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Revised Noise Assessment

Proposed Residential Development Of The Former Wombwell Foundry Site, Hough Lane, Wombwell, South Yorkshire.

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1.0 INTRODUCTION.

1.1 In February 2004 Kirby Charles Associates Limited carried out an assessment to determine the impact on the proposed development site of the noise generated by the adjacent active railway, road, and commercial premises. (Report Reference: KCA220204/2107).

1.2 Following concerns of the Pollution Control Department, Barnsley Metropolitan Borough Council, with regard to the recorded rail / commercial noise levels and the absence of a vibration assessment for the railway, an additional noise assessment was undertaken, in consultation with the Pollution Control Dept, in December 2005. (Report Reference: KCA220204/2107A).

1.3 The Planning Approved Site Layout (Ref: Drawing No: 2461/01 Revision L Dated 16-02-06) has now been revised and accordingly Kirby Charles Associates Ltd have been instructed by Ben Bailey Homes Ltd to revise the 2004 / 2005 noise assessment reports with regard to the proposed new site layout, i.e. Drawing No: WF1 Dated January 2010.

1.4 With regard to the proposed New Site Layout Drawing No WF1 Dated January 2010, the only change is that the Plots within the western section of the site have been revised, i.e. Plots closest to the railway. The Plots within the northern and eastern sections of the site, i.e. adjacent to Hough Lane and Calglass respectively, remain unaltered and are as detailed on the Planning Approved Site Layout.

1.5 This revised assessment will therefore only consider the western section of the site and the impact of rail noise on those revised Plots. NOTE: It is considered that the impact of Hough Lane traffic and Calglass noise will be insignificant on the western section revised Plots due to the screening afforded by the intervening dwellings and / or distance attenuation.

1.6 With regard to the unaltered Plots within the northern and eastern sections, the mitigation measures recommended within the 2004 / 2005 Noise Assessment Reports (KCA220204/2107 and KCA220204/2107A) to reduce the Hough Lane / Calglass noise to acceptable levels, remain the same.

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 respect of transportation noise as it affects residential properties PPG24 states that:

> ***"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."***

2.3 The Noise Exposure Categories are:

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.

2.4 The noise levels, LAeq, corresponding to these noise exposure categories for road and rail 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**
Rail Traffic				
07.00 hrs - 23.00 hrs	<55	55 - 66	66 - 74	>74
23.00 hrs – 07.00 hrs	<45	45 - 59	59 - 66	>66

2.5 Further, PPG24 states in Annex 2 that:

"Daytime

4. There is no recent, major, U.K. based research from which to take figures for road or rail traffic. The level at the boundary of NEC A and NEC B is therefore based on guidance provided by the World Health Organisation that "general daytime outdoor noise levels of less than 55 dB(A) Leq are desirable to prevent any significant community annoyance".

"Night-time

5. As for daytime, there is no recent, major, U.K. based research from which to take figures for road or rail traffic. There has been research on the effects of aircraft noise, most recently on sleep disturbance, which looks at noise levels at which people are awoken from sleep. The night-time noise level at the boundary of NEC A and NEC B is based on the WHO guideline previously referred to which states that for night-time: "based on limited data available, a level of less than 35 dB(A) is recommended to preserve the restorative process of sleep" and this is considered more relevant when seeking to achieve the best practicable conditions for rest and sleep."

2.6 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 $LAeq_{16hr}$ during the daytime period and ≤35 dB $LAeq_{8hr}$ during the night time period.

3.0 NOISE / VIBRATION ASSESSMENT.

3.1 In order to establish the existing noise climate at the proposed development site noise monitoring was carried out during the periods 19th / 20th February 2004 with the instrument being positioned at the south western (railway) boundary opposite the rear of Welcome Windows Limited factory premises / Nu-Gas premises and near to the north eastern boundary adjacent to the Galglass Limited workshops. The additional noise monitoring was carried out on 21st and 22nd December 2005.

