



Measurement of Environmental Noise

Report Reference Number: 11132-1

For:

Euan McCormick

Project/Site Address

Dalton Pumping Station, The Waterworks, Cold Hesledon, Seaham, Durham, SR7 8RQ

Prepared by

John Ashe

Test Date

02nd November 2020

Report Date

10th November 2020

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Measurement Survey
Undertaken By

John Ashe

Report Completed By

John Ashe

2.0 – Objectives

E2 Consultants were instructed by Euan McCormick to prepare a noise assessment. The report has been compiled following a request from the planners and environmental health regarding the proposal to convert an existing barn to a venue used for wedding parties.

The methodology used for this assessment is BS8233/BS4142 to confirm that the noise from the noise on the proposed site is within acceptable levels and, if not, propose mitigation measures to combat the noise levels.

The noise levels measured have been considered and assessed against this national guidance to establish the acceptability of the development.

Details regarding the assessment methodology used, together with the results of the survey undertaken and the conclusions and recommendations, are presented within this report.

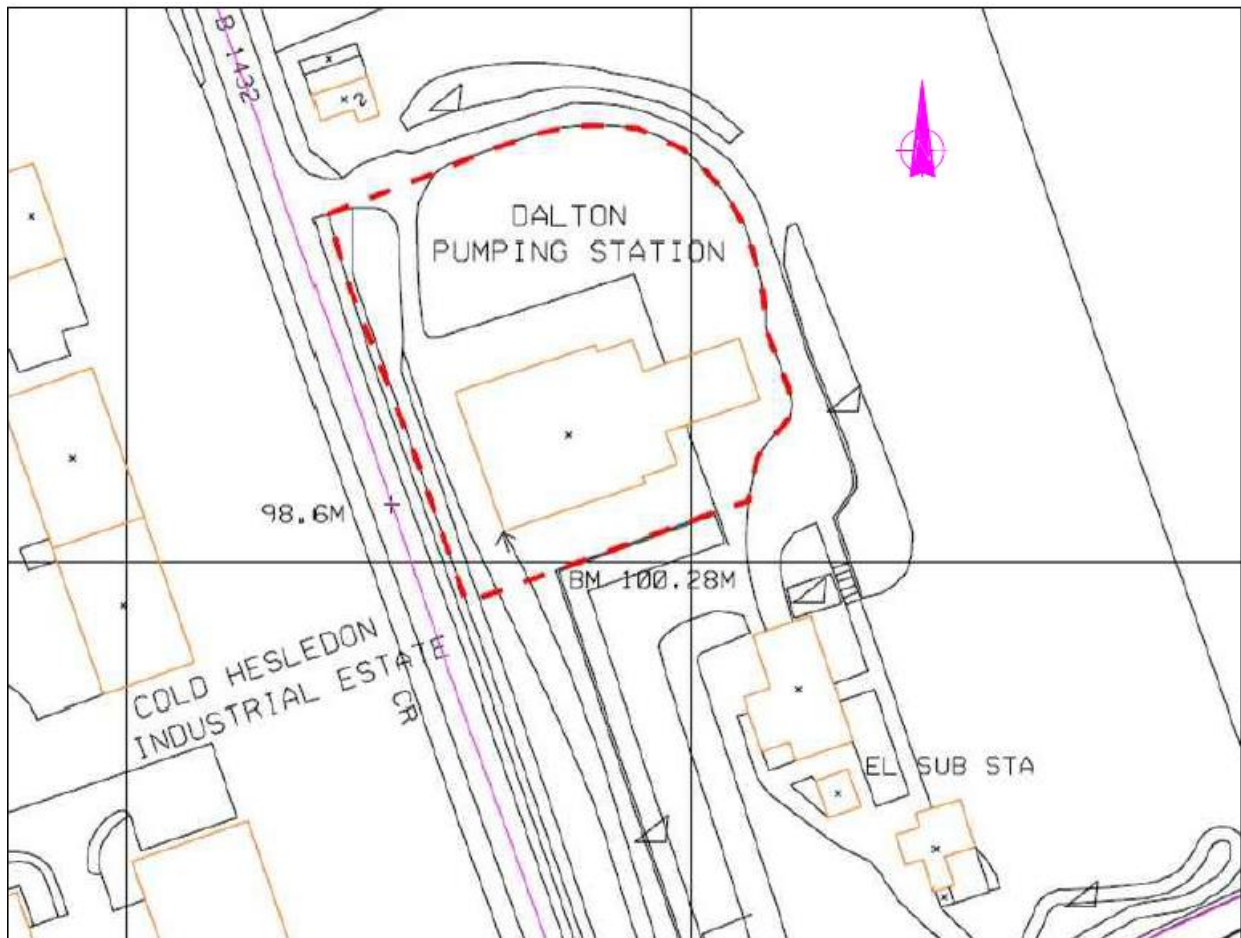
3.0 – Site Description

An assessment has been requested to ensure that the noise levels from the proposed venue will not effect the nearest dwellings to the south and north of the site.

