

Report No: **AAL/BS13051**

Noise Assessment

Gynsill Court



Client: Pro Vision
Grosvenor Court,
Winchester Rd,
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1. Introduction

Acoustic Associates have been retained to assess the noise from the A46 on proposed new housing at Gynsill Court. Currently there is no proposed housing layout available so the mitigation is not specific to a particular layout although the illustrative layout has been taken into consideration. The old PPG24 has now been withdrawn and replaced with The National Planning Policy Framework (NPPF), March 2012, Department for Communities and Local Government.

All information presented is illustrative and intended to assist in the application for planning permission only. The following concerns acoustic performance only and you must ensure that other non-acoustic requirements are considered. This report is based on information supplied by the client and we can not be held responsible for any errors in that information. The data in this report remains the property of Acoustic Associates Leicestershire and should not be used without their prior consent.

2. Scope

This assessment covers the monitoring of current noise levels on the proposed development site and general recommendations for mitigation - not specific to any layout. We are informed the Local Planning Authority have no specific guidelines for noise in gardens. The scope of this report is to consider internal noise within dwellings with only general consideration of gardens.

3. Noise measurements

Noise levels were measured by a competent person for environmental and occupational noise monitoring, in accordance with BS 7445 (Description and measurement of environmental noise) and the old PPG24 measurement method. Free field noise levels were measured at a height of about 1.5 m above the ground using the following Type 1 sound level meters with wind shields fitted:

Instrument	Serial No.	Calibrated	Measurement
Larson Davis 820	0709	Jan 12	Approximate location of nearest housing to the A46

The equipment was operated according to the manufacturers instructions and calibrated before and after use with a Bruel & Kjaer Type 4230 acoustic calibrator (serial number 781674, calibrated Jan 2012), and the calibration had not changed.

Weather conditions were satisfactory for monitoring noise, and noise level measurements were not affected by wind generated noise. Average wind speeds were less than 1 m/s westerly, and it

was dry and warm with some sunny intervals. Temperatures were above 48°F.

The measured noise levels are given in Appendix 1. Ambient noise levels were dominated by traffic noise and were 68 $L_{Aeq,16hr}$ or less in the daytime and 61 $L_{Aeq,8hr}$ or less at nighttime.

4. Noise assessment

The old guidance on noise in relation to planning applications have now been withdrawn and replaced with The National Planning Policy Framework (NPPF), March 2012, Department for Communities and Local Government. The NPPF states

6. The purpose of the planning system is to contribute to the achievement of sustainable development. The policies in paragraphs 18 to 219, taken as a whole, constitute the Government's view of what sustainable development in England means in practice for the planning system.

7. There are three dimensions to sustainable development: economic, social and environmental. These dimensions give rise to the need for the planning system to perform a number of roles:

- an economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;*

- a social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and*

- an environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.*

109. The planning system should contribute to and enhance the natural and local environment by: ... preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability;

123. 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 impacts²⁷ on health and quality of life arising from noise from new development, including through the use of conditions;*

- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.

144. When determining planning applications, local planning authorities should:

ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source and establish appropriate noise limits for extraction in proximity to noise sensitive properties;

The NPPF does not directly give guidelines for acceptable noise levels so this assessment considers the BS 8233 advice which indicates acceptable noise levels within houses. In this assessment the “good” conditions given in BS 8233 are taken as the design criteria.

The old PPG 24 used the concept of Noise Exposure Categories (NECs), ranging from A to D, to help local planning authorities in their consideration of applications for residential development near transport-related noise sources. PPG 24 explains these categories as follows:

Category A represents the circumstances in which noise is unlikely to be a determining factor, while Category D relates to the situation in which development should normally be refused. Categories B and C deal with situations where noise mitigation measures may make development acceptable.

8. Values in the table below refer to noise levels measured on an open site at the position of the proposed dwellings, well away from any existing buildings, and 1.2m to 1.5m above the ground.

<i>Noise levels corresponding to the noise exposure categories for new dwellings $L_{Aeq,T}$ dB</i>				
	<i>Noise exposure category</i>			
<i>Noise source</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>road traffic</i>				
<i>07:00-23:00</i>	<i><55</i>	<i>55 - 63</i>	<i>63 - 72</i>	<i>>72</i>
<i>23:00-07:00</i>	<i><45</i>	<i>45 - 57</i>	<i>57 - 66</i>	<i>>66</i>

Notes

⁰Noise levels: the noise levels ($L_{Aeq,T}$) used when deciding the NEC of a site should be representative of typical conditions.

