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REPORT AS5474.100412.NIA

10 JAMESTOWN ROAD CAMDEN

PPG24 ASSESSMENT REPORT

Prepared: 12th April 2010

Anise Developments Ltd
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CONTENTS

List of Attachments

1. INTRODUCTION

It is proposed to redevelop 10 Jamestown Road, Camden for mixed office and residential use. The proposed development would consist of a redevelopment of the existing four storey building and the construction of an additional floor above. Office accommodation is proposed at ground, first and second floor level, and residential accommodation at third and fourth floor levels.

Alan Saunders Associates has been commissioned by Anise Developments Ltd to undertake an assessment of the noise impact on the site and to establish Noise Exposure Category boundaries under Planning Policy Guidance PPG24 *'Planning & Noise: September 1994'* with regard to the road traffic. This assessment will also consider the requirement for any outline mitigation measures as appropriate for the residential areas of the development.

2. SURVEY PROCEDURE & EQUIPMENT

An environmental noise survey was undertaken in accordance with the requirements of PPG24. Noise levels were measured at third floor level on the site over consecutive 15-minute periods between 13:15 hours on Wednesday 7th and 12:15 hours on Friday 9th April 2010.

The following equipment was used for the survey:

- 1 no. Norsonic Sound Level Meter type 116
- Norsonic Sound Level Calibrator type 1253

The calibration of the equipment was verified before and after use. No calibration drift was observed.

The monitoring position for continuous measurement is indicated on the attached site plan AS5474/SP1.

The weather during the survey was dry with wind speeds within acceptable parameters. This made the conditions suitable for the measurement of environmental noise. Measurements were made generally in accordance with the requirements of BS7445:1991 *'Description and measurement of environmental noise Part 2 – Acquisition of data pertinent to land use'*.

Descriptions and explanations of the acoustic parameters used in this report are shown in Appendix A.

3. RESULTS

The results of the continuous monitoring are shown as time histories of the L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} noise levels over 15-minute sample periods in Figures AS5474/TH1-TH2.

4. SUITABILITY OF THE SITE FOR RESIDENTIAL DEVELOPMENT

The site is mainly affected by road traffic noise from Jamestown Road, to the south of the site.

4.1 Planning Policy Guidance PPG24: Planning & Noise

In order to assess the suitability of the site for residential development, reference to current guidance documents is appropriate. The document Planning Policy Guidance PPG24 *'Planning & Noise: September 1994'*, gives guidance to local authorities in England on the use of their planning powers to minimise the impact of noise.

PPG24 introduces in paragraph 8 the concept of Noise Exposure Categories (NEC) from A to D, to assist planning authorities in the consideration of applications for residential development near transport noise sources. Category A represents the circumstance in which noise is unlikely to be a determining factor, whilst Category D relates to a situation in which development should normally be refused.

The document also introduces a definition of night and day:

- Daytime 07:00 – 23:00 hours
- Night-time 23:00 – 07:00 hours

PPG24 uses the L_{Aeq} value for the above periods to assess the potential impact of noise on any developments.

4.2 BS8233:1999 'Sound insulation and noise reduction for buildings'

The guidance in this document indicates 'good' and 'reasonable' noise levels for various activities within residential and commercial buildings.

The relevant sections of this standard are shown in the following table:

Criterion	Typical Situations	Design range $L_{Aeq,T}$ dB	
		Good	Reasonable
Reasonable resting/sleeping conditions	Living Rooms	30	40
	Bedrooms	30	35

Table 4.1 – Excerpt from BS8233: 1999 [dB ref. 20μPa]

This standard also states that individual noise events should not normally exceed 45 dB:$L_{Amax,fast}$ within bedrooms at night.

4.3 Noise Assessment

The average noise levels for the daytime and night-time periods, as measured at the monitoring position, are shown in Table 4.2.

Daytime $L_{Aeq,16hour}$	Night-time $L_{Aeq,8hour}$
66 dB	64dB

Table 4.2 – Daytime and night-time average noise levels [dB ref. 20μPa]

Table 4.3 below shows the resulting NEC classification for the noise monitoring position for daytime and night time periods under consideration of noise from road traffic.

Daytime Category	Night-time Category
C	C

Table 4.3 – PPG24 Daytime and night-time categories

The results of the measurements have been used to calculate the NEC categorisations on the site.

AS5474/NEC shows the noise exposure categories of PPG24 and their significance with regard to noise exposure. The above indicates that the site is within category C.

