

Matter 3/ Examination Day 2 (PM) Sites BB and Q
Representation No 122

Wainhomes Developments Ltd

SOUTH RIBBLE SITE ALLOCATIONS DPD EXAMINATION
DAY 2 (PM) - SITE ALLOCATIONS BB AND Q

EPP reference: ST2-8896-SH

February 2013

CONTENTS:

1.	INTRODUCTION	1
2.	SITE BB – BARN FLATT CLOSE	1
3.	SITE Q CHAPEL PARK ROAD, LONGTON	3
4.	APPENDICES	3

1. INTRODUCTION

1.1 Emery Planning Partnership is instructed by Wainhomes Developments Ltd to attend the afternoon session of Day 2 of the Examination into the South Ribble Site Allocations DPD. This session deals with Site Allocation BB which is the land at Barn Flatt Close. It also deals with Site Allocation Q which our client controls and has recently submitted a planning application for 14 dwellings.

1.2 Our submissions to the Publication Draft are set out in our letter dated 14th August 2012. In summary we objected to the non-allocation of Site BB in the plan. The reasons for our position were as follows:

- This site was allocated within an earlier draft of the emerging DPD for residential development. However in the report to Cabinet dated 13th June 2012, two proposed amendments were made, one of which was for site BB to be deleted as a residential allocation for 30 dwellings. The reasons given were that the site is adjacent to the motorway and a recent noise assessment shows that noise levels would be too high for dwellings in that location.
- The site was however left as an unallocated site within the existing built up area which would enable development to come forward should there be a technical solution to help mitigate noise levels from the motorway.

1.3 We maintain this objection and consider that the site should now be reallocated. We set out below why this is the case.

1.4 With regard to Site Q we support the allocation of this site within the emerging DPD and confirm that the site is available, suitable and achievable for development in the next 5 years as confirmed in the 2010 SHLAA (Ref LHU1).

2. SITE BB – BARN FLATT CLOSE

Preferred Options Draft (SRE054a)

2.1 The Preferred Options states that the site was allocated for Local Needs in Villages in Policy D9 of the South Ribble Local Plan. Its allocation was then carried forward into the plan to provide a limited amount of new development in the village to ensure new families move into the area to maintain its viability and support the local shops and services it provides. The site was reallocated for market housing in the emerging plan which will ensure it now comes forward.

- 2.2 As noted above in the report to Cabinet dated 13th June 2012, two proposed amendments were made, one of which was for site BB to be deleted as a residential allocation for 30 dwellings. This was carried forward into the submission draft, hence our objections.
- 2.3 The reason for the de-allocation of the site was due to the layout put forward to the Council which had proposed dwellings much closer to the motorway. We have now addressed this point following a new noise report (appendix EPP1) and layout for the site (appendix EPP2).

Soundness Tests

- 2.4 NPPF sets out 4 tests of soundness. We consider that the de-allocation of the site from the plan is contrary to the following tests.
- **Justified** – the de-allocation of the site is not justified by evidence as the site was allocated at the preferred options stage. The 13th June Cabinet meeting referred to a subsequent noise survey hence the de-allocation. However the noise survey and layout undertaken by our client shows that noise is not a constraint to development.
 - **Consistent with national policy** – this test requires the plan to enable the delivery of sustainable development in accordance with the policies in the Framework. NPPF seeks to “*boost significantly*” the delivery of new housing and planning permission should be granted unless the demonstrable adverse impacts significantly outweigh the benefits. In this case there are no significant adverse impacts.

Noise

- 2.5 We welcome the acknowledgement that the site should be included within the urban area, and the acceptance that development can come forward provided that a technical solution can be achieved.
- 2.6 Our client has undertaken further noise investigations on this site and with the new layout for the site we are confident that a technical solution has been achieved. This noise report has been submitted to the council and is enclosed as Appendix EPP1. We have yet to obtain the formal response from the council’s Environmental Health Officer. Should this be obtained before the hearing session then we will provide the Inspector with a copy. Attached as Appendix EPP2 is the layout for the site which accords with the recommendations of the noise report in Appendix EPP1. The layout takes account of the recommendations of the noise report so that the internal layout of the dwellings locates non-habitable spaces such as kitchens and bathrooms towards the motorway.

- 2.7 Therefore the site can now be reallocated as a residential site for around 46 dwellings in the next version of the plan. This additional housing would not cause any issues with regard to Policy 4: Housing Delivery of the adopted Core Strategy as that confirms that the housing requirement is a minimum.

3. SITE Q CHAPEL PARK ROAD, LONGTON

- 3.1 The proposed allocation is located approximately 1km to the east of Longton District Centre, close to the junction with the A59 Longton Bypass. It is a grassed parcel of vacant greenfield land on the edge of Longton and is well contained with existing residential development to the north and east. It is therefore a logical extension to the existing urban area.
- 3.2 Longton is a sustainable settlement for new residential development. The proposed allocation has excellent proximity to shops, schools and services within Longton village centre. The proposed development would not significantly harm the character and appearance of the open countryside or the amenity adjoining dwellings. The dwellings are to achieve Level 4 in the Code for Sustainable Homes in accordance with Policy 27 in the Central Lancashire Core Strategy.
- 3.3 A planning application has now been submitted on this site. This follows recent approvals by the Council on sites proposed for allocation in the emerging Site Allocations DPD. Indeed at the January 2013 planning committee an application by Redrow Homes (07/2012/0580/FUL) for 14 dwellings was approved. The Redrow scheme is part of the wider allocation (Sites M, V and X) in the emerging Site Allocations DPD.
- 3.4 The application site is immediately bounded by residential development on the north along Chapel Lane and to the east by Chapel Meadow. The proposed would respect the position of neighbouring dwellings to the north and east and retain an acceptable separation distance between the existing and proposed dwellings.
- 3.5 Following the requisite environmental and technical work for the planning application, we can confirm that the site is available, suitable and achievable and in accordance with the policy in NPPF.