¹Night time noise levels (23:00 - 07:00): sites where individual noise events regularly exceed 82 dBL_{Amax} (S time weighting) several times in any hour should be treated as being in NEC C

Noise from road traffic

1. For established roads it will normally be sufficient to base assessments on the current measured noise level (para 8 of Annex 1 refers).

BS 8233:1999 Code of practice for sound insulation and noise reduction for buildings gives design criteria for dwellings, it states:

7.6.1.2 For dwellings the main criteria are reasonable resting/sleeping conditions in bedrooms and good listening conditions in other rooms. It also gives design ranges for external noise experienced within rooms:

		Design range $L_{Aeq,T}$	
		good	reasonable
Reasonable resting/sleeping conditions	Living rooms	30	40
	Bedrooms	30	35

For a reasonable standard in bedrooms at night individual noise events should not normally exceed 45 L_{Amax}

A noise survey was conducted following the method of the old PPG 24, from 25th to 27th June 2013, covering typical weekdays, the indications are that these were a typical days as far as we know. The noise was monitored in 1 hourly intervals - the results are given in Appendix 1.

Under the old PPG 24 the land would be in NEC C “where noise mitigation measures may make development acceptable” and mitigation measures are considered below.

5. Noise mitigation

Internal noise levels are calculated in Appendix 2 and the glazing requirement is derived from them, examples of glazing that achieves the required attenuation is also given. It is recommended that 30 $R_{traffic}$ glazing is used on bedroom windows facing the road (eg 10/16/6 double glazing). It is recommended that 38 $R_{traffic}$ glazing is used on living room windows facing the road (eg 6/150/4 secondary double glazing). Night time internal noise levels, as well as daytime, are then all within the “good” classification.

Windows have to be closed to achieve these noise levels and so acoustic ventilation (of the same specification as the windows) should be provided. There are a number of possible methods of providing ventilation while maintaining sufficient sound insulation. If forced ventilation is not required, a sound insulated wall vent (eg PassiventFresh TLF-dB Willan Building Services tel: 01619627113) would be adequate. Similar systems from other suppliers

may be acceptable. These systems are adequate acoustically but we can not advise on ventilation requirements.

To reduce noise in gardens it is recommended that where possible gardens are screened from the A46 by the houses. Where this is not possible acoustic barriers are recommended round gardens. Vertical overlap wooden fencing of 18mm thick wood or more to a height of at least 2.2m may be adequate. For it to be effective it must be air tight. In most cases this will also reduce noise levels at ground floor windows.

The proposed development on adjoining land may make a difference in lowering noise levels but details are not currently available.

6. Conclusions

- Noise was monitored near the site boundary closest to the A46 from 25-27 July 2013.
- Internal noise levels would be “good” to BS 8233 if the windows meet the recommended specification.
- Windows have to be closed to achieve these noise levels and so acoustic ventilation (of the same specification as the windows) should be provided.
- To reduce noise in gardens it is recommended that where possible gardens are screened from the A46 by the houses. Where this is not possible acoustic barriers are recommended round gardens.

Appendix 1. Measured noise levels

Date	Time	L _{Aeq}	L _{Amax}	L _{A90}
25 June 2013	10:00	66.9	73.2	63.3
25 June 2013	11:00	67	74.4	63.8
25 June 2013	12:00	67	75.9	64
25 June 2013	13:00	65.5	72.7	60.2
25 June 2013	14:00	66	72.9	62.5
25 June 2013	15:00	67.4	73.9	65
25 June 2013	16:00	68.7	74	66.2
25 June 2013	17:00	68.5	74.4	66.2
25 June 2013	18:00	68.2	75.9	65.9
25 June 2013	19:00	66.4	73	63.2
25 June 2013	20:00	65	72.5	61.8
25 June 2013	21:00	64.2	70.7	60.6
25 June 2013	22:00	63.6	70.9	58.7
25 June 2013	23:00	61.3	69.2	55
26 June 2013	00:00	57.7	69.5	48.6
26 June 2013	01:00	56.1	68.5	42.8
26 June 2013	02:00	55.7	67.2	41.8
26 June 2013	03:00	57.6	67.9	48.6
26 June 2013	04:00	59.3	72.5	53.5
26 June 2013	05:00	62.1	68.7	57.7
26 June 2013	06:00	65.7	81	62.5
26 June 2013	07:00	68.2	72	66.5
26 June 2013	08:00	68.2	72.7	66.2
26 June 2013	09:00	67.5	72.9	65.2
26 June 2013	10:00	66.9	74.9	64.2
26 June 2013	11:00	67.4	73.5	64.5
26 June 2013	12:00	67.7	73.7	65
26 June 2013	13:00	67.5	75	64.7
26 June 2013	14:00	68.2	75	65.7
26 June 2013	15:00	69	74.7	66.7
26 June 2013	16:00	70.2	74.2	68.2
26 June 2013	17:00	70.5	76.9	68.7
26 June 2013	18:00	69.4	74.5	67
26 June 2013	19:00	67.7	77.2	65
26 June 2013	20:00	66	84	62.6
26 June 2013	21:00	65.2	81.2	61.2
26 June 2013	22:00	63.6	74.2	58.5
26 June 2013	23:00	61.2	69.2	54.3
27 June 2013	00:00	59.1	70	47.5
27 June 2013	01:00	57.2	69.2	43.5
27 June 2013	02:00	57.7	68.7	43.3
27 June 2013	03:00	55.8	73.7	45.5
27 June 2013	04:00	58.2	71.5	52.2
27 June 2013	05:00	60.5	71.9	56.2
27 June 2013	06:00	66.4	72.2	62.1
27 June 2013	07:00	69.2	78.9	67

