



**REDROW HOMES
NOISE PROTECTION SCREENING
PHASE 2 BEREWOOD, WATERLOOVILLE**

SCREENING ASSESSMENT

JANUARY 2014



the journey is the reward

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1 Introduction

1.1 Mayer Brown Limited have been commissioned by Redrow Homes to provide a screening study of the data available to inform the provision of a noise protection scheme for the future residents of the Phase 2 development at Berewood.

1.2 Redrow Homes wish to make a Reserved Matters Application (RMA) at the Phase 2 site and as such are required to discharge the following condition:

“No relevant phase of the development hereby permitted shall commence until a scheme for protecting proposed dwellings and their gardens from noise from the London Road has been submitted to and approved in writing by the Local Planning Authority. Those dwellings shall not be occupied until the implementation of all works forming part of such approved noise protection scheme has been completed in full accordance with all detailed components of such scheme.”

*“**Reason:** To safeguard the amenity of occupiers and having due regard to policies CS16 and DM10 of the Havant Borough Core Strategy 2011 which forms part of the Local Development Framework.”*

1.3 This study collates all of the currently available noise data for the site in order to identify the locations where noise protection may be required and to highlight where further data is required to inform the Noise Protection Scheme.

1.4 This approach has been discussed with and approved by the relevant planning and noise officers at Havant Borough Council.

1.5 In addition, the Council Noise Officer has advised that the following standards are expected:

“Maximum noise level (predicted 15 years from completion of dwellings) in habitable rooms, with windows closed and other means of ventilation provided should not exceed the following:

- *Daytime 35 dB $L_{Aeq,16h}$*
- *Night time 30 dB $L_{Aeq,8h}$ ”*

2 Existing Noise Data

- 2.1 Three sets of noise survey have been undertaken at the Berewood site over the design period.
- 2.2 The first of these was undertaken at six locations in June 2004. Another set of monitoring data was undertaken in September 2009 with further monitoring being undertaken in December 2009. These included the initial six locations plus a further two at the gas compound and at a residential location to the south. All eight locations are set out in Table 2.1 below and are illustrated in Figure 1 .

ID	Location
1	132 Hambledon Parade
2	127A London Road (on the London Road/Hulbert Road Roundabout)
3	Opposite 10 London Road
4	On the northern boundary of Grainger land west of Pipers Wood Industrial Park
5	58 Forest End
6	Newlands Farm
7	Gas Compound
8	Parklands Day Nursery