4. APPENDICES

- EPP1. Noise Report
- EPP2. Site Layout



WAINHOMES NORTH WEST LIMITED

LAND OFF HIGHER WALTON ROAD, HIGHER WALTON

SITE LAYOUT ASSESSMENT

R0517-REP03-DRG

13 FEBRUARY 2013

REPORT DETAILS

Project	Land off Higher Walton Road Higher Walton			
Client	Wainhomes North West Limited Cedarwood, Kelvin Close Birchwood, Warrington WA3 7PB			
Document Reference	R0517-REP02-DRG			
Date Issued	13 th February 2013			
Revision	Initial Version			
Issued By	David Gray BSc (Hons) AMIOA, Red Acoustics Limited Suite 3 Cottam Lane Business Centre Cottam Lane Preston PR2 1JR T: 01772 722 182 F: 01772 722 451 M: 07765 863 095 davidgray@redacoustics.co.uk			
Signed				
Checked By	Simon Webster BEng (Hons) MIOA, Red Acoustics Ltd			
Signed				

SUMMARY

Red Acoustics has been commissioned by Wainhomes North West Limited to provide an assessment of environmental noise relating to land off Higher Walton Road, Higher Walton.

This report examines the environmental noise conditions at the site and compares the findings against current standards. A proposed initial site layout is examined with regard to external noise levels. Analysis indicates that although garden noise levels generally exceed guidance values, consideration should be given to the amenity of the outdoor space. Consideration should also be given the reduction in noise levels that would be experienced by existing dwellings on Barnfield Close and to the park to the east of the site, which would provide outdoor amenity to the development and has good facilities.

Outline plot specific recommendations with regard to internal noise levels have been provided.

CONTENTS

1.0		
INTRODUCTION		1
2.0		
DESCRIPTION OF SITE		2
	<i>Figure 1: Site Location Plan & Measurement Positions</i>	3
3.0		
CHARACTERISTICS OF THE PROPOSED DEVELOPMENT		4
	<i>Figure 2: Proposed Outline Site Plan</i>	5
4.0		
PLANNING POLICY GUIDANCE		6
5.0		
ENVIRONMENTAL NOISE SURVEYS		8
	<i>Photograph 1: Long Duration Survey Location</i>	8
	<i>Figure 2: Site Location Plan & Measurement Positions</i>	9
	<i>Table 1: Summary of Measured Environmental Noise Levels</i>	10
6.0		
CADNAA NOISE MODELLING		11
	<i>Figure 3: Predicted Daytime LAeq Propagation Across Site</i>	12
	<i>Figure 4: Predicted Night Time LAeq Propagation Across Site</i>	13
	<i>Figure 5: Predicted Daytime LAeq Propagation Across Site 1.5m (Ground Floor/Garden Level) - Proposed Site Plan</i>	14
	<i>Figure 6: Predicted Daytime LAeq Propagation Across Site 4m (First Floor Level) - Proposed Site Plan</i>	15
6.0		
NOISE INGRESS		16
	<i>Table 2: Glazing & Ventilation Proposals</i>	17
	<i>Figure 7: Outline Glazing and Ventilation Specification - Living Room Spaces</i>	17
	<i>Figure 8: Outline Glazing and Ventilation Specification - Bedroom Spaces</i>	18

APPENDIX B: SUMMARY RESULTS

26

Table B1: Summary Measured Statistical Noise Levels – Daytime

27

Table B2: Summary Measured Octave Band Leq Noise Levels Noise Levels – Daytime

29

Figure B1: Summary Measured Statistical Noise Levels – Long Duration Survey

31

1.0 INTRODUCTION

Red Acoustics has been commissioned by Wainhomes North West Limited to provide an assessment of environmental noise relating to a land off Higher Walton Road, Higher Walton.

CandaA noise propagation software has been used to determine the propagation of noise across the site for various outline site layouts. The predicted noise levels are then to be analysed with regard to outdoor amenity.

2.0 DESCRIPTION OF SITE

The site is located within a mixed rural/residential area of Higher Walton, Lancashire.

The site comprises an 'L' shape with an area of 1.8 Hectares is currently grassland with some shrubs and trees.

The site is bounded to the west by the M6 motorway, which is located at a height of approximately 8.5m above the level of the site. The site is bounded to the south by Higher Walton Road, a modestly trafficked road providing access between Preston and Higher Walton. The site is bounded to the north by farmland and to the east by a park. The south-eastern corner of the site is bounded by an existing residential development, Barnflatt Close.

A plan of the existing site is shown in Figure 1.

Figure 1: Site Location Plan & Measurement Positions



3.0 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

Planning approval is sought for a residential development together with garden spaces and access road.

A proposed outline site plan is shown in Figure 2 indicating the proposed development.

Figure 2: Proposed Outline Site Plan



4.0 PLANNING POLICY GUIDANCE

National Planning Policy Framework

National Planning Policy is guided by the National Planning Policy Framework. With regard to Noise the Framework states the following:

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;*
- *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; and*
- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

The terms 'significant adverse impact' and 'other adverse impacts' are defined in the explanatory notes of the 'Noise Policy Statement for England (NPSE)' which states:

There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

It should be noted that no specific noise limits for LOAEL and SOAEL have not yet been specifically defined, however, guidance from other acoustic standards may be employed to determine suitable levels within the overall principal of the National Planning Policy Framework.

With regard to the achievement of satisfactory acoustic conditions within dwellings guidance on suitable internal noise levels can be found in BS8233 - Code of Practice ('Sound insulation and noise reduction or buildings'). These are discussed in section 6.0 below.

5.0 ENVIRONMENTAL NOISE SURVEYS

In order to determine the prevailing environmental noise levels at the site, manned surveys were carried out at site during the daytime of Monday 27th and Wednesday 29th February 2012. The manned measurement locations used for the surveys are identified in Figure 1. Manned measurements were made at a height of 1.5m above ground level.

An unmanned long duration survey was conducted between Monday 27th Wednesday 29th February 2012. The unmanned monitoring location was positioned at a mast height of 5.4m in order to simulate a first floor bedroom space, given the relative height of the M6 motorway. The manned measurements can be used to calibrate a noise model to the fixed long term monitoring position.

Photograph 1: Long Duration Survey Location



The measured noise levels can be used to determine the acoustic requirements of the façades of the buildings to achieve satisfactory internal noise levels within the proposed dwellings.

The noise climate at the site is dominated by noise from the M6 motorway. Traffic on Higher Walton Road is audible towards the south of the site. Other noise sources included overflying aircraft and bird song.

To determine a more accurate representation of motorway noise a survey was conducted at a location over looking the same stretch of motorway to the north of the site. As there are no junctions between the site and the measurement location the traffic flow and therefore the generated noise level is deemed to be same. This measured data can then be used to more accurately calibrate the CadnaA noise propagation model. The measurement location of this survey is shown in Figure 2.

Figure 2: Site Location Plan & Measurement Positions



Full survey details and instrumentation are given in Appendix A.

Appendix B contains a summary of the results obtained from the surveys.

Table 3 summarises the measured noise levels at the site.