For sites within NEC C, PPG24 states:

> *'Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.'*

Residential buildings overlooking Jamestown Road would, therefore, be designed and all elements of the building envelopes specified to ensure that acceptable internal noise levels as shown in Table 4.1 are achieved, whilst taking into account all current and future permanent noise sources.

It should be noted that, in urban areas, development sites situated near to main transport routes generally fall into NEC B or C and mitigation measures are frequently required.

4.4 Mitigation Measures

It is expected that carefully specified thermal double glazing would provide sufficient attenuation for satisfactory internal noise levels. PPG24 states that typical double glazing would reduce road traffic noise levels by 33dB(A), which would result in noise levels at or close to acceptable conditions in this case.

In order to ensure acceptable internal noise levels are maintained, all windows facing or having a view of the road traffic should remain closed. Allowances should, therefore, be made for alternative means of ventilation which may be required.

5. CONCLUSIONS

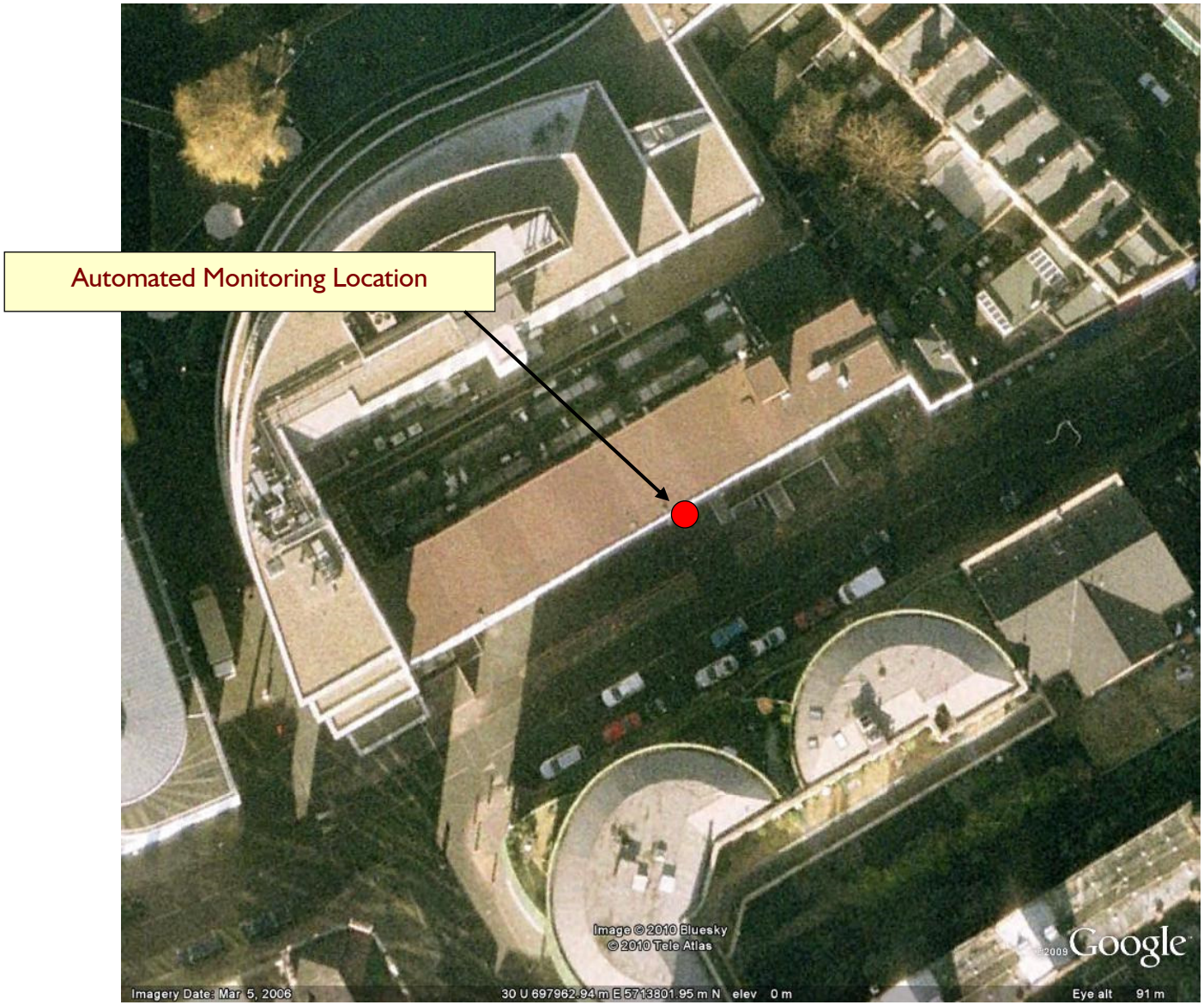
Measurements have been made of the prevailing noise climate at the proposed site for residential development at 10 Jamestown Road, Camden.

