

Acoustic Assessment at



41 Market Street

Watford

Document Ref: 042223 Rev A

Date: 08/11/2022

Author: N Johnson MSc. MIOA



Executive Summary

Ned Johnson Acoustic Consultants Limited has been appointed to undertake an acoustic assessment for the proposed development at 41 Market Street, Watford.

The impact of noise arising from the commercial sources has been assessed. There are no significant sources of commercial noise, in close proximity to the site.

The assessment concludes that commercial noise does not negatively impact upon the proposed development.



Contents

Executive Summary	2
1. Introduction	4
2. Site Description	5
3. Planning Reference Documents	8
4. Survey Methodology	13
5. Noise Survey Results	14
6. Commercial Noise Impacts	17
Appendix 1: Glossary	19
Appendix 2: Calibration Certificates	21
Appendix 3: Data	26



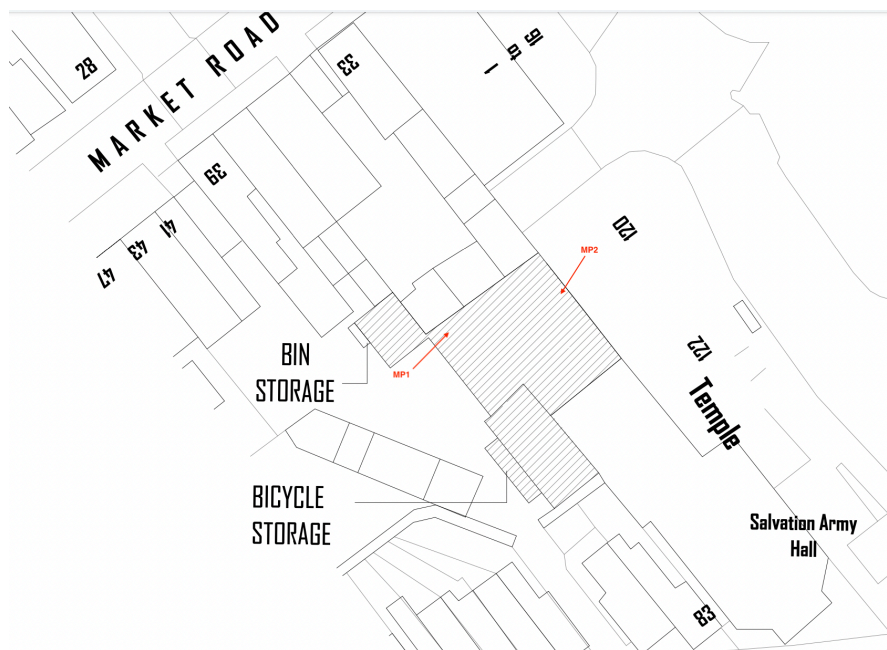
1. Introduction

- 1.1 Ned Johnson Acoustic Consultants Limited has been appointed to undertake an acoustic assessment for the development at the 41 Market Street, Watford.
- 1.2 The proposed development is for the conversion of the existing commercial offices into residential apartments. The development will not involve the extension of the property and the structure will remain as it currently stands.
- 1.3 Under permitted development rights the conversion of the B1 business use to C3 residential use does not require planning permission. However, under the Town & Country Planning (General Permitted Development) (England) (Amendment) Order 2016 a developer must apply to the Local Planning Authority for determination as to whether prior approval would be required for, among other matters, the impacts of noise from commercial premises on the intended occupiers of the development.
- 1.4 This report examines the existing commercial noise sources and their potential impacts upon the future residents.

2. Site Description

- 2.1 The development site is a currently an office building in a courtyard style area off Market Street in Watford. The building that shares a party wall with 33 Market Street, which is an office building that is due to be converted into residential flats. It also has a façade in close proximity to 120-122 Exchange Road, which is an office building. Other commercial noise sources in the locality are the office block located just to the south west of 41 Market Street. There are some air conditioning condenser units on the flat roof of 41 Market Street, these were for cooling a server block in the building and will not be functioning should the offices be converted to flats. There is an extraction system at the rear of 37 Market Street serving Cerbul Carpatin, which is open daily 09:00 – 23:00.
- 2.2 Figure 1 below shows the location of the development.

