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Noise Assessment

Proposed Residential Development Of Land Adjacent To No 28 Stone Row Court, Tankersley, Barnsley, South Yorkshire.

Prepared for: *Pilley Developments Limited*

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1.0 INTRODUCTION.

1.1 The proposed development will comprise 4 detached residential dwellings with detached garages on land adjacent to No 28 Stone Row Court, Tankersley, Barnsley.

1.2 The proposed development site is bound by existing residential dwellings to the north, a Volvo Workshop / Yard to the south, UK Cranes Workshop / Yard to the southwest, an earth bund with a new industrial unit being constructed to the west, and an earth bund / open land to the east. The Volvo Yard immediately adjacent to the proposal site south boundary is currently being used as a vehicle storage / parking area.

1.3 Kirby Charles Associates Limited were instructed by Pilley Developments Limited to carry out an assessment to determine the impact on the proposed residential development site of the noise generated by the adjacent industrial users and if required, to recommend mitigation measures to ensure the acceptable noise criteria levels are not exceeded.

2.0 NOISE STANDARDS AND GUIDELINES.

2.1 The Department of the Environment Planning Policy Guidance Note PPG24:"Planning and Noise" gives guidance to local authorities on the use of their planning powers to minimise the adverse impact of noise.

2.2 In relation to noise from industrial developments, PPG24 states:

"The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in B.S.4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the

scope for complaints and this is taken into account by the "rating level" defined in B.S.4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the development (expressed in terms of the rating level) and the existing background noise level. The Standard indicates that:

"A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance".

2.3 The British Standard, BS 4142 as amended in 1997, refers to two indices, i.e.

a. **L90**, the level of noise exceeded for 90% of the measurement period, this is known as the background noise level, and

b. **Leq**, i.e. the equivalent continuous noise level, which is the steady noise level that contains the same amount of energy over a specific time period as that in a fluctuating sound.

2.4 The assessment procedure contained in B.S.4142 compares the noise from the proposed factory or fixed installation, using the Leq index corrected for tonal components etc., with the background noise level for the area, i.e. the L90 index.

2.5 If the corrected noise from the proposals is 10 dB or more above the background noise level this is a positive indication that complaints would be likely whilst if the noise from the activity is 10 dB below the L90 then this would be a positive indication that complaints would be unlikely. Differences of 5 dB are of marginal significance.

2.6 In addition with regard to transportation noise as it affects residential properties, PPG24 states:

> ***"1. When assessing a proposal for residential development near a source of noise, local planning authorities should determine into which of the four noise exposure categories (NECs) the proposed site falls, taking into account of both the day and night-time noise levels."***

2.7 The Noise Exposure Categories being:

A - ***Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.***

B - ***Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.***

C - ***Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.***

D - ***Planning permission should normally be refused.***

2.8 The noise levels, LAeq, corresponding to these noise exposure categories for road traffic are:

NOISE LEVELS CORRESPONDING TO THE NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS $LAeq_T$ dB				
NOISE SOURCE	**NOISE EXPOSURE CATEGORY**			
	NEC A	**NEC B**	**NEC C**	**NEC D**
Road Traffic				
07.00 hrs - 23.00 hrs	<55	55 - 63	63 - 72	>72
23.00 hrs – 07.00 hrs	<45	45 – 57	57 - 66	>66

2.9 PPG 24 adds that a window open for ventilation provides between 10 and 15 dB(A) attenuation, assuming minimal attenuation the above NEC A external levels would therefore equate to internal levels of ≤45 dB(A) Leq_{16hr} during the daytime period and ≤35 dB(A) Leq_{8hr} during the night time period.

2.10 In addition, the British Standard BS8233: 1999 *'Sound insulation and noise reduction for buildings - Code of practice'*, indicates that for gardens and balconies etc. it is desirable that the steady noise level does not exceed 50 dB $LAeq_T$ and 55 dB $LAeq_T$ should be regarded as the upper limit, whilst an indication of the design target for indoor ambient noise levels is given at Table 5, i.e.

Table 5 – Indoor ambient noise levels in spaces when they are unoccupied

Criterion	**Typical Situation**	**Design Range $LAeq_T$ dB**	
		Good	**Reasonable**
Reasonable resting/sleeping conditions	Living rooms	30	40
	Bedrooms*	30	35
* For a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB L_{Amax}.			

3.0 NOISE ASSESSMENT.

3.1 In order to determine the existing noise climate at the proposed residential development a 24-hour noise monitoring exercise was carried out on Thursday 13th November 2008 with the instrument being positioned on the proposal site, at the rear facade position of Plot 2 (Refer to Appendix A - Sketch Appraisal Layout, Drawing No: 01).

3.2 All noise monitoring was undertaken using a Cirrus Type CR800B Precision Integrating/Logging Sound Level Meter which complies with the requirements of BS EN 60651:1994 (Type 1) and BS EN 60804:1994 (Type 1). The microphone to the sound level meter was positioned 1.5m above ground level and equipped with a windshield at all times.

3.3 The instrument was calibrated before and after the monitoring periods using a Cirrus Type CR511E Calibrator which complies with IEC 942, no drift in calibration was observed. Further, all instrumentation had been calibrated by the manufacturer within the previous 12 months.

3.4 In addition all noise monitoring was carried out when the weather conditions satisfied the requirements of the British Standard BS4142: 1997, i.e. mean wind speed less than 5m/s and no significant rainfall. Wind speeds were recorded using an anemometer.

3.5 Personnel were present throughout the monitoring periods thereby ensuring that an accurate representation of the prevailing noise climate was recorded.