The measured levels have been assessed against currently available standards and guidance documents, including PPG24 *'Planning & Noise: September 1994'*, to consider whether the site is suitable for its proposed residential use.

This report shows that the site falls into Noise Exposure Category C.

Mitigation measures including acoustically specified double-glazing, have been recommended. The acoustic performance of the external building fabric would be fully determined as the design progresses.

Jamie Duncan AMIOA
ALAN SAUNDERS ASSOCIATES



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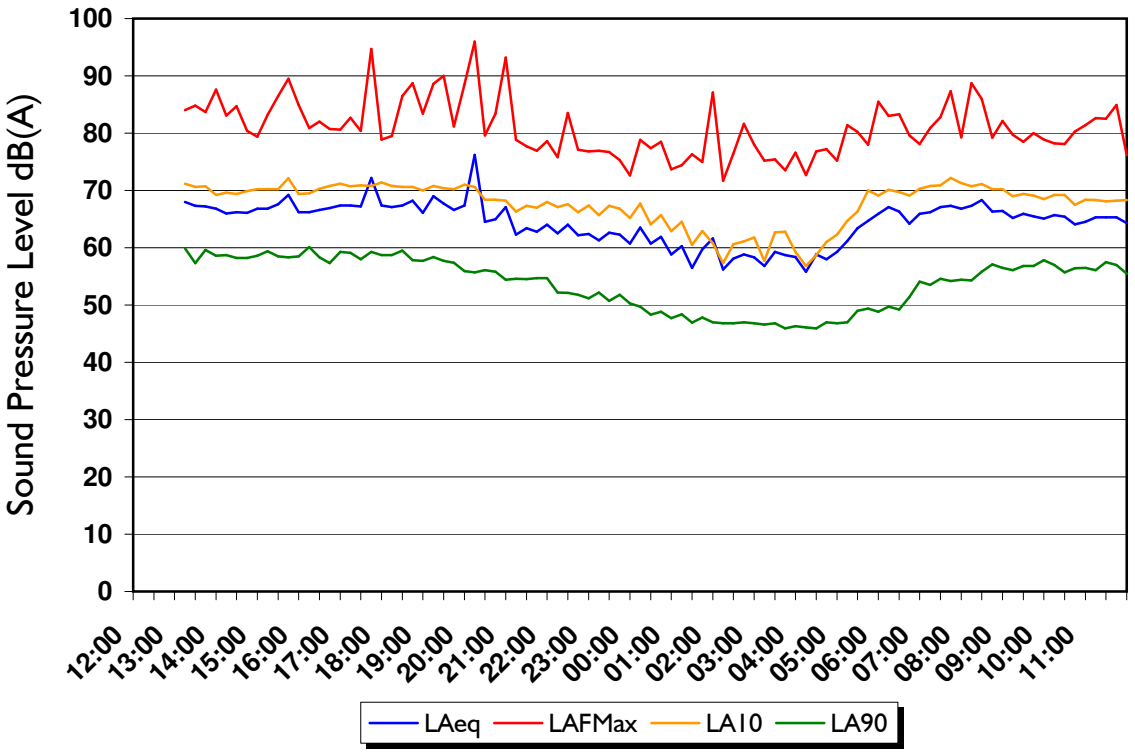
Project:
10 Jamestown Road, Camden