Table 1: Summary of Measured Environmental Noise Levels

Location	Measured Noise Levels					
	Daytime			Night-time		
	dB, L _{Aeq}	dB, L _{Amax}	dB L _{A90}	dB, L _{Aeq}	dB, L _{Amax}	dB L _{A90}
LDS	65 - 75	70 - 91	61 - 74	60 - 74	65 - 78	49 - 73
LDS (base 1.5m)	70 - 72	74 - 76	69 - 70	-	-	-
P1	71 - 72	77 - 91	69 - 70	-	-	-
P2	71 - 72	75 - 77	69 - 70	-	-	-
P3	66 - 70	69 - 76	67 - 68	-	-	-
P4	70	73	69	-	-	-
Motorway	80 - 81	83 - 88	78 - 80			

Details of predicted noise propagation across the site are given in Section 6.0.

Reference should be given to Section 7.0 with regards to providing adequate levels of protection against noise.

6.0 CADNAA NOISE MODELLING

To determine the propagation of noise across the proposed development site, CadnaA 3D noise mapping software has been used to predict the residual daytime and night-time noise levels at the residential facades based on the measured survey data, proposed site plans and topologic data.

CadnaA is a software program for prediction and assessment of noise levels in the vicinity of:

- industrial facilities
- sport and leisure facilities
- roads, railways and airports
- music venues
- any other noisy equipment including ventilation plant

The program provides for easy entry and configuration of landscapes with all components that influence sound emission and propagation, the calculation and the documentation of the noise levels in accordance with national regulations, and the presentation of the results with noise contour plots and coloured noise maps.

Figures 3 and 4 show respectively average daytime and night time noise propagation across site.

Figure 3: Predicted Daytime L_{Aeq} Propagation Across Site



Figure 3 shows that the general noise climate across the site ranges from approximately 73dBA at the western edge of the site falling to approximately 65dBA towards the east of the site during daytime periods.

Figure 4: Predicted Night Time L_{Aeq} Propagation Across Site

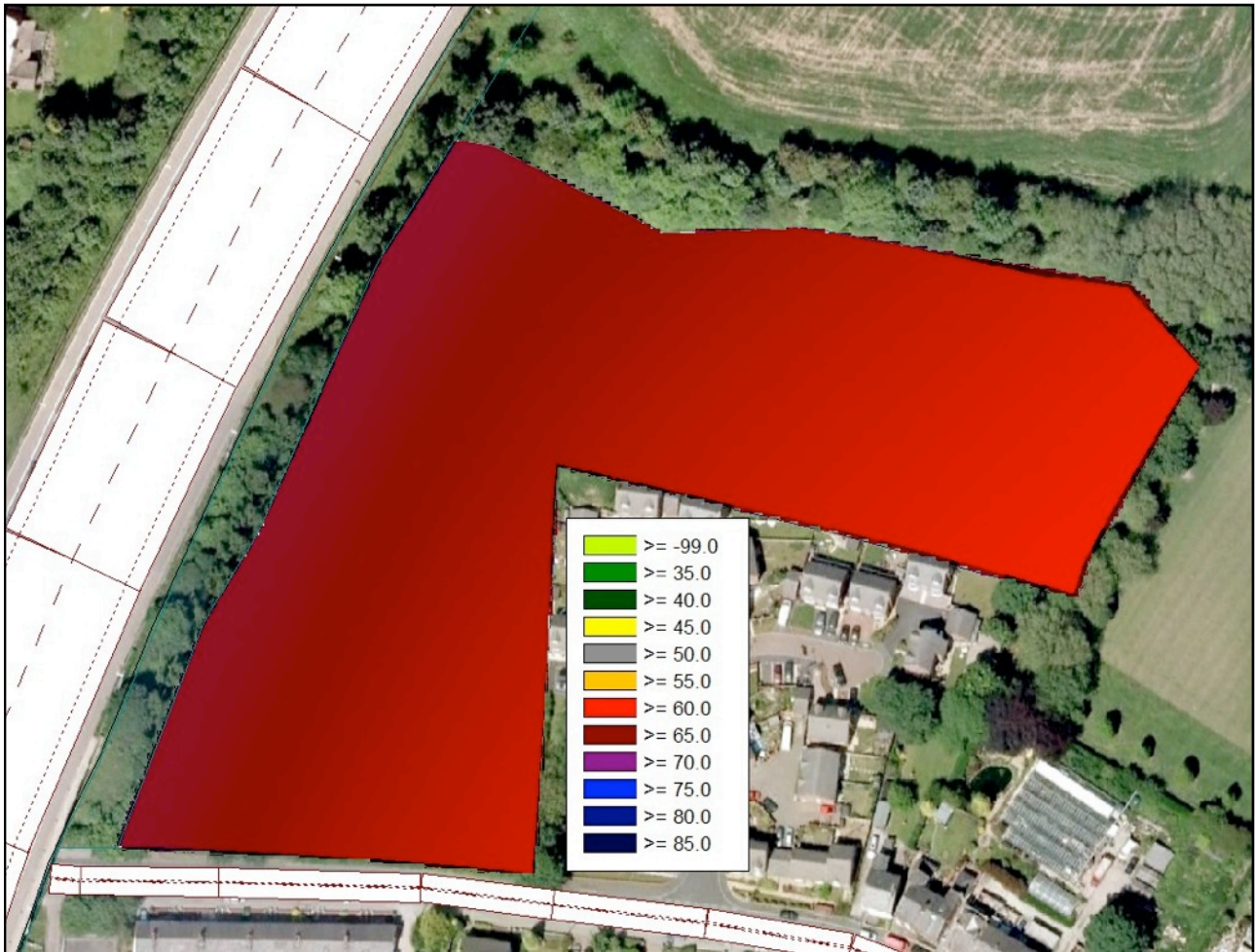


Figure 4 shows that the general noise climate across the site ranges from approximately 65dBA at the western edge of the site falling to approximately 60dBA towards the east of the site during night time periods.