3.2 All noise monitoring was undertaken using a Bruel & Kjaer Type 2231 or Larson Davis Model 820 Precision Integrating/Logging Sound Level Meters which comply with the requirements of BS EN 60651:1994 (Type 1) and BS EN 60804:1994 (Type 1). The microphone to the sound level meters was equipped with a windshield at all times.

3.3 The instruments were calibrated before and after the monitoring periods using a Bruel and Kjaer Type 4230, which complies with IEC 942, no drift in calibration was observed. Further, all instrumentation had been calibrated by an authorised laboratory within the previous 2 years.

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 <5m/s and no significant rainfall.

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 19th / 20th February 2004 noise monitoring indicated: (Refer to Appendix A – Noise Monitoring Results)

(A) South Western Boundary (Railway and Rear of Welcome Windows / Nu Gas).

Daytime ambient level at boundary = 59/60 dB $LAeq_{1hr}$

Night time ambient level at boundary = 38 / 58 dB $LAeq_{1hr}$

(B) North Eastern Boundary (Galglass Limited Workshops)

Daytime ambient level near boundary = 48/54 dB $LAeq_{1hr}$

3.7 Subjectively, the predominant noise sources affecting the proposed development site were:

A. Western (Railway) Boundary.

i. Daytime Period: - Commuter trains and local traffic. Noise from the rear of the Welcome Windows factory was occasionally audible, i.e. machine noise, radio (rear door open), vehicle movements and impact noise of waste being put into skips, whilst noise emanating from the rear of Nu-Gas premises was not discernible.

ii. Night Time Period: - Commuter trains / occasional local traffic. Industrial premises closed.

B. Eastern (Calglass) Boundary.

i. Daytime period: - Local traffic. Low-level noise emanating from the adjacent Galglass workshops was very occasionally audible, i.e. machine noise, impact (metal on concrete) noise and hammering. Noise emanating from Fern Brothers was not discernible other than for the occasional vehicle. Both factory premises were closed during the night time period.

3.8 In summary, the results of the 21st and 22nd December 2005 additional noise monitoring were: (Refer to Appendix A – Noise Monitoring Results)

A. 10m From Railway Boundary, Opposite Nu-Gas Wagon Parking Area:

05.00 to 06.00hrs (4 commuter trains) = 54.2 dB $LAeq_{1hr}$

06.00 to 07.00hrs (8 commuter trains) = 56.7 dB $LAeq_{1hr}$

07.00 to 08.00hrs (6 commuter trains) = 58.6 dB $LAeq_{1hr}$

B. Rear of Site (By-Pass Traffic): 08.00 to 08.30hrs = 58.0 dB $LAeq_{30min}$

C. 10m From Hough Lane: 08.35 to 09.35hrs = 61.1 dB $LAeq_{1hr}$

D. 15m From Calglass Boundary

10.30 to 11.00hrs = 54.6 dB $LAeq_{30min}$

11.00 to 11.30hrs = 54.2 dB $LAeq_{30min}$

11.30 to 12.00hrs = 55.4 dB $LAeq_{30min}$

12.00 to 12.30hrs = 54.9 dB $LAeq_{30min}$

12.30 to 13.00hrs = 55.5 dB $LAeq_{30min}$

13.00 to 13.30hrs = 55.3 dB $LAeq_{30min}$

3.9 With regard to the railway, the results of the noise monitoring (19th / 20th Feb 2004 and 21st / 22nd Dec 2005) indicate that the proposed residential development site, 10m from the site railway boundary, is exposed to rail noise at PPG24 Noise Exposure Category B during the day and night time periods.

3.10 In order to reduce rail noise to acceptable levels (Ref: PPG24), it is proposed that a 2.5m high acoustic screen fence is erected at the railway boundary. The attenuation provided by the acoustic screen fence would be: (Using CRN procedures)

Source height	=	0.7m
Receiver height	=	2.0m (day), 4.0m (night)
Acoustic fence height	=	2.5m
Distance source to acoustic fence	=	5.0m
Distance receiver to acoustic fence	=	10.0m
Path difference, day	=	0.27m
Path difference, night	=	0.067m
Attenuation due to acoustic fence	=	-14 dB day, -10 dB night.

