NOISE ASSESSMENT OF
SITE AT WAKEFIELD ROAD
MAPPLEWELL
BARNSLEY

An Assessment on Behalf of
Pipestone Ltd

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Environmental Studies

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1. Background

It was proposed that the site at Wakefield Road Mapplewell be assessed as to its suitability for residential development in terms of noise. Wakefield Road is part of the A61 which links Barnsley and Wakefield, and as such is a busy main road.

2. Criteria

Prior to its replacement by the less specific (in terms of noise criteria) National Planning Policy Framework (2012), Department of the Environment publication 'Planning and Policy Guidance : Planning and Noise -1994 (PPG 24) was the instrument used by Local Authorities to assess potential development sites which were subject to traffic noise.

In the absence of detailed noise advice in the National Planning Policy Framework, the advice from PPG 24 was that, wherever possible, new housing should not be exposed to external traffic noise source noise levels in excess of 55 dB L_{Aeq} (16 hour) during the day, and external traffic source noise levels in excess of 45 dB L_{Aeq} (8 hour) during the night. However, daytime noise levels up to 72 dB L_{Aeq} (16 hour) and night-time noise levels up to 66 dB L_{Aeq} (8 hour) may be acceptable provided appropriate measures are taken to assure an adequate level of protection against road traffic noise.

BS 8233:1999 ('Sound insulation and noise reduction for buildings – Code of practice') gives guidance on acceptable noise levels within dwellings (Table 5 Section 7.6.1.3). The following table shows the internal noise levels it recommends with regard to housing:-

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

BS 8233 refers to a daytime garden noise level of 55 dB(A) L_{eq} (16 hour) as being acceptable, with many Local Authorities aiming for the low to mid 50's.

3. Method of Assessment

The site at Mapplewell was visited on 13th September 2012 and noise measurements were conducted at the locations shown on Figure 1 (overleaf).

4. Noise Measurements

Noise measurements were conducted on 13th September 2012 between 12.00 pm and 3 pm at the two locations shown on the plan over the page.

Equipment used: CEL 268 Type 1 Environmental Noise Meters
(serial nos. 017249 & 093146)

Calibration: Field calibration was carried out before and after the noise measures using a CEL 284/2 Acoustical Calibrator.
(serial no. 06411727)

All equipment used was within manufacturer's spec. calibration.

Weather: At the time of the noise measures the weather was overcast with a light southerly breeze.

Noise Sources: Wakefield Road is a heavily trafficked road, being a main route between Wakefield and Barnsley.

Figure 1 – Noise Measurement Locations

Sketch of site boundary

X Noise Measurement Positions

5. Results

The following 3-hour noise data was measured at the 2 Measurement Positions:-

Measurement Position (see Figure 1)	L_{Aeq} (dB)	L_{A10} (dB)	L_{A90} (dB)	L_{AMAX} (dB)
A	**70.5**	**74.0**	**53.5**	**88.5**
B	**71.0**	**74.5**	**54.0**	**90.2**

6. Discussion

The noise levels were similar at the 2 noise measurement locations (chosen to represent the noisiest areas of the site) position 'B' being slightly quieter, probably due to traffic travelling slightly slower due to the change in speed limit to the south of the site.

Using the correction factors from within PPG 24, the measured levels infer an L10(18 hour) noise levels of 73 dB(A) at the site perimeter. This in turn suggests that the daytime (16 hour L_{Aeq}) value at this point of the site would be 70.0 dB.

Applying distance attenuation to the measured noise levels to take account of the likely position of the nearest housing to the road (see John R Paley Associates Drawing no. D09 4198 100) leads to a reduction of 5 dB(A), meaning that at the façade position of the proposed nearest properties to the road, the daytime noise level (L_{Aeq}) would be 65 dB. This level would be reduced further back into the site, with the 'front-line' properties acting as a noise barrier with regard to road traffic noise from the A61.

In order to protect the internal noise climate of the closest properties to

Wakefield Road, windows of an enhanced specification would be needed – a minimum attenuation of 35 dB(A) being required so that the 'good' internal noise standard from BS 8233 could be met, or 30 dB(A) to meet the 'reasonable' standard (the L_{Aeq} 8-hour night-time noise levels are likely to be in the order of 10 dB lower than the daytime levels) Appendix 1 of this report details the noise attenuation values associated with various glazing combinations. An alternative means of acoustic ventilation in noise sensitive rooms (which have a view of the road) would ensure that windows can remain closed and so maintain the internal noise climate of the most exposed dwellings.

Whilst garden areas behind the closest proposed housing to Wakefield Road would be screened by the buildings themselves, the frontline properties would need a robust close boarded fence or similar between themselves and the A61 to reduce noise levels in their garden areas. An overall barrier height of 2.4 metres is calculated (using the methodology embodied in the government publication 'The Calculation of Road Traffic Noise') to give a reduction of 12.6 dB(A) in the garden area of the 'frontline' properties, thereby reducing the daytime noise level to below 55 dB(A).
Alternatively, the amenity gardens could be sited on the opposite side of the new housing to the A61, such that the houses themselves act as a noise barrier.

7. Conclusions

The noise measurement exercise conducted at the site at Mapplewell indicates that the incorporation of mitigating features discussed in this report would mean that the proposed housing would enjoy a satisfactory noise climate both within the dwellings themselves, and in the garden areas.

APPENDIX 1

TYPICAL SOUND REDUCTION OF GLAZED UNITS

REF NO	UNIT	Noise Reduction In dB(A) (R_W)*
1.	Single, 4mm glass	30
2.	Sealed unit 4/6/4 (4mm glass/6mm space/4mm glass)	31
3.	Sealed unit 6/12/6	33
4.	Sealed unit 4/12/10	36
5.	Single 6.4 laminated glass	36
6.	Pilkington Acoustic Laminate™ (P.A.L.) 6/12/7	38
7.	Sealed unit 6.4/12/10	40
8.	P.A.L. 6/12/11	41
9.	P.A.L. 10/12/16	42
10.	P.A.L. 13/12/13	45
11.	P.A.L. 16/12/16	46
12.	Double 6/100/4 with lined reveals	46
13.	Double 4/150/4 with lined reveals	47
10.	Double 10/200/6 with lined reveals	49

All values based on published research by Pilkington Glass.

*R_W was the noise reduction index referred to in Planning Policy Guidance 'Planning and Noise' (PPG 24)