

Traffic Noise Attenuation at Land Adjacent to 1 Leigh Cottages, Petersfield Road.

Dear Sir/Madam

This note describes the traffic noise attenuation at the proposed development at the above mentioned site.

A site very close by (6 Leigh Cottages) was subject to a first storey level traffic noise survey in 2003 in proxy to the proposed construction of the block of flats at 1a Petersfield Road (refer to directory 03/52309/014). The façade of this property is approximately 6m from the edge of the road.

The calculated noise levels (sound pressure levels) were 67 $L_{eq}[dB(A)]$ by day and 59 $L_{eq}[dB(A)]$ at night. According to PPG24, this is in Category C (63-72 $L_{eq}[dB(A)]$ day and 57-66 $L_{eq}[dB(A)]$ night). The façade of the flats now called Angela Court are also approximately 6m from the edge of the road and are therefore also presumed to be Category C.

Noise (as sound pressure level) attenuates in a simple logarithmic manner and as such it is straightforward to calculate the projected levels at points other than the sampling position (see the outputs from an engineering webpage attached).

Using the survey conducted at 6 Leigh Cottages, the projected noise level at the source (the edge of the road) is 90.5 $L_{eq}[dB(A)]$ day and 82.5 $L_{eq}[dB(A)]$ at night.

The proposed development on the land adjacent to 1 Leigh Cottages would have a façade approximately 12m from the edge of the road. At the façade of the proposed development, this level of noise attenuates to 61 $L_{eq}[dB(A)]$ day and 53 $L_{eq}[dB(A)]$ night. According to PPG24, this falls into **Category B** (55-63 $L_{eq}[dB(A)]$ day and 45-57 $L_{eq}[dB(A)]$ night).

An earlier survey was also undertaken at the site of the proposed development in 1995 (refer to directory 52/52767/006). The façade of the proposed development at that time was approximately 4m from the edge of the road, and the calculated first storey level traffic noise as 71 $L_{eq}[dB(A)]$ (Category C).

The projected noise level at the source from this value is 91 $L_{eq}[dB(A)]$, which correlates well with the levels of noise in 2003, suggesting that the noise levels vary little with time. In fact, since the closure of the South Leigh Landfill site, the current occupants of 1 Leigh Cottages consider that the noise level has reduced, if anything.

The level of noise calculated for the development now being proposed on the land adjacent to 1 Leigh Cottages (12m from the edge of the road) attenuates similarly that projected from the survey at 6 Leigh Cottages, to a value of 61.5 $L_{eq}[dB(A)]$. This is **Category B**, and it can be assumed from this that night time attenuation would also be to similar levels (i.e. also Category B).

The 1.8m solid boundary and considerable shrubbery that bound the site of the proposed development further attenuate the noise considerably at ground floor level and the current occupants of 1 Leigh Cottages attest to being able to converse easily and hear their small water feature located 2m from the western (roadside) boundary.

A final remark would be that 3a Leigh Cottages (refer to directory 03/68258/000) was built without redress to a noise survey, although since it falls between 1 and 6 Leigh Cottages, it would certainly also be Category C.

Dr Rachel Benstead (Senior Scientist)



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NOISE ATTENUATION BY DISTANCE (Point Source)

PROJECT DATA (Optional)

Project 1 *Leish Cottages (4m)*
Remarks *18hr average*
Your ref Client
Identification Client's ref

CALCULATION INPUT

Source Noise Levels

Sound Pressure Level (SPL, Lp) at 4 m from source 71 dB(A)

Transmission path

hemi - spherical

Immission Point (listener)

Distance from Source 12 m

CALCULATION RESULTS

Sound levels

Source Sound Power Level (PWL) 91 dB(A)

Attenuation

Attenuation by distance of 12 m 29.6

Immission (listener's) point

Sound Pressure Level (SPL, Lp) 61.5 dB(A)

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NOISE ATTENUATION BY DISTANCE (Point Source)