3.6 In summary the results of the noise monitoring were: (Refer to Appendix B – Noise Monitoring Results)

TIME PERIOD	MEAN RECORDED AMBIENT NOISE LEVEL dB $LAeq_T$	MEAN RECORDED BACKGROUND NOISE LEVEL dB $LA90_T$
Daytime Period (07.00hrs to 23.00hrs):		
07.00 to 08.00 hrs	49.9	47.6
08.00 to 09.00 hrs	53.1	50.1
09.00 to 10.00 hrs	56.8	49.5
10.00 to 11.00 hrs	52.4	49.2
11.00 to 12.00 hrs	51.2	47.9
12.00 to 13.00 hrs	49.0	46.2
13.00 to 14.00 hrs	51.5	48.0
14.00 to 15.00 hrs	50.5	48.6
15.00 to 16.00 hrs	49.9	46.8
16.00 to 17.00 hrs	48.8	45.7
17.00 to 18.00 hrs	46.7	44.3
18.00 to 19.00 hrs	44.5	42.6
19.00 to 20.00 hrs	45.5	42.7
20.00 to 21.00 hrs	45.0	42.5
21.00 to 22.00 hrs	45.9	43.3
22.00 to 23.00 hrs	42.5	39.9
Mean Daytime	**50.5**	**45.9**
Night Time Period (23.00hrs to 07.00hrs):		
23.00 to 00.00 hrs	40.2	37.5
00.00 to 01.00 hrs	41.7	37.6
01.00 to 02.00 hrs	41.7	37.5
02.00 to 03.00 hrs	37.4	33.9
03.00 to 04.00 hrs	40.2	36.2
04.00 to 05.00 hrs	43.4	39.1
05.00 to 06.00 hrs	45.0	40.8
06.00 to 07.00 hrs	45.6	43.1
Mean Night Time	**42.6**	**38.2**

3.7 Subjectively, during the monitoring period the predominant noise sources were the occasional vehicle movements on the adjacent industrial premises, local road traffic and the occasional activity on the nearby construction (industrial unit) site. Noise emanating from the nearby industrial workshops was not discernible.

3.8 The results of the noise monitoring indicate that the proposed residential development site is typically exposed to transportation noise at PPG24 Noise Exposure Category A during the day and night time periods i.e.

NEC A - Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.

3.9 The results of the monitoring also indicate that the noise climate at the proposed residential development site is typically in compliance with recommendations of BS8233: 1999 with regard to noise levels at outdoor living spaces (gardens, balconies etc), i.e. $\leq$50 dB $LAeq_T$ with 55 dB $LAeq_T$ as the upper limit.

3.10 However, in order to minimise the potential to cause annoyance or disturbance to the sleep of future residents due to the activities of the adjacent industrial occupiers and to ensure compliance with the acceptable criteria levels, i.e. BS8233: 1999 $\leq$40 dB $LAeq_T$ within living rooms and $\leq$30 dB $LAeq_T$, 45 dB LA_{MAX} within bedrooms, it is recommended that: (Ref: Sketch Appraisal Layout Drawing No: 01)

i. A 2m high acoustic fence is erected to the southern site boundary, extending from the northern corner of Plot 4 rear garden to the northern corner of Plot 3 rear garden.

ii. All bedrooms with a view of the industrial premises are fitted with windows having a manufacturers minimum sound insulation value of 33 dB (R_W) with ventilation being provided by acoustic vents which when fully open, provide a comparable sound insulation value to that

of the closed window system, e.g. 6mm glass x 16mm air-gap x 6mm glass with Greenwood Airvac S Vent OR Equivalent.

4.0 CONCLUSIONS

4.1 This assessment has indicated that the proposed residential development site is typically exposed to transportation noise at PPG24 Noise Exposure Category A during the day and night time periods.

4.2 This assessment has however recommended that in order to minimise the potential of the adjacent industrial activities to cause annoyance or disturbance to the sleep of future residents and the ensure the acceptable criteria levels are not exceeded, i.e. BS8233: 1999, $\leq$50 dB $LAeq_T$ within gardens, $\leq$40 dB $LAeq_T$ within living rooms and $\leq$30 dB $LAeq_T$, 45 dB LA_{MAX} within bedrooms, the following minimum mitigation measures should be implemented:

