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**PROPOSED RESIDENTIAL DEVELOPMENT AT MANOR  
FARM & COPSEYS NURSERY, HAVANT**

**NOISE IMPACT ASSESSMENT**

Technical Report: R4433-1 Rev 0

Date: 24th October 2012

For: Barratt David Wilson Southampton  
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## 24 Acoustics Document Control Sheet

**Project Title:** Proposed Residential Development at Manor Farm and Copseys Nursery,  
Havant, Hampshire

Noise Impact Assessment

**Report Ref:** R4433-1 Rev 0

**Date:** 24th October 2012

|                                       | <b>Name</b>                            | <b>Position</b>         | <b>Signature</b> | <b>Date</b> |
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| For and on behalf of 24 Acoustics Ltd |                                        |                         |                  |             |

## Document Status and Approval Schedule

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|-----------------|--------------------|--------------------|--------------------|
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|                 |                    |                    |                    |

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## EXECUTIVE SUMMARY

Barratt David Wilson Southampton intends to apply for planning permission to develop land at Manor Farm and Copseys Nursery in Denvilles, Havant for residential use.

The site is subject to noise from road traffic using the A27 and from the adjacent Warblington to Emsworth railway.

An assessment has shown that noise levels in external amenity areas throughout the site are likely to be lower than 55 dB  $L_{Aeq16, hour}$ .

It is concluded that with the recommended measures given, it is considered that an appropriate acoustic environment can be provided to the proposed residential properties, both externally and internally. There should be no harm on the grounds of noise to the future residents of this proposed development.

## CONTENTS

|     |                                           |    |
|-----|-------------------------------------------|----|
| 1.0 | INTRODUCTION & SCOPE OF ASSESSMENT        | 5  |
| 2.0 | SITE DESCRIPTION AND PROPOSED DEVELOPMENT | 5  |
| 3.0 | STANDARDS AND GUIDANCE                    | 6  |
| 4.0 | NOISE MEASUREMENTS                        | 8  |
| 5.0 | ASSESSMENT                                | 10 |
| 6.0 | CONCLUSIONS                               | 11 |
|     | REFERENCES                                | 12 |
|     | FIGURES                                   | 13 |
|     | APPENDIX A: NOISE UNITS                   | 16 |

## **1.0 INTRODUCTION & SCOPE OF ASSESSMENT**

- 1.1 24 Acoustics Ltd has been retained by Barratt David Wilson Southampton to undertake a noise impact assessment at Manor Farm and Copseys Nursery in Havant, Hampshire. It is intended to apply for planning permission to redevelop the site for residential use.
- 1.2 This report has assessed the impact of noise from road traffic and a railway adjacent to the site.
- 1.3 All noise levels in this report are quoted in dB relative to 20  $\mu$ Pa.

## **2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT**

- 2.1 The site is located in Denvilles, Havant and is currently used as farmland. Copseys Nursery bounds the site to the north with residential properties to the west and open farmland to the east. The A27 and the Warblington to Emsworth railway line are located to the south of the site. The site is approximately 12 acres in size and is currently used as farm land.
- 2.2 The A27 is situated approximately 350 m from the site at its closest point and is the dominant noise source across the site. At this location, the A27 is a dual carriageway, elevated by approximately 5 metres above the level of the site.
- 2.3 The Warblington to Emsworth railway is situated approximately 75 metres from the site at its closest point. Passing trains are audible across the site but do not significantly contribute to time-averaged noise levels.
- 2.4 Barratt David Wilson Southampton proposes to redevelop the site for residential use. A plan showing the proposed development scheme is shown in Figure 2.

### 3.0 STANDARDS AND GUIDANCE

#### NPPF

3.1 The National Planning Policy Framework (NPPF) [Reference 1] was published by the Department for Communities and Local Government in March 2012, and is now effective. This document 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; and

3.2 The NPPF refers to the Noise Policy Statement for England (NPSE) [Reference 3] 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;
- Where possible, contribute to the improvement of 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 As the NPPF/NPSE do not provide any technical guidance on planning noise limits, it is appropriate to refer to guidelines set out in other standards.
- 3.5 This report assesses the noise levels on the proposed development site with reference to the following standards.

