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LAND AT ROUNDSTONE LANE, ANGMERING

NOISE IMPACT ASSESSMENT

Technical Report: R3613-1 Rev 2

Date: 25th July 2012

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EXECUTIVE SUMMARY

Barratt David Wilson Southampton has retained 24 Acoustics Ltd to undertake a noise impact assessment at the land at Roundstone Lane, Angmering.

An ambient noise survey has been carried out at the site to determine existing noise levels during daytime and night-time periods. The site is classified as falling within Noise Exposure Category B of PPG 24 which states that '*Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to secure an adequate level of protection against noise*'. It is considered that the only additional measure required to mitigate against noise from road traffic using the A280 will be to provide alternative means of ventilation to habitable rooms facing the A280.

Noise from the neighbouring rugby club also offers the potential to cause disturbance to the future occupiers of the site, however, no significant noise from club training was audible during 24 Acoustics' site visit. It is recommended that provision is made for an acoustic barrier, 2 m in height to be constructed along the southern boundary with the club.

On the above basis it is considered that there are no significant noise-related issues which could prevent obtaining planning consent for residential development on this site. It is recommended that early consultation is undertaken with the local planning authority, however, to address any noise-related concerns that they may have at an early stage.

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1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been retained by Barratt David Wilson Southampton (Barratt) to undertake a noise impact assessment at the site at Roundstone Lane, Angmering. It is understood that Barratt have agreed to purchase the property (subject to contract) and intends to apply for planning consent for residential use.

1.2 This report presents the results of an initial outline noise impact assessment for the site and identifies any noise-related measures which could affect the development of the site.

1.3 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μPa.

2.0 SITE DESCRIPTION

2.1 The site is bounded to by the A280 to the east, Worthing Rugby Club to the south, Roundstone Lane to the west and existing residential properties to the North. The site comprises mainly arable farm land but also includes premises at the north which are occupied by Manor Nurseries.

2.2 An aerial image of the site and surroundings is provided in Figure 1.

2.3 It is considered that it is noise from road traffic using the A280 and from the use of the pitches at Worthing Rugby Club which will require assessment.

3.0 ASSESSMENT CRITERIA

PPG 24

3.1 When assessing the merits of developments which have issues relating to noise, Local Authorities are guided by Planning Policy Guidance (PPG) 24 [Reference 1], published by the Department of Transport, Local Government and the Regions (formerly the Department of the Environment). The aim of this guidance is to provide advice on how the planning system may be used to minimise the adverse impact of noise without placing unreasonable restrictions on developments or any future residential amenity.

3.2 The document introduces the concept of Noise Exposure Categories (NECs); these provide a useful framework for classifying the level of noise that a proposed residential site will be exposed to. The advice is given with respect to the development of new residential properties in the vicinity of different transportation systems and of mixed noise sources.

3.3 An explanation of the NEC groups is given in Table 1 below.

NEC	Description
A	Noise need not be considered as a determining 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 secure 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 1: NEC Definitions

3.4 PPG 24 indicates that as noise levels vary throughout a 24 hour period, it is usually necessary to assess the acceptability of noise levels for separate periods of the day. The day is divided into two periods; 07.00-23.00 hours (daytime) and 23.00-07.00 hours (night-time). The noise levels associated with each of the noise exposure categories for road traffic (re: PPG 24) are given in Table 2.

Time Period	Noise Exposure Category, dB $L_{Aeq,T}$			
	A	B	C	D
07:00 to 23:00	< 55	55 - 63	63 – 72	> 72
23:00 to 07:00	< 45	45 - 57	57 – 66	> 66

Table 2: NEC Criteria – Road Traffic

3.5 The noise levels within each NEC apply to the noise levels on the undeveloped site at the position of the proposed dwellings, at a height of between 1.2 and 1.5 m above ground level. A further stipulation of PPG 24 is if noise levels at night regularly exceed 82 dB L_{Amax} (slow time weighting) several times in any hour, the site should be categorised as being in NEC C, regardless of the $L_{Aeq, 8h}$ (except where the night-time value puts the site in NEC D).

BS 8233: 1999/ World Health Organisation

3.6 PPG 24 relates to the assessment of external free field noise levels. PPG 24 recognises the importance of good sound insulation and refers the reader to BS 8233: 1987 for guidance on suitable internal levels (superseded by BS 8233: 1999 'Sound insulation and noise reduction for buildings' [Reference 2]).

3.7 The assessment method in BS 8233 has the advantage that it generalises a situation and is not therefore dependent for its conclusions on the sound insulation values of particular properties. It is generally taken that the difference in noise level from a road, between outside and inside, is approximately 30 to 35 dBA for a standard residential construction with windows closed.