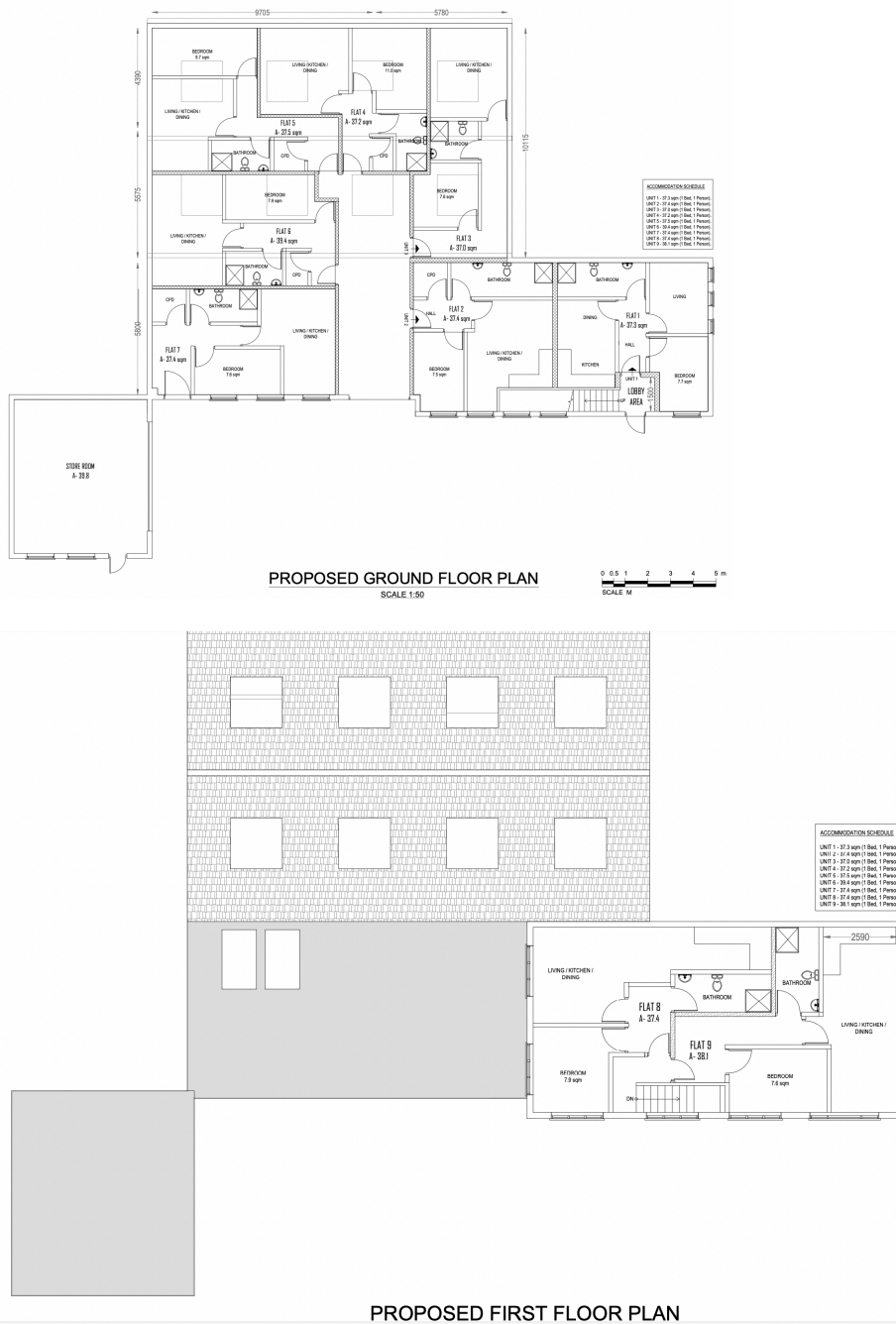
Figure 1.





2.3 Figure 2 below shows the proposed layout of the flats.

Figure 2.





- 2.4 The construction of the separating walls to the two office buildings is solid brick.
- 2.5 MP1 was at first floor level with direct line of sight to the extraction system at Cerbul Carpatin (which is approximately 30 metres away) and MP2 was at ground floor level adjacent to the wall facing the offices at 120 – 122 Exchange Road.
- 2.6 Observations during the site visits showed that inside 41 Market Street, there was no audible commercial noise from any of the sources, the rooms were very quiet. Outside there the only noticeable noise was from road traffic on the local road network. Externally the extraction system at Cerbul Carpatin was very feint and was much quieter than the road traffic, in fact it was only faintly audible when road traffic noise dropped.



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 July 2021.

3.2 Paragraphs 174 (e) 185(a), (b) and 187 refer to noise in terms of policy approach:

174. 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

185. 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

187. 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 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 There are three aims in the NPSE, which match, and expand upon, the first two bullet points in paragraph 123 of the NPPF and add a third aim that relates to a wider improvement in health and quality of life (the bold text is in the NPSE):
- 3.7 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.



- 3.8 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.

The Town and County Planning (General Permitted Development) (England) Order 2015'

- 3.9 These regulations were amended in 2016 to require developers to submit an assessment of commercial noise when applying for prior approval applications in respect of Class O (the conversion of offices to residential units):

'Development under Class O is permitted subject to the condition that before

beginning the development, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to—

1. *(a) transport and highways impacts of the development,*
2. *(b) contamination risks on the site,*
3. *(c) flooding risks on the site, and*
4. *(d) impacts of noise from commercial premises on the intended occupiers of the development,'*

- 3.10 The interpretation of commercial premises is as follows:



‘For the purposes of Class O, “commercial premises” means any premises normally used for the purpose of any commercial or industrial undertaking which existed on the date of application under paragraph O.2(1), and includes any premises licensed under the Licensing Act 2003(a) or any other place of public entertainment. ‘

- 3.11 Guidance on what is required for prior approval applications is currently limited. The National Planning Practice Guidance provides the following advice in regard to prior approval applications:

‘The statutory requirements relating to prior approval are much less prescriptive than those relating to planning applications. This is deliberate as prior approval is a light touch process which applies where the principal of the development has already been established. Where no specific procedure is provided in the General Permitted Development Order, local planning authorities have discretion on what processes they put in place. It is important that a local planning authority does not impose unnecessarily onerous requirements on developers and does not seek to replicate the planning application system.’