BS 8233: 1999

- 3.6 British Standard 8233 [Reference 4] defines a range of ambient noise levels for a number of design criteria for 'good' or 'reasonable' acoustic conditions inside certain habitable rooms. Table 3 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 3:** Indoor Ambient Noise Levels as Recommended in BS 8233

- 3.7 BS 8233 also states that for 'reasonable' acoustic conditions in bedrooms noise levels should not regularly exceed 45 dB  $L_{Amax,f}$ .
- 3.8 The World Health Organisation provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO 2000 guidelines [Reference 5] suggest internal noise levels not exceeding 30 dB  $L_{Aeq}$  or regularly exceeding 45 dB  $L_{Amax,f}$  for 'a good sleep'.

- 3.9 The 2000 WHO document also states that *'To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level on balconies, terrace and outdoor living areas should not exceed 55 dB  $L_{Aeq}$  for a steady continuous noise'*. It is relevant to note that the WHO values are aspirational and the WHO has no force in current planning legislation.

#### Summary

- 3.10 Based upon the review of standards described above, noise has been assessed in accordance with the following approach:
- BS 8233 for interior noise levels (of between 30 and 40 dB  $L_{Aeq}$  in living rooms and between 30 and 35 dB  $L_{Aeq}$  in bedrooms, and not to exceed and 45 dB  $L_{Amax,f}$  in bedrooms at night).

## **4.0 NOISE MEASUREMENTS**

### Methodology

- 4.1 Environmental noise surveys have been undertaken on the undeveloped site between 15th and 19th October 2012 in order to establish existing ambient noise levels across the site. The noise measurement locations are shown in Figure 1.
- 4.2 Ambient noise levels were measured using the following equipment:
- |                                                 |           |
|-------------------------------------------------|-----------|
| Rion (Type 1) precision grade sound level meter | Type NA28 |
| Rion (Type 1) precision grade sound level meter | Type NL32 |
| Brüel and Kjær acoustic calibrator              | Type 4231 |
- 4.3 The instrumentation was configured to measure and store overall A-weighted statistical parameters such as  $L_{Aeq}$ ,  $L_{Amax}$  and  $L_{A90}$  (all measured on fast response) in 5 minute intervals.

- 4.4 The instrumentation at each location was equipped with an environmental microphone. Measurements were made at 1.5 metres above ground level. 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.
- 4.5 At times, rain and winds were experienced during the survey period. Therefore, although all data is presented, only daytime data from 16-18th October 2012 and night-time data from 17-18th October 2012 have been used in the analysis.

### Results

- 4.6 The noise survey results for the measurements at Position 1 are shown graphically in Figure 3 and are summarised in Table 4 below. Daytime results are taken from 16-18th October 2012 whilst night-time results are taken from 17-18th October 2012.

| Measurement Period | Daytime                  | Night-time               |                                   |
|--------------------|--------------------------|--------------------------|-----------------------------------|
|                    | Sound Pressure Level, dB | Sound Pressure Level, dB |                                   |
|                    | $L_{Aeq, 16 \text{ hr}}$ | $L_{Aeq, 8 \text{ hr}}$  | Typical $L_{Amax,f}$ <sup>1</sup> |
| Monday 15/10/12    | 52.1                     | 49.4                     | 70.3                              |
| Tuesday 16/10/12   | 53.3                     | 54.5                     | 71.1                              |
| Wednesday 17/10/12 | 56.0                     | 52.0                     | 63.2                              |
| Thursday 18/10/12  | 57.1                     | 46.0                     | 58.9                              |
| Friday 19/10/12    | 53.0                     | -                        | -                                 |
| Average            | 55.5                     | 49.0                     | 61.1                              |

**Table 4:** Summary of Noise Survey Results at Position 1

- 4.7 The noise survey results for the measurements taken at Positions 2-6 are described in Table 5 below.