3.8 BS 8233 provides internal design sound levels for 'good' and 'reasonable' conditions. The figures in Table 3, together with a night-time maximum value of 45 dB $L_{Amax,f}$, are design recommendations from BS 8233: 1999 for reasonable internal noise levels. It should be noted that the World Health Organisation [Reference 3] recommends that for a 'good nights sleep' noise levels in bedrooms at night should not exceed 30 dB $L_{Aeq, 8\ hour}$ or regularly exceed 45 dB $L_{Amax.f}$

Criterion	Typical Situation	Design Noise Levels (dB $L_{Aeq, T}$)	
		Good	Reasonable
Resting/ sleeping conditions	Living rooms	30	40
	Bedrooms	30	35

Table 3: Indoor Ambient Noise Levels ref: BS 8233

3.9 The World Health Organisation also provides guidance relating to annoyance from noise in external amenity spaces. It states that, in order to prevent significant community annoyance, noise levels in outside living spaces (gardens, terraces, balconies) should not exceed 55 dB $L_{Aeq, 16\ hour}$ (between the hours of 07:00 and 23:00).

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

Measurement Instrumentation and Procedure

4.1 Noise surveys have been undertaken to assess the impact of noise on the site. The surveys were undertaken using the following instrumentation:

Rion precision sound level meter	Type NL31;
Rion precision real time analyser	Type NA28;
Norsonic acoustic calibrator	Type 1253.

4.2 The sound level meter was equipped with an environmental microphone and wind shield. The instrument was powered by external batteries and stored in a weatherproof case. The calibration of the instrumentation was checked before and after the tests and no signal variation occurred. Calibration of 24 Acoustics' equipment is traceable to National Standards. The weather was mostly dry throughout the survey and the windspeed was less than 5 m/s.

4.3 Unattended measurements were obtained over the period between 7th and 9th December 2010 at the site boundary with the A280. The sound level meter was configured to continuously measure and store overall A-weighted statistical parameters including L_{Aeq}, L_{Amax} and L_{A90} (all measured on fast response) in 5 minute intervals. Measurements were made in accordance with BS 7445: 1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use [Reference 4]. Measurements were taken at a height of approximately 1.5 m above ground level under free-field conditions.

4.4 Additional attended measurements were undertaken on the morning of the 9th December in order to gain an understanding of the frequency content and level variation in the vicinity of the proposed development. Subjective observations were also made during this time.

4.5 The noise survey location is shown in Figure 1.

5.0 RESULTS AND ASSESSMENT

Road Traffic Noise Survey

5.1 The results of the unattended noise survey are shown in Figure B1 in Appendix B.

5.2 The unattended free-field average (L_{eq}) data values have been averaged to determine the overall 16 hour daytime and 8 hour night-time noise levels at the site boundary. The overall average (L_{eq}) levels are shown in Table 4 below. Maximum typical night-time levels were in the order of 72 dB $L_{Amax, fast}$.

Date	Night-time Level (23:00 – 07:00) dB $L_{Aeq, 8\ hour}$	Daytime Level (07:00 - 23:00) dB $L_{Aeq, 16\ hour}$
08/12/2010	54.5	61.5
09/12/2010	54.6	-
Average	**54.5**	**61.5**

Table 4: Unattended noise survey results.

5.3 The results indicate that the area of the site closest to the A280 will fall within Noise Exposure Category B of PPG 24 which states '*Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to secure an adequate level of protection against noise*'.

5.4 Barratt should therefore be aware of the need to provide mitigation to their proposed buildings to protect against noise from road traffic using the A280. The following measures are likely to be required:

- A noise barrier along the boundary with the A280. Realistically, a 1.8 m close-boarded garden boundary fence (with surface density greater than 10 kg/m^2) are likely to provide adequate attenuation of noise to external amenity spaces;
- The first row of properties (facing the A280) will require alternative means of ventilation to habitable rooms (such as acoustic trickle vents or passive wall vents) to enable residents to occupy the premises with windows closed. The noise levels are such that specialist acoustic glazing will not be required. The acoustic attenuation provided by standard thermal double-glazing units will be sufficient.

Impact of Noise from Worthing Rugby Club

5.5 At the time of one of 24 Acoustics' site visit, training was in progress at the rugby ground. Noise was observed to be relatively unobtrusive at the nearest site boundary to the grounds, however. Barratt should be aware, however, of the potential for significant local road traffic movements on match days and the potential for a greater noise level during matches from the players and spectators. It is recommended that provision is made for an acoustic barrier (2 m in height) along the southern boundary of the site with the grounds. It is also recommended that the issue of noise from the club is addressed with the local planning authority as part of any pre-application enquiries.