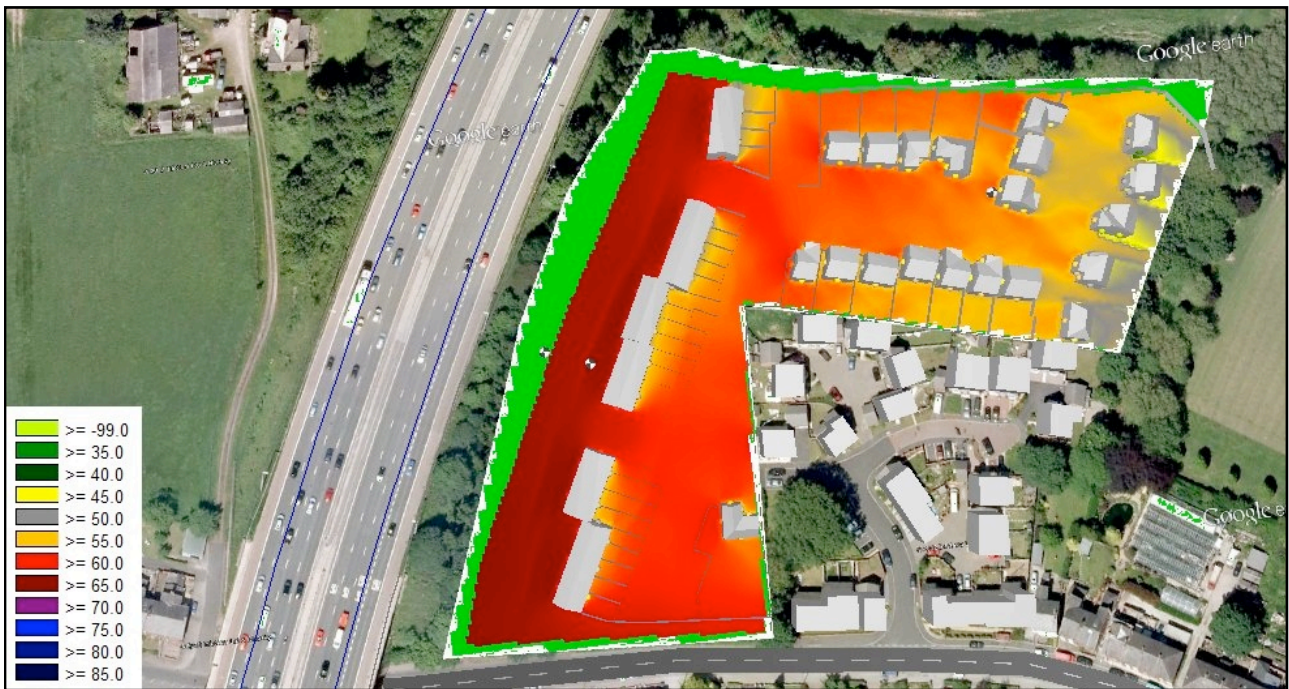
Figures 5 and 6 show the predicted noise propagation across the site with the introduction of the proposed site plan.

Figure 5: Predicted Daytime L_{Aeq} Propagation Across Site 1.5m (Ground Floor/Garden Level) - Proposed Site Plan



Figure 5 shows that garden noise levels are typically in the range of 55 - 60 dB L_{Aeq} with a number of spaces marginally exceeding this range up to approximately 63dBA. Garden noise levels for dwellings to the east of the site fall in the range 45 - 50 dBA. The site layout has been planned such that a row dwellings to the west of the site form a barrier between the motorway and garden spaces in order to enhance the outdoor amenity as far as practicable. It should be noted that this layout also reduces the noise levels in garden spaces of existing dwellings on Barnflat Close. It should also be noted that noise level are expected to be lower in the evenings than indicated in the figures due to a reduction in traffic. Consideration should also be given to the park to the east of the site to which a pathway from the development is proposed which should be considered as an outdoor amenity with good facilities.

Figure 6: Predicted Daytime L_{Aeq} Propagation Across Site 4m (First Floor Level) - Proposed Site Plan



It should be noted that night time noise levels would typically be lower than indicated in the figure during the middle of the night, with the noise level increasing at approximately 6am as traffic increases.

6.0 NOISE INGRESS

Broadband Design Criteria

BS8233:1999 'Sound Insulation and Noise Reduction for Buildings' provides appropriate broadband criteria for acceptable intrusive noise levels in dwellings, specifically bedroom and living room areas, due to 'anonymous' noise, such as road traffic.

These criteria range between 30dB L_{Aeq} to 40dB L_{Aeq} for living rooms during the day (07:00 to 23:00 hours), and 30dB L_{Aeq} to 35dB L_{Aeq} for bedrooms during the night (23:00 to 07:00 hours). The upper limit is deemed to provide 'reasonable' conditions. In addition, the Standard also suggests a single maximum 45dB L_{Amax} criterion for intrusive noise events in bedrooms. These criteria are also comparable with World Health Organisation (WHO) guidelines.

The World Health Organisation's (WHO) Guidelines for Community Noise state that "for a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{Amax} more than 10-15 times per night".

Outline Design Recommendations

A Positive Input Ventilation (PIV) system is fitted as standard to all Wainhomes Developments. The PIV system provides continuous background ventilation and typically eliminates the need for through wall/window ventilators, depending on the air tightness of the dwelling, thus improving the acoustic integrity of the facades. The specific air tightness requirements should be confirmed with the product manufacturer, taking into account energy (SAP) requirements for the development. The proposed system should incorporate a boost function to provide comfort ventilation to reduce the need to open windows for purge ventilation.

Assuming no through wall/window trickle vents are required, 'good' internal noise levels would typically be achieved with the glazing specification shown below in Table 2

Table 2 indicates the minimum glazing and ventilation specifications required for the elevations of the residential buildings.

Table 2: Glazing & Ventilation Proposals

Habitable Room Type	Minimum Glazing Specification	Ventilation System	BS8233:1999 'Good' up to external level, dB L _{Aeq} /L _{Amax}	BS8233:1999 'Reasonable' up to external level, dB L _{Aeq} /L _{Amax}
Living Rooms	4-16-4	PIV	64/-	74/-
	10-12-6		70/-	80/-
	10.8 (lamine)-16-6		75/-	85/-
Bedrooms	4-16-4	PIV	65/80	70/80
	10-12-6		70/84	75/84