- 3.12 The planning officer’s report contained the following comment regarding commercial noise:

‘The applicant has not provided an acoustic report to assess potential noise impacts. Given that the surroundings are commercial, not subject to time restrictions, and plant and equipment is shown on the roof, noise impacts may be harmful to residential amenity. The development would therefore fail to accord with condition MA.2.(2) (d) of Class MA, Part 3, Schedule 2, of General Permitted Development Order 2015 (as amended). ‘



4 Survey Methodology

- 4.1 The survey was conducted over a 43.5-hour period at MP1 and a 37-hour period at MP2 from June 27th to June 29th 2022.
- 4.2 The instruments used for the survey were Bruel & Kjaer 2260 and 2250 precision grade sound level meters.
- 4.3 The sound level meters were calibrated immediately before and after the survey with a Bruel & Kjaer 4231 Acoustic Calibrator producing 94dB_A at 1KHz and no drift was noted in calibration readings. Both calibration results were 93.8dB_A.
- 4.4 During the survey there were no unusual noise events. The sound level meter was set to log every 15 minutes. The metrics measured were L_{Aeq} and L_{A90}.
- 4.5 The sound level meter at MP1 was mounted on a tripod in a first-floor room with direct line of sight to the extraction system at the rear of 37 Market Street and the office block on the opposite side of the courtyard area.
- 4.6 The sound level meter at MP2 was mounted on a tripod in a room with a wall facing 120-122 Exchange Road and sharing a wall with 33 Market Street.
- 4.7 The measurement points were chosen to measure the impact, if any, of the commercial noise sources.



5. Noise Survey Results

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

Table 1. Summary of measured noise levels at MP1.

Start Date	Duration	$L_{Aeq,T}$	10 th Highest $L_{AF Max}$
27/06/22	13:19 – 23:00	26	N/A
27/06/22	23:00 – 07:00	23	45
28/06/22	07:00 – 23:00	25	N/A
28/06/22	23:00 – 07:00	22	45
29/06/22	07:00 – 10:00	25	N/A

Table 2. Summary of measured noise levels during office working hours at MP1.

Start Date	Duration	$L_{Aeq,T}$	10 th Highest $L_{AF Max}$
27/06/22	13:19 – 17:30	26	N/A
28/06/22	08:00 – 17:30	27	N/A



Table 3. Summary of measured noise levels at MP2.

Start Date	Duration	$L_{Aeq,T}$	10 th Highest $L_{AF Max}$
27/06/22	13:14 – 23:00	33	N/A
27/06/22	23:00 – 07:00	26	45
28/06/22	07:00 – 23:00	35	N/A

Table 4. Summary of measured noise levels during working hours in the offices at MP2.

Start Date	Duration	$L_{Aeq,T}$	10 th Highest $L_{AF Max}$
27/06/22	13:14 – 17:30	30	N/A
28/06/22	08:00 – 17:30	30	N/A

- 5.2 Measurements were taken externally at first floor level to establish the external sound pressure level during the day. The short-term result was 45dB $L_{Aeq 15 min}$ the internal sound pressure level was measured with the windows open directly after the external measurement was taken and the result was 34dB $L_{Aeq 15 min}$.
- 5.3 The impact of the extraction system at Cerbul Carpatin is assessed in the table below. Using the subjective method in BS4142:2014 the fan noise was not tonal. It is unknown if the extraction system will run



intermittently; however, as the sound from the system is not readily distinctive against the residual acoustic environment at the façade of 41 Market Street, no penalty has been added, as per paragraph 9.2 of BS4142:2014, to the external measurement referred to in paragraph 5.2.

Table 5. BS4142 summary

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



6 Commercial Noise Impacts

- 6.1 In this location the main source of noise was road traffic noise. Internal observations showed that there was no sound from the office building at 120-122 Exchange Road. Neither was there any audible sound from the offices at 33 Market Street. The office building opposite 41 Market Street also had no audible sound at the premises.
- 6.2 The extraction system at Cerbul Carpatin was just audible at the external first floor façade when there were breaks in road traffic noise and then it was a mild humming sound with no tonal content. The restaurant is open 9:00 – 23:00, so any noise was measured during the daytime survey included sound from this source.
- 6.3 The internal measurements at both MP1 and MP2 show that the internal sound pressure levels recommended in BS8233:2014 were met both day and night; as were the $L_{AF Max}$ recommended levels in the WHO Guidelines for Community Noise. MP2 was slightly higher as workmen entered the building on June 28th and 29th to move equipment, which has led to a few incidents of non-commercial noise that slightly raised the sound pressure levels. On both days the workmen arrived after 17:30 when the neighbouring offices had closed.
- 6.4 The measurements during office working hours in Tables 2 and 4 show that the sound pressure levels of the working day were 27 dB_A and 30dB_A. Both measurement results show that the internal sound pressure levels meet the recommendations in BS8233:2014.
- 6.5 The National Planning Practice states that prior approval is a light touch. In the case of 41 Market Street none of the commercial noise sources



will impact upon the proposed development and therefore no mitigation in respect of commercial noise is required.



Appendix 1: Glossary of Terms

Daytime Defined in PPG 24 as the period 07:00-23:00 hours.

