.7	°C
Humidity:	36 - 38	%rh
Pressure:	101.6 - 101.6	kPa
INSTRUCTION MANUAL DETAILS	Title: SV971A User Manual Version No.: Rev. 1.00 Publication Date: 23/09/2021 Date Provided or Downloaded: 28/11/2022 Uncertainties Provided: Case Corrections Wind Shield Corrections Mic Pressure to Free Field Corrections	
CALIBRATOR DETAILS	Manufacturer: SVANTEK Model: SV30A Serial No.: 83782 Customer or Lab Calibrator: Lab Calibrator Specified or Equivalent: Equivalent Sound Pressure Level: 114.00 dB Calibration Reference SPL Frequency: 999.97 Hz Calibration Check Frequency	
CALIBRATION METHOD	Periodic tests were performed in accordance with procedures from IEC 61672-3: 2013.	
UNCERTAINTY OF MEASUREMENTS	Uncertainty of measurement has been evaluated in compliance with EA-4/02:2013. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%.	
MEASUREMENT TRACEABILITY	The instrument under test was calibrated using the following equipment: Svanetek SV401 Signal Generator, ACS022, Certificate No. 1148625 Svanetek SV30A Acoustical Calibrator, ACS023, Certificate No. 6397/1 LAB-EL LB-706B Thermo-Barometer, ACS029, Certificate No. 1148624	
NOTES	- The information appearing on this certificate has been compiled specifically for this instrument. This calibration certificate is produced with traceable and advanced equipment which permit comprehensive quality assurance verification of all data supplied herein. - The measurements in this document are traceable to GUM (Central Office of Measures), Poland - This calibration certificate shall not be reproduced except in full, without written permission from AcSoft Ltd.	
Page 2 of 8 This calibration was performed by AcSoft Ltd, 11 Abbey Court, Fraser Road, Priory Business Park, Bedford, MK44 3WH T: 01234 639550 W: www.acsoft.co.uk E: sales@acsoft.co.uk VAP-12/106/21024 (Rev0) Rev. 01		



Laboratory Location

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

**Certificate of Calibration**

Certificate number: 47900

Test Object: Sound Level Meter, BS EN 60651 and or BS EN 60804 Class 1

Producer: Brüel & Kjær
Type: 2260
Serial number: 2034414
Customer: Ned Johnson Acoustic Consultants Ltd
Address: 378 Church Street,
 London. N9 9HS.
Contact Person: Ned Johnson
Order No: TBC

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	Brüel & Kjær	4189	2169417	47899
Calibrator*	Brüel & Kjær	4231_V7	2039392	47898
Preamplifier	Brüel & Kjær	ZC0026	NoCode	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.

Conditions	Pressure kPa	Temperature °C	Humidity %RH
Reference conditions	101.325	23	50
Measurement conditions	100.72 ±0.01	21.13 ±0.2	64.40 ±2.4

Calibration Dates:

Received date: 16/05/2024 Reviewed date: 23/05/2024
 Calibration date: 23/05/2024 Issued date: 23/05/2024

Technicians: (Electronic certificate)

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

Reviewed by: *Jenny Crawford*

This certificate is issued in accordance with the CA Quality Management system. It provides traceability of measurement to recognized national standards, and to the units of measurement realized at the National Physical Laboratory or other recognized national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Doc ref: Slim-Cert-Master-V3-07



Laboratory Location

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

**Certificate of Calibration**Certificate number: **47899**Test Object: **Measurement Microphone**

Producer: **Brüel & Kjær**
 Type: **4189**
 Serial number: **2169417**
 Customer: **Ned Johnson Acoustic Consultants Ltd**
 Address: **378 Church Street,
 London. N9 9HS.**
 Contact Person: **Ned Johnson**
 Order No: **TBC**

Measurement Results	Sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)	Capacitance (pF)
Measurement 1	-24.95	56.54	13.75
Measurement 2	-24.95	56.55	13.76
Measurement 3	-24.95	56.54	13.76
Result (Average):	-24.95	56.54	13.76
Expanded Uncertainty:	0.10		2.00
Degree of Freedom:	>100		>100
Coverage Factor:	2		2

The stated sensitivity is the pressure sensitivity at 250Hz, S₂₅₀, and is valid at reference conditions. The following correction factors have been applied during the measurement:

Pressure:-0.01 dB/kPa Temperature:-0.006 dB/°C Humidity:0 dB/%RH

Conditions	Pressure kPa	Temperature °C	Humidity %RH
Reference conditions	101.325	23	50
Measurement conditions	100.69 ± 0.040	20.8 ± 0.1	64.2 ± 0.7

The calibration test report shown on the next page gives details of the response at other frequencies relative to this 250 Hz reference sensitivity. Results ≥100 Hz are obtained using an electrostatic actuator as described in BS EN 61094-6 and those below 100 Hz are obtained in a reference pressure chamber. Detailed results are available from the calibration laboratory upon request.

The reported expanded uncertainty of measurements is based on a standard uncertainty multiplied by the coverage factor of k=2, providing a coverage probability 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.

