

B&Q Cricklewood ES Volume III

Appendix 13-2: Noise and Vibration
Monitoring

Montreaux Cricklewood Developments Ltd

July 2020

Appendix 13.2: Noise and Vibration Monitoring

Monitoring Equipment

The following equipment was used for the baseline noise and vibration surveys.

Table 1. Noise Monitoring Equipment

Type	Supplier	Model	Serial Number	Location(s) Used
Sound Level Meter	Rion	NL-52	420764	LT
Sound Level Meter	01dB	DUO	12076	ST
Vibration Level Meter	Svantek	Svan-958	14212	V
Field Calibrator	Rion	NC-74	50541127	LT / ST

The noise monitoring was undertaken following the principles of BS 7445-1. The long-term measurement was undertaken with the sound level meter stored in a weather proof peli case with the microphone attached to a pole secured onto the peli case at approximately 1.2m. Short term Measurements were undertaken with the microphone fixed on a tripod at a height of approximately 1.2 m. Measurements were taken under free-field conditions.

The vibration monitoring was undertaken following the principles of BS6472. Attended vibration monitoring was undertaken with the geophone placed on the concrete ground with a sand bag placed on top to keep contact with the surface. The distance to the track was approximately 10m away from the nearest rail line.

The calibration of the equipment was checked before and after each set of measurements and there was no drift in calibration levels ($\pm 0.5\text{dB}$).

Survey Dates and Measurement Locations

Long-term (LT) noise measurements were undertaken from 4th February 2020 to 11th February 2020. Due to excessive wind results for before 18:00 on 4th February and after 14:45 on 8th February have been discounted.

At all other times weather conditions were seen as conducive to environmental noise monitoring e.g. wind below 5m/s and no precipitation.

Short-term (ST) noise measurements were undertaken on 23rd January 2020 between 13:15 and 15:15 to be representative of daytime levels and, between 00:00 and 01:00 on 24th January 2020 to represent night-time levels.

Noise monitors were calibrated before and after use in order to check no calibration drift occurred ($\pm 0.5\text{dB}$).

Vibration Monitoring (V) was undertaken on 23rd January 2020 between 15:45 and 17:45.

Table 2 shows the locations where measurements were taken.

Table 2. Noise Monitoring locations

Measurement Type	Location ID	Receptor
Long-term unattended noise monitoring	LT	Residential properties located at Dairyman Close, NM2 1EP
Short-term attended noise monitoring	ST	Travelodge hotel to the west, NW2 3DU
Short-term attended vibration monitoring	V	Proposed Development

Results

Long Term

A summary of the measured long-term noise levels are presented in Table 3. All noise levels are in dB re. 20µPa, free-field, fast time-weighting and have been presented as follows:

Noise levels have been calculated over daytime periods of 07:00 – 23:00 and night periods of 23:00 – 07:00 for all noise levels.

The $L_{Aeq,T}$ level for each period is the logarithmic average of all logged L_{Aeq} levels over that period.

The L_{Amax} level for each period is the 90th percentile of all recorded L_{Amax} levels over that period.

The L_{A90} level for each period is the mode of all recorded L_{A90} levels over that period.

A time history of the long-term measurement can be found in Figure 1.