PROJECT DATA (Optional)

Project *6 large Gtays (Gm)*Remarks *PM*

Your ref Client

Identification Client's ref

CALCULATION INPUT

Source Noise Levels

Sound Pressure Level (SPL, Lp) at 6 m from source 67 dB(A)

Transmission path

hemi - spherical

Immission Point (listener)

Distance from Source 12 m

CALCULATION RESULTS

Sound levels

Source Sound Power Level (PWL) 90.5 dB(A)

Attenuation

Attenuation by distance of 12 m 29.6

Immission (listener's) point

Sound Pressure Level (SPL, Lp) 61 dB(A)

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NOISE ATTENUATION BY DISTANCE (Point Source)

PROJECT DATA (Optional)

Project 6 Leigh court (6m)
Remarks NIGHT

Your ref Client
Identification Client's ref

CALCULATION INPUT

Source Noise Levels

Sound Pressure Level (SPL, Lp) at 6 m from source 59 dB(A)

Transmission path

hemi - spherical

Immission Point (listener)

Distance from Source 12 m

CALCULATION RESULTS

Sound levels

Source Sound Power Level (PWL) 82.5 dB(A)

Attenuation

Attenuation by distance of 12 m 29.6

Immission (listener's) point

Sound Pressure Level (SPL, Lp) 53 dB(A)

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08 JAN 2013

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Traffic Noise Attenuation at Land Adjacent to 1 Leigh Cottages,
Petersfield Road.

In response to objections raised by HEH in Memorandum ref EH/LG/lrg, dated 15/02/2012

From S.Benstead MSc BSc

Our Ref : BNS1/040412012

This note further describes the traffic noise attenuation at the proposed development at the above mentioned site.

This report uses the traffic noise data from the successful application to build at No.1a Petersfield Road, now known as "Angela Court" (refer to directory 03//52309/014), which used recorded measurements at the first floor level from No.6 Leigh Cottages in proxy - No.6 being 6 metres from the near side carriageway, as were the proposed flats. This survey produced calculated noise levels (sound pressure levels) of 67 Leq[dB(A)] by day and 59 Leq[dB(A)] by night. These values are considered to be reasonably representative of the proposed development site since they are measured (rather than modelled by calculation) and were recorded within 30 metres of the proposed development and within 10 years of present (given that the road is used by less heavy traffic since the closure of the South Leigh Landfill Site).

Taking the Petersfield Road as a linear source as described in the document "Calculation of Road Traffic Noise" published by the Department of Transport in 1988 by HMSO; noise attenuation can be described by $-10\log_{10}(d'/13.5)\text{dB(A)}$ where the distance from the effective source position is >4 metres and so can be assumed to occur at a rate of 3 dB per doubling of distance (ref paragraph 18 and chart 7 "Calculation of Road Traffic Noise").

In addition the proposed development at 1 Leigh cottages benefits from a barrier attenuation effect (paragraphs 22, 22.2; figures 3,4; table 9 "Calculation of Road Traffic Noise"), provided by the substantial garden wall.

Taking these factors and the increased distance between the linear source and the proposed development into account, the noise attenuation from the line source of Petersfield Road has been calculated at both ground floor window level (approximately 1.5 metres) and at first floor window level (approximately 4.4 metres) for both day and night noise levels, based on the measured values at No.6 Leigh Cottages.

Calculations were completed for 10 points on the Western façade of the proposed development, this being the façade most affected by noise from the Petersfield Road. Calculations were undertaken at both ground floor window and first floor window heights. The positions of these 10 points are shown on diagrams 1 - 3 at the end of this report.

The calculated attenuation rates and barrier attenuation are shown at the end of this report in tables 1 - 4.

