



Pepper Mill Barn
Old Salisbury Lane
Romsey
SO51 0GD

T: 01794 515999
F: 01794 515100

**PROPOSED RESIDENTIAL DEVELOPMENT
BEDHAMPTON ROAD
BEDHAMPTON

NOISE ASSESSMENT**

Technical Report: R5011-1 Rev 0

Date: 16th December 2013

For: Mr D Cleeve
6 Meadow Edge
Waterlooville
PO7 5AX

24 Acoustics Document Control Sheet

Project Title: Proposed Residential Development, Bedhampton Road, Bedhampton - Noise Assessment

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	Name	Position	Signature	Date
Prepared by	Stephen Gosling BEng (Hons) MIOA	Principal Consultant		
Approved by	Chris McConnell MSc MIOA	Consultant		
For and on behalf of 24 Acoustics Ltd				

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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been instructed by Mr D Cleeve to undertake a noise assessment for proposed residential accommodation at the former Bedhampton School Yard, Bedhampton Road, Bedhampton.
- 1.2 24 Acoustics Ltd understands that noise arising from operations at the adjacent tyre fitting premises (National Tyres) has been highlighted as a potential concern. Accordingly, this noise impact assessment has included:
- Assessment of prevailing ambient noise levels
 - Assessment of noise from the commercial unit
- 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 μ Pa.

2.0 SITE DESCRIPTION

- 2.1 The proposed site is located in the yard of the former Bedhampton School, Bedhampton Road, Bedhampton. Bedhampton Road is a single carriageway thoroughfare with a speed limit of 30 mph.
- 2.2 It is proposed to construct residential accommodation comprising three houses in a single block. The site is bounded by a commercial tyre fitting premises which fronts Bedhampton Road (to the east of the site). Other residential properties are in the vicinity.
- 2.3 The tyre fitting premises operate during daytime hours (Monday - Friday 08:30 - 18:00, Saturday 08:30 - 17:00, Sunday 10:00 - 16:00). Noise emissions from the tyre fitting premises is most significant from the open front facade. Noise from the rear and side of the building is significantly lower as there are no openings.
- 2.4 The new dwellings would be built with the front facade located at a similar distance back from the road as the tyre fitting premises (ie, approximately 13m from the centre of the road).
- 2.5 The existing site layout is shown in Figure 1.

3.0 STANDARDS AND GUIDANCE

NPPF

3.1 The National Planning Policy Framework (NPPF) was published by the Department for Communities and Local Government in March 2012. This document replaces specific guidance contained within the planning policy guidance and statement documents which are currently in force. This document therefore supersedes PPG 24 [Reference 2] which previously provided guidance on noise relating to planning and new development. For noise the NPPF policy states that planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions, while recognising that many developments will create some noise.

3.2 The NPPF also refers to the Noise Policy Statement for England (NPSE) which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to 'promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims.

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life.

3.3 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the

NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

- 3.4 Since the NPPF currently provides no technical guidance on planning noise limits, it is appropriate to refer to internal noise levels.

BS 8233: 1999

- 3.5 British Standard 8233 defines design criteria for 'good' or 'reasonable' acoustic conditions inside certain habitable rooms. Table 1 shows a summary of the levels recommended in BS 8233 for used for resting and sleeping.

Criterion	Typical Situation	Design Range, dB $L_{Aeq, T}$	
		Good	Reasonable
Reasonable resting/ sleeping conditions	Living rooms	30	40
	Bedrooms	30	35

Table 1: Indoor Ambient Noise Levels as per BS 8233

- 3.6 BS 8233 also states that for 'reasonable' acoustic conditions in bedrooms noise levels should not regularly exceed 45 dB $L_{Amax, f}$.

