



AIRTIGHT & NOISECHECK LIMITED

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ACOUSTIC TESTING REPORT FOR

BRECHLEY CIVIL ENGINEERING LTD

10 Victoria Road South

Southsea

Hampshire

PO5 2DA

SITE ADDRESS

**HOWARDS YARD
MILL RYTHE LANE
HAYLING ISLAND
HAMPSHIRE
PO11 0QG**



Acoustic Engineer:

A handwritten signature in blue ink, appearing to read 'M. Vine'.

Michael Vine

Date: 21-22 January 2014

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Test Engineer:



Michael Vine

Date: 21-22 January 2014

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

Customer Name:

Brenchley Civil Engineering Ltd
10 Victoria Road South
Southsea
Hampshire
PO5 2DA

Date: 21-22 January 2014

Site Address:

Howards Yard
Mill Rythe Lane
Hayling Island
Hampshire
PO11 0DG

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 121 – Serial No 31399, Calibration due April 2015 &
NOR121 serial No 29809, Calibration due July 2015

Analysers comply with the following standards:

IEC 60651 type 1
IEC 60804 type 1
IEC 61260 class 1
IEC 225
ANSI S1.4-1985 type 1
ANSI S1.43 -1997 type 1
ANSI S1.11-1986 order 3 type 1D
DIN 45 657
Norsonic Production Standard set of the Nor121

Measurement Microphones (Gras 40AF) – Serial No 51465, Calibration due June 2015 & Nor
1225, serial No 54968, calibration due July 2015

Measurement Procedure:

The external ambient noise levels were recorded for a 24hour period at the proposed new civil engineering depot between 1530hrs on 21st January 2014 to 1530hrs on 22nd January 2014 to ascertain the external noise levels at the nearest noise sensitive façade in relation to the depot. In addition the noise levels associated with the crusher for the plant and also the entrance to the existing plant to measure the noise levels associated with the lorries entering the existing depot. This report will be written according to the requirements of World Health Organisation – guidelines for community noise. Other British Standards and documents may be referred to in this report.



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Executive Summary:

Airtight & Noisecheck Ltd were instructed by Brenchley Civil Engineering to undertake a variety of noise assessments to determine the impact (If any) the relocation of a civil engineering depot would have on the nearest residential dwellings in relation to the proposed new site on Mill Rythe Lane, Hayling Island.

The measurements were measured in accordance with BS4142: 1997 and are clearly listed in this report. The civil engineering depot will have two noise sources apparent, they are:

- Rubble crusher
- Vehicles accessing & leaving the depot.

After a variety of measurements, calculations and predictions it is apparent that providing the mitigation measures are carried out then there is no reason to suggest that the depot will have an adverse impact on the residential dwellings. The dwellings are already exposed to high levels of noise due to the road traffic using Havant Road. The site also used to be used as a car scrappage depot and it is anticipated that this type of noise would exceed the measured noise levels listed in this report.

The client is keen to implement the mitigation works to enclose the crusher, and they are positioning the crusher at the furthest possible location away from the residential dwelling. In addition to this the entrance to the depot has been positioned as far away from the dwelling as possible due to reduce the potential impact on the residents.

The noise levels measured and calculated should not increase the likelihood of complaints for the residential dwellings and the noise levels associated with the civil engineering depot should be less than those previously experienced when the site was used as a car scrappage yard.



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1 Objective:

1.1 To determine the impact (if any) the relocation of a civil engineering depot will have on the nearest residential dwellings located to the North West of the site. The depot will predominantly include offices and workspace but there will be a crusher situated on the site that will be used to crush the rubble on site. Also there will be HGV vehicles entering and leaving the site during the early morning hours. The crusher will only be in operation during the day time hours and not during noise sensitive hours.

2 Calibration:

2.1 The measurement microphone was calibrated before and after testing in each measurement location and there were no drifts recorded during the assessments.