The nearest noise sensitive property is to the south of the site. This is partially shielded by an existing building. All activities will be carried out internally within the pump house and the main function room is located on the west side of the building closest to the road

The dwelling to the north is approximately 75 meters away from the development.

The site can be seen below with the development highlighted in red.



4.0 – Microphone Position

The microphone was placed at the dwelling to the south of the site, this is most likely to effect by the noise from the venue as the dwelling is further away from the road and more exposed.

Measurements had been taken 3m away from any reflective surface.

Measurements from a previous test will be used in which music levels from a professional sound was used. Measurements had been taken within the venue and directly outside the façade which included windows.



Measurement Time	Location	Duration	Reading Reference
28/07/2020 22:24 – 22:54	Inside proposal	30Min	200728_0001
Music playing -			

Measurement Time	Location	Duration	Reading Reference
28/07/2020 23:01 – 23:31	Directly Outside	30 min	200728_0002
Music playing and door open -			

Measurement Time	Location	Duration	Reading Reference
02/11/2020 16:30 – 19:30	Access path to dwelling	3 Hours	201102_0001

Measurement Time	Location	Duration	Reading Reference
02/11/2020 21:39 – 00:39	Access path to dwelling	3 Hours	201102_0002

5.0 – Uncertainties

The following points are noted to allow for and minimize where possible any uncertainties in the measurements taken.

- 1) A class one microphone has been used for the survey (**Norsonic 140 SLM – serial number 1405312**).
- 2) Weather conditions – 90% cloud cover.

	Before Measurements	After Measurements
Wind speed:	1m/s - NW	2m/s - NW
Humidity:	52%	52%
Temperature:	10°C	08°C
Barometric pressure:	1013mb	1013mb

The weather during the day was noted as cloudy with winds of less than 5m/s with no prevailing directional component.

- 3) Noise levels at the time of the measurements were noted to be fairly constant, with no sudden increases or decreases in noise levels.
- 4) All results seen in this report will be rounded; for example, 82.5 will be rounded up to 83.

6.0 – Recommendations & Results

6.1 Data Collected

The data taken from the site is shown below:

Measurement Time	Location	Laeq	LA90
28/07/2020 22:24 – 22:54	Inside proposal -	96.8dB ~ 97dB	N/A
28/07/2020 23:01 – 23:31	Directly Outside -	49.8dB ~ 50dB	N/A
02/11/2020 16:30 – 19:30	Access path to dwelling	57dB	54dB
02/11/2020 21:39 – 00:39	Access path to dwelling	52dB	45dB

6.1.1 – BS4142 Assessment

The BS4142 assessment can be seen below. Due the way the measurements have been taken, the reduction of the façade can be calculated due to taking internal measurement and measurement directly outside the façade of the building. The reduction is 47dB. However, I will lower this resistance to 30dB assuming that more windows will be present.

This reduction can be entered into the CadnA software along with the building models. This is shown below:



As can be seen, the highest level of noise at the dwelling from the music would be 41dB at the north dwelling and 27dB at the south dwelling. This is below that of the L90 reading for the background noise levels.

It is therefore concluded that the noise levels of the wedding venue would not have an adverse effect on the dwellings either to the north or the south of the properties.

7.0 – On-Site Microphone Calibration

Microphone calibration: 114.0 dB 113.9dB = Drift of -0.1dB

(The drift value is within acceptable limits of +/-0.3dB)

8.0 – Technical Appendix

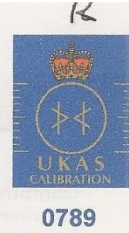
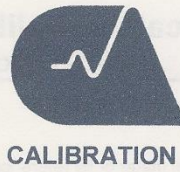
Class 1 Microphone: Norsonic 140 SLM

Calibrator: Norsonic 1251

SITE DATA:

Please see attached sheets sent with this document.

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: U32459

Test object: Sound Level Meter, BS EN IEC 61672-1:2003 Class 1 (Precision) and associated Frequency Analyser BS EN IEC 61260, Class 1

Producer: Norsonic
Type: 140
Serial No.: 1406414

Customer: E2 Specialist Consultants Ltd
Address: 3B South Park Way, Wakefield 41 Business Park, Wakefield. WF2 0XJ.

Contact Person: John Ashe

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 and for electrical testing of frequency filters as set out in BS EN IEC 61260. Results and conformance statement are overleaf and detailed results are in the attached Test Report.