Night-time Defined in PPG 24 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), Lax: Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).

LA10,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.

LA90,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.



LAE: 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_{Aeq, T} is used to describe many noises and can be measured directly with an integrating sound level meter.

L_{Amax}: 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: 41049

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:

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	41048
Calibrator*	Brüel and Kjær	4231	2039392	41047
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	Brüel & Kjær	UA0237 (Large round)
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	101.07 ±0.03	22.35 ±0.15	42.43 ±1

Calibration Dates:

Received date:	06/05/2022	Reviewed date:	17/05/2022
Calibration date:	17/05/2022	Issued date:	17/05/2022

Technicians: (Electronic certificate)

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

Reviewed by: *Darren Batten*

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.



Laboratory Location

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



Certificate of Calibration

Certificate number: **41048**

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:

Measurement Results	Sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)	Capacitance (pF)
Measurement 1	-24.87	57.07	14.09
Measurement 2	-24.87	57.10	14.09
Measurement 3	-24.86	57.14	14.10
Result (Average):	-24.87	57.11	14.09
Expanded Uncertainty:	0.10		1.00
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	101.108 ± 0.043	22.4 ± 0.1	41.9 ± 0.9

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: 06/05/2022 Reviewed date: 17/05/2022
 Calibration date: 17/05/2022 Issued date: 17/05/2022

Technicians: (Electronic certificate)

Calibrated by: *Palanivel Marappan BEng(Hons), MSc*
 Reviewed by: *Darren Batten*

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-V3-03



Laboratory Location

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



Certificate of Calibration

Certificate number: **41047**

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	94.05	0.02	999.86	0.46
Measurement 2	94.05	0.02	999.86	0.45
Measurement 3	94.05	0.02	999.86	0.46
Result (Average):	94.05	0.02	999.86	0.46
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
 Pressure:0.0008 dB/kPa Temperature:0.0015 dB/°C Humidity:0.001 dB/%RH Load volume: 0.0003

Conditions	Pressure kPa	Temperature °C	Humidity %RH
Reference conditions	101.325	23	50
Measurement conditions	101.107 ±0.043	22.3 ±0.1	41.6 ±0.8

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.

Records: K:\C A\Calibration\Nor-1504\Nor-1018 CalCal2022\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: 06/05/2022 Reviewed date: 17/05/2022
 Calibration date: 17/05/2022 Issued date: 17/05/2022

Technicians: (Electronic certificate)

Calibrated by: *Palaniivel Marappan B.Eng(Hons), M.Sc*
 Reviewed by: *Darren Batten*

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.



Campbell Associates Ltd

5b Chelmsford Road Industrial Estate
 GREAT DUNMOW, Essex, GB-CM6 1HD
www.campbell-associates.co.uk
 Phone 01371 871030 Facsimile 01371879106



**Certificate of Calibration
 and Conformance**

Certificate number: 36284

Test object: Sound Level Meter, BS EN IEC 61672-1:2003 Class 1 (Precision)
Producer : Brüel and Kjær
Type : 2250
Serial No.: 2630254

Customer: Ned Johnson Acoustic Consultants Ltd
Address: 378 Church Street,
 London. N9 9HS.
Contact Person: Ned Johnson

Method :
 Calibration has been performed as set out in CA Technical Procedures TP01 & 02 as appropriate. These are based on the procedures for periodic verification of sound level meters as set out in BS EN IEC 61672-3:2006. Results and conformance statement are overleaf and detailed results are in the attached Test Report.

Tested	Producer:	Type:	Serial No:	Certificate number
Microphone	Brüel & Kjær	4189	2631299	36283
Calibrator*	Brüel and Kjær	4231	1838911	U34578
Preamplifier	Brüel & Kjær	ZC0032	8615	Included

Additional items that also have been submitted for verification

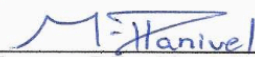
- Wind shield -
- Attenuator -
- Extension cable -


These items have been taken into account wherever appropriate.

Instruction manual: BE1712-23 Firmware version: BZ7222 v2.2.1 The test object is a single channel instrument.