Title:
Indicative Site Plan

Figure:
AS5474/SP1

Date:
12th April 2010

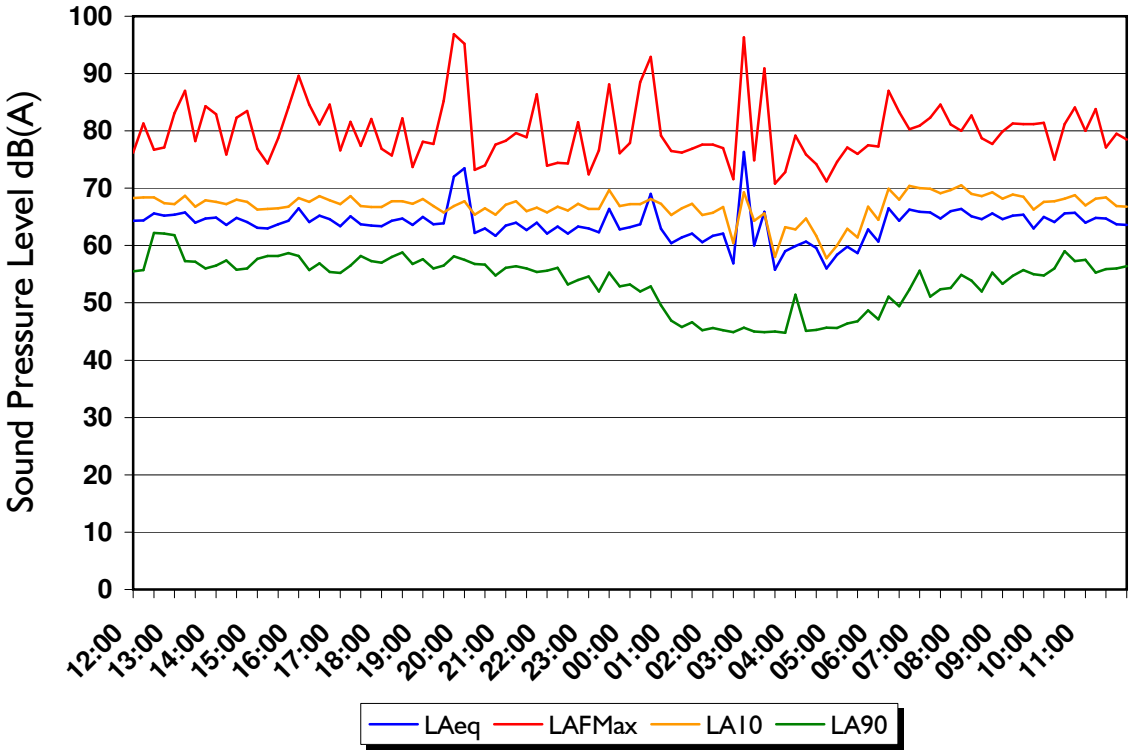


Wednesday 07 April to Thursday 08 April 2010

Figure AS5474/TH1

10 Jamestown Road, Camden (Residential)

Environmental Noise Time History



Thursday 08 April to Friday 09 April 2010

Figure AS5474/TH2

RECOMMENDED NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS NEAR EXISTING NOISE SOURCES: PPG24

NOISE LEVELS[0] CORRESPONDING TO THE NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS $L_{Aeq,T}$ dB					
		NOISE EXPOSURE CATEGORY			
NOISE SOURCE	PERIOD	A	B	C	D
road traffic	07.00 - 23.00 23.00 - 07.00[1]	<55 <45	55 - 63 45 - 57	63 - 72 57 - 66	>72 >66
rail traffic	07.00 - 23.00 23.00 - 07.00[1]	<55 <45	55 - 66 45 - 59	66 - 74 59 - 66	>74 >66
air traffic[2]	07.00 - 23.00 23.00 - 07.00[1]	<57 <48	57 - 66 48 - 57	66 - 72 57 - 66	>72 >66
mixed sources[3]	07.00 - 23.00 23.00 - 07.00[1]	<55 <45	55 - 63 45 - 57	63 - 72 57 - 66	>72 >66

NOTES

[0] **Noise Levels:** the noise level(s) ($L_{Aeq,T}$) used when deciding the NEC of a site should be representative of typical conditions.

[1] **Night time noise levels (23:00 -07:00):** sites where individual noise events regularly exceed 82dB L_{Amax} (S time weighting) several times in any hour should be treated as being in NEC C, regardless of the $L_{Aeq,\ 8hr}$(except where the $L_{Aeq,\ 8hr}$ already puts the site in NEC D).

[2] **Aircraft noise:** daytime values accord with the contour values adopted by the Department of Transport which relate to levels measured 1.2m above open ground. For the same amount of noise energy, contour values can be up to 2dB(A) higher than those of other sources because of ground reflection effects.

[3] **Mixed sources:** this refers to any combination of road, rail, air and industrial noise sources. The 'mixed source' values are based on the lower numerical values of the single source limits in the table. The 'mixed source' NECs should only be used where no individual noise source is dominant.

To check if any individual noise source is dominant (for the purposes of this assessment) the noise level from the individual sources should be determined and then combined by decibel addition (remembering first to subtract 2 dB(A) from any aircraft noise contour values). If the level of any one source then lies within 2 dB(A) of the calculated combined value, that source should be taken as the dominant one and the site assessed against the appropriate NEC for that source, rather than using the A'mixed source' NECs. If the dominant source is industrial noise see paragraph 19 of Annex 3.