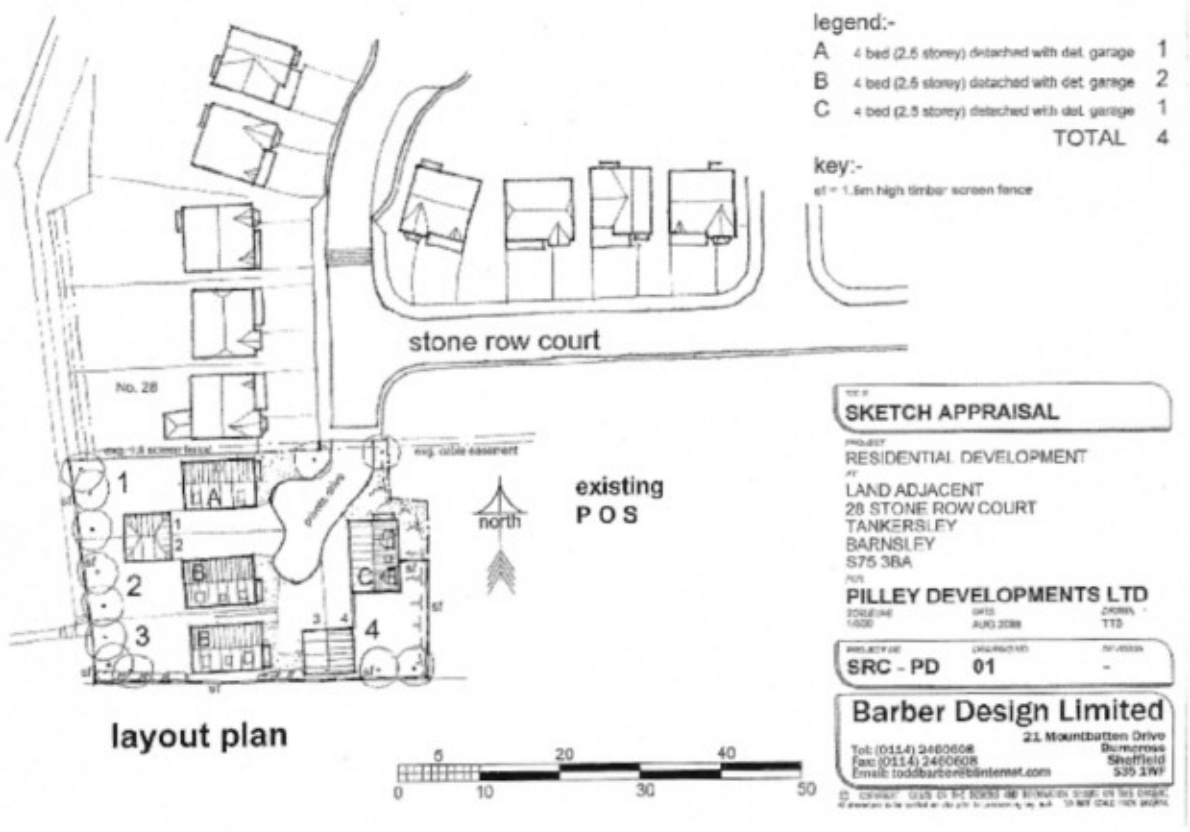
i. A 2m high acoustic fence erected to the southern site boundary, extending from the northern corner of Plot 4 rear garden to the northern corner of Plot 3 rear garden.

ii. All bedrooms with a view of the industrial premises are fitted with windows having a manufacturers minimum sound insulation value of 33 dB (R_W) with ventilation being provided by acoustic vents which when fully open, provide a comparable sound insulation value to that of the closed window system, e.g. 6mm glass x 16mm air-gap x 6mm glass with Greenwood Airvac S Vent OR Equivalent.

APPENDIX A

SKETCH APPRAISAL LAYOUT

DRAWING No: 01


legend:-
A 4 bed (2.5 storey) detached with det. garage 1
B 4 bed (2.5 storey) detached with det. garage 2
C 4 bed (2.5 storey) detached with det. garage 1
TOTAL 4
key:-
sf = 1.8m high timber screen fence
stone row court
No. 28
existing
P O S
north
SKETCH APPRAISAL
RESIDENTIAL DEVELOPMENT
LAND ADJACENT
28 STONE ROW COURT
TANKERSLEY
BARNSLEY
S75 3BA
PILLEY DEVELOPMENTS LTD
SRC - PD 01
Barber Design Limited
21 Mountbatten Drive
Sheffield
S35 1WF
layout plan
0 10 20 30 40 50

APPENDIX B

NOISE MONITORING RESULTS

Pilley Developments Limited
Proposed Residential Development At Land Adjacent To 28 Stone Row Court, Tankersley, Barnsley.
Environmental Noise Monitoring Results.
Instrumentation - Cirrus Type CR:800B (Serial No: C18728FD) Precision Integrating SLM
Instrumentation Calibration Date - March 2008
Weather Conditions: Mainly dry, 100% cloud, south westerly breeze (1/2m/s), temp 10C
Monitoring Position: On site, Plot 2 rear facade position.

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	07:06	51.4	78.3	44.5	59.7	49.2	46.5	45.7	
13/11/08	07:10	48.3	63.4	45.6	50.4	49.0	47.7	46.7	
13/11/08	07:15	47.2	51.5	44.6	49.3	47.9	46.9	46.0	
13/11/08	07:20	48.7	55.2	45.6	51.8	49.6	48.1	47.1	
13/11/08	07:25	48.7	53.1	45.9	50.7	49.5	48.3	47.3	
13/11/08	07:30	50.3	71.4	46.7	53.3	51.0	49.2	48.1	Man in Volvo yard checking vehicles
13/11/08	07:35	50.2	66.6	47.0	52.5	50.7	49.4	48.4	
13/11/08	07:40	51.8	65.8	47.5	58.8	53.1	50.1	49.0	Vehicle movement in UK Cranes yard
13/11/08	07:45	50.0	62.5	46.7	52.7	50.9	49.5	48.2	
13/11/08	07:50	50.5	61.8	46.3	54.8	51.3	49.7	48.3	
13/11/08	07:55	50.0	58.3	46.8	52.6	51.1	49.5	48.3	
Mean Period:		**49.9**						**47.6**	
13/11/08	08:00	50.4	65.8	46.8	54.8	51.4	49.6	48.4	
13/11/08	08:05	50.9	57.4	46.9	54.0	51.9	50.4	48.9	
13/11/08	08:10	53.9	69.3	48.5	62.0	55.3	51.8	50.0	Grinder being used on construction (New Unit) site
13/11/08	08:15	52.5	63.1	48.7	57.7	54.0	51.5	49.9	
13/11/08	08:20	54.8	67.3	48.2	63.5	57.8	51.9	49.9	Earth mover leaves Volvo yard
13/11/08	08:25	52.3	65.2	48.8	56.8	53.6	51.5	50.2	Jiggerpick being used on construction (New Unit) site