3.11 The predicted noise levels at any dwelling 10m distance from the railway boundary with the 2.5m high acoustic screen fence would typically be 45 and 47 dB(A) Leq_T respectively during the day and night time periods.

3.12 In order to further reduce rail noise with regard to those dwellings immediately adjacent to the railway boundary, it is proposed to install glazing of minimum specification 6mm glass x 16mm air-gap x 6.8mm glass to all bedroom windows having a view of the railway with ventilation being provided by acoustic trickle vents, i.e. January 2010 site layout WF1 – Plots 103 to 109, 134 to 155, and 162 to 165.

3.13 The sound insulation value, inclusive of the spectrum adaption term C_{tr}, of the proposed acoustically enhanced windows, i.e. 6mm glass x 16mm air-gap x 6.8mm (e.g. Pilkington's Insulight Phon incorporating K glass), is 32 dB (Ref: Pilkington's Sound Insulation Data) thereby ensuring that the internal noise environment within the bedrooms are within the acceptable criteria levels, reference PPG24.

3.14 With regard to the specified acoustic trickle vents detailed above, the element-normalised sound level difference of the ventilator, $D_{n,e}$, shall be a minimum of 38 dB with the vent in the fully open position in order to ensure the sound insulation value of the window system is maintained.

3.15 During the monitoring period (railway boundary) it was noted that Nu-Gas employees arrived on site at 06.45hrs with wagon loading starting at 07.10hrs until 07.25hrs and wagons departure at 07.30hrs. Subjectively, during the period 06.45hrs to 07.30hrs the noise generated by Nu-Gas was not considered significant, i.e. rail / road noise predominant.

3.16 It should be noted that the majority of the work carried out by Nu-Gas is off-site therefore the only potential for annoyance / disturbance to future residents would be at the start and end of the working day, wagon loading / unloading.

3.17 However, it is considered that the noise reduction provided by the proposed acoustic screening and bedroom windows specification (Ref: paragraphs 3.11 and 3.12 above) that the noise generated by the activities of Nu-Gas would be insignificant and would not cause annoyance / disturbance to future residents.

3.18 With regard to the rear of the site, the recorded noise level during the period of peak traffic flows on the by-pass was 58.0 dB $LAeq_{30min}$. It is considered however that the day and night time noise exposure levels at dwellings to the rear of the site would be within Noise Exposure Category A due to the by-pass traffic noise.

3.19 With regard to vibration generated by the railway, vibration monitoring was carried out on 22nd December 2005 using a Vibrock V901 Seismograph with the transducer (3 orthgonally mounted geophones) being mounted approx 10 metres from the nearest rail (vibration dose value (VDV) recorded).

3.20 In summary the results of the vibration monitoring indicated that the daytime (16hr) vibration dose value, assuming the frequency and type of trains per hour during the monitoring period remains the same for each hour of the 16hr period, is 0.057 / 0.076 and 0.060 ($m/s^{1.75}$) respectively for the X, Y and Z axis. Refer to Appendix B – Vibration Monitoring Results.

3.21 The British Standard BS6472: Guide to Evaluation Of Human Exposure to Vibration in Buildings (1Hz to 80Hz):1992 gives at Table 7 the vibration dose values ($m/s^{1.75}$) above which various degrees of adverse comment may be expected in residential buildings, i.e.

Table 7. Vibration dose values ($m/s^{1.75}$) above which various degrees of adverse comment maybe expected in residential buildings			
Place	**Low Probability Of Adverse Comment**	**Adverse Comment Possible**	**Adverse Comment Probable**
Residential Buildings 16 hr day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential Buildings 8 hr night	0.13	0.26	0.51

3.22 The results of the monitoring therefore indicate that the levels of vibration generated by the railway are significantly within the day and night time guideline values recommended by the British Standards BS6472 with regard to a low probability of adverse comment.