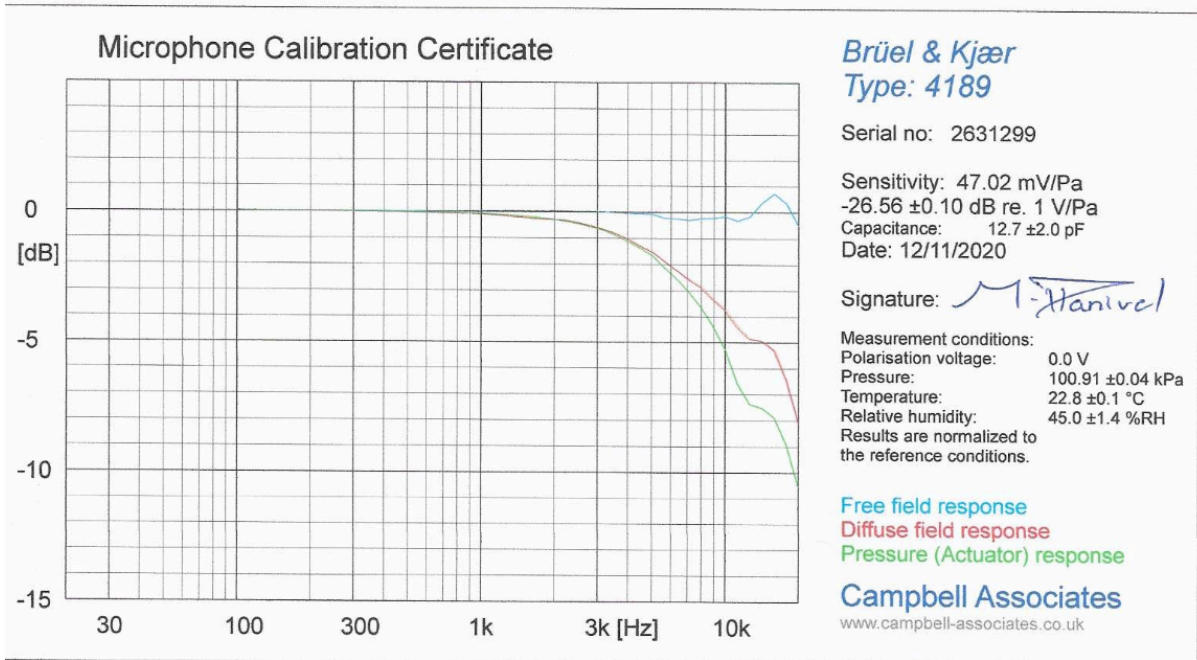
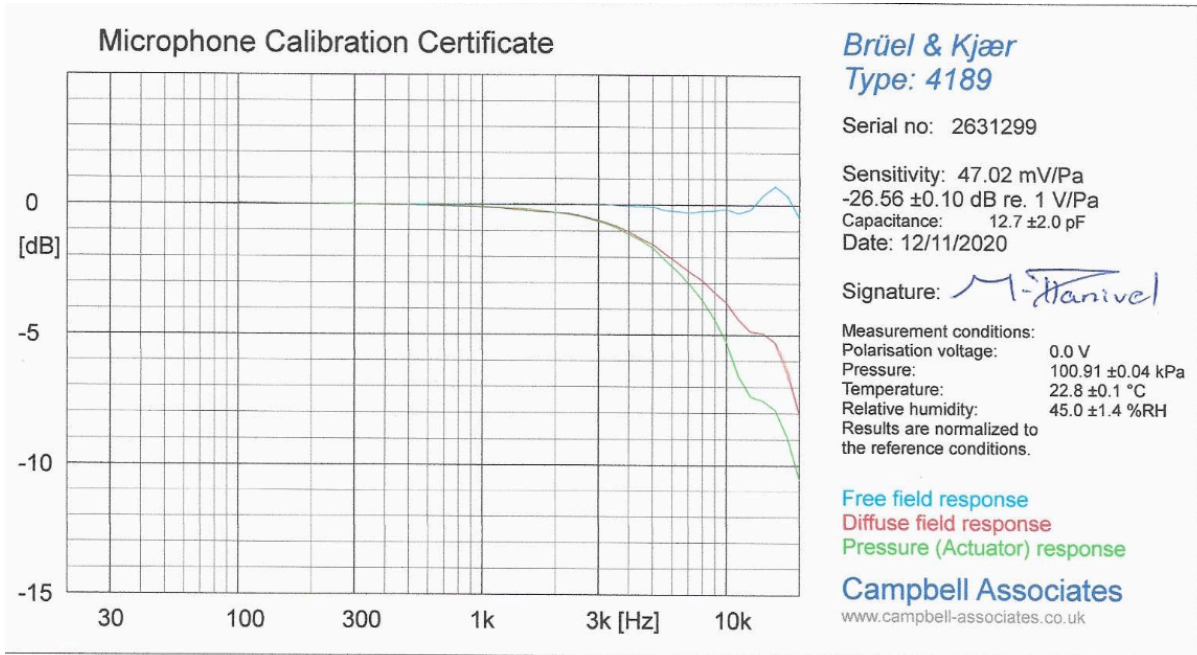
Conditions	Pressure	Temperature	Humidity
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.93 ±0.05 kPa	22.3 ±0.2 °C	43.0 ±0.7 %RH

Date received for calibration: 06/11/2020
 Date of calibration: 12/11/2020
 Date of issue: 12/11/2020
 Engineer