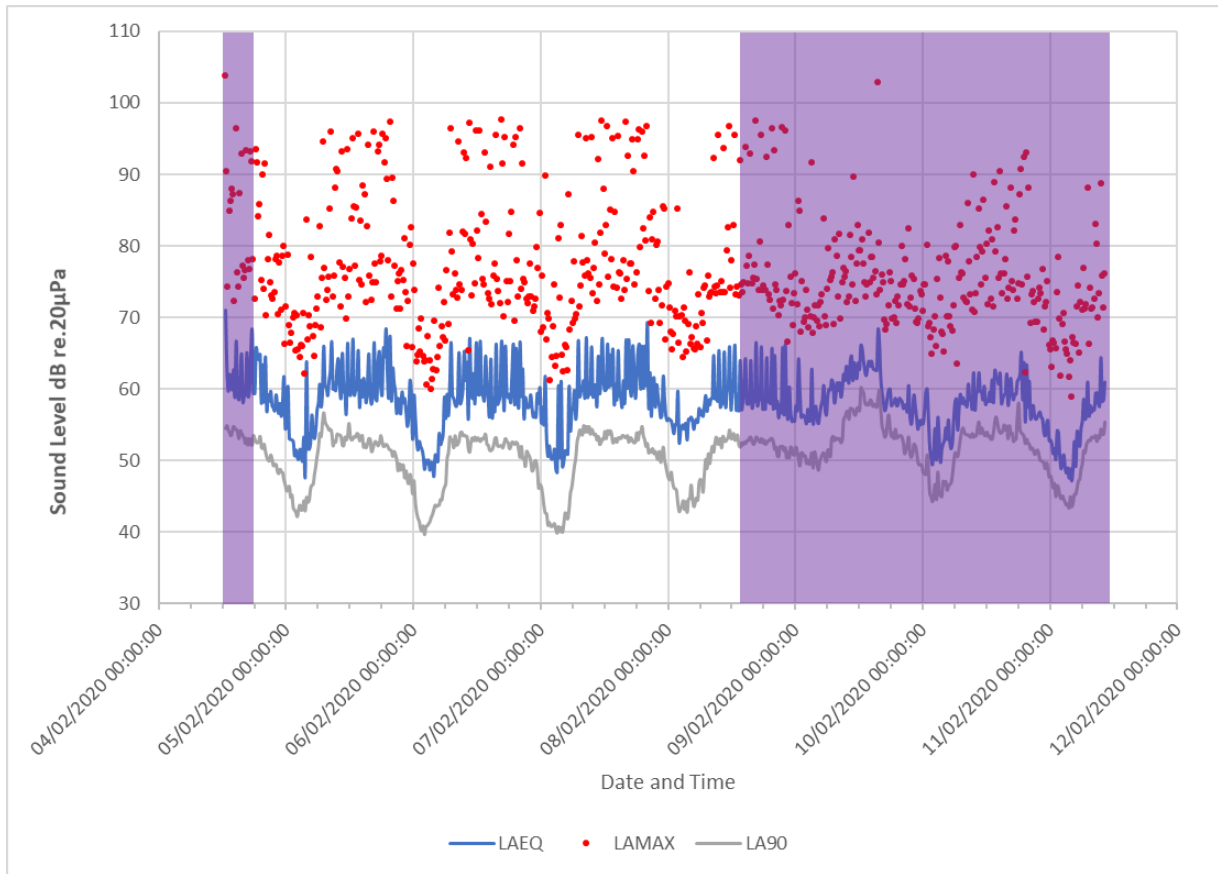
Table 3. Long Term results

Day/Date	Day 07:00-23:00			Night 23:00-07:00		
	$L_{Aeq,T}$ dB	$L_{A90,15min}$ dB	L_{Amax} dB	$L_{Aeq,T}$ dB	$L_{A90,15min}$ dB	L_{Amax} dB
04/02/2020 ^{1,2}	61	53	92	57	43	79
05/02/2020	62	52	95	55	44	78
06/02/2020	62	53	96	57	41	83
07/02/2020	63	53	96	56	47	76
08/02/2020 ³	61	53	94	58	51	83
09/02/2020	62	53	83	55	47	79
10/02/2020	60	54	79	53	45	74
11/02/2020 ⁴	59	53	74	-	-	-
Overall ⁵	62	53	94	57	43	79

¹ Start Time 12:30, ² recordings discounted before 18:00, ³ recordings discounted after 15:00, ⁴ Stop Time 10:15, ⁵ Overall noise level do not include times when weather was not conducive for environmental noise monitoring.

Figure 1 Long Term Time History

Purple shaded areas indicate periods where meteorological periods were not conducive for noise monitoring.



Short Term

The summary of measured short term levels are presented in Table 4.

Table 4. Short Term Results

Time Period	Date	Time	Measurement Duration	L _{Aeq}	L _{A90}	L _{AMAX}
Daytime	23/01/2020	13:15	120 Minutes	60	51	82
Night-time	24/01/2020	00:00	60 Minutes	52	47	80

Vibration

The summary of the attended vibration measurement is presented in Table 5.

Table 5. Vibration Monitoring Results

Date	Time	Measurement Duration	VDV _{2hr} (ms ^{-1.75})	VDV _{16hr} (ms ^{-1.75})	VDV _{8hr} (ms ^{-1.75})
23/01/2020	15:45	120 Minutes	0.055	0.093	0.078

Calibration Certificates

RION NL-52 420764



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 05 July 2018

Certificate Number: UCRT18/1678

Issued by:

ANV Measurement Systems
 Beaufort Court
 17 Roebuck Way
 Milton Keynes MK5 8HL
 Telephone 01908 642846 Fax 01908 642814
 E-Mail: info@noise-and-vibration.co.uk
 Web: www.noise-and-vibration.co.uk
 Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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Approved Signatory
K. Mistry

Customer AECOM Ltd
 St Georges House
 5 St Georges Road
 London
 SW19 4DR

Order No. 08215735-Gen_Gen
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator
Identification