Table 1 shows that due to the greater distance from the effective line source and the barrier attenuation effect of the garden wall, the western façade at ground floor window level is likely to achieve a maximum of 54Leq[dB(A)] by day (an average of 53Leq[dB(A)]). By night noise levels of 42-45 Leq[dB(A)] (Table 3) are predicted, giving an average of noise level of 44 Leq[dB(A)]. This places the average ground floor noise levels within **NEC A** (NEC A being <55Leq[dB(A)] by day, and <45Leq[dB(A)] by night, with maximum noise levels in **NEC B** (NEC B being 55-63 Leq[dB(A)] by day, and 45-57 Leq[dB(A)] by night as stated in the Planning Policy Guidance 24, Annex 1).

Table 2 shows that at the first floor level the greater distance from the line source and the barrier effect produces an average traffic noise level of 59Leq[dB(A)], with a range of between 54-63Leq[dB(A)] by day. Table 4 shows the average traffic noise level to be 50Leq[dB(A)] with a range of between 46-54 Leq[dB(A)] by night – placing the first floor noise levels within **NEC B**. (NEC B being 55-63 Leq[dB(A)] by day, and 45-57 Leq[dB(A)] by night as stated in the Planning Policy Guidance 24, Annex 1).

Original source data
#6 Leigh Cottages
Date
2003 at 6 m from road side
for 1st floor level
67 Leq[dB(A)] by day

Ground Floor Calculations

*position		1	2	3	4	5
Noise attenuation from source		64	65	65	65	64
Barrier Effect						
S		3.335	3.8	4.3	4.75	5.25
B		11.05	8.4	7.4	6.9	9
d'		14.05	11.35	11.35	11.35	14.05
path difference		0.335	0.85	0.35	0.3	0.2
Barrier Effect Attenuation Leq[dB(A)]		12	14.8	12	11.7	10.5
Total Noise Attenuation (Leq[dB(A)]		52	51	53	54	53
Average noise 53Leq[dB(A)]						

Table 1: Ground floor noise attenuation, including barrier affect attenuation, based upon the noise levels calculated in 2003 at 6 metres from the roadside at first floor window height, at day, as reported in "Traffic Noise Survey at Petersfield Road, Havant 2003" by ISVR Consulting. Document Ref: 7046 RO1 (refer to directory 03//52309/014). The calculations all fall within the range of **NEC A** (<55Leq[dB(A)] by day, and <45Leq[dB(A)] by night as stated in the Planning Policy Guidance 24, Annex 1) .

Original source data
#6 Leigh Cottages
Date
2003 at 6 m from road side
for 1st floor level
67 Leq[dB(A)] by day

First Floor Calculation

*position		6	7	8	9	10
Noise attenuation from source		64	65	65	65	64
Barrier Effect						
S		3.335	3.8	4.3	4.75	5.25
B		11.2	8.1	7.6	7.1	9.15
d'		14.4	11.85	11.85	11.85	14.4
path difference		0.135	0.05	0.05	0	0
Barrier Effect Attenuation (Leq[dB(A)])		10	8.5	2.5	5	5
Total Noise Attenuation (Leq[dB(A)])		54	57	63	60	59
Average noise 59Leq[dB(A)]						

Table 2: First floor noise attenuation, including barrier affect attenuation, based upon the noise levels calculated in 2003 at 6 metres from the roadside at first floor window height, at day, as reported in "Traffic Noise Survey at Petersfield Road, Havant 2003" by ISVR Consulting. Document Ref: 7046 RO1 (refer to directory 03//52309/014). The calculations all fall within the range of **NEC A/B**, as stated in the Planning Policy Guidance 24, Annex 1) .