Date	Time	L_{Aeq}	L_{Amax}	L_{A90}
27 June 2013	08:00	70.2	74.5	68.5
27 June 2013	09:00	67.9	74.5	65.4

60.7 $L_{Aeq,8hr}$ 25 June 23:00 - 26 June 7:00
68.0 $L_{Aeq,16hr}$ 26 June 7:00-23:00
60.9 $L_{Aeq,8hr}$ 26 June 23:00 - 27 June 7:00
67.3 $L_{Aeq,16hr}$ 27 June 7:00-10:00 and 25 June 10:00-23:00

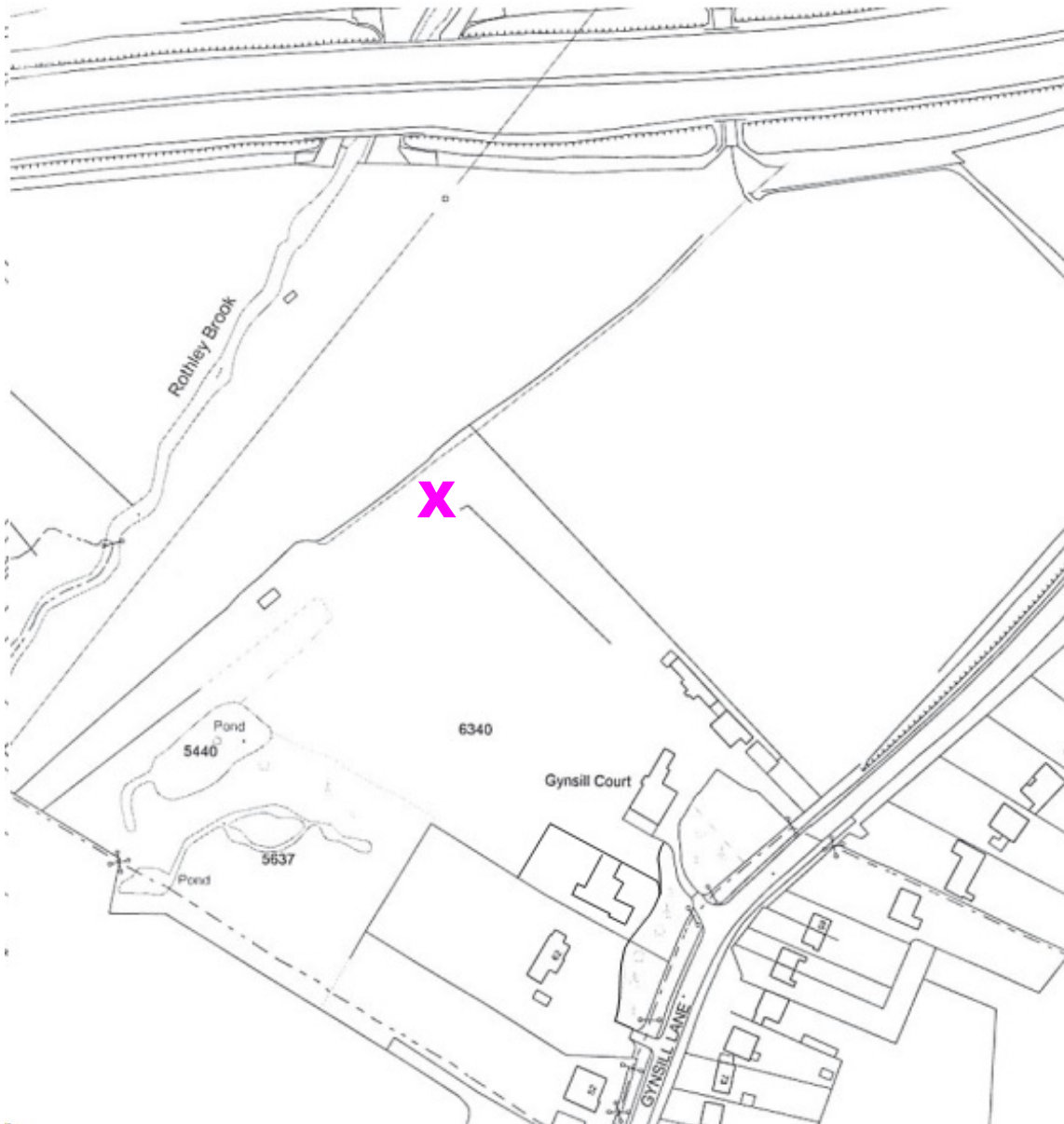


Figure 1. Noise monitoring position

Appendix 2. Calculation of internal noise

Calculations of internal noise levels to BS 8233 paragraph 6.7.1.

	Day L_{Aeq}	Night L_{Aeq}	typical night L_{Amax}	
A. External noise level	68	61	72	dBA
C. Glazing requirements	38	30	30	$R_{traffic}$
Internal noise level, A-C	30	31	42	dBA
BS8233 classification	good	good	acceptable	

Standard 10/16/6 double glazing gives over 30 $R_{traffic}$

Stadip's Phonip 9-12-12 double glazed units, Stadip Securit Planitherm 6-16-8.4 Stadip

Silence or Pilkingtons Optiphon & Optiphon 8.8/16/12.8 all give at least 38 $R_{traffic}$

Alternatively secondary double glazing is probably a more cost effective solution - 6/150/4

secondary double glazing gives over 38 $R_{traffic}$

Glossary

Ambient noise	The whole noise climate that exists at present. The all pervasive noise associated with a given environment. It would normally be measured as an L_{Aeq} .
A-weighting	The human ear responds to sound in a frequency dependent manner. Low frequencies (bass tones) and very high frequencies (eg a dog whistle) are not heard as well as intermediate frequencies. The sound level is A-weighted (electronically) to get the sound level meter to respond in a similar way as a human ear.
Background	The "typical lowest" noise level when the specific noise being considered is not contributing to the noise. It is measured in terms of the L_{A90} .
Barrier	A wall or fence which blocks the path of noise. For it to be effective it must be air tight and of sufficient mass, and must be sufficiently wide and tall.
Competent person	A person with sufficient experience and qualification to assess noise, for example a Member of the Institute of Acoustics (an MIOA or FIOA) or someone with a degree in acoustics.