4.0 CONCLUSIONS.

4.1 This revised assessment has indicated that with regard the revised western section of the proposed residential development site, in order to ensure the acceptable day and night time criteria levels (Ref: PPG24) are not exceeded at the proposed (revised) dwellings due to the adjacent railway and commercial activities (Welcome Windows Ltd and Nu-Gas Ltd) the following noise reduction measures are recommended: (Ref: January 2010 Site Layout Drawing No WF1)

i. A 2.5m high acoustic screen fence to be erected along the full length of the railway boundary.

ii. Plots 103 to 109, 134 to 155, and 162 to 165 – All bedroom windows with a view of the railway to be fitted with glazing of minimum specification of 6mm glass x 16mm air-gap x 6.8mm glass, with ventilation being provided by acoustic trickle vents.

4.2 This revised assessment has indicated that the typical levels of vibration generated by the railway are significantly within the day and night time guideline values recommended by the British Standards BS6472 with regard to a low probability of adverse comment.

APPENDIX A

NOISE MONITORING RESULTS

Ben Bailey Homes Limited

Proposed Residential Development Of The Former Wombwell Foundry Site, Hough Lane, Wombwell.

Environmental Noise Monitoring Results

Instrumentation - B & K Type 2231 Precision Integrating SLM, B & K Type 4230 Calibrator
(Instrumentation Calibration Date: March 2003)

Weather Conditions - Dry, 40% overcast, slight wind, 11C.

Monitoring Position: At railway (south west) boundary, opposite Welcome Windows Factory

Set-Up: Module #: 15 (BZ 7115) Time W. : F
Mic.Corr: + 0.8 dB Freq.W. : A
Pr. Time: 00:05:00 Rg. (dB): 20.8 - 93.8

Date	Time	MAXL	L(01)	L(10)	L(50)	L(90)	L(99)	MINL	LEQ	Comments
A. DAYTIME PERIOD:										
19/02/04	12:32:58	87.7	82.3	55.8	52.8	50.8	49.3	48.7	62.9	Commuter train
19/02/04	12:37:58	80.3	74.8	57.8	53.3	50.8	49.8	49.0	59.7	Commuter train
19/02/04	12:42:58	87.0	83.3	59.3	52.8	50.3	49.3	47.9	64.2	Commuter train
19/02/04	12:47:58	59.5	55.3	53.3	50.8	49.3	48.3	47.5	51.2	Distant traffic, industrial
19/02/04	12:52:58	67.4	59.3	55.3	51.3	49.3	48.3	47.1	52.7	Distant traffic, industrial
19/02/04	12:57:58	72.3	58.3	53.8	51.8	49.8	48.3	47.4	52.6	Distant traffic, industrial
19/02/04	13:02:58	66.0	60.3	55.8	51.3	49.3	47.8	46.6	53.0	Distant traffic, industrial
19/02/04	13:07:58	72.0	67.3	56.8	51.8	49.3	47.8	46.7	55.2	Commuter train
19/02/04	13:12:58	83.9	77.8	55.8	51.3	48.8	47.3	46.1	63.2	Commuter train
19/02/04	13:17:58	63.8	58.3	54.3	50.8	49.3	48.3	47.2	52.0	Distant traffic, industrial
19/02/04	13:22:58	77.0	71.3	52.8	50.3	48.3	46.8	46.0	57.0	Distant traffic, industrial
19/02/04	13:27:58	59.0	55.3	53.3	50.8	49.3	48.3	47.4	51.3	Distant traffic, industrial
Mean Period						**49.6**			**59.0**	**Total 5 trains**