Table 2.1: Berewood Noise Monitoring Locations

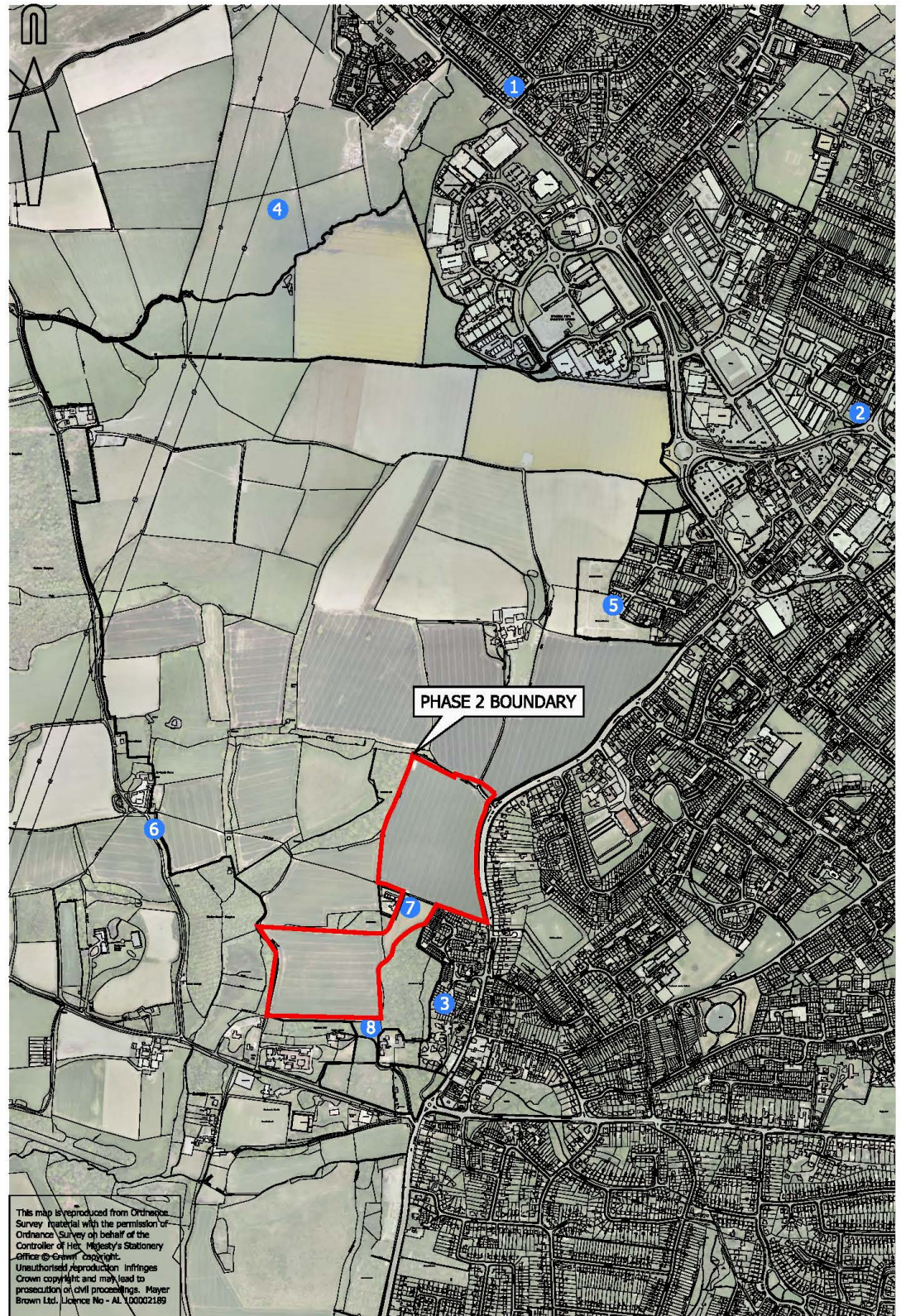


Figure 1: Noise Monitoring Locations

2.3 It can be seen from Figure 1 that the closest monitoring positions to the Phase 2 site are 3, 7 and 8.

2.4 Tables 2.2 and 2.3 below are a summary of the day time and night time results obtained at these locations in 2004 and 2009

Location	Day-time Noise Levels (LAeq 07:00 – 23:00)								
	2004								
	17/06	18/06	19/06	20/06	21/06	22/06	23/06	24/06	7-day average
3*	66.3	65.4	64.6	66.0	68.2	69.3	68.4	65.2	66.7
	2009								
		15/09	16/09	17/09	18/09	19/09	20/09	21/09	7-day average
		–	–	–	–	–	–	–	
		16/09	17/09	18/09	19/09	20/09	21/09	22/09	7-day average
3	-	61.0	60.0	61.0	60.0	58.0	59.0	61.0	
		09/12	10/12	11/12	12/12	13/12	14/12	15/12	7-day average
		–	–	–	–	–	–	–	
		10/12	11/12	12/12	13/12	14/12	15/12	16/12	7-day average
7		51.0	55.0	56.0	55.0	55.0	54.0	54.0	
8		48.0	48.0	47.0	45.0	46.0	48.0	47.0	47.0

Table 2.2: Day-time Noise Levels Adjacent to Phase 2

Location	Night time Noise Levels (LAeq 23:00 – 07:00)								
	2004								
	17/06	18/06	19/06	20/06	21/06	22/06	23/06	24/06	7-day average
3	58.4	58.4	58.9	58.4	58.2	57.1	59.7	57.4	55.2
	2009								
		15/09	16/09	17/09	18/09	19/09	20/09	21/09	7-day average
		–	–	–	–	–	–	–	
		16/09	17/09	18/09	19/09	20/09	21/09	22/09	7-day average
3		53.0	53.0	52.0	54.0	52.0	51.0	51.0	
		09/12	10/12	11/12	12/12	13/12	14/12	15/12	7-day average
		–	–	–	–	–	–	–	
		10/12	11/12	12/12	13/12	14/12	15/12	16/12	7-day average
7		44.0	50.0	50.0	49.0	49.0	48.0	49.0	
8		39.0	43.0	40.0	43.0	41.0	41.0	40.0	41.0

Table 2.3: Night time Noise Levels Adjacent to Phase 2

2.5 However, it is clear from Figure 1 that none of these locations are truly representative of noise levels in the vicinity of London Road.

2.6 An indication of noise levels adjacent to London Road can be obtained from the noise modelling which has been undertaken for the assessment year of 2021. Modelling data was derived from detailed traffic modelling and was calibrated against monitored data at other locations along the network.