3 Site Layout & Microphone Position:

3.1 Howards Yard, Mille Hythe Lane is situated on a large parcel of land immediately to the South of Mill Hythe Lane and to the West of Havant Road. Havant road is a very busy road serving Hayling Island and it is very busy for large periods of the day and night. There are many residential dwellings located immediately on Havant Road. However the immediate area surrounding the site is industrial with other businesses located immediately to the East of the site.

The proposed civil engineering depot is currently an open piece of land not being used but it used to be a car scrapping yard, indicating that the site was subject to very loud noise events and these events would have had an impact on the residential dwellings. The scrappage yard was a very busy business with large number of vehicles being demolished and as such would have produced noise emissions.

3.2 The crusher will be located at the Southern façade of the site, in excess of 170metres from the nearest residential façade. In addition to this the crusher will be completely screened by a dense wooden barrier. The main building will be situated in the middle of the site and is understood to be a two storey building. Part of this building will screen the crusher a little also.

3.3 The entrance to the site is positioned at the Eastern edge of the Northern façade of the site. It will be approximately 80metres from the nearest noise sensitive façade, however Havant Road is situated immediately to the West of the residential dwelling and as such will be exposed to higher noise levels produced from the road traffic using the Havant Road, including HGV'S and buses.

3.4 The microphone was positioned at the North West façade of the site which is as close to the residential façade as was possible. It may be the case that the actual background noise level will be higher than that listed in the report due to the noise sensitive façade being closer to the Havant Road than the position of the microphone.

4 Weather Conditions:

4.1 The weather was varied during the measurement procedure with a mix of wind, rain and sunshine. The temperatures varied between 2-10degrees Celsius.



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5.1 The background noise levels for the microphone location is listed in the table below:

Microphone Location (North West of the site):

Time Period	L _{Aeq}	Lowest L _{Aeq} 1hour value	Lowest LA90 1hour Value	Target Value for Specific Noise
Day – 0700-2300	58dB(A)	58dB(A)	54dB(A)	44dB(A)
Night – 2300-0700	54dB(A)	N/A	N/A	N/A

Specific Noise Level – Rubble Crusher:

Time Period	L _{Aeq} 30mins	Predicted noise level at 170m	Predicted Attenuation offered by enclosure & barrier	Overall specific noise at facade	Difference	Complaints likely
Typical working day	83dB(A)	50dB(A)	15dB(A)	35dB(A)	-19dB(A)	Unlikely

5.2 The above tables show that the predicted noise emissions produced from the crusher should not increase the likelihood of complaints for the local residents. The noise levels will reduce over distance due to sound propagation. In addition to this the crusher will be completely enclosed by an enclosure comprising of a steel frame and timber railway sleepers. **This enclosure will screen the crusher completely from the dwellings so it should offer sound attenuation of between 10-12dB**, there is also an existing 3.9m high fence enclosing the site which will act as a further barrier. Due to the height and composition of the barrier this should offer a further reduction of between 3-5dB.

5.3 Due to the location of the crusher in relation to the main building, the actual building should offer some further screening for the noise emissions. The composition of large parts of the ground between the dwellings and crusher are grass and bushes, these will offer more absorption than concrete so this ground may decrease the sound further.

5.4 Lorries Entering & Leaving the Site:

Time Period	L _{Aeq} 30mins	Highest L _{Aeq} 15min Value	Lowest LA90 Value at facade (0630-0700)	Predicted specific noise at 80m	Difference	Complaints likely
0636-0806	63dB(A)	64dB(A)	53dB(A)	44dB(A)	-9dB(A)	Unlikely

5.5 The results listed above were taken from the existing civil engineering depot for a period of 1.5 hours in order to determine the noise levels associated with the lorries accessing and leaving the site. There were 18 Lorries in total during the time period and this is assumed to be a typical value. It can be seen that due to the sound propagation over distance for a line source the predicted specific noise at the residential boundary is -9dB below the lowest background LA90 value measured between the hours of 0630-0700 indicating that complaints should be unlikely. There is a high level of traffic already using the local road network during this time period and these vehicles will be a lot closer to the residential dwelling than the Lorries. The Lorries do in fact have to go past the dwelling to access the yard but they will be going very slowly due to the dwelling being situated on a corner. The vehicles using Havant Road will create higher noise emissions due to the increase in speed that they will be travelling at.