 Palanivel Marappan B.Eng (Hons), M.Sc
 Supervisor


 Darren Batten Tech IOA

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





Appendix 3: Data

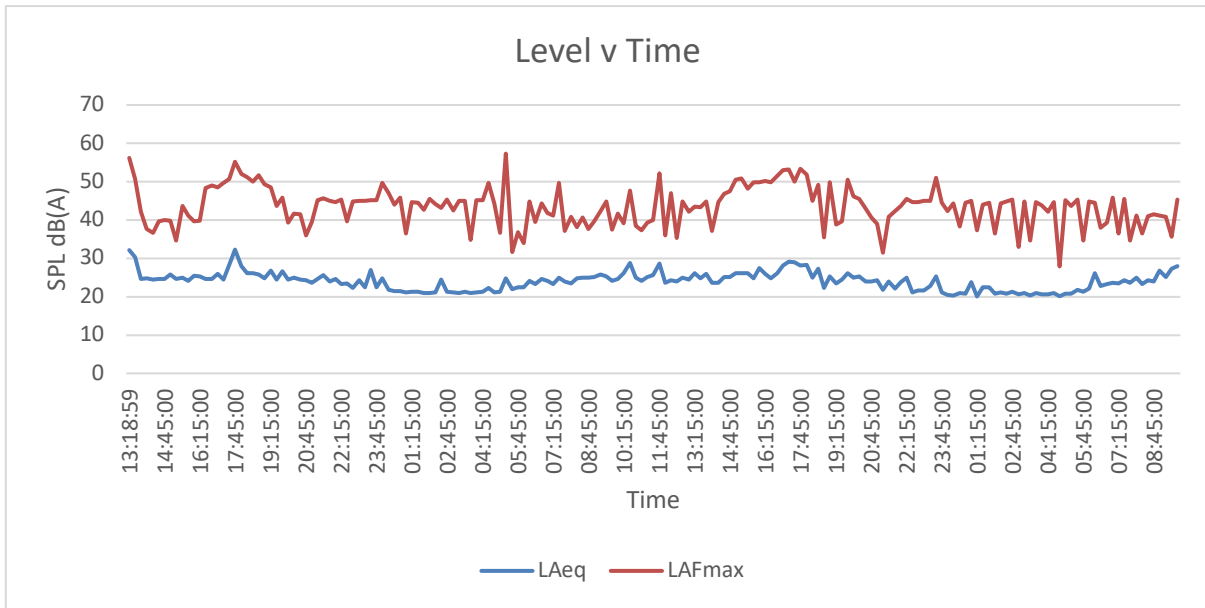


Table 4

Start Time	L _{Aeq} 15min	L _{AF} Max 15min
13:18:59	32.1	56.14
13:30:00	30.36	50.7
13:45:00	24.6	42.19
14:00:00	24.85	37.7
14:15:00	24.54	36.61
14:30:00	24.69	39.6
14:45:00	24.59	40.04
15:00:00	25.85	39.84
15:15:00	24.58	34.7
15:30:00	24.95	43.67
15:45:00	24.21	41.22
16:00:00	25.42	39.65
16:15:00	25.33	39.78
16:30:00	24.57	48.32
16:45:00	24.66	49.02
17:00:00	25.95	48.55

41 Market Street Acoustic Assessment



27

17:15:00	24.52	49.74
17:30:00	28.35	50.69
17:45:00	32.28	55.24
18:00:00	27.95	52.03
18:15:00	26.13	51.24
18:30:00	26.09	50.01
18:45:00	25.76	51.65
19:00:00	24.85	49.3
19:15:00	26.85	48.45
19:30:00	24.44	43.71
19:45:00	26.7	45.89
20:00:00	24.46	39.28
20:15:00	25	41.73
20:30:00	24.44	41.46
20:45:00	24.33	36.05
21:00:00	23.69	39.43
21:15:00	24.7	45.14
21:30:00	25.69	45.69
21:45:00	23.88	45.07
22:00:00	24.62	44.72
22:15:00	23.32	45.36
22:30:00	23.45	39.6
22:45:00	22.29	44.9
23:00:00	24.28	45.06
23:15:00	22.4	45.03
23:30:00	27.03	45.22
23:45:00	22.54	45.14
00:00:00	24.76	49.76
00:15:00	21.71	47.01
00:30:00	21.38	44.04
00:45:00	21.53	45.88
01:00:00	21.09	36.42
01:15:00	21.23	44.62
01:30:00	21.37	44.53
01:45:00	20.91	42.65
02:00:00	21.03	45.47
02:15:00	21.14	44.16
02:30:00	24.51	43.19
02:45:00	21.3	45.4
03:00:00	21.12	42.51
03:15:00	20.95	45.03
03:30:00	21.34	44.97

41 Market Street Acoustic Assessment



28

03:45:00	20.94	34.77
04:00:00	21.2	45.19
04:15:00	21.31	45.22
04:30:00	22.28	49.65
04:45:00	21.2	44.39
05:00:00	21.36	36.59
05:15:00	24.81	57.32
05:30:00	21.93	31.65
05:45:00	22.49	36.77
06:00:00	22.46	34.06
06:15:00	24.08	44.79
06:30:00	23.22	39.44
06:45:00	24.59	44.41
07:00:00	24.15	41.83
07:15:00	23.27	41.22
07:30:00	24.94	49.72
07:45:00	23.97	37.11
08:00:00	23.46	40.85
08:15:00	24.72	38.18
08:30:00	24.9	40.7
08:45:00	24.94	37.67
09:00:00	25.18	39.63
09:15:00	25.72	42.26
09:30:00	25.29	44.82
09:45:00	24.1	37.57
10:00:00	24.7	41.64
10:15:00	26.13	39.22
10:30:00	28.78	47.69
10:45:00	24.96	38.51
11:00:00	24.15	37.34
11:15:00	25.19	39.37
11:30:00	25.6	40.06
11:45:00	28.62	52.14
12:00:00	23.66	36.02
12:15:00	24.23	46.94
12:30:00	23.96	35.33
12:45:00	24.89	44.8
13:00:00	24.41	42.24
13:15:00	26.13	43.52
13:30:00	24.86	43.37
13:45:00	26.02	44.85
14:00:00	23.68	37.15