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	08:30	51.6	63.6	48.5	53.9	52.4	51.1	50.2	
13/11/08	08:35	52.0	60.8	48.9	54.8	52.8	51.5	50.5	
13/11/08	08:40	53.9	70.5	49.4	60.8	54.2	51.9	50.8	
13/11/08	08:45	52.0	57.8	49.3	55.2	53.2	51.5	50.5	
13/11/08	08:50	53.8	64.6	49.0	59.6	55.7	52.3	50.4	Vehicle movements in UK Cranes yard
13/11/08	08:55	55.4	76.9	49.9	60.2	56.7	53.6	51.2	Vehicle movements in UK Cranes yard
Mean Period:		**53.1**						**50.1**	
13/11/08	09:00	62.4	75.3	51.2	69.8	64.7	60.5	54.2	
13/11/08	09:05	52.3	61.5	49.0	55.9	53.5	51.7	50.6	
13/11/08	09:10	60.5	81.3	49.2	71.4	58.8	52.2	50.6	
13/11/08	09:15	62.5	81.3	49.2	73.8	64.5	53.5	50.3	
13/11/08	09:20	50.3	56.2	47.8	52.9	50.9	50.0	49.1	
13/11/08	09:25	50.6	56.9	47.5	53.2	51.4	50.3	49.0	
13/11/08	09:30	51.4	62.2	48.0	56.3	53.1	50.2	49.2	
13/11/08	09:35	49.6	56.4	47.4	52.7	50.1	49.3	48.4	
13/11/08	09:40	49.3	68.4	45.8	52.2	50.1	48.6	47.2	
13/11/08	09:45	50.1	60.7	46.5	55.8	51.1	49.1	47.7	
13/11/08	09:50	49.7	59.0	46.7	52.4	50.9	49.1	48.0	
13/11/08	09:55	51.4	61.8	47.9	56.3	52.5	50.4	49.2	
Mean Period:		**56.8**						**49.5**	
13/11/08	10:00	52.4	57.6	47.5	56.9	54.9	51.2	49.1	
13/11/08	10:05	51.6	65.7	47.7	57.4	52.4	50.3	49.1	
13/11/08	10:10	51.0	56.5	47.7	53.9	52.3	50.5	49.3	
13/11/08	10:15	57.0	71.8	47.8	68.3	54.6	51.0	49.4	
13/11/08	10:20	50.3	60.0	46.8	52.7	51.3	49.8	48.5	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	10:25	51.3	57.8	47.2	55.1	53.0	50.5	49.0	
13/11/08	10:30	51.1	59.2	47.8	53.8	52.2	50.6	49.3	
13/11/08	10:35	51.9	60.7	48.1	54.5	53.0	51.4	50.2	
13/11/08	10:40	53.2	61.0	48.5	57.1	55.4	52.2	50.0	
13/11/08	10:45	52.7	61.5	48.2	56.6	54.1	52.1	50.5	
13/11/08	10:50	51.5	56.3	47.4	54.6	53.3	50.9	48.9	
13/11/08	10:55	49.7	60.0	46.3	53.9	51.2	48.8	47.3	
Mean Period:		**52.4**						**49.2**	
13/11/08	11:00	48.3	52.9	45.0	50.2	49.1	48.0	46.6	
13/11/08	11:05	51.3	76.6	45.7	54.8	51.5	48.8	47.4	
13/11/08	11:10	48.8	58.9	46.0	51.1	49.7	48.4	47.2	
13/11/08	11:15	49.1	58.3	45.8	51.9	50.4	48.7	47.2	
13/11/08	11:20	53.4	73.6	46.3	63.0	50.6	48.7	47.9	
13/11/08	11:25	49.0	54.0	46.3	51.8	49.8	48.6	47.5	
13/11/08	11:30	49.9	57.8	46.4	52.4	50.9	49.5	48.4	
13/11/08	11:35	53.7	70.0	46.9	62.5	55.2	49.1	48.0	
13/11/08	11:40	52.5	64.5	47.0	59.3	55.9	49.8	48.4	
13/11/08	11:45	50.8	66.9	47.5	55.0	51.8	49.8	48.8	
13/11/08	11:50	52.0	68.4	47.9	57.7	53.2	50.3	49.1	
13/11/08	11:55	51.4	62.3	46.5	57.2	53.1	50.2	48.6	
Mean Period:		**51.2**						**47.9**	
13/11/08	12:00	49.8	66.4	45.6	54.1	51.0	48.9	47.4	
13/11/08	12:05	48.4	56.6	45.4	51.4	49.3	47.9	46.8	
13/11/08	12:10	48.4	64.2	45.2	51.5	49.3	47.8	46.7	
13/11/08	12:15	47.8	55.1	44.7	50.5	49.0	47.3	45.9	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	12:20	51.3	63.5	45.1	58.3	53.6	49.3	46.6	
13/11/08	12:25	48.0	53.1	44.6	50.6	49.3	47.5	45.9	
13/11/08	12:30	49.8	66.4	44.8	57.8	50.7	47.6	46.5	
13/11/08	12:35	49.0	60.7	44.7	55.5	50.7	47.5	45.8	
13/11/08	12:40	49.2	59.3	44.6	54.7	51.1	48.1	46.4	
13/11/08	12:45	48.0	54.5	43.7	51.4	49.5	47.4	45.3	
13/11/08	12:50	47.6	60.3	44.8	50.9	49.0	46.7	45.7	
13/11/08	12:55	48.6	60.8	44.3	52.9	50.2	47.5	45.9	
Mean Period:		**49.0**						**46.2**	
13/11/08	13:00	48.8	60.1	44.5	52.6	50.9	47.7	45.9	
13/11/08	13:05	47.6	53.7	44.3	51.2	48.5	47.0	46.1	
13/11/08	13:10	48.6	54.2	45.9	50.5	49.4	48.2	47.3	
13/11/08	13:15	49.5	61.3	46.3	51.9	50.5	49.1	48.0	
13/11/08	13:20	50.1	54.1	46.9	52.5	51.0	49.7	48.6	
13/11/08	13:25	50.2	60.4	47.2	53.0	51.4	49.6	48.4	
13/11/08	13:30	50.4	57.4	46.5	53.1	51.4	50.0	48.5	
13/11/08	13:35	50.0	67.7	45.9	53.0	51.4	49.1	47.7	
13/11/08	13:40	49.7	56.1	46.1	52.3	51.0	49.2	47.8	
13/11/08	13:45	54.1	68.0	48.5	60.8	57.7	51.4	49.9	
13/11/08	13:50	57.0	71.4	47.0	67.6	58.3	51.7	48.8	