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6 Results Conclusion:

6.1 The tales listed above combined with the noise reductions predicted using sound propagation equations for both point source (crusher) and line source (vehicles) indicated that the noise emissions produced from the crusher and vehicles accessing the site should ensure that complaints will be unlikely from the local residents.

6.2 The results have been compared to the methodology in BS4142: 1997 which states that if the specific noise level is +10dB above the lowest LA90 value then complaints will be likely, +5dB above and they will be of marginal significance and if they are -10dB below the lowest LA90 value then complaints should be unlikely. **With the addition of the steel/sleeper containing wall, this will reduce the noise levels from the crusher further**

6.3 The crusher will only be in operation during normal working hours so this noise levels has been compared to the background noise levels apparent during this time period only and due to the vehicles accessing the yard between 0630-0800 these values have been compared to the background noise levels apparent during this time period.

7 Results Summary:

7.1 The results indicate that the proposed civil engineering depot should not increase the likelihood of complaints for the nearest residential dwellings in relation to the crusher and the vehicles accessing the yard. The noise levels will be reduced by standard sound propagation over distance and the mitigation measures being implemented on site (enclosure and barrier).

7.2 The noise levels at the actual residential façade were also measured for a period of 15minutes during a Saturday morning when the roads will be quieter and the LAeq value was 67dB(A) with the LA90 value being 60dB(A). This value is higher than the measured background noise levels and as such should show that the difference between the predicted specific noise levels and background noise will be greater than the differences listed within the report. It was not possible to measure the full 24hour noise levels in this location due to access and security but it is evident that the noise levels produced from the road traffic using the local road network should exceed the predicted values produced from the crusher and vehicles accessing the site.

7.3 It must not be forgotten that the site used to be used as a car scrappage site and this type of work would have produced for higher noise levels than the background noise levels measured during this procedure. This type of noise would have been very loud and intermittent and as such would have been more audible to the residential properties. This indicates that the residents have been exposed to higher noise levels than those which will be produced from the civil engineering depot and are used to these levels of noise emissions.

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APPENDIX

Continuous equivalent noise level, LAeq — the steady noise level (usually in dBA) which, over the period of time under consideration, contains the same amount of sound energy as the time varying noise.

L_{Amax} - The maximum value that the A-weighted sound pressure level reaches during a measurement period.

dB (A) — The A-weighted sound pressure level.

Decibel (dB) — A unit used for many acoustic qualities to indicate the level of sound with respect to a reference level.

A-weighting — A frequency weighting that relates to the response of the human ear.

Background noise level — Prevailing noise level in a specified environment measured in the absence of the noise being studied.

Habitable Room – A room used for sleeping or recreation/relaxation

D_{ne,w} Weighted element normalised level difference – A single-number quantity which characterises the airborne sound insulation of a small building elements.

EPU – Environmental Protection Unit

R_w Weighted sound reduction index – A single-number quantity which characterises the airborne sound insulation of a material or building element measured in the laboratory.

LA10 – The A-weighted noise level exceeded for 10% of the measurement duration.

LA90 - The A-weighted noise level exceeded for 90% of the measurement duration.

Sound Propagation: For a line Source

$$L_2 = L_1 - 10 \log (r_2/r_1)$$

Where:

L₂ = Predicted noise level at nearest noise sensitive façade.

L₁ = Noise level at source

R₂ = distance to nearest noise sensitive façade

R₁ = distance to original noise level

Sound Propagation: For a point Source

$$L_2 = L_1 - 20 \log (r_2/r_1)$$

Where:

L₂ = Predicted noise level at nearest noise sensitive façade.