41 Market Street Acoustic Assessment



29

14:15:00	23.67	44.7
14:30:00	25.2	46.84
14:45:00	25.21	47.46
15:00:00	26.18	50.44
15:15:00	26.07	50.77
15:30:00	26.05	48.12
15:45:00	24.84	49.88
16:00:00	27.54	49.79
16:15:00	25.98	50.17
16:30:00	24.82	49.79
16:45:00	26.16	51.58
17:00:00	28.07	53.05
17:15:00	29.15	53.21
17:30:00	28.97	50.08
17:45:00	28.2	53.39
18:00:00	28.23	51.93
18:15:00	24.89	45.06
18:30:00	27.35	49.22
18:45:00	22.37	35.54
19:00:00	25.28	49.79
19:15:00	23.44	38.87
19:30:00	24.41	39.69
19:45:00	26.18	50.54
20:00:00	24.88	46.22
20:15:00	25.34	45.56
20:30:00	24.03	43.07
20:45:00	23.88	40.66
21:00:00	24.3	39.05
21:15:00	21.85	31.5
21:30:00	24.02	40.84
21:45:00	22.12	42.25
22:00:00	23.76	43.59
22:15:00	24.88	45.51
22:30:00	21.05	44.69
22:45:00	21.7	44.65
23:00:00	21.61	45.06
23:15:00	22.76	45
23:30:00	25.35	50.99
23:45:00	21.19	44.45
00:00:00	20.41	42.29
00:15:00	20.23	44.26
00:30:00	20.92	38.3

41 Market Street Acoustic Assessment

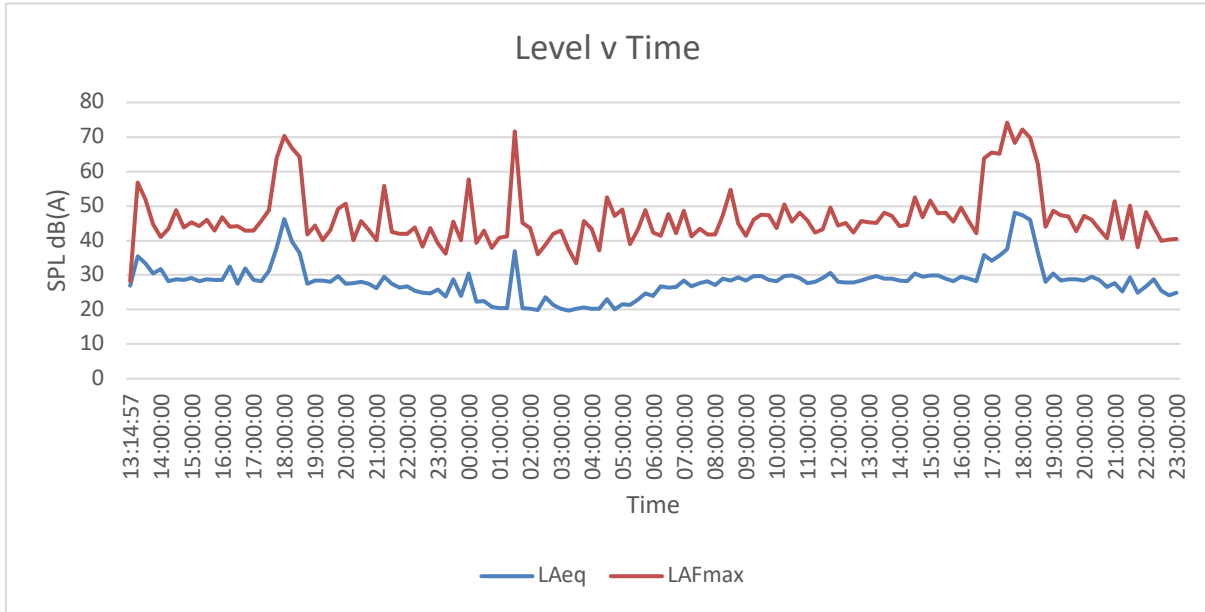


30

00:45:00	20.74	44.47
01:00:00	23.76	45.08
01:15:00	20.06	37.35
01:30:00	22.48	44.06
01:45:00	22.5	44.5
02:00:00	20.75	36.42
02:15:00	21.12	44.38
02:30:00	20.71	44.78
02:45:00	21.31	45.4
03:00:00	20.56	33.05
03:15:00	20.89	44.88
03:30:00	20.28	34.7
03:45:00	21.02	44.72
04:00:00	20.7	43.9
04:15:00	20.7	42.18
04:30:00	21.03	44.72
04:45:00	20.2	27.9
05:00:00	20.83	45.25
05:15:00	20.76	43.62
05:30:00	21.75	45.37
05:45:00	21.25	34.7
06:00:00	22.18	44.91
06:15:00	26.07	44.43
06:30:00	22.85	38
06:45:00	23.32	39.31
07:00:00	23.7	45.92
07:15:00	23.39	36.55
07:30:00	24.29	45.55
07:45:00	23.57	34.68
08:00:00	24.97	41.19
08:15:00	23.32	36.56
08:30:00	24.33	40.92
08:45:00	24.01	41.44
09:00:00	26.85	41.09
09:15:00	25.09	40.88
09:30:00	27.3	35.64
09:45:00	27.89	45.37