13/11/08	13:55	50.6	61.7	47.3	54.6	51.6	50.0	48.7	
Mean Period:		**51.5**						**48.0**	
13/11/08	14:00	50.9	56.4	47.8	54.1	52.0	50.3	49.3	
13/11/08	14:05	51.0	62.1	47.8	53.5	52.1	50.4	49.4	
13/11/08	14:10	51.6	67.1	48.0	54.1	52.6	51.0	49.7	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	14:15	50.0	58.9	47.0	52.1	51.1	49.7	48.4	
13/11/08	14:20	51.6	61.0	47.9	57.6	53.9	50.1	49.0	
13/11/08	14:25	50.2	62.6	47.5	52.5	50.9	49.7	48.8	
13/11/08	14:30	50.5	66.0	46.8	52.6	51.3	50.0	48.7	
13/11/08	14:35	50.2	60.6	47.2	52.7	50.9	49.8	48.9	
13/11/08	14:40	49.7	59.4	46.8	53.3	50.7	49.0	48.1	
13/11/08	14:45	50.1	60.7	47.1	53.0	51.5	49.5	48.2	
13/11/08	14:50	50.2	63.7	46.7	55.0	51.3	49.3	48.1	
13/11/08	14:55	49.0	58.3	45.2	51.2	50.1	48.8	47.0	
Mean Period:		**50.5**						**48.6**	
13/11/08	15:00	51.4	63.6	46.1	58.6	53.7	49.2	47.7	
13/11/08	15:05	53.3	67.7	46.6	59.5	54.9	51.9	48.3	
13/11/08	15:10	48.8	67.7	45.0	51.7	50.1	48.0	46.5	
13/11/08	15:15	48.2	53.8	45.0	50.5	49.1	47.8	46.7	
13/11/08	15:20	51.1	67.3	45.9	59.9	51.8	48.7	47.1	
13/11/08	15:25	49.0	56.0	45.6	51.9	50.4	48.6	47.1	
13/11/08	15:30	48.3	53.5	45.2	50.9	49.5	47.8	46.5	
13/11/08	15:35	49.0	57.6	44.8	53.9	50.8	47.9	46.4	
13/11/08	15:40	48.3	58.9	45.1	52.5	49.3	47.4	46.3	
13/11/08	15:45	47.8	63.6	44.9	51.5	48.8	46.9	46.1	
13/11/08	15:50	50.2	58.3	44.7	55.8	52.6	48.6	46.4	
13/11/08	15:55	48.9	69.5	45.0	51.9	49.5	47.7	46.7	
Mean Period:		**49.9**						**46.8**	
13/11/08	16:00	49.0	65.3	45.0	52.5	50.1	48.1	46.7	
13/11/08	16:05	48.6	62.7	44.4	53.1	49.9	47.5	45.9	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	16:10	47.6	55.7	44.4	51.5	49.0	46.7	45.8	
13/11/08	16:15	48.1	68.3	44.3	52.3	48.2	46.6	45.5	
13/11/08	16:20	50.3	78.7	43.9	53.1	49.0	47.3	45.6	
13/11/08	16:25	48.6	60.4	43.6	54.3	51.0	47.0	45.0	
13/11/08	16:30	48.7	58.3	43.8	52.9	50.7	47.8	45.5	
13/11/08	16:35	49.3	64.3	45.2	53.4	50.7	48.4	46.7	
13/11/08	16:40	51.2	68.1	44.0	57.9	53.9	49.0	46.2	
13/11/08	16:45	47.7	58.3	43.0	53.0	49.1	46.4	45.2	
13/11/08	16:50	47.1	61.9	44.3	49.6	48.0	46.4	45.4	
13/11/08	16:55	46.5	57.7	43.4	51.2	47.1	45.7	44.7	
Mean Period:		**48.8**						**45.7**	
13/11/08	17:00	46.0	57.8	43.6	47.7	46.7	45.6	44.6	UK Cranes yard no appears closed but light on in offices
13/11/08	17:05	50.6	56.9	44.5	55.8	53.3	49.1	45.9	Vovo yard open, people about.
13/11/08	17:10	45.5	54.0	42.2	50.3	46.7	44.5	43.4	
13/11/08	17:15	45.5	55.7	41.4	50.8	46.8	44.4	42.8	
13/11/08	17:20	44.6	54.9	41.9	46.9	45.8	44.0	42.9	
13/11/08	17:25	46.1	54.0	42.3	50.8	47.5	45.2	43.9	
13/11/08	17:30	46.7	64.6	43.1	50.4	47.0	45.8	44.7	
13/11/08	17:35	45.5	59.3	42.2	47.9	46.2	45.1	44.1	
13/11/08	17:40	46.5	56.6	43.1	49.0	47.7	46.1	44.6	
13/11/08	17:45	46.4	64.7	43.3	48.5	47.0	45.7	44.9	
13/11/08	17:50	46.0	56.9	43.7	47.8	46.6	45.6	44.8	
13/11/08	17:55	47.0	57.7	43.0	51.6	48.4	46.0	44.5	
Mean Period:		**46.7**						**44.3**	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	18:00	45.4	59.2	42.5	48.5	46.4	44.6	43.6	
13/11/08	18:05	45.0	62.0	42.3	47.3	45.8	44.3	43.4	
13/11/08	18:10	45.4	55.9	42.3	48.5	46.5	44.9	43.4	
13/11/08	18:15	44.5	53.3	41.7	47.6	45.8	43.8	42.7	
13/11/08	18:20	43.4	48.8	40.3	46.0	44.4	42.9	41.8	
13/11/08	18:25	44.2	47.2	41.4	46.0	45.0	43.9	42.7	
13/11/08	18:30	45.0	54.5	41.0	50.5	46.9	43.5	42.3	
13/11/08	18:35	44.3	49.8	41.3	46.8	45.3	43.8	42.6	
13/11/08	18:40	44.4	54.8	40.3	48.3	45.5	43.6	41.9	
13/11/08	18:45	44.4	60.6	41.0	47.2	45.5	43.7	42.5	
13/11/08	18:50	43.7	53.7	40.3	46.9	44.8	43.1	41.8	
13/11/08	18:55	44.0	57.2	41.0	47.1	44.8	43.3	42.2	
Mean Period:		**44.5**						**42.6**	
13/11/08	19:00	44.7	57.2	41.2	48.7	45.7	43.8	42.7	Volvo yard closed
13/11/08	19:05	45.2	55.4	40.8	48.6	46.6	44.5	43.0	Light on in UK Cranes offices but no activity.