6.0 CONCLUSIONS

6.1 Barratt David Wilson Southampton has retained 24 Acoustics Ltd to undertake a noise impact assessment at the land at Roundstone Lane, Angmering.

6.2 An ambient noise survey has been carried out at the site to determine existing noise levels during daytime and night-time periods. The site is classified as falling within Noise Exposure Category B of PPG 24 which states that '*Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to secure an adequate level of protection against noise*'. It is considered that the only additional measure required to mitigate against noise from road traffic using the A280 will be to provide alternative means of ventilation to habitable rooms facing the A280.

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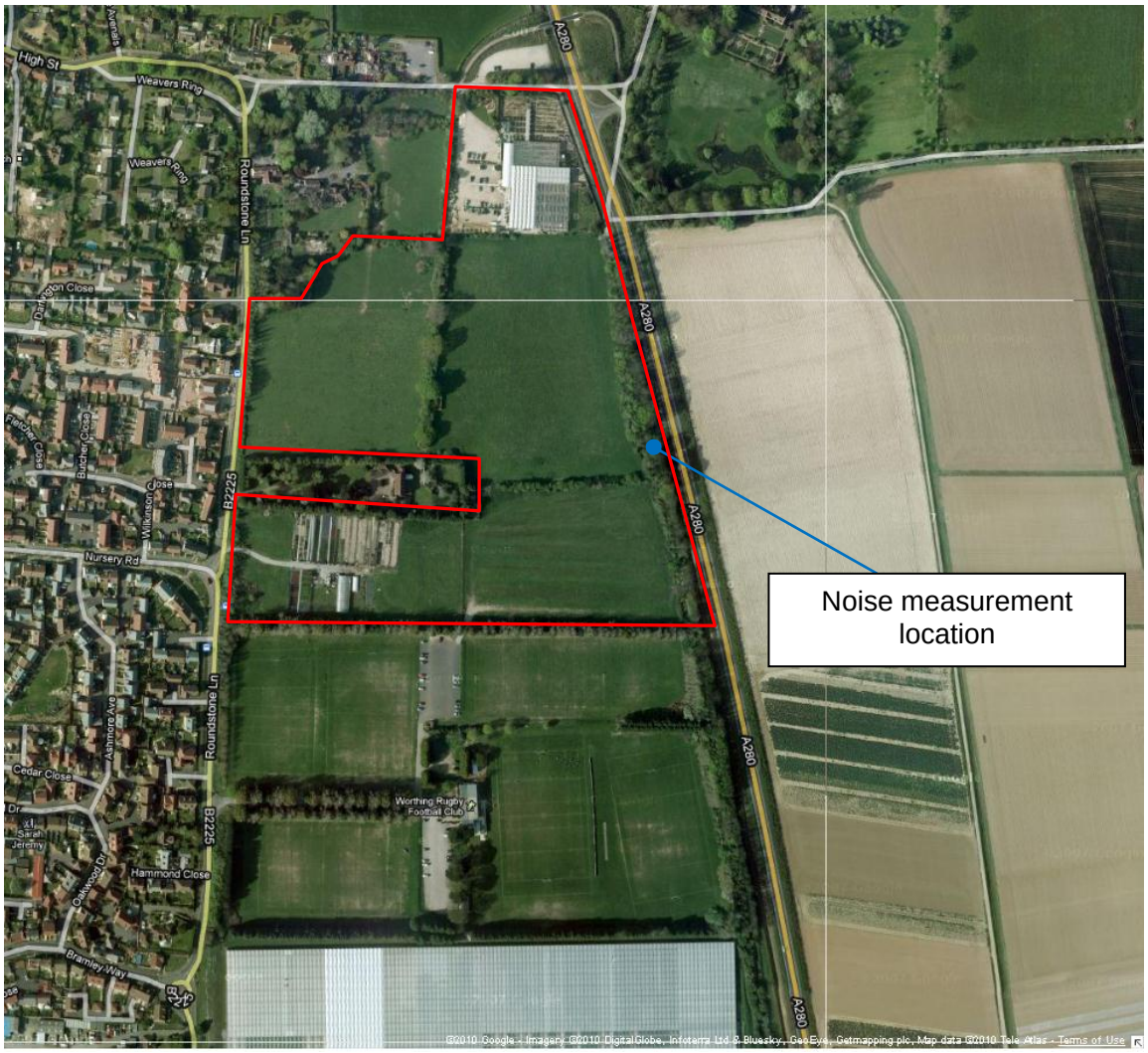
6.4 On the above basis it is considered that there are no significant noise-related issues which could prevent obtaining planning consent for residential development on this site. It is recommended that early consultation is undertaken with the local planning authority, however, to address any noise-related concerns that they may have at an early stage.