If the contribution of the individual noise sources to the overall noise level cannot be determined by measurement and/or calculation, then the overall measured level should be used and the site assessed against the NECs for 'mixed sources'.

NEC	GUIDANCE
A	Noise need not be considered as a determined factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

TABLE AS5474/NEC

APPENDIX A

ACOUSTIC TERMINOLOGY & HUMAN RESPONSE TO BROADBAND NOISE

1.0 ACOUSTIC TERMINOLOGY

The annoyance produced by noise is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and any variations in its level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

dB (A): The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level.

L_{10} & L_{90}: If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the `average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.

It is common practice to use the L_{10} index to describe traffic noise, as being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic noise.

L_{eq}: The concept of L_{eq} (equivalent continuous sound level) has up to recently been primarily used in assessing noise in industry but seems now to be finding use in defining many other types of noise, such as aircraft noise, environmental noise and construction noise.

L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc).

The use of digital technology in sound level meters now makes the measurement of L_{eq} very straightforward.

Because L_{eq} is effectively a summation of a number of noise events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute noise limit.

L_{max}: L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

D The sound insulation performance of a construction is a function of the difference in noise level either side of the construction in the presence of a loud noise source in one of the pair of rooms under test. *D*, is therefore simply the *level difference* in decibels between the two rooms in different frequency bands.

D_w D_w is the *Weighted Level Difference* The level difference is determined as above, but weighted in accordance with the procedures laid down in BS EN ISO 717-1.

$D_{nT,w}$ $D_{nT,w}$ is the *Weighted Standardised Level Difference* as defined in BS EN ISO 717-1 and represents the *weighted level difference*, as described above, corrected for room reverberant characteristics.

C_{tr} C_{tr} is a spectrum adaptation term to be added to a single number quantity such as $D_{nT,w}$, to take account of characteristics of a particular sound.

$L'_{nT,w}$ $L'_{nT,w}$ is the *Weighted Standardised Impact Sound Pressure Level* as defined in BS EN ISO 717-2 and represents the level of sound pressure when measured within room where the floor above is under excitation from a calibrated tapping machine, corrected for the receive room reverberant characteristics.

APPENDIX A

ACOUSTIC TERMINOLOGY & HUMAN RESPONSE TO BROADBAND NOISE

2.0 OCTAVE BAND FREQUENCIES

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation have agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band. In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, eg. 250 Hz octave band runs from 176 Hz to 353 Hz. The most commonly used bands are:

Octave Band Centre Frequency Hz	63	125	250	500	1000	2000	4000	8000

3.0 HUMAN PERCEPTION OF BROADBAND NOISE

Because of the logarithmic nature of the decibel scale, it should be borne in mind that noise levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) is not twice as loud as 50 dB(A) sound level. It has been found experimentally that changes in the average level of fluctuating sound, such as traffic noise, need to be of the order of 3 dB(A) before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10 dB(A) is perceived by the average listener as a doubling or halving of loudness. Using this information, a guide to the subjective interpretation of changes in traffic noise level can be given.

INTERPRETATION

Change in Sound Level dB(A)	Subjective Impression	Human Response
0 to 2	Imperceptible change in loudness	Marginal
3 to 5	Perceptible change in loudness	Noticeable
6 to 10	Up to a doubling or halving of loudness	Significant
11 to 15	More than a doubling or halving of loudness	Substantial
16 to 20	Up to a quadrupling or quartering of loudness	Substantial
21 or more	More than a quadrupling or quartering of loudness	Very Substantial

4.0 EARTH BUNDS AND BARRIERS - EFFECTIVE SCREEN HEIGHT

When considering the reduction in noise level of a source provided by a barrier, it is necessary to establish the "effective screen height". For example if a 3 metre high barrier exists between a noise source and a listener, with the barrier close to the listener, the listener will perceive the noise source is louder, if he climbs up a ladder (and is closer to the top of the barrier) than if he were standing at ground level. Equally if he sat on the ground the noise source would seem quieter than it was if he were standing. This may be explained by the fact that the "effective screen height" is changing with the three cases above, the greater the effective screen height, in general, the greater the reduction in noise level.

Where the noise sources are various roads, the attenuation provided by a fixed barrier at a specific property will be greater for roads close to the barrier than for roads further away.