Original source data

#6 Leigh Cottages

Date

2003 at 6 m from road side
for 1st floor level
59 Leq[dB(A) by night

Ground Floor Calculations

*position		1	2	3	4	5
Noise attenuation from source		56	57	57	57	56
Barrier Effect						
S		3.335	3.8	4.3	4.75	5.25
B		11.05	8.4	7.4	6.9	9
d'		14.05	11.35	11.35	11.35	14.05
path difference		0.335	0.85	0.35	0.3	0.2
Barrier Effect Attenuation (Leq[dB(A)])		12	14.8	12	11.7	10.5
Total noise (Leq[dB(A)])		44	42	45	45	45

Average noise 44 Leq[dB(A)]

Table 3: Ground floor noise attenuation, including barrier affect attenuation, based upon the noise levels calculated in 2003 at 6metres from the roadside at first floor window height, at night, as reported in "Traffic Noise Survey at Petersfield Road, Havant 2003" by ISVR Consulting. Document Ref: 7046 RO1 (refer to directory 03//52309/014). The calculations all fall within the range of **NEC A/B**(NEC A being <55Leq[dB(A)] by day, and<45Leq[dB(A)] by night, whilst NEC B is 45-57Leq[dB(A)] by night, as stated in the Planning Policy Guidance 24, Annex 1) .

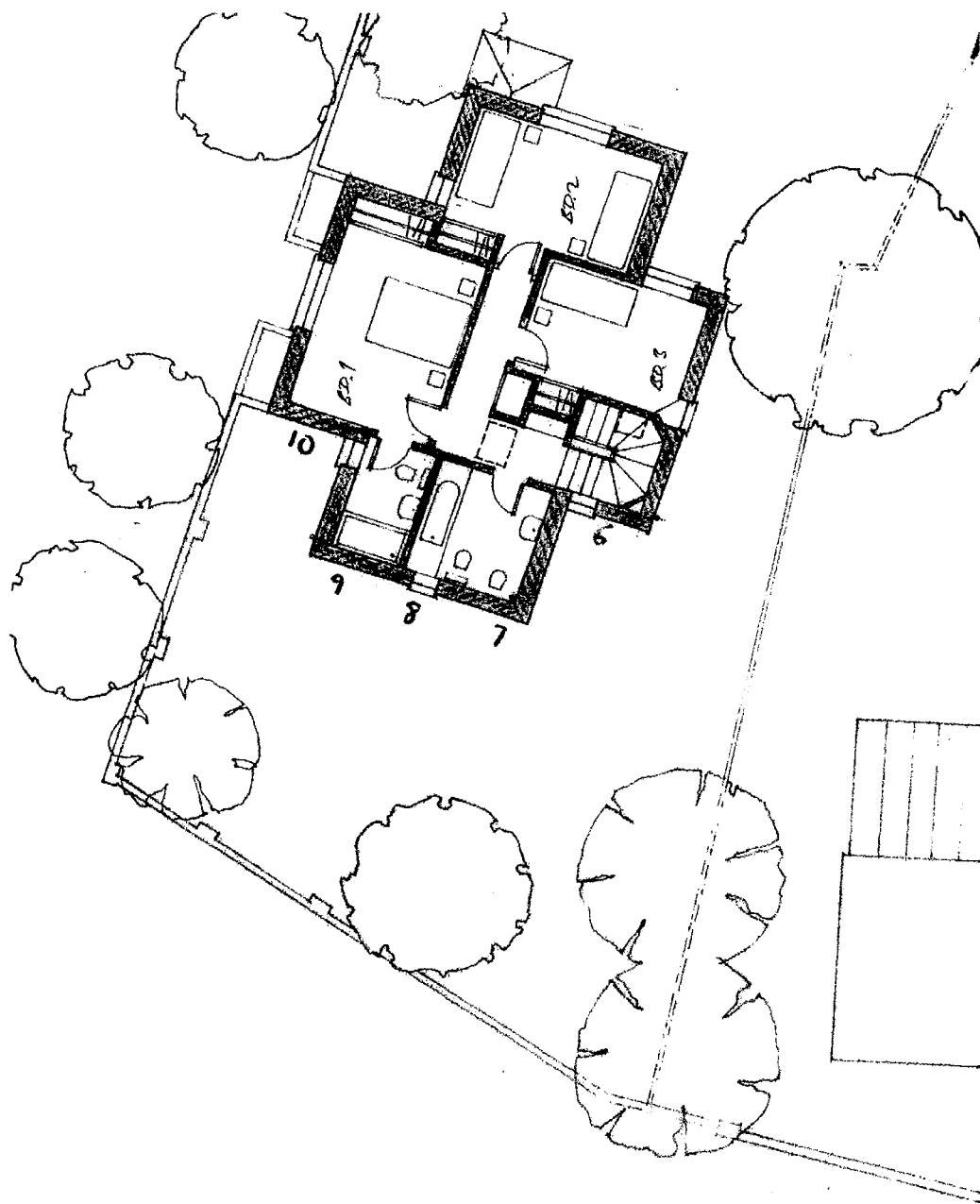
Original source data
 #6 Leigh Cottages
 Date
 2003 at 6 m from road side
 for 1st floor level
 59 Leq[dB(A) by night