Project: Land at Roundstone Lane, Angmering	**Title:** Aerial image of site and survey location.		24Acoustics
DWG No: Figure 1	**Scale:** N.T.S.	**Rev:** A	
Date: December 2010	**Drawn By:** JE	**Job No:** 3613-1	

REFERENCES

1. Planning Policy Guidance 24, (1994)

2. British Standards Institution. British Standard 8233: Sound Insulation and Noise Reduction for Buildings, 1999.

3. World Health Organisation. Guidelines for Community Noise, 2000.

4. British Standards Institution. British Standard 7445: 1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use.

APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in important by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB(A) corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

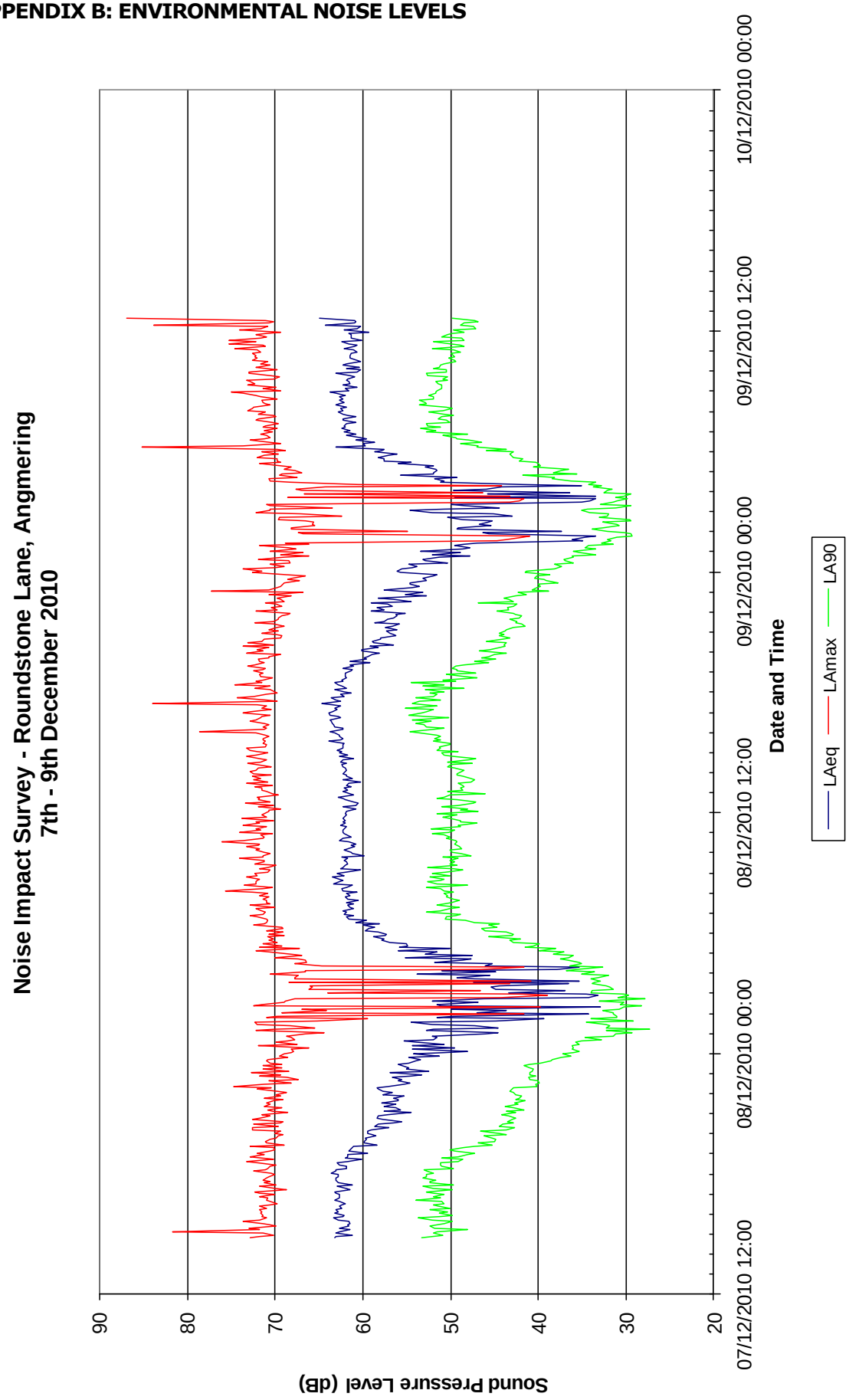
This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 [1] as the " value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: ENVIRONMENTAL NOISE LEVELS