13/11/08	19:10	44.0	52.9	40.8	47.8	45.1	43.2	42.0	
13/11/08	19:15	44.2	52.9	40.8	48.6	45.4	43.4	42.0	
13/11/08	19:20	43.7	53.8	41.1	46.6	44.8	43.1	42.1	
13/11/08	19:25	49.1	73.3	42.0	56.1	48.5	45.8	44.0	
13/11/08	19:30	47.4	65.3	41.9	52.9	49.1	45.7	43.9	
13/11/08	19:35	45.0	53.9	41.5	49.5	46.3	44.0	42.9	
13/11/08	19:40	44.3	49.7	40.5	46.3	45.3	43.9	42.4	
13/11/08	19:45	44.6	56.1	41.4	48.2	45.7	43.7	42.5	
13/11/08	19:50	44.9	55.6	41.5	47.9	46.5	44.2	42.7	
13/11/08	19:55	45.6	59.8	41.1	51.7	46.3	44.3	42.5	
Mean Period:		**45.5**						**42.7**	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	20:00	47.2	61.0	41.0	55.8	48.7	44.8	43.2	
13/11/08	20:05	45.3	57.1	40.9	51.1	46.5	44.3	42.9	
13/11/08	20:10	45.2	56.8	41.0	49.5	46.5	44.3	42.9	
13/11/08	20:15	46.4	56.5	42.1	51.6	47.6	45.5	44.0	
13/11/08	20:20	45.3	54.2	40.6	48.8	46.7	44.6	43.1	
13/11/08	20:25	44.0	48.6	41.5	46.7	45.2	43.5	42.4	
13/11/08	20:30	44.4	48.3	41.5	47.1	45.3	44.1	42.9	
13/11/08	20:35	43.8	52.7	41.0	46.4	44.8	43.3	42.3	
13/11/08	20:40	42.8	47.1	40.4	44.4	43.5	42.4	41.5	
13/11/08	20:45	43.6	51.8	39.7	48.7	45.1	42.9	41.0	
13/11/08	20:50	45.9	57.3	40.2	53.7	48.8	43.3	41.6	
13/11/08	20:55	43.3	49.0	40.1	46.0	44.5	42.7	41.6	
Mean Period:		**45.0**						**42.5**	
13/11/08	21:00	46.1	56.2	40.3	49.9	47.6	45.8	42.3	
13/11/08	21:05	47.8	54.6	45.7	48.9	48.2	47.5	46.8	
13/11/08	21:10	47.9	54.3	46.1	49.7	48.3	47.6	47.0	
13/11/08	21:15	48.0	56.4	46.3	50.7	48.4	47.6	47.0	
13/11/08	21:20	44.1	55.4	40.7	48.8	45.0	43.4	42.1	
13/11/08	21:25	45.1	56.2	40.8	48.7	46.4	44.3	42.6	
13/11/08	21:30	45.6	57.7	41.1	52.2	47.3	43.8	42.5	
13/11/08	21:35	43.9	54.3	40.3	48.3	44.7	43.1	42.0	
13/11/08	21:40	43.3	50.1	40.7	47.0	44.1	42.7	41.7	
13/11/08	21:45	44.1	50.4	40.9	46.6	45.1	43.7	42.2	
13/11/08	21:50	46.2	56.9	39.9	52.3	48.4	44.8	42.1	
13/11/08	21:55	45.1	56.9	40.3	52.2	47.1	43.1	41.7	
Mean Period:		**45.9**						**43.3**	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
13/11/08	22:00	45.0	52.8	39.8	51.0	47.5	43.2	41.6	
13/11/08	22:05	43.6	62.6	39.3	49.6	44.1	41.9	40.7	
13/11/08	22:10	43.3	49.0	40.0	46.0	44.3	42.9	41.6	
13/11/08	22:15	42.5	49.6	38.5	45.0	43.8	42.0	40.1	
13/11/08	22:20	41.6	45.6	38.9	43.7	42.5	41.2	40.2	
13/11/08	22:25	41.3	47.8	38.3	44.0	42.4	40.8	39.5	
13/11/08	22:30	41.8	51.5	38.4	45.1	42.8	41.2	39.9	
13/11/08	22:35	42.5	54.8	38.2	47.4	43.7	41.5	39.8	
13/11/08	22:40	42.6	61.8	38.0	46.3	43.7	41.4	39.7	
13/11/08	22:45	41.0	44.8	37.9	43.1	42.1	40.5	39.4	
13/11/08	22:50	40.8	51.1	37.5	43.7	42.2	40.3	38.7	
13/11/08	22:55	42.4	51.4	36.3	47.2	44.7	41.3	37.8	
Mean Period:		**42.5**						**39.9**	
13/11/08	23:00	40.4	54.1	36.3	46.1	41.9	38.8	37.5	
13/11/08	23:05	40.4	46.7	36.8	43.1	41.5	39.9	38.6	
13/11/08	23:10	41.1	53.0	36.5	45.9	42.6	40.0	38.2	
13/11/08	23:15	41.0	51.8	36.0	47.5	43.3	39.0	37.7	
13/11/08	23:20	39.4	43.2	36.5	41.5	40.3	39.0	37.8	
13/11/08	23:25	42.0	57.5	36.4	50.0	43.5	39.7	37.9	
13/11/08	23:30	41.2	50.2	37.0	44.7	42.8	40.3	38.5	
13/11/08	23:35	39.5	52.6	36.1	41.9	40.8	38.9	37.4	
13/11/08	23:40	39.3	48.0	35.7	45.4	40.3	38.3	37.0	
13/11/08	23:45	38.0	42.2	34.9	40.5	39.5	37.4	36.1	
13/11/08	23:50	38.9	45.1	35.3	41.9	40.4	38.2	36.8	
13/11/08	23:55	38.9	46.3	35.0	42.0	40.5	38.1	36.5	
Mean Period:		**40.2**						**37.5**	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
14/11/08	00:00	40.0	57.1	36.0	44.3	40.8	38.7	37.5	
14/11/08	00:05	44.9	57.3	33.4	53.5	48.7	40.1	36.5	
14/11/08	00:10	41.4	51.0	35.0	47.3	43.6	39.9	37.3	
14/11/08	00:15	39.2	51.2	34.3	42.7	40.8	38.5	36.3	
14/11/08	00:20	38.5	46.6	33.9	42.2	40.0	37.7	36.1	
14/11/08	00:25	41.0	54.2	36.0	47.3	43.1	39.0	37.6	
14/11/08	00:30	40.0	47.2	35.8	43.5	41.3	39.5	37.6	