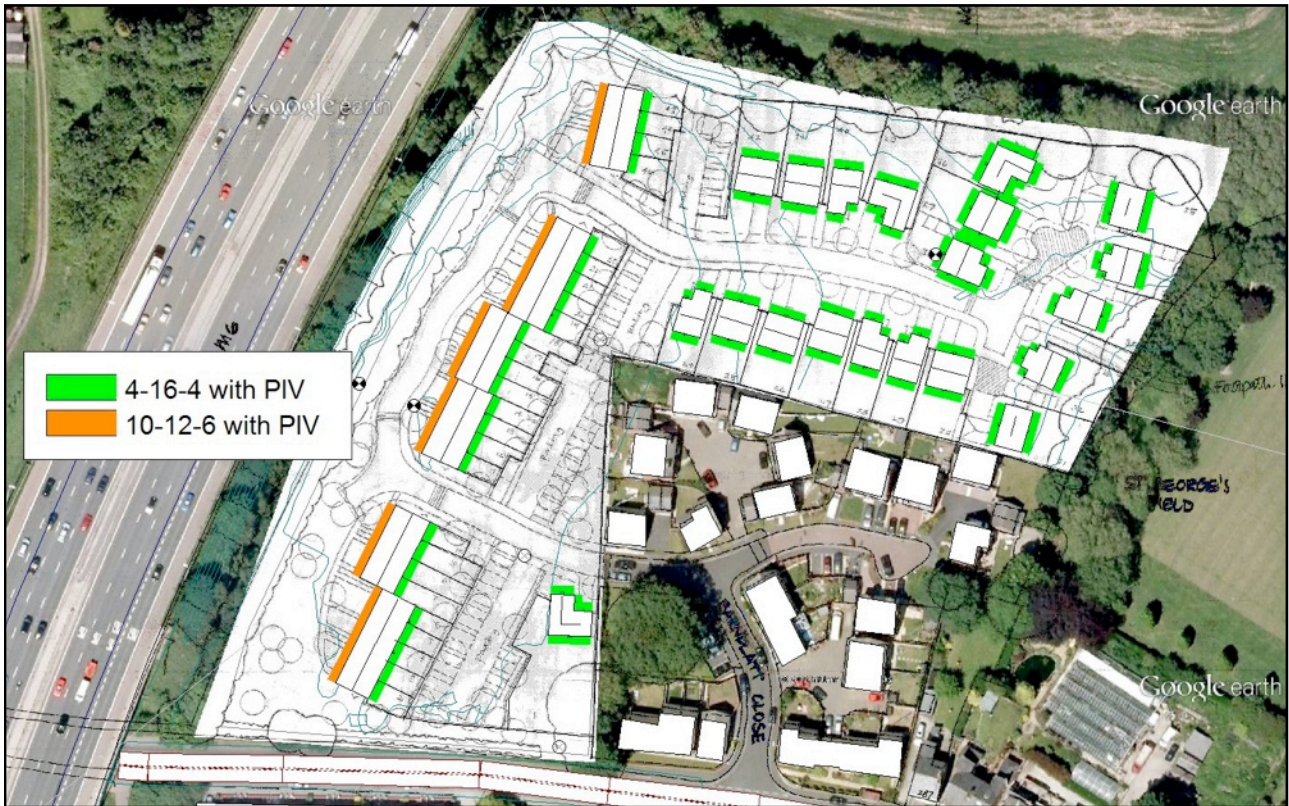
The internal layout of the dwellings should be considered such that habitable spaces, as far as practical are located on the 'quiet' facade, away from the motorway. As such, non-habitable spaces such as kitchens and bathrooms should be located on the 'noisy' facade.

Figures 7 and 8 show the outline glazing and ventilation specifications graphically, for daytime and night time periods respectively.

Figure 7: Outline Glazing and Ventilation Specification - Living Room Spaces



Figure 8: Outline Glazing and Ventilation Specification - Bedroom Spaces



APPENDIX A: NOISE SURVEY DETAILS

Location

Land off Higher Walton Road, Higher Walton

Survey Dates

27th February 2012 (Daytime)

29th February 2012 (Daytime)

27th - 29th February 2012 (Long Duration Survey)

23rd April 2012 (Daytime Motorway Survey)

Weather

27th February 2012 (Daytime)

Some drizzle, 9°C, Slight westerly breeze

29th February 2012 (Daytime)

Dry, 10°C, Still

27th - 29th February 2012 (Long Duration Survey)

Some drizzle during 27th, 5°C - 10°C, Slight westerly breeze

23rd April 2012 (Daytime Motorway Survey)

Dry, 9°C Still

Personnel Present During Measurements

David Gray - Red Acoustics Limited

Instrumentation

Equipment Description	Type Number	Manufacturer	Serial Number	Date of Last Calibration	Calibration Certificate Number
Sound Level Meter	CR:171B Type 1	Cirrus	G056965	2 nd November 2011	191399
Sound Calibrator	CR:515 Type 1	Cirrus	59153	2 nd November 2011	191400
Sound Level Meter	Type 118 IEC 60651 Type 1	Norsonic	31496	22 Nov 2011	10241
Sound Calibrator	Type 1251 IEC 60942-1997 Class 1	Norsonic	31040	22 Nov 2011	10239

Methodology

Before and after the measurements the sound level meters were check calibrated to an accuracy of ± 0.3 dB using the Sound Calibrators. The Cirrus calibrator produces a sound pressure level of 94 dB re 2×10^{-5} Pa @ 1kHz. The Norsonic calibrator produces a sound pressure level of 114 dB re 2×10^{-5} Pa @ 1kHz.

The manned survey locations were set at a height of 1.5 metres above ground level. The un-manned survey locations was set at a height of 5.4 metres above ground level. Noise levels were recorded in 5 minute durations.

LAND OFF HIGHER WALTON ROAD, HIGHER WALTON



WAINHOMES NORTH WEST LIMITED

SITE LAYOUT ASSESSMENT - R0517-REP02-DRG - 13 FEBRUARY 2013

Calibration Certificates

Certificate of Calibration



Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	Sound Level Meter
Model Number	CR:171B
Serial Number	G056965

Calibration Procedure

The instrument detailed above has been calibrated to the published test and calibration data as detailed in the instrument handbook, using the techniques recommended in the latest revisions of the International Standards IEC 61672-1:2002, IEC 60651:1979, IEC 60804:2001, IEC 61260:1995, IEC 60942:1997, IEC 61252:1993, ANSI S1.4-1983, ANSI S1.11-1986 and ANSI S1.43-1997 where applicable.

Sound Level Meters: All Calibration procedures were carried out by substituting the microphone capsule with a suitable electrical signal, apart from the final acoustic calibration.

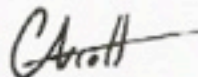
Calibration Traceability

The equipment detailed above was calibrated against the calibration laboratory standards held by Cirrus Research plc. Which are traceable to the appropriate International Standards.