Calibration Dates:

Received date: 16/05/2024 Reviewed date: 23/05/2024
 Calibration date: 23/05/2024 Issued date: 23/05/2024

Technicians: (Electronic certificate)

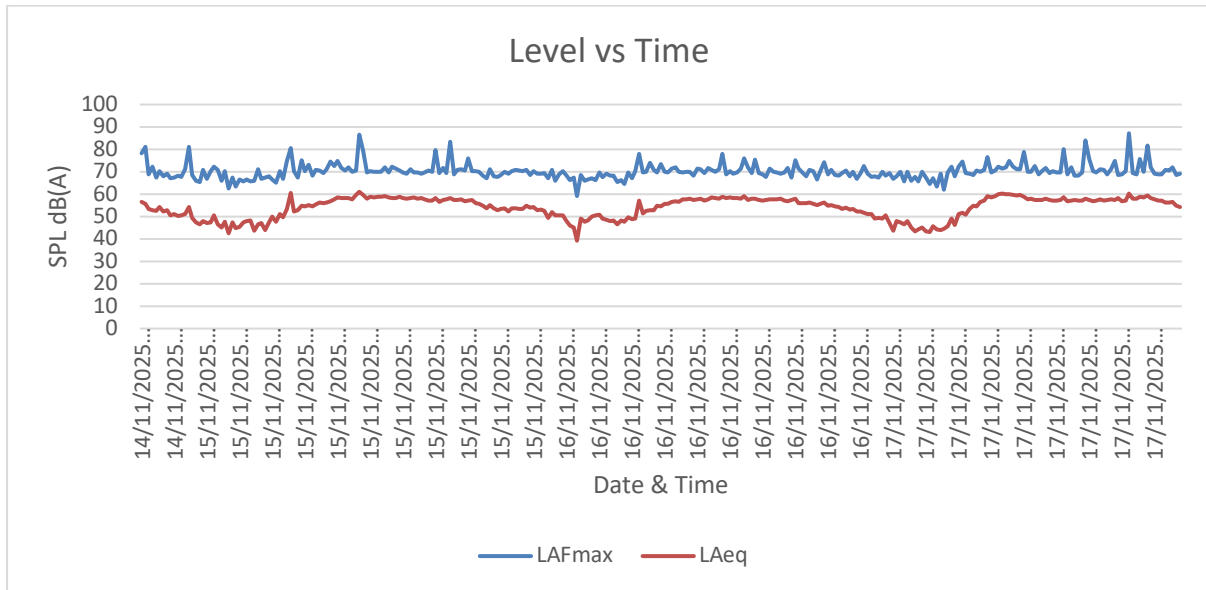
Calibrated by: *Palanivel Marappan B.Eng (Hons), M.Sc*
 Reviewed by: *Jenny Crawford*

This certificate is issued in accordance with the CA Quality Management system. It provides traceability of measurement to recognized national standards, and to the units of measurement realized at the National Physical Laboratory or other recognized national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

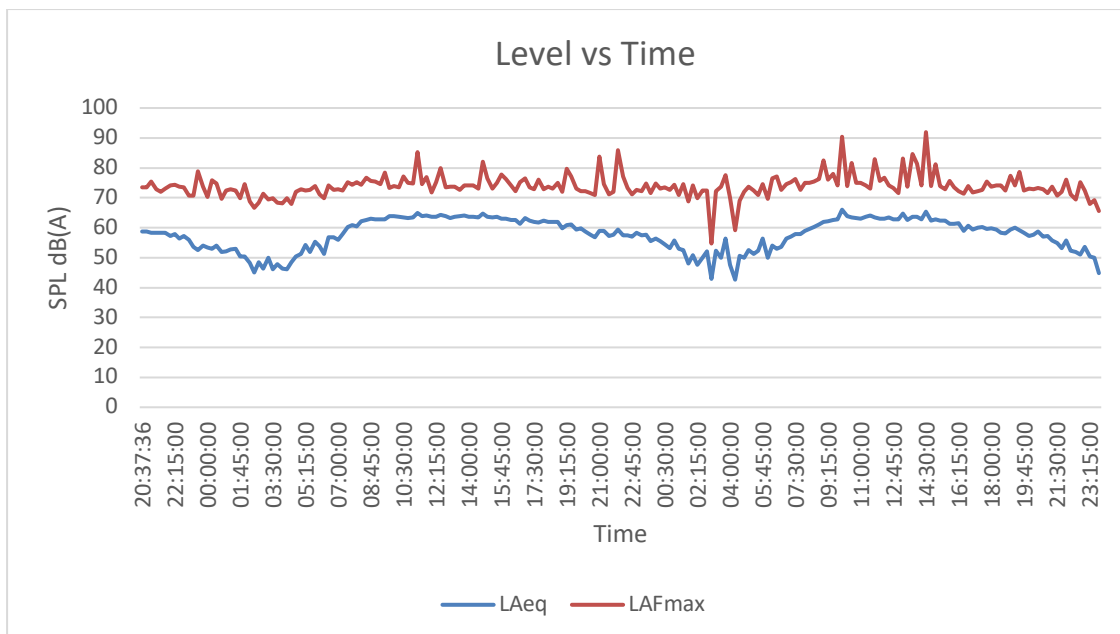
Doc ref: Mic-Cert-Master-V3-04

Appendix 3: Data

MP1



MP2





Disclaimer:

This report was completed by Ned Johnson Acoustic Consultant Ltd on the basis of a defined programme of work and terms and conditions agreed with the client. The report has been prepared with all reasonable skill, care and diligence within the terms of the Contract with the Client and taking into account the project objectives, the agreed scope of works, prevailing site conditions and the degree of manpower and resources allocated to the project.

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