14/11/08	00:35	41.8	56.6	35.7	47.9	43.7	40.1	37.0	
14/11/08	00:40	41.4	55.7	35.9	46.4	42.9	40.0	38.1	
14/11/08	00:45	42.5	53.9	37.2	48.5	44.3	41.1	39.3	
14/11/08	00:50	41.6	60.2	35.6	49.3	42.3	39.7	37.3	
14/11/08	00:55	44.0	54.9	37.9	49.2	46.2	42.6	40.1	
Mean Period:		**41.7**						**37.6**	
14/11/08	01:00	42.0	56.7	36.7	47.3	43.8	40.6	38.4	
14/11/08	01:05	40.9	55.8	36.0	46.0	42.4	39.6	37.9	
14/11/08	01:10	40.1	51.2	35.7	43.6	41.7	39.2	37.7	
14/11/08	01:15	39.8	49.0	35.1	44.7	41.6	38.7	36.8	
14/11/08	01:20	43.3	52.9	35.9	48.2	45.2	42.3	39.2	
14/11/08	01:25	38.4	47.3	33.7	42.8	40.2	37.4	35.8	
14/11/08	01:30	39.0	51.9	33.7	44.6	40.6	37.9	35.9	
14/11/08	01:35	39.2	51.1	33.7	45.7	41.7	37.2	35.7	
14/11/08	01:40	40.6	51.3	35.3	46.3	42.7	39.0	37.0	
14/11/08	01:45	42.6	55.4	36.4	46.2	44.9	41.7	38.1	
14/11/08	01:50	44.8	57.5	36.5	52.1	47.8	41.9	38.5	
14/11/08	01:55	43.7	55.2	36.6	51.2	46.5	41.2	38.9	
Mean Period:		**41.7**						**37.5**	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
14/11/08	02:00	38.2	47.2	33.7	42.1	39.5	37.5	35.7	
14/11/08	02:05	38.6	50.8	33.6	43.1	40.9	36.7	34.7	
14/11/08	02:10	37.2	48.3	32.7	45.0	38.1	36.2	34.4	
14/11/08	02:15	35.3	42.5	32.3	37.7	36.1	34.8	33.6	
14/11/08	02:20	35.9	41.2	32.6	38.3	37.1	35.3	34.0	
14/11/08	02:25	36.2	45.0	32.6	38.7	37.3	35.5	34.4	
14/11/08	02:30	39.3	55.0	32.3	49.2	40.8	34.9	33.5	
14/11/08	02:35	36.0	44.5	32.2	39.8	37.4	35.2	34.0	
14/11/08	02:40	36.2	43.4	32.1	39.6	37.7	35.4	33.6	
14/11/08	02:45	36.1	45.6	31.5	42.4	37.7	34.6	33.0	
14/11/08	02:50	36.9	48.7	31.6	44.4	38.7	35.6	32.8	
14/11/08	02:55	39.9	55.2	31.6	49.7	41.2	35.1	32.9	
Mean Period:		**37.4**						**33.9**	
14/11/08	03:00	36.5	40.4	31.9	39.2	38.0	36.2	33.5	
14/11/08	03:05	34.9	40.6	31.5	39.5	36.4	34.0	32.7	
14/11/08	03:10	40.3	53.2	32.1	49.2	44.2	35.9	33.7	
14/11/08	03:15	39.1	55.3	34.4	46.0	39.8	37.6	35.9	
14/11/08	03:20	40.0	55.5	33.6	45.1	41.8	38.6	36.0	
14/11/08	03:25	41.0	52.6	35.0	47.7	43.7	38.8	36.8	
14/11/08	03:30	38.5	46.6	34.5	42.8	40.1	37.5	36.0	
14/11/08	03:35	39.6	45.3	35.1	42.4	41.0	38.9	37.4	
14/11/08	03:40	39.9	46.0	36.0	43.4	41.2	39.3	37.6	
14/11/08	03:45	43.1	58.1	36.1	50.9	45.4	40.5	37.9	
14/11/08	03:50	41.5	50.4	35.7	46.4	43.7	40.3	37.6	
14/11/08	03:55	42.4	52.8	36.8	48.2	44.8	40.7	38.7	
Mean Period:		**40.2**						**36.2**	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
14/11/08	04:00	42.9	51.6	35.7	48.9	45.7	41.2	38.6	
14/11/08	04:05	43.6	54.5	36.9	48.9	46.0	42.0	39.5	
14/11/08	04:10	43.6	58.6	37.9	49.2	45.7	42.0	39.5	
14/11/08	04:15	39.1	46.0	34.6	41.9	40.5	38.5	36.7	
14/11/08	04:20	40.7	52.5	35.4	44.9	42.6	39.7	37.8	
14/11/08	04:25	42.4	56.3	36.2	49.2	43.5	40.7	38.4	
14/11/08	04:30	46.9	58.7	39.0	53.2	49.7	44.6	41.5	
14/11/08	04:35	44.0	62.3	37.7	51.8	45.3	41.5	39.2	
14/11/08	04:40	44.6	52.4	39.4	49.2	47.0	43.4	40.9	
14/11/08	04:45	42.5	52.3	37.8	46.5	44.0	41.6	39.9	
14/11/08	04:50	43.7	57.9	36.5	51.1	46.0	41.2	39.1	
14/11/08	04:55	41.5	53.9	35.5	47.1	43.5	40.1	37.8	
Mean Period:		**43.4**						**39.1**	
14/11/08	05:00	42.1	48.7	36.5	46.1	44.3	40.9	38.7	
14/11/08	05:05	43.0	55.2	37.8	47.2	44.3	42.1	40.5	
14/11/08	05:10	43.2	58.7	37.8	48.9	45.3	41.6	39.5	
14/11/08	05:15	45.8	58.3	36.7	54.5	48.8	42.2	38.6	Vehicle movement in Volvo yard
14/11/08	05:20	47.5	66.3	37.8	58.4	48.1	41.8	39.6	
14/11/08	05:25	42.5	56.6	37.7	49.2	42.8	40.8	39.3	
14/11/08	05:30	43.8	49.8	38.4	48.4	45.7	43.0	40.3	
14/11/08	05:35	46.8	58.9	40.6	51.7	48.9	45.6	43.6	
14/11/08	05:40	44.8	55.8	40.3	49.1	46.5	43.9	42.0	
14/11/08	05:45	46.4	58.7	41.8	52.8	47.7	44.9	43.4	
14/11/08	05:50	45.6	56.5	40.6	51.5	46.9	44.3	42.3	
14/11/08	05:55	44.3	54.0	39.7	49.7	45.9	43.0	41.8	
Mean Period:		**45.0**						**40.8**	