The Cirrus Research plc calibration laboratory standards are:

Microphone Type	B&K4180	Serial Number	1893453	Calibration Ref.	S 6009
Pistonphone Type	B&K4220	Serial Number	613843	Calibration Ref.	S 5964

Calibrated by



Calibration Date

02 November 2011


Calibration Certificate Number

191399

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH
Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742
Email: sales@cirrusresearch.co.uk

Certificate of Calibration



Cirrus Research plc
dedicated to noise measurement

Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	Acoustic Calibrator
Model Number	CR-515
Serial Number	59153

Calibration Procedure

The acoustic calibrator detailed above has been calibrated to the published data as described in the operating manual. The procedures and techniques used to follow the recommendations of the IEC standard Electroacoustics – Sound Calibrators IEC 60942:2003, IEC 60942:1997, BS EN 60942:1998 and BS EN 60942:2003 where applicable. The calibrator’s main output is 94.00 dB (1 Pa) and this was set within the 0.01 dB resolution of the test system, i.e. one hundredth of a decibel. Numbers in [parenthesis] refer to the paragraph in IEC 60942.

Calibration Traceability

The calibrator above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards [A.0.6]. The standards are:

Microphone Type	B&K4180	Serial Number	1893453	Calibration Ref.	S 6009
Pistonphone Type	B&K4220	Serial Number	613843	Calibration Ref.	S 5964

Calibration Climate Conditions

The climatic test conditions were all maintained within the permitted limits of IEC 60942:1997.

Temperature	[B.3.2]	Permitted band	15°C to 25°C
Humidity	[B.3.2]	Permitted band	30% to 90% RH
Static Pressure	[B.3.2]	Permitted band	85 kPa to 105 kPa
Ambient Noise Level	[B.3.3.6]	Max permitted level	64 dB(Z)

Measurement Results

The figures below are the Calibration Laboratory test limits for this model calibrator and have a smaller tolerance than those permitted in IEC 60942.

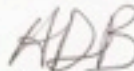
94 dB Output	94.00	dB	Permitted band	93.95 to 94.05dB
Frequency	1000	Hz	Permitted band	990 to 1010Hz

Uncertainty

With an uncertainty coefficient of k=2, i.e. a 95% confidence level, the uncertainty of each measure is

94 dB Output	± 0.13 dB	104 dB Output	± 0.14 dB
Frequency	± 0.1 Hz	Level Stability	± 0.04 dB

Calibrated by



Calibration Date 02 November 2011

Calibration Certificate Number 191400

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH
Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742
Email: sales@cirrusresearch.co.uk

Calibration Report		Certificate No.:10241	
Norsonic Type: 118 Serial no: 31496			
Customer:	Red Acoustics Ltd.		
Address:	Suite 3, Cottam Lane Business Centre, Cottam Lane, Preston, PR2 1JR.		
Contact Person:	Simon Webster.		
Instrument software version:	V2.0.752		
Microphone :	Norsonic	Type: 1225	Serial no: 52344
Preamplifier	Norsonic	Type: 1206	Serial no: 30540
Calibrator:	Norsonic	Type: 1251	Serial no: 31040
			Sens:-26.26dB
			Level:113.99dB
Measured with Preamplifier		Mains adapter was included	
Interface cable was included			
This sound level meter has been calibrated as specified in BS 7580. PART 1: 1997.			
Measurement Results:			
Calibration of sound level meter - BS7580 Clause 5.4			Passed
Noise test - BS 7580 Clause 5.5.2			Passed
Level Linearity Test - BS 7580, Clause 5.5.3			Passed
Frequency weightings: A Network - BS 7580 Clause 5.5.4			Passed
Frequency weightings: C Network - BS 7580 Clause 5.5.4			Passed
Frequency weightings: Z Network - BS 7580 Clause 5.5.4			Passed
Time weightings F and S - BS7580 Clause 5.5.5			Passed
Peak response - BS7580 Clause 5.5.6			Passed
RMS accuracy - BS7580 Clause 5.5.7			Passed
Time weighting I - BS7580 Clause 5.5.8			Passed
Integrating Test : Time averaging - BS7580 Clause 5.5.9			Passed
Integrating Test : Pulse range - BS7580 Clause 5.5.10			Passed
Integrating Test : Sound exposure level - BS7580 Clause 5.5.11			Passed
Overload SPL Test - BS 7580 Clause 5.5.12			Passed
Overload Leq Test - BS 7580 Clause 5.5.12			Passed
Acoustic tests - BS 7580 Clause 5.4 and 5.5			Passed
Summation of acoustic tests - BS 7580 Clause 5.5.4			Passed
The sound level meter in the configuration tested conforms to the requirements of BS 7580 Part 1.			
Comment:			
Correct level with associated calibrator is 113.8dB(A). All results quoted are directly traceable to NPL London.			
Measurement procedure: TP02			
Environmental conditions:			
Pressure:	Temperature:	Relative humidity:	
101.304 kPa	22.9 °C	55.0 %RH	
Date of calibration: 22/11/2011			
Date of issue: 22/11/2011			
Supervisor: Darren Batten Tech IOA Engineer			
Michael Tickner		Campbell Associates www.campbell-associates.co.uk	
Software version: 5.2e			

Calibration Report

Certificate No.:10239

Manufacturer: Norsonic
Type: 1251
Serial no: 31040

Customer: Red Acoustics Ltd
Department:
Address: Suite 3, Cottam Lane Business Centre,
 Cottam Lane, Preston, PR2 1JR.
Order No:
Contact Person: Simon Webster.

Measurement Results:

	Level: (dB)	P. Stab : (dB)	Frequency: (Hz)	F. Stab : (%)	Distortion: (% TD)
1:	113.99	0.06	1000.19	0.00	0.43
2:	113.99	0.06	1000.19	0.00	0.43
3:	113.99	0.06	1000.19	0.00	0.43
Result (Average):	113.99	0.06	1000.19	0.00	0.43
Expanded Uncertainty:	0.10	0.02	1.00	0.01	0.10
Degree of Freedom:	>100	>100	>100	>100	>100
Coverage Factor:	2.00	2.00	2.00	2.00	2.00

The stated level is relative to 20µPa.

The following correction factors have been applied during the measurement:
 Pressure:0.0005 dB/kPa Temperature:0.003 dB/°C Relative humidity: None
 Reference microphone: WSM2 - GRAS40AC-28653. Volume correction: -0.015 dB
 Records:K:\C A\Calibration\Nor-1504\Nor-1018 CalCal\2011\NOR1251_31040_M1.nmf
 Measurement procedure: CA TP-01 V7.5


The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with ISO publication 95 4/02.

Calibrated in 1/2" configuration. Level adjusted from 114.17dB. Results Traceable to NPL London.