Manufacturer	Instrument	Type	Serial No. / Version
Rion	Sound Level Meter	NL-52	00420764
Rion	Firmware		1.8
Rion	Pre Amplifier	NH-25	20813
Rion	Microphone	UC-59	03573
Brüel & Kjær	Calibrator	4231	3002998
	Calibrator adaptor type if applicable		UC 0210



Performance Class 1
Test Procedure TP 2.SLM 61672-3 TPS-49
Procedures from IEC 61672-3:2006 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003
Date Received 03 July 2018 ANV Job No. UKAS18/07417
Date Calibrated 05 July 2018

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	Dated	Certificate No.	Laboratory
	28 June 2016	UCRT16/1212	7623

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.

01dB DUO 12076

<h1>Certificate of Calibration</h1> <p>Issued by University of Salford (Acoustics Calibration Laboratory) UKAS ACCREDITED CALIBRATION LABORATORY NO. 0801</p>		 <p>UKAS CALIBRATION 0801</p>
<p>Page 1 of 3</p>		
<p>APPROVED SIGNATORIES</p> <p>Claire Lomax [x] Andy Moorhouse [] Gary Phillips [] Danny McCaul []</p> <p style="text-align: right;"><i>C. Lomax</i></p>		 <p>University of Salford MANCHESTER</p>
<p>acoustic calibration laboratory</p> <p>The University of Salford, Salford, Greater Manchester, M5 4WT, UK http://www.acoustics.salford.ac.uk t 0161 295 3030/0161 295 3319 f 0161 295 4456 e c.lomax1@salford.ac.uk</p>		

Certificate Number: 03639/3

Date of Issue: 13 March 2018

PERIODIC TEST OF A SOUND LEVEL METER to IEC 61672-3:2006

FOR:	Aecom St George's House 5 St George's Road Wimbledon London SW19 4DR
FOR THE ATTENTION OF:	Thomas Citrine
PERIODIC TEST DATE:	12 th and 13 th March 2018
TEST PROCEDURE:	CTP12 (Laboratory Manual)

Sound Level Meter Details

Manufacturer	01dB	
Model	DUO	
Serial number	12076	
Class	1	
Hardware version	LIS1005G	Application FW: 2.35. Metrology FW: 2.12

Associated Items	Microphone
Manu	GRAS
Model	40CD
Serial Number	209841

Test Engineer (initial): GP Name: Gary Phillips

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 the 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.

Svantek Svan-958 14212



CERTIFICATE OF CALIBRATION

Date of Issue: 18 December 2019

Certificate Number: TCRT19/1927

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

E-Mail: info@noise-and-vibration.co.uk

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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Approved Signatory

K. Mistry

A handwritten signature in blue ink, appearing to read 'K. Mistry', is written over a horizontal line.

CUSTOMER AECOM Ltd
 Sunley House
 4 Bedford Park
 Croydon
 CR0 2AP

ORDER No 08217289

Job No TRAC19/12542

DATE OF RECEIPT 11 December 2019

PROCEDURE Calibration Engineer's Handbook, section 25

IDENTIFICATION Sound level meter Svantek type SVAN 958 serial No 14212
 connected via a SC26/3 extension lead and preamplifier type SV 12L
 serial No 11430 to a half-inch microphone type GRAS 40AE serial No
 241515.

CALIBRATED ON 18 December 2019

PREVIOUS CALIBRATION Calibrated on 28 November 2017, Certificate No. UCRT17/2059
 issued by this laboratory.

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

NC-74 50541127



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 30 November 2018

Certificate Number: UCRT18/2191

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way


Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

E-Mail: info@noise-and-vibration.co.uk

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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K. Mistry

Customer AECOM Ltd
 St George's House
 5 St George's Road
 Wimbledon
 London
 SW19 4DR

Order No. 08215735 - GEN_GEN

Test Procedure Procedure TP 1 Calibration of Sound Calibrators

Description Acoustic Calibrator

Identification	Manufacturer	Instrument	Model	Serial No.
	Rion	Calibrator	NC-74	50541127

The calibrator has been tested as specified in Annex B of IEC 60942:2003. As public evidence was available from a testing organisation (PTB) responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2003.

ANV Job No. UKAS18/11736



Date Received 29 November 2018

Date Calibrated 30 November 2018

Previous Certificate *Dated* 20 November 2017
 Certificate No. UCRT17/2044
 Laboratory 0653

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.

Monitoring Location Pictures

<p>Long Term</p>	
<p>Short Term</p>	
<p>Vibration</p>	