Summary

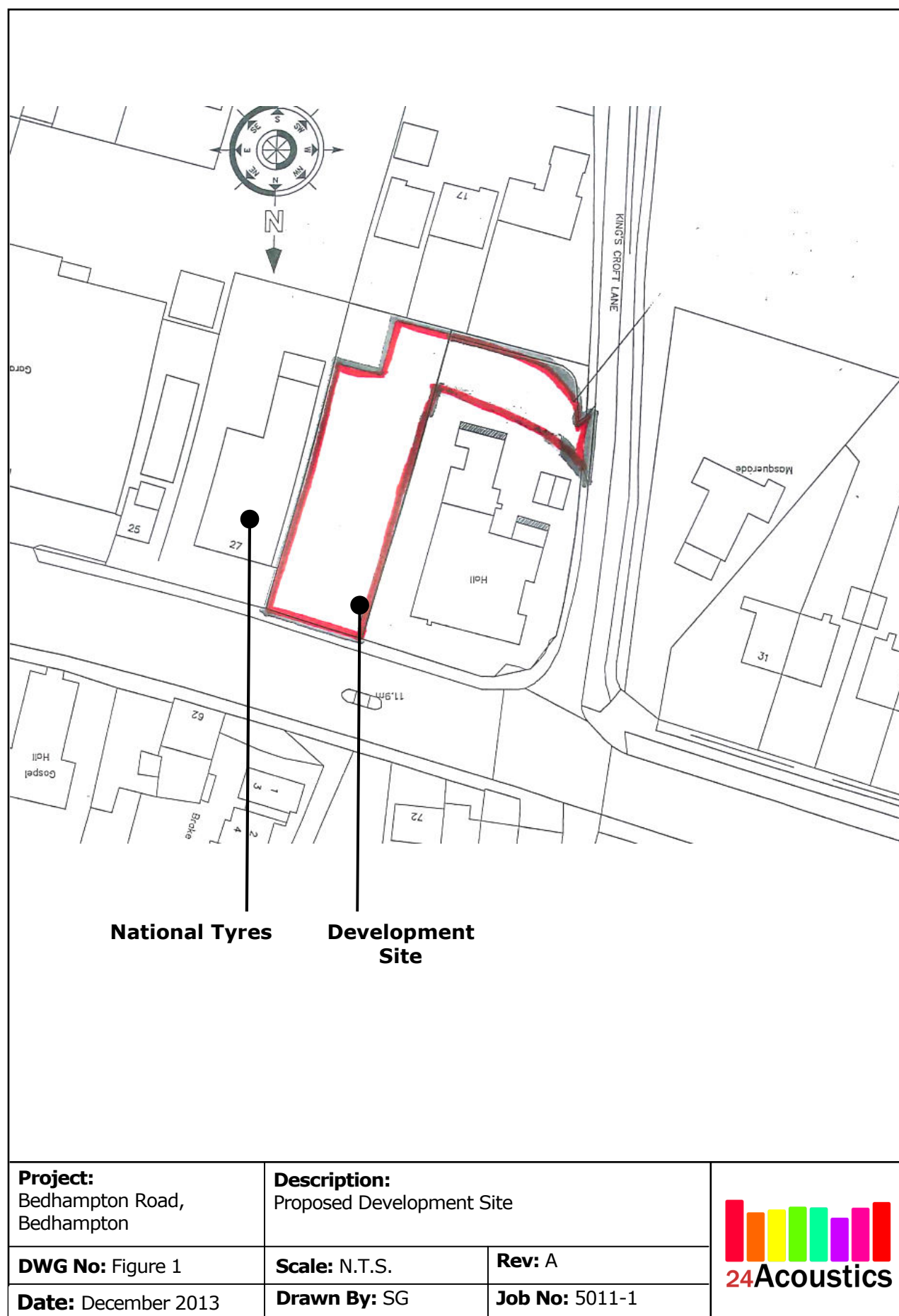
- 3.7 Based upon the review of standards described above, noise has been assessed in accordance with the following approach:
- BS 8233 for the recommended interior noise levels inside the properties (of between 30 and 40 dB L_{Aeq} for 'good' and 'reasonable' conditions in living rooms respectively and between 30 and 35 dB L_{Aeq} for 'good' and 'reasonable' conditions in bedrooms and 45 dB $L_{Amax, f}$ for reasonable conditions in bedrooms);