Date	Time	Leq	Lmax	Lmin dB	L1 dB	L10 dB	L50 dB	L90 dB	Industrial Activity Comments
14/11/08	06:00	46.1	58.1	41.0	53.5	47.6	44.4	42.9	
14/11/08	06:05	45.2	54.5	40.2	48.7	46.7	44.6	42.2	
14/11/08	06:10	45.3	54.6	41.7	47.7	46.3	44.9	43.1	
14/11/08	06:15	45.9	55.7	40.8	51.2	47.1	44.9	43.3	
14/11/08	06:20	45.9	69.0	41.4	51.2	46.3	44.2	42.8	
14/11/08	06:25	46.1	50.5	42.4	48.2	47.1	45.9	44.3	
14/11/08	06:30	45.5	56.9	41.7	50.7	46.7	44.7	42.9	
14/11/08	06:35	45.6	61.3	40.8	49.8	46.1	44.6	42.8	
14/11/08	06:40	45.5	55.1	41.7	49.1	46.6	44.7	43.4	
14/11/08	06:45	45.3	52.6	42.7	47.4	46.1	44.8	43.7	
14/11/08	06:50	44.9	56.1	40.4	49.6	46.1	43.9	42.5	
14/11/08	06:55	45.3	49.9	40.7	48.6	46.7	44.6	42.9	Main gates opened at Volvo yard
Mean Period:		**45.6**						**43.1**	