First Floor Calculations

*position		6	7	8	9	10
Noise attenuation from source		56	57	57	57	56
Barrier Effect						
S		3.335	3.8	4.3	4.75	5.25
B		11.2	8.1	7.6	7.1	9.15
d'		14.4	11.85	11.85	11.85	14.4
path difference		0.135	0.05	0.05	0	0
Barrier Effect Attenuation (Leq[dB(A)])		10	8.5	2.5	5	5
Total Noise Attenuation (Leq[dB(A)])		46	48	54	52	51
Average noise	50Leq[dB(A)]					

Table 4: First floor noise attenuation, including barrier affect attenuation, based upon the noise levels calculated in 2003 at 6metres from the roadside at first floor window height, at night, as reported in "Traffic Noise Survey at Petersfield Road, Havant 2003" by ISVR Consulting. Document Ref: 7046 RO1 (refer to directory 03//52309/014). The calculations all fall within the range of **NEC B**.

Diagram 2 – First floor plan showing the locations of positions 6 to 10 at which attenuated noise levels were calculated.



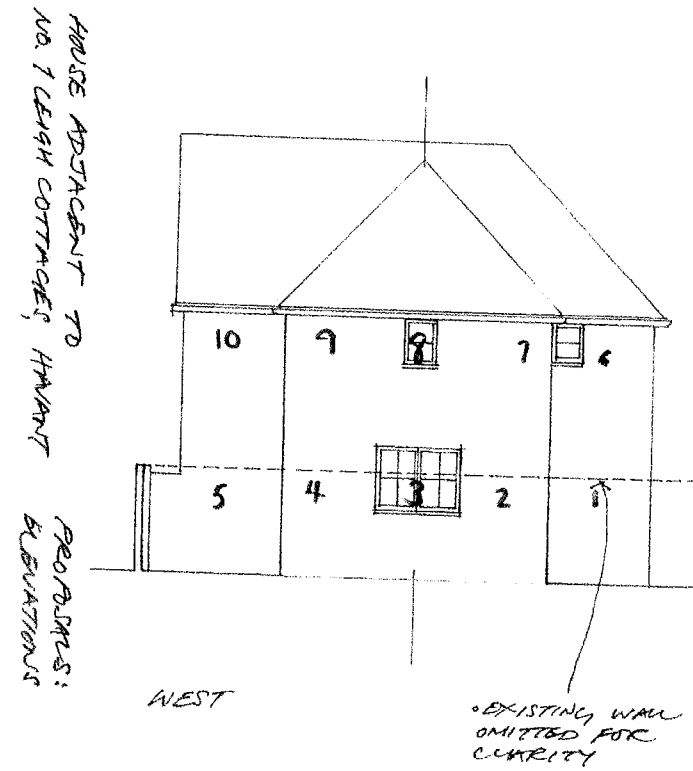
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10.1 LEIGH COTTAGES, HAVANT

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Diagram 3 – Western Façade showing the locations of positions 1 to 10 at which attenuation noise levels were calculated



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