Date	Time	MAXL	L(01)	L(10)	L(50)	L(90)	L(99)	MINL	LEQ	Comments
A. DAYTIME PERIOD:										
19/02/04	13:32:58	65.7	56.8	54.8	51.8	50.3	48.8	48.1	52.7	Distant traffic, industrial
19/02/04	13:37:58	77.5	75.3	57.8	53.3	50.8	49.8	49.0	59.7	Commuter train
19/02/04	13:42:58	83.8	76.8	55.8	52.8	50.8	49.3	48.7	62.9	Commuter train
19/02/04	13:47:58	84.0	81.3	59.3	52.8	50.3	49.3	47.9	64.2	Commuter train
19/02/04	13:52:58	71.6	62.8	55.8	52.8	50.8	49.3	48.4	54.4	Distant traffic, industrial
19/02/04	13:57:58	74.3	65.8	56.8	53.8	50.8	49.3	48.4	55.8	Distant traffic, industrial
19/02/04	14:02:58	77.1	71.8	55.8	52.3	49.8	48.3	47.4	58.1	Commuter train
19/02/04	14:07:58	83.5	77.8	57.3	52.8	49.8	49.3	48.1	62.9	Commuter train
19/02/04	14:12:58	72.3	58.3	53.8	51.8	49.8	48.3	47.4	52.6	Distant traffic, industrial
19/02/04	14:17:58	83.9	76.3	53.8	51.3	49.8	48.8	48.0	62.3	Commuter train
19/02/04	14:22:58	67.6	60.3	54.8	51.8	50.3	49.3	48.2	53.0	Distant traffic, industrial
19/02/04	14:27:58	79.2	75.3	57.8	52.8	50.8	49.8	49.0	60.0	Commuter train
Mean Period						**50.3**			**60.0**	**Total 7 trains**
19/02/04	14:32:58	85.0	79.3	54.8	51.3	49.8	48.3	46.8	64.3	Commuter train
19/02/04	14:37:58	84.1	76.8	58.8	52.8	50.3	48.8	47.6	63.6	Commuter train
19/02/04	14:42:58	69.8	60.3	56.3	52.8	50.3	48.8	47.3	54.2	Distant traffic, industrial
19/02/04	14:47:58	63.9	59.3	56.3	53.3	51.3	50.3	49.3	54.0	Distant traffic, industrial
19/02/04	14:52:58	69.8	59.8	56.8	53.8	51.8	50.3	49.5	54.6	Distant traffic, industrial
19/02/04	14:57:58	64.4	60.3	56.3	52.8	50.3	49.3	48.2	53.8	Distant traffic, industrial
19/02/04	15:02:58	75.0	61.8	57.8	54.3	51.8	49.8	48.7	55.5	Commuter train
19/02/04	15:07:58	84.1	77.8	58.8	53.8	51.3	50.3	49.4	64.1	Commuter train
19/02/04	15:12:58	67.4	59.3	55.3	51.3	49.3	48.3	47.1	52.7	Distant traffic, industrial