Environmental conditions:
 Pressure: 101.167 ± 0.004 kPa Temperature: 23.9 ± 1.7 °C Relative humidity: 45.7 ± 4.6 %RH

Date of calibration: 22/11/2011
 Date of issue: 22/11/2011

Supervisor : Darren Batten TechIOA
 Engineer :


 Michael Tickner
 Software version: 5.2a


Campbell Associates
 www.campbell-associates.co.uk

APPENDIX B: SUMMARY RESULTS

Survey Results

Tables B1 and B2 summarise the results obtained from the daytime surveys. Figure B1 shows a summary of the results of the long duration survey.

Table B1: Summary Measured Statistical Noise Levels – Daytime

Measurement Location	Date	Start Time	L _{Aeq} , dB	L _{AMax} , dB	L _{A90} , dB	Comments
MP1	27/02/2012	12:50	71.3	78.3	68.7	
MP1	27/02/2012	12:55	71.4	91.2	68.9	
MP1	27/02/2012	13:00	71.2	79.0	69.0	
MP1	27/02/2012	13:05	71.2	77.3	68.7	
MP1	27/02/2012	13:10	71.5	77.6	69.4	
MP1	27/02/2012	13:15	72.4	84.3	69.8	
MP1	27/02/2012	13:20	71.8	80.8	69.6	
LDS (Base 1.5m)	27/02/2012	13:30	71.9	76.0	69.9	
MP2	27/02/2012	13:35	71.5	75.0	69.7	
MP2	27/02/2012	13:40	71.5	75.5	69.9	
MP2	27/02/2012	13:45	71.9	75.7	70.3	
MP2	27/02/2012	13:50	71.5	75.4	69.3	
MP2	27/02/2012	13:55	71.4	76.1	69.7	
MP2	27/02/2012	14:00	71.7	77.4	69.9	
MP3	27/02/2012	14:05	69.4	74	67.9	
MP3	27/02/2012	14:10	69.1	72.8	67.1	
MP3	27/02/2012	14:15	69.6	72.9	67.7	
MP3	27/02/2012	14:20	68.5	72.2	67.0	
MP3	27/02/2012	14:25	69.4	75.2	67.6	
MP3	27/02/2012	14:30	69.5	76.3	67.2	
MP3	27/02/2012	14:35	69.7	74.5	67.6	
MP3	29/02/2012	08:40	66.5	69.7	65.4	
MP3	29/02/2012	8:45	66.4	69.6	65.1	
MP3	29/02/2012	8:50	66.2	69.3	65.0	
MP3	29/02/2012	8:55	66.6	69.0	64.8	
LDS (Base 1.5m)	29/02/2012	9:05	70.8	73.7	69.4	
MP4	29/02/2012	9:10	70.4	72.6	68.8	

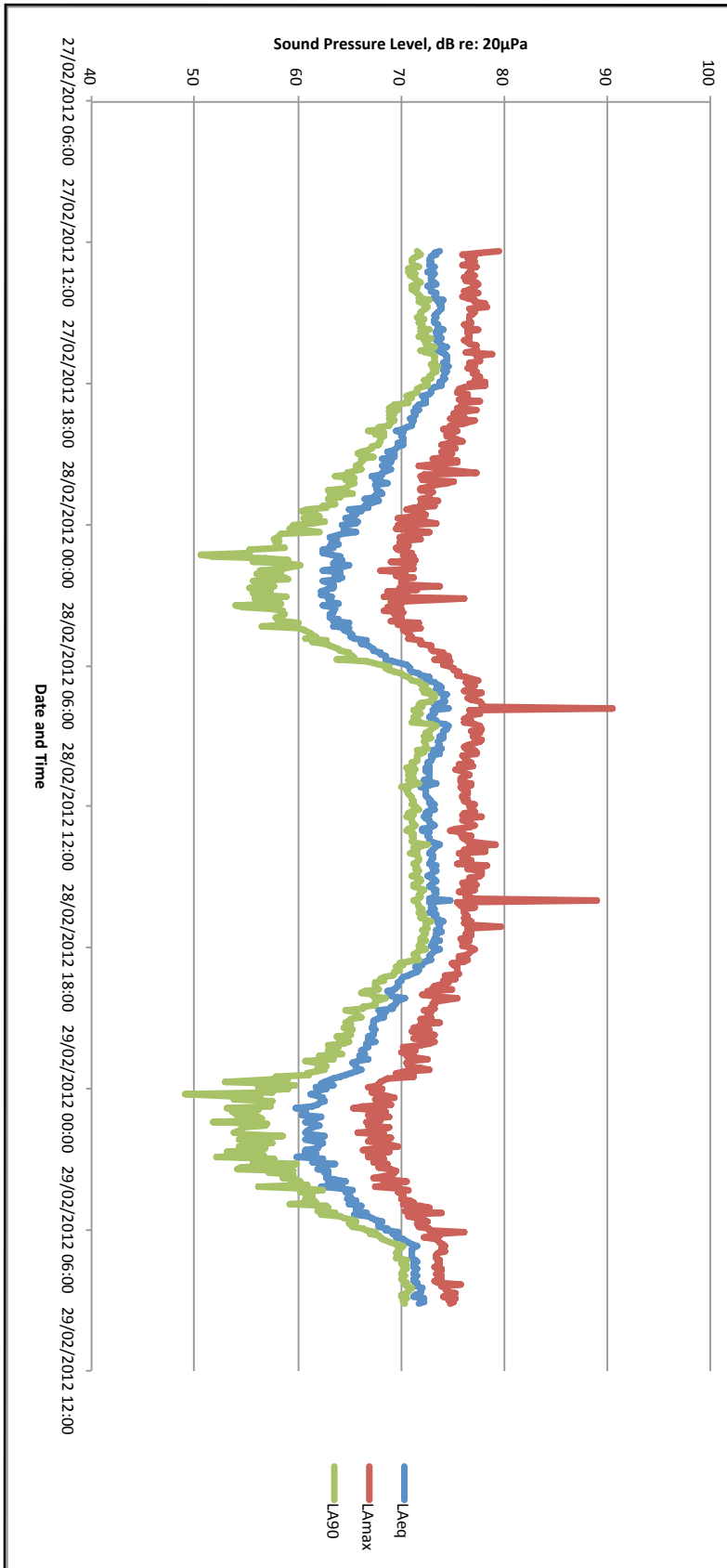
Measurement Location	Date	Start Time	L _{Aeq} , dB	L _{AMax} , dB	L _{A90} , dB	Comments
Motorway	23/04/2012	11:15	80.4	87.9	78.3	
Motorway	23/04/2012	11:20	80.4	83.6	78.9	
Motorway	23/04/2012	11:25	80.5	84.9	78.7	
Motorway	23/04/2012	11:30	80.6	84.7	78.9	
Motorway	23/04/2012	11:35	80.5	84.1	78.7	
Motorway	23/04/2012	11:40	80.8	84.2	79.0	
Motorway	23/04/2012	11:45	80.5	83.8	78.6	
Motorway	23/04/2012	11:50	80.8	84.4	78.6	
Motorway	23/04/2012	11:55	80.6	83.9	78.5	
Motorway	23/04/2012	12:00	80.7	84.5	78.7	
Motorway	23/04/2012	12:05	80.9	83.2	79.5	