L₁ = Noise level at source

R₂ = distance to nearest noise sensitive façade

R₁ = distance to original noise level

British Standards & associated documents:

Code of Practice: BS4142: 1999



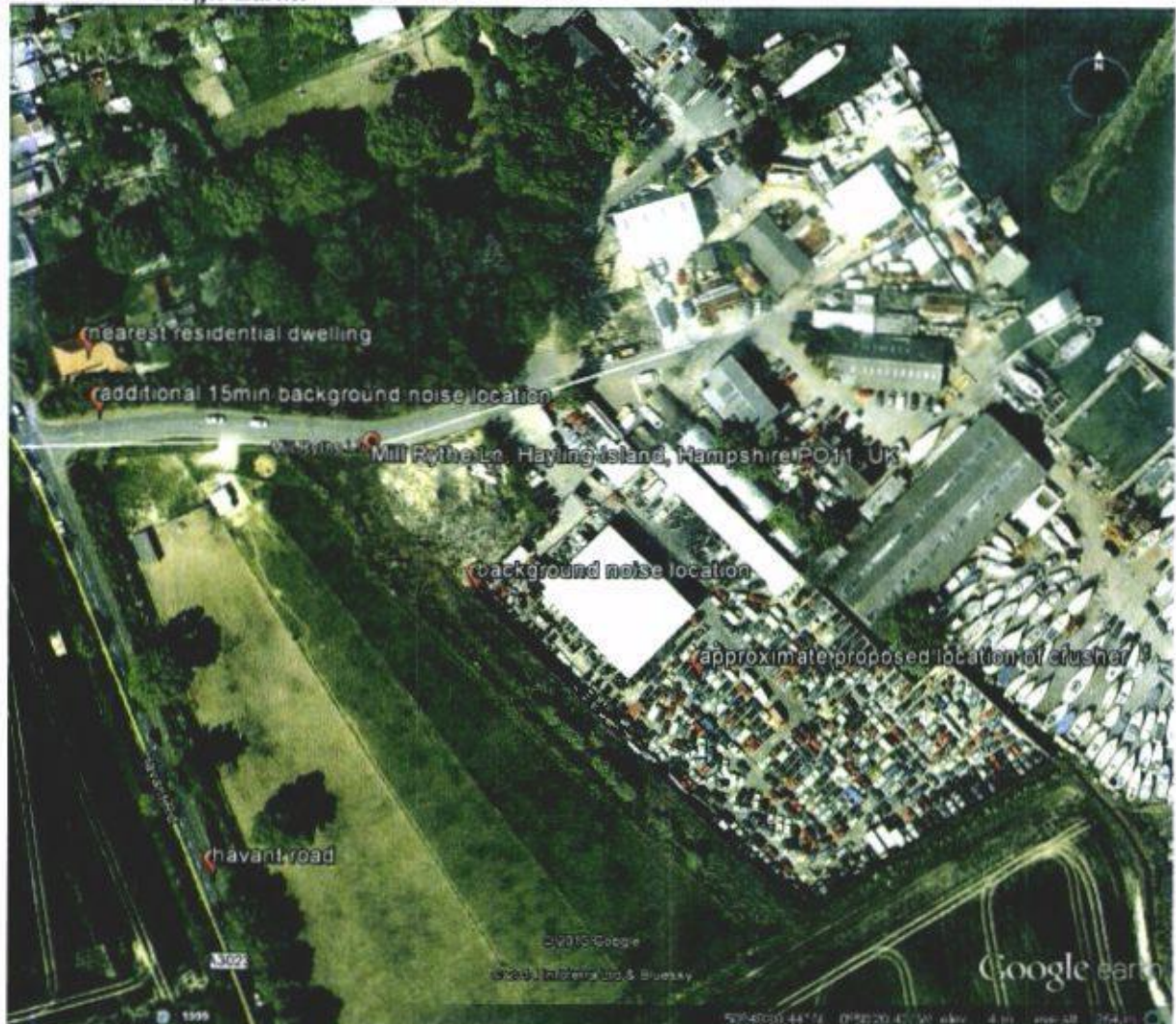
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14. Google Earth:



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