Date	Time	MAXL	L(01)	L(10)	L(50)	L(90)	L(99)	MINL	LEQ	Comments
A. DAYTIME PERIOD:										
19/02/04	15:17:58	66.0	60.3	55.8	51.3	49.3	47.8	46.6	53.0	Distant traffic, industrial
19/02/04	15:22:58	63.6	59.3	55.8	51.8	49.8	48.8	47.6	53.2	Distant traffic, industrial
19/02/04	15:27:58	76.6	70.8	54.8	51.3	48.8	46.8	44.9	57.5	Commuter train
Mean Period						***50.3***			**59.3**	***Total 5 trains***
B. NIGHT TIME PERIOD:										
19/02/04	22:14:59	54.0	50.8	46.3	42.3	38.8	37.3	36.1	43.7	Distant local traffic
19/02/04	22:19:59	50.0	47.8	44.3	39.3	35.3	34.3	33.5	41.0	Distant local traffic
19/02/04	22:24:59	86.5	79.8	48.8	41.3	37.8	36.8	35.9	65.0	Commuter train
19/02/04	22:29:59	48.3	46.8	43.3	38.8	35.8	34.3	33.7	40.2	Distant local traffic
19/02/04	22:34:59	77.5	75.3	47.3	40.8	36.8	35.3	34.7	58.7	Commuter train
19/02/04	22:39:59	84.5	79.8	52.8	40.8	35.3	33.3	32.3	63.9	Commuter train
19/02/04	22:44:59	51.7	46.3	43.8	37.3	34.8	33.8	33.2	39.8	Distant local traffic
19/02/04	22:49:59	63.8	54.3	45.8	38.8	33.8	32.8	31.9	43.7	Distant local traffic
19/02/04	22:54:59	58.4	51.3	45.8	38.3	35.3	33.8	33.3	42.4	Distant local traffic
19/02/04	22:59:59	48.4	46.3	43.3	37.8	34.8	33.3	32.7	39.4	Distant local traffic
19/02/04	23:04:59	48.4	46.8	43.8	36.8	34.8	33.8	33.4	39.7	Distant local traffic
19/02/04	23:09:59	77.1	74.3	46.3	38.8	35.3	34.8	34.0	57.6	Commuter train
Mean Period						**35.7**			**57.7**	**Total 4 trains**
19/02/04	23:14:59	49.9	48.8	45.3	38.8	34.8	34.3	33.5	41.4	Distant local traffic
19/02/04	23:19:59	50.7	48.3	44.8	38.8	34.8	33.3	32.9	41.2	Distant local traffic
19/02/04	23:24:59	51.0	44.8	42.8	37.3	34.8	34.3	33.6	39.2	Distant local traffic
19/02/04	23:29:59	85.6	78.3	47.8	39.3	34.8	33.8	33.4	63.8	Commuter train

Date	Time	MAXL	L(01)	L(10)	L(50)	L(90)	L(99)	MINL	LEQ	Comments
B. NIGHT TIME PERIOD CONT'D:										
19/02/04	23:34:59	55.9	53.3	47.8	38.8	35.3	34.8	33.9	43.7	Distant local traffic
19/02/04	23:39:59	84.5	77.8	49.3	40.8	36.3	34.8	34.0	63.1	Commuter train
19/02/04	23:44:59	80.5	76.8	47.3	36.8	35.3	33.8	33.2	60.6	Commuter train
19/02/04	23:49:59	58.9	49.3	44.8	37.8	34.3	33.3	32.6	41.6	Distant local traffic
19/02/04	23:54:59	55.2	51.8	44.3	37.3	33.8	32.8	31.9	41.0	Distant local traffic
19/02/04	23:59:59	48.2	46.8	42.8	35.8	32.8	30.8	30.0	38.8	Distant local traffic
20/02/04	00:04:59	47.1	44.8	39.8	33.8	32.3	31.3	30.4	36.5	Distant local traffic
20/02/04	00:09:59	48.0	46.8	41.8	35.3	32.8	32.3	31.5	38.3	Distant local traffic
Mean Period						**34.3**			**56.8**	**Total 3 trains**
20/02/04	00:14:59	51.8	48.3	43.8	35.8	33.3	32.3	31.5	39.6	Distant local traffic
20/02/04	00:19:59	49.5	47.3	43.8	37.3	33.8	31.8	30.8	39.8	Distant local traffic
20/02/04	00:24:59	45.8	44.3	41.3	36.3	32.3	31.3	30.3	38.0	Distant local traffic
20/02/04	00:29:59	48.7	46.3	41.3	34.3	32.3	31.3	29.9	37.6	Distant local traffic
20/02/04	00:34:59	48.3	46.3	41.8	35.3	33.3	32.3	31.5	38.0	Distant local traffic
20/02/04	00:39:59	48.9	43.8	38.3	33.8	31.8	30.8	30.4	35.6	Distant local traffic
20/02/04	00:44:59	50.4	46.8	40.8	34.3	31.8	30.8	29.7	37.5	Distant local traffic
20/02/04	00:49:59	52.1	49.8	43.3	34.3	31.8	31.3	30.7	39.2	Distant local traffic
20/02/04	00:54:59	48.4	46.3	41.8	34.8	31.8	30.8	30.0	38.0	Distant local traffic
Mean Period						**32.5**			**38.3**	**No Trains**

Ben Bailey Homes Limited

Proposed Residential Development Of The Former Wombwell Foundry Site, Hough Lane, Wombwell.