Table B2: Summary Measured Octave Band L_{Aeq} Noise Levels Noise Levels – Daytime

Measurement Location	Date	Start Time	L_{Aeq} , dB	63	125	250	500	1k	2k	4k
MP1	27/02/2012	12:50	71.3	70.1	63.9	61.2	66.4	69.4	62.1	51.4
MP1	27/02/2012	12:55	71.4	70.2	63.8	61.1	65.9	69.3	62.2	58.5
MP1	27/02/2012	13:00	71.2	71.3	66.0	62.2	66.1	69.3	62.2	52.2
MP1	27/02/2012	13:05	71.2	70.0	63.6	61.5	65.8	69.3	62.6	51.1
MP1	27/02/2012	13:10	71.5	70.5	64.4	61.0	66.5	69.7	62.4	50.8
MP1	27/02/2012	13:15	72.4	73.1	68.5	65.0	67.5	70.2	63.6	54.1
MP1	27/02/2012	13:20	71.8	72.8	66.5	63.0	66.8	69.8	62.9	53.2
LDS (Base 1.5m)	27/02/2012	13:30	71.9	73.0	65.9	61.6	67.2	70.3	61.4	47.6
MP2	27/02/2012	13:35	71.5	71.8	64.7	59.4	67.0	69.7	61.3	47.9
MP2	27/02/2012	13:40	71.5	71.4	64.4	59.5	67.1	69.8	61.6	48.1
MP2	27/02/2012	13:45	71.9	72.3	64.4	59.6	67.5	70.1	61.8	47.6
MP2	27/02/2012	13:50	71.5	71.7	64.8	59.8	67.3	69.6	61.5	47.5
MP2	27/02/2012	13:55	71.4	71.6	64.5	59.4	67.2	69.6	61.2	47.3
MP2	27/02/2012	14:00	71.7	71.8	64.2	59.6	67.4	70.0	61.5	47.6
MP3	27/02/2012	14:05	69.4	69.0	63.3	56.7	64.3	68.0	59.1	45.4
MP3	27/02/2012	14:10	69.1	69.5	64.3	57.0	64.5	67.4	58.8	45.3
MP3	27/02/2012	14:15	69.6	68.7	63.5	57.0	65.2	67.9	59.3	45.9
MP3	27/02/2012	14:20	68.5	68.7	62.7	56.0	63.4	67.0	58.5	44.8
MP3	27/02/2012	14:25	69.4	70.3	64.2	60.0	64.7	67.7	59.5	45.8
MP3	27/02/2012	14:30	69.5	68.9	63.0	56.7	64.6	67.8	59.7	46.2
MP3	27/02/2012	14:35	69.7	68.6	62.8	56.4	64.6	68.2	59.6	46.2
MP3	29/02/2012	08:40	66.5	74.8	74.4	60.4	62.8	68.7	58.2	50.8
MP3	29/02/2012	8:45	66.4	79.1	71.3	61.8	62.4	68.8	58.0	56.4
MP3	29/02/2012	8:50	66.2	73.5	71.2	59.8	61.3	68.6	57.9	53.9
MP3	29/02/2012	8:55	66.6	75.2	75.2	63.5	64.0	68.1	57.3	56.4
LDS (Base 1.5m)	29/02/2012	9:05	70.8	81.2	76.5	67.6	69.2	72.6	63.6	54.3
MP4	29/02/2012	9:10	70.4	81.2	73.2	67.7	69.9	71.2	63.2	51.7

Measurement Location	Date	Start Time	L _{Aeq} , dB	63	125	250	500	1k	2k	4k
Motorway	23/04/2012	11:15	80.4	76.0	71.9	67.8	72.5	79.0	71.6	59.4
Motorway	23/04/2012	11:20	80.4	75.0	73.0	66.4	72.5	79.1	71.5	59.3
Motorway	23/04/2012	11:25	80.5	74.8	71.8	66.0	72.1	79.2	71.6	59.2
Motorway	23/04/2012	11:30	80.6	75.9	73.3	67.2	72.7	79.3	71.5	59.3
Motorway	23/04/2012	11:35	80.5	75.0	72.2	66.7	72.2	79.1	71.6	59.4
Motorway	23/04/2012	11:40	80.8	75.8	72.5	66.6	72.7	79.4	71.9	59.6
Motorway	23/04/2012	11:45	80.5	76.0	72.4	66.3	72.3	79.2	71.5	59.2
Motorway	23/04/2012	11:50	80.8	76.5	72.9	67.3	72.7	79.5	71.8	59.6
Motorway	23/04/2012	11:55	80.6	76.3	72.2	66.8	72.9	79.2	71.5	59.1
Motorway	23/04/2012	12:00	80.7	75.8	72.6	67.1	72.8	79.4	71.7	59.5
Motorway	23/04/2012	12:05	80.9	76.1	73.5	68.1	73.2	79.6	71.8	59.6

Figure B1: Summary Measured Statistical Noise Levels – Long Duration Survey





House types	No.
Ruskin	6
Austen	20
Nelson	4
Newton	3
Scott	4
Brunel	3
Wren	2
Nightingale	2
Stephenson	2
TOTAL	46

B. L.A. amendments 21.1.13
 A. client amendments 2.5.12

Client: **WAINHOMES**
mck associates limited
 architecture | building surveying | urban design
 bunnels villa • 48 wadding street, road • fulwood • oxford • oxford • oxford
 tel: 01772 774510 fax: 01772 774511 mck@mckassociates.co.uk

HIGHER WALTON ROAD
 Drawing title:
FEASIBILITY SKETCH
 Drawn: **APK** Checked: **SK** Scale: **1:500** Date: **1.5.12**
 Job No: **12/029** Drawing No: **SK.02** Rev: **A, B**