dB	The decibel, the unit of measurement of sound pressure level. It is a logarithmic scale so doubling it's value does NOT mean twice as much sound. It is calculated from the reference level, $p_0 = 2 \times 10^{-5} \text{N/m}^2$, so that 0dB is the threshold of hearing. A 3dB increase indicates a doubling of the energy of the sound.

$$\text{Noise level, dB} = 20 \log \frac{P}{p_0}$$

dB(A)	The sound pressure level after it has been A-weighted.
Free field	An environment where there are no reflective surfaces other than the ground or floor, in the middle of a field for instance. Noise decays at 6 dB per doubling of distance.
Facade noise level	Noise level 1 m in front of a reflective surface (usually a building). It is usually about 3 dB higher than the equivalent free field noise level.
Intermittent	An intermittent noise is one that because of its nature fluctuates in noise level (not one that is switched on and off), for example a dust filter with a self cleaning pneumatic mechanism (with a periodic blowback.)
L_{Aeq}	Equivalent continuous A-weighted sound pressure level. It indicates the average noise level over the measurement period.
L_{AN}, L_{A90}	N is an integer. The noise level that is exceeded for N% of the time, eg L_{A90} (the background) is the noise level that is exceeded for 90% of the time.
Noise level	The same as sound pressure level.
Noise sensitive area	Any location where there may be people (animals may also be included in some circumstances) who could be adversely affected by noise, such as dwellings, schools, hospitals, auditoria, law courts and chambers, laboratories, libraries, museums, art galleries, inhabited buildings, open areas used by the public or recreational areas. Usually factories and industrial sites would not be noise sensitive.
Rw	Weighted sound reduction index defined in ISO 140-3:1995. it is the noise reduction provided by a building element.
Sound pressure	Sound Pressure Level (SPL) - the noise level indicated by a sound level meter in dB. It will vary from place to place and over time.