<sup>1</sup> 24 Acoustics define the typical  $L_{Amax,f}$  as the 10th highest value.

| Measurement Position | Sound Pressure Level, dB  |                           |                              |
|----------------------|---------------------------|---------------------------|------------------------------|
|                      | $L_{Aeq, 10 \text{ min}}$ | $L_{A90, 10 \text{ min}}$ | $L_{Amax,f, 10 \text{ min}}$ |
| 2                    | 53.5                      | 52.1                      | 56.7                         |
| 3                    | 54.2                      | 52.9                      | 58.8                         |
| 4                    | 51.8                      | 50.2                      | 55.2                         |
| 5                    | 54.9                      | 53.4                      | 58.7                         |
| 6                    | 55.1                      | 53.7                      | 58.8                         |

**Table 5:** Average Measured Levels from the Short-Term Noise Surveys (Daytime)

- 4.8 It should be noted that a fine drizzle was experienced during measurements at Positions 4-6. This would have caused the surface of the A27 to become slightly wet, therefore marginally increasing noise levels measured at Positions 5 and 6 even though they are further from the A27.

## 5.0 ASSESSMENT

- 5.1 Both existing ambient noise levels and noise levels with the develop present have been considered across the site as part of this assessment.
- 5.2 The assessment indicates that with the additional screening provided by the properties themselves, noise levels in external amenity areas throughout the site are likely to be lower than 55 dB  $L_{Aeq, 16 \text{ hour}}$  during the day.
- 5.3 Incident noise levels at properties closest to the A27 are predicted to be approximately 55 dB  $L_{Aeq, 16 \text{ hour}}$  during the daytime and 49 dB  $L_{Aeq, 8 \text{ hour}}$  during the night-time. Incident noise levels at properties further from the A27 will be marginally lower. Typical night-time  $L_{Amax, f}$  values are predicted to be in the range 58-72 dB at properties closest to the A27.

- 5.4 When windows are open the internal ambient noise levels which can be expected inside most of the properties will be greater than those recommended by BS 8233. Calculations have been undertaken to determine glazing and ventilation requirements for the proposed properties throughout. These indicate that standard thermal double glazing (providing a minimum rating of 31 dB  $R_w$ ) and trickle vents achieving a sound insulation performance of at least 32 dB  $D_{n,e,w}$  should be acceptable in all properties and will ensure an adequate acoustic environment as defined in BS 8233 in all habitable rooms. It is important to note that these calculations are based on average room and glazing sizes and more detailed calculations may be necessary to ensure these noise levels are achieved once detailed design of the façades is complete.

## 6.0 CONCLUSIONS

- 6.1 Barratt David Wilson Southampton intends to apply for planning permission to develop land at Manor Farm and Copseys Nursery in Denvilles, Havant for residential use.
- 6.2 The site is subject to noise from road traffic using the A27 and from the adjacent Warblington to Emsworth railway.
- 6.3 An assessment has shown that noise levels in external amenity areas throughout the site are likely to be lower than 55 dB  $L_{Aeq16, hour}$ .
- 6.4 It is concluded that with the recommended measures given, it is considered that an appropriate acoustic environment can be provided to the proposed residential properties, both externally and internally. There should be no harm on the grounds of noise to the future residents of this proposed development.

## REFERENCES

1. Department for Communities and Local Government. National Planning Policy Framework, 2012.
2. Department of the Environment. Planning Policy Guidance (PPG) 24, Planning and Noise, 1994.
3. DEFRA, Noise Policy Statement for England, 2010.
4. British Standards Institution. British Standard 8233: Sound Insulation and Noise Reduction for Buildings, 1999.
5. World Health Organisation. Guidelines for Community Noise, 2000.