MP2



Start Time	L _{Aeq} 15min	L _{AF} Max 15min
13:14:57	26.92	28.28
13:15:00	35.47	56.85
13:30:00	33.36	51.88
13:45:00	30.53	44.78
14:00:00	31.76	41.12
14:15:00	28.24	43.43
14:30:00	28.85	48.83
14:45:00	28.55	43.73
15:00:00	29.15	45.32
15:15:00	28.18	44.11
15:30:00	28.82	46.11
15:45:00	28.55	42.8
16:00:00	28.6	46.83
16:15:00	32.57	43.94
16:30:00	27.45	44.2

41 Market Street Acoustic Assessment



32

16:45:00	32	42.88
17:00:00	28.63	42.9
17:15:00	28.27	45.58
17:30:00	31.25	48.86
17:45:00	37.8	63.79
18:00:00	46.21	70.36
18:15:00	39.75	66.72
18:30:00	36.37	64.18
18:45:00	27.53	41.81
19:00:00	28.42	44.38
19:15:00	28.46	40.04
19:30:00	27.96	43.08
19:45:00	29.7	49.21
20:00:00	27.41	50.62
20:15:00	27.66	40.15
20:30:00	28.07	45.59
20:45:00	27.58	43.06
21:00:00	26.1	40.15
21:15:00	29.58	55.81
21:30:00	27.45	42.58
21:45:00	26.44	41.95
22:00:00	26.75	41.97
22:15:00	25.51	43.72
22:30:00	24.93	38.32
22:45:00	24.71	43.54
23:00:00	25.82	39.21
23:15:00	23.87	36.28
23:30:00	28.76	45.5
23:45:00	24.01	40.14
00:00:00	30.47	57.68
00:15:00	22.38	39.32
00:30:00	22.4	42.83
00:45:00	20.73	37.89
01:00:00	20.51	40.75
01:15:00	20.51	41.2

41 Market Street Acoustic Assessment



33

01:30:00	36.9	71.66
01:45:00	20.37	45.16
02:00:00	20.17	43.63
02:15:00	19.88	36.08
02:30:00	23.59	38.8
02:45:00	21.4	41.93
03:00:00	20.33	42.97
03:15:00	19.72	37.46
03:30:00	20.35	33.51
03:45:00	20.57	45.6
04:00:00	20.27	43.45
04:15:00	20.19	37.16
04:30:00	23.13	52.48
04:45:00	20.05	47.17
05:00:00	21.58	49.05
05:15:00	21.38	38.95
05:30:00	22.81	42.98
05:45:00	24.73	48.75
06:00:00	23.96	42.29
06:15:00	26.79	41.48
06:30:00	26.45	47.62
06:45:00	26.65	42.08
07:00:00	28.35	48.63
07:15:00	26.75	41.21
07:30:00	27.74	43.46
07:45:00	28.19	41.81
08:00:00	27.16	41.83
08:15:00	28.97	47.25
08:30:00	28.45	54.71
08:45:00	29.33	44.91
09:00:00	28.4	41.37
09:15:00	29.72	45.98
09:30:00	29.73	47.48
09:45:00	28.55	47.39
10:00:00	28.32	43.54

41 Market Street Acoustic Assessment



34

10:15:00	29.74	50.47
10:30:00	29.94	45.48
10:45:00	29.2	48.13
11:00:00	27.72	45.93
11:15:00	27.98	42.39
11:30:00	29.09	43.32
11:45:00	30.58	49.56
12:00:00	28	44.36
12:15:00	27.87	45.19
12:30:00	27.92	42.41
12:45:00	28.46	45.58
13:00:00	29.23	45.36
13:15:00	29.71	45.15
13:30:00	28.93	48.01
13:45:00	28.98	47.15
14:00:00	28.49	44.21
14:15:00	28.23	44.59
14:30:00	30.47	52.5
14:45:00	29.51	46.7
15:00:00	29.91	51.55
15:15:00	29.87	47.81
15:30:00	28.99	48.09
15:45:00	28.18	45.53
16:00:00	29.57	49.6
16:15:00	28.97	45.68
16:30:00	28.29	42.07
16:45:00	35.85	63.86
17:00:00	34.14	65.49
17:15:00	35.72	65.07
17:30:00	37.46	74.16
17:45:00	48.09	68.21
18:00:00	47.34	72.26
18:15:00	46.07	69.72
18:30:00	36.5	62.15
18:45:00	27.98	44.05

41 Market Street Acoustic Assessment



35

19:00:00	30.44	48.72
19:15:00	28.42	47.4
19:30:00	28.84	46.91
19:45:00	28.73	42.71
20:00:00	28.35	47.19
20:15:00	29.5	45.98
20:30:00	28.6	43.21
20:45:00	26.53	40.72
21:00:00	27.68	51.41
21:15:00	25.31	40.46
21:30:00	29.42	50.16
21:45:00	24.92	38.13
22:00:00	26.83	48.33
22:15:00	28.8	44.01
22:30:00	25.43	39.84
22:45:00	24.06	40.3
23:00:00	24.84	40.41