2.7 Figure 2 illustrates the locations at which noise modelling data was obtained.

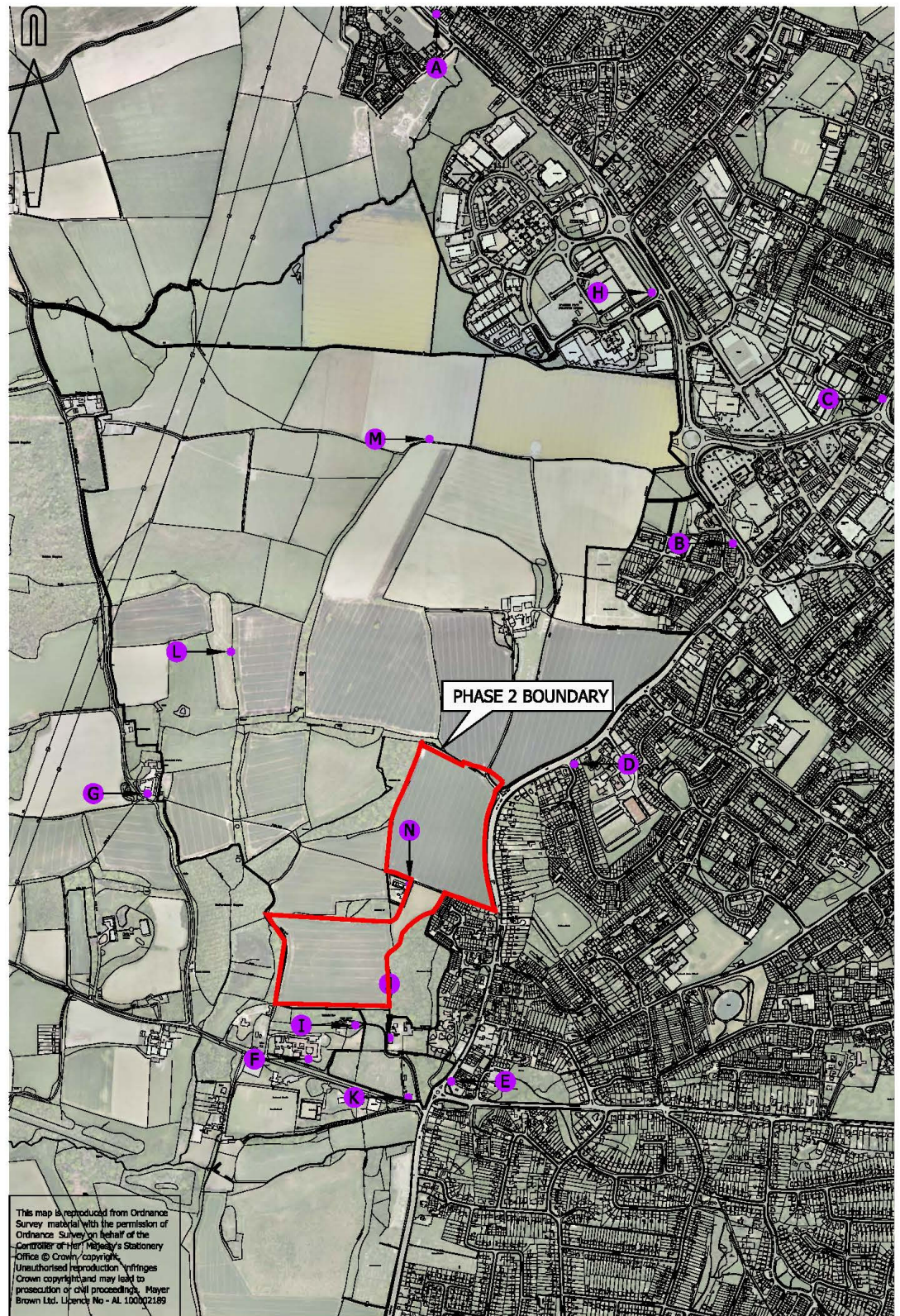


Figure 2: Noise Modelling Locations

- 2.8 It can be seen from Figure 2 that modelling locations D and E are more representative of sites adjacent to London Road. The modelled noise levels for the future year of 2021 at these locations is set out in Table 2.4 below.

Location	2021	
	L _{Aeq} 18hr* (06:00 – 24:00)	L _{Aeq} 8hr* (06:00 – 24:00)
D	63.1	57.1
E	64.2	58.2

*Converted from L_{A10} 18hr to L_{Aeq} 18hr and L_{Aeq} 8hr as per CRTN guidance

Table 2.4: Noise Modelling Adjacent to London Road

- 2.9 These values are calculated as being within approximately 10 m of the centre line of London Road.