**Project:**  
Manor Farm and Copseys  
Nursery, Havant

**Description:**  
Proposed Development Site and Noise Survey  
Locations

**DWG No:** Figure 1

**Scale:** N.T.S.

**Rev:** A

**Date:** October 2012

**Drawn By:** DC

**Job No:** 4433-1



**Project:**  
Manor Farm and Copseys  
Nursery, Havant

**Description:**  
Proposed Site Plan

**DWG No:** Figure 2

**Scale:** N.T.S.

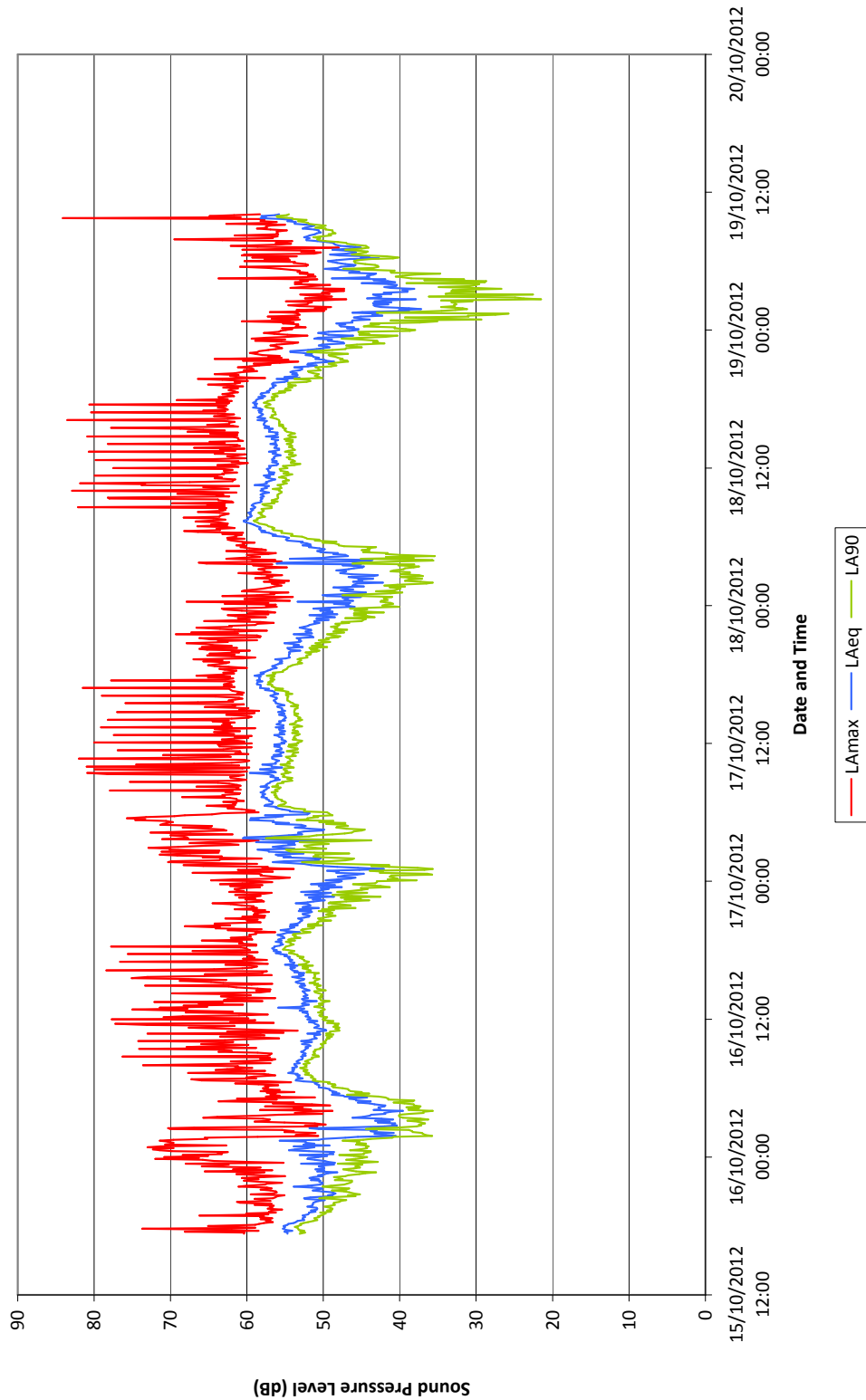
**Rev:** A

**Date:** October 2012

**Drawn By:** DC

**Job No:** 4433-1

Figure 3: Noise Survey Results - Position 1



## 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.