Tested

	Producer:	Type:	Serial No:	Certificate number
Microphone	Norsonic	1225	226969	32458
Calibrator*	Norsonic	1251	34494	U32457
Preamplifier	Norsonic	1209	20695	Included

Additional items that also have been submitted for verification
 Wind shield Norsonic Nor1451 (ø 60mm)
 Attenuator -
 Extension cable -
 These items have been taken into account wherever appropriate.

Instruction manual: Im140_1Ed6R3En Firmware version: v3.0.1842 The test object is a single channel instrument.

Conditions	Pressure	Temperature	Humidity
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.58 ±0.04 kPa	22.3 ±0.2 °C	41.9 ±0.7 %RH

Date received for calibration: 23/07/2019
 Date of calibration: 31/07/2019
 Date of issue: 31/07/2019
 Engineer

Supervisor

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

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.

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 GREAT DUNMOW, CM6 1HD, England
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 Phone 01371 871030 Facsimile 01371879106



CALIBRATION

0789

Certificate number: U32457

Certificate of Calibration and Conformance

Test object: Sound Calibrator
Manufacturer: Norsonic
Type: 1251
Serial no: 34494

Customer: E2 Specialist Consultants Ltd
Address: 3B South Park Way,
 Wakefield 41 Business Park,
 Wakefield. WF2 0XJ.
Contact Person: John Ashe

Measurement Results:	Level	Level Stability	Frequency	Frequency Stability	Distortion
1:	114.11 dB	0.06 dB	1000.34 Hz	0.00 %	0.35 %
2:	114.10 dB	0.06 dB	1000.35 Hz	0.00 %	0.35 %
3:	114.11 dB	0.06 dB	1000.35 Hz	0.00 %	0.35 %
Result (Average):	114.11 dB	0.06 dB	1000.34 Hz	0.00 %	0.35 %
Expanded Uncertainty:	0.10 dB	0.02 dB	1.00 Hz	0.01 %	0.10 %
Degree of Freedom:	>100	>100	>100	>100	>100
Coverage Factor:	2.00	2.00	2.00	2.00	2.00

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: 0.0005 dB/kPa Temperature: 0.003 dB/°C Relative humidity: 0.000 dB/%RH Load volume : 0.0003 dB/mm³

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 CalCal\2019\NOR1251_34494_M1.nmf

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.533 ± 0.040 kPa	22.1 ± 0.1 °C	42.5 ± 0.7 %RH

Date received for calibration: 23/07/2019
 Date of calibration: 31/07/2019
 Date of issue: 31/07/2019
 Engineer

Supervisor

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

Darren Batten TechIOA

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CALIBRATION

0789

Certificate of Calibration
Floor Tapping Machine

Certificate number: U32450

Manufacturer: Norsonic
Type: 277
Serial no: 2775929

Client: E2 Specialist Consultants Ltd
3B South Park Way
Wakefield Junction 41 Business Park
Wakefield, WF2 0XJ

Contact Name: John Ashe

Method:

This certificate is issued against the requirements of Annex A of both BS EN ISO 16283-2:2015 and 140-6/7:1998 in respect of regular verification and also meet the requirements of UKAS publication LAB23 covering the verification of floor tapping machines used for building acoustics applications.

The machine was inspected for mechanical soundness and tested for electrical safety. It was cleaned and lubricated in accordance with the manufacturers instructions. The cams and hammer guides were inspected to ensure a free fall of the hammers. The mass of each of the hammers were measured in situ along with their curvature and diameter of the impact face. The machine was set up as per the manufacturers specification using the calibration gauge provided (where applicable) and checked for level, then the direction of fall of the hammer set was checked against the requirements of the standard. The time between successive hammer impacts was measured over a 30 second period and the mean and range of successive values calculated.

Environmental Conditions	Temperature	Relative Humidity
Reference Conditions:	23 °C	50 %RH
Measurement Conditions:	22.4 °C	53.5 %RH

Date received: 23 July 2019
 Date of Calibration: 31 July 2019
 Date of issue: 31 July 2019

Engineer:

Samuel Death - BSc (Hons)

Supervisor:

Darren Batten - Tech IOA

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Certificate of Competence in Environmental Noise Measurement

This is to certify that

John William Matthew Ashe

*has completed a course of instruction approved by the
Institute of Acoustics and designed to enable the candidate
to undertake environmental noise measurements in a
competent manner and has achieved a satisfactory
performance in the written and practical examinations
thereof and that this fact has been recorded in a
Register kept by the Institute for this purpose.*


Education Committee Chairman


Institute Secretary

Date 16 May 2014

Centre Leeds Metropolitan University

Reference Number EK161

*For the purposes of Credit Transfer or Professional Development this Certificate
may be considered to be equivalent to 25 points or hours*

The Institute of Acoustics Limited, 3rd Floor, St Peter's House, 45-49 Victoria Street, St Albans, Hertfordshire AL1 3WZ
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