3 Phase 2 Layout

- 3.1 The proposed Phase 2 Housing Layout is illustrated in Figure 3 in the rear of this document.

Houses

- 3.2 The layout indicates that the majority of houses within the Phase 2 scheme will be screened from London Road by those which are situated in closer proximity to it. Figure 3 indicates that houses fronting onto London Road will be separated from the road by an average width of around 33m which will include internal access roads, SUDs features and a substantial grass verge. The closest facades will be situated at approximately 30m from the centre of the road. The Calculation for Roads and Bridges¹ contains a method for calculating the reduction of noise over distance and this is set out below:

$$-10 \text{ Log}_{10} (d'/13.5)$$

Where d' = the shortest distance from the effective source position

- 3.3 Where the day time noise levels within 10 m of the centre line of London Road are assumed to be approximately 63.7 L_{Aeq} dBA (as per the preceding section) the above equation indicates that noise levels at the closet facades are likely to be approximately 62.3 L_{Aeq} dBA (assuming a 1.4 dBA reduction over distance).
- 3.4 Where the night time noise levels within 10 m of the centre line of London Road are assumed to be approximately 57.7 L_{Aeq} dBA (as per the preceding section) the above equation indicates that noise levels at the closet facades are likely to be approximately 56.3 L_{Aeq} dBA (assuming a 1.4 dBA reduction over distance).

Gardens

- 3.5 Regarding any possible noise nuisance affecting outside living space and gardens. The WHO Guidelines for Community Noise² advises that that noise levels which exceed 55 dB $L_{Aeq,T}$ may result in serious annoyance during both day-time and night-time periods.
- 3.6 At this stage it is anticipated that where acoustic fencing is provided along the most affected boundaries noise levels will not exceed those stated above.

¹ Department of Transport. (1998) Calculation of Road Traffic Noise (CRTN). HMSO. London.

² The World Health Organisation (WHO) (2000). Guidelines for Community Noise. Geneva

4 Requirement for Noise Protection

Houses

- 4.1 The preceding screening assessment indicates that in order for the internal noise levels of houses fronting London Road to meet the HBC noise criteria of:

“Maximum noise level (predicted 15 years from completion of dwellings) in habitable rooms, with windows closed and other means of ventilation provided should not exceed the following:

- *Daytime 35 dB $L_{Aeq,16h}$*
- *Night time 30 dB $L_{Aeq,8h}$ ”*

it is likely to be necessary for these houses to be fitted with glazing of an appropriate specification.

- 4.2 Annex 6 of PPG24³ states the following:

“Typical noise reduction of a dwelling façade with windows set in brick/block wall.”

Difference between external and internal Noise Levels			
Noise Source	Single Glazing	Thermal Double Glazing	Secondary Glazing
Road Traffic	28dBA	33dBA	34dBA

Table 4.1: Difference Between External and Internal Noise levels

- 4.3 *Please note that the values in the above Table are the difference between dB(A) levels measured outside and inside typical dwellings, therefore 3dB(A) have been added to the free field noise levels measured at the site to determine existing facade levels.*
- 4.4 A simple assessment based on the above indicates the following noise levels may be expected with conventional thermal double glazing within the proposed worst case dwellings.

Daytime LAeq(16-hour) dBA	Night-time LAeq(8-hour)
32.3 dBA	26.3 dBA

Table 4.2: Predicted Worst Case Internal Noise Levels Using Thermal Double Glazing

³ Department of the Environment. (1994) Planning Policy Guidance PPG24, Planning and Noise. HMSO, London

- 4.5 These predicted worst case internal noise levels meet the proposed criteria. It is thus demonstrated that acceptable internal noise levels are achievable.

Gardens

- 4.6 No private gardens are indicated as fronting directly onto London Road. Where any portions of gardens which are located adjacent to London Road, it is suggested that these are screened with acoustic fencing.
- 4.7 Where communal outdoor areas are located adjacent to London Road, it is not considered necessary to apply noise mitigation in these instances.

5 Further Data Requirements

- 5.1 The calculations in the preceding sections are primarily based upon modelled data. Whilst this data has been calibrated and is the best source data available at this time, it is suggested that further validation monitoring is carried out to support the assumptions made.
- 5.2 Currently, infrastructure works are being carried out at Phase 2. However it should be possible to acquire site data with the cooperation of the contractor. It should also be possible to obtain noise data from a site more distant from Phase 2 but still adjacent to appropriate portions of London Road.
- 5.3 Therefore it is suggested further monitoring works are now obtained to support the assumptions made herein and to inform any noise protections scheme, if subsequently required.

Figure 3: Phase 2 Housing Layout