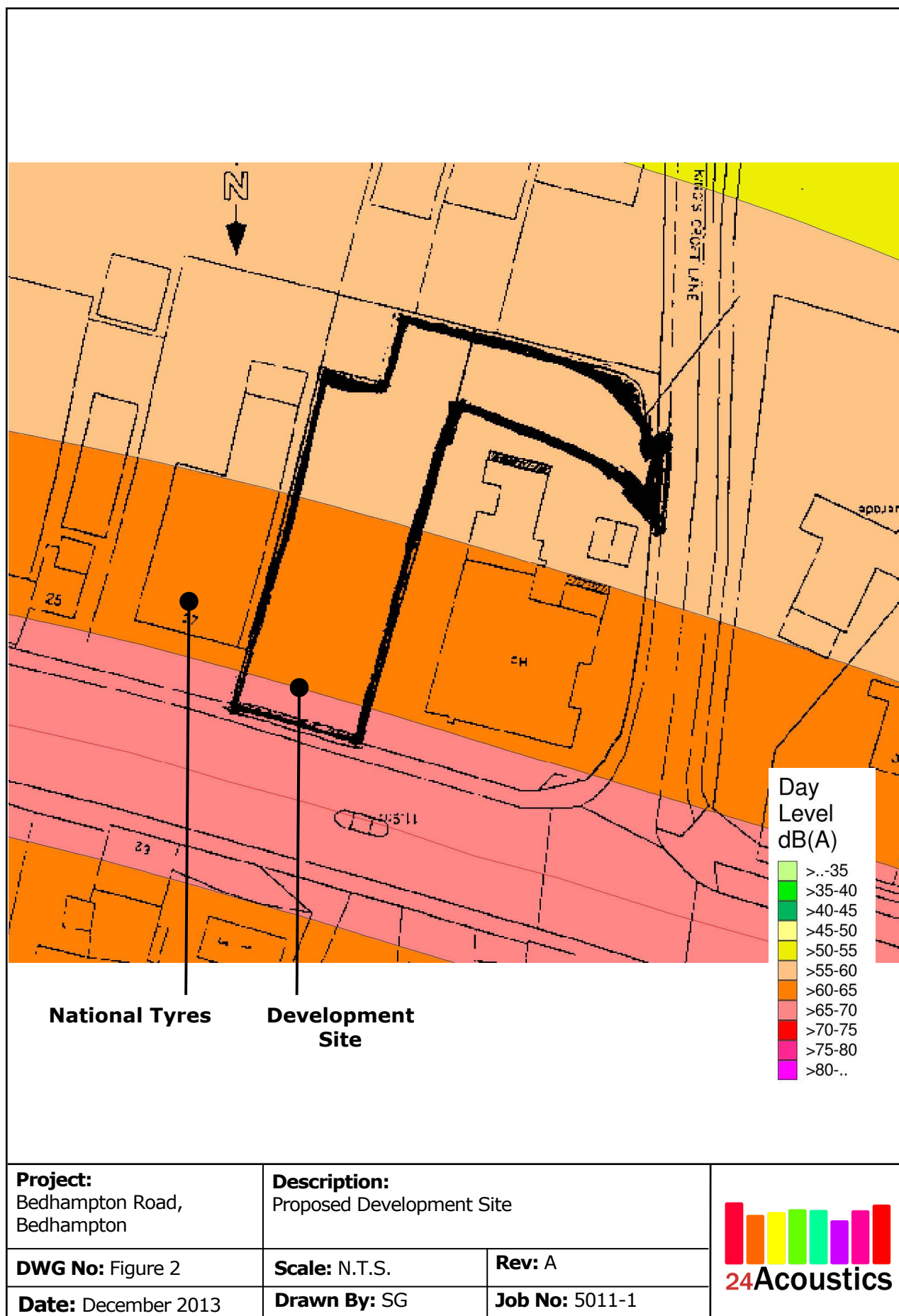
4.0 ENVIRONMENTAL NOISE ASSESSMENT

- 4.1 Detailed predictions of the noise levels across the site have been carried out using IMMI v2011-1 noise mapping software. Noise from the Bedhampton Road has been modelled following the method given in Calculation of Road Traffic Noise which takes into account the effects of geometric divergence, acoustic screening and ground absorption.
- 4.2 The acoustic model has been used to assess the prevailing ambient noise level for properties most potentially affected by noise from traffic at the front of the site. The results of the acoustic modelling are shown in Figure 2.
- 4.3 Typical levels at the front of the proposed site will be in the order of 62 dB LAeq 16 hour. It is expected the background noise levels would be typically 5 - 10 dB lower and taking a worst case assessment, would give a prevailing level of 52 dB LA90 during the daytime.
- 4.4 Noise levels within the tyre facility will vary considerably throughout the day. Typical levels from a similar facility were found not to exceed an internal reverberant level of 78 dB LAeq when assessed over an hour period.
- 4.5 Assuming an upper internal level of 78 dB LAeq, 1 hour, the resultant noise level at the nearest proposed residential properties would be 44 dB LAeq 1 hour. This level is 8 dB lower than the calculated prevailing background noise level and on this basis is considered acceptable.
- 4.6 As the units contain amenity space at the rear, internal noise levels at the front of the development are of greater significance in terms of assessing impact. On the basis that glazing and ventilation will be selected to reduce external road traffic levels to 35 dB LAeq 16 hour or lower during the daytime, it is considered that noise from the tyre fitting facility will be negligible.
- 4.7 On this basis, the scheme is considered acceptable subject to imposition of conditions which require internal noise levels to be achieved as a matter of detailed design.

5.0 CONCLUSIONS

- 5.1 Mr Cleeve proposes to develop the land on Bedhampton Road, Bedhampton for residential use. The site is subject to noise from a tyre fitting facility (National Tyres) and also noise from traffic on Bedhampton Road.
- 5.2 Noise arising from the tyre fitting facility, when assessed at the nearest proposed properties at the front of the site will be significantly lower than the prevailing background noise level.
- 5.3 Subject to a condition requiring noise from Bedhampton Road to not exceed 35 dB $L_{Aeq\ 16\ hour}$ in lounges and 30 dB $L_{Aeq\ 8\ hour}$ in bedrooms (and also not to exceed 45 dB $L_{Amax, f}$), it is concluded that a satisfactory living environment will be achieved for future residents.





APPENDIX A: NOISE UNITS

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 importance 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 dB(A) is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB(A). 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 interval, 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.