Environmental Noise Monitoring Results

Instrumentation - B & K Type 2231 Precision Integrating SLM, B & K Type 4230 Calibrator
(*Instrumentation Calibration Date: March 2003*)

Weather Conditions - Dry, 10% overcast, south easterly wind (3.9 m/s), 10C.

Monitoring Position: At north eastern boundary adjacent to Galglass Factory Building

Set-Up: Module #: 15 (BZ 7115) Time W. : F
Mic.Corr: + 0.8 dB Freq.W. : A
Pr. Time: 00:05:00 Rg. (dB): 20.8 - 93.8

Date	Time	MAXL	L(01)	L(10)	L(50)	L(90)	L(99)	MINL	LEQ	Comments
20/02/04	12:15:46	54.6	52.3	50.3	48.3	46.3	45.3	44.3	48.6	Distant local traffic
20/02/04	12:20:46	55.6	51.8	49.8	47.8	46.3	45.3	44.3	48.2	Distant local traffic
20/02/04	12:25:46	52.4	50.8	49.3	46.8	45.3	44.3	43.7	47.3	Distant local traffic
20/02/04	12:30:46	66.4	57.3	51.8	47.8	45.3	44.8	44.2	49.5	HGV into yard / plane
20/02/04	12:35:46	61.0	57.3	51.8	47.3	45.8	44.3	43.7	49.2	Plane nearby
20/02/04	12:40:46	55.2	52.3	50.3	47.3	45.3	44.8	44.2	47.9	Distant local traffic
20/02/04	12:45:46	57.1	53.8	51.3	48.3	46.3	45.3	44.8	48.9	Distant local traffic
20/02/04	12:50:46	55.6	52.8	50.3	48.3	46.8	45.3	44.5	48.7	Distant local traffic
20/02/04	12:55:46	55.9	51.3	49.3	47.8	46.3	45.8	45.0	47.9	Distant local traffic
20/02/04	13:00:46	53.8	51.3	49.8	47.8	46.8	45.3	44.8	48.2	Distant local traffic
20/02/04	13:05:46	54.9	51.3	49.8	47.8	45.8	44.8	44.3	47.9	Distant local traffic
20/02/04	13:10:46	53.8	50.8	48.8	46.8	44.8	44.3	43.5	47.1	Distant local traffic
Mean Period						**45.9**			**48.3**	

Date	Time	MAXL	L(01)	L(10)	L(50)	L(90)	L(99)	MINL	LEQ	Comments
20/02/04	13:15:46	63.4	57.3	51.3	48.8	47.8	46.8	46.1	49.9	Distant local traffic
20/02/04	13:20:46	58.9	54.3	50.8	48.8	47.3	46.3	45.5	49.4	Distant local traffic
20/02/04	13:25:46	57.7	52.8	50.3	48.3	47.3	46.3	45.7	48.9	Distant local traffic
20/02/04	13:30:46	54.0	51.8	50.8	49.3	47.8	46.8	46.0	49.3	Distant local traffic
20/02/04	13:35:46	54.6	51.8	50.3	48.8	47.3	45.8	45.3	48.9	Distant local traffic
20/02/04	13:40:46	53.7	51.3	50.3	48.3	47.3	46.3	45.5	48.7	HGV departs yard
20/02/04	13:45:46	59.2	52.3	50.8	48.8	47.3	46.3	45.8	49.1	Distant local traffic
20/02/04	13:50:46	57.5	55.3	52.8	49.3	47.8	46.8	46.1	50.2	Fencing being repaired
20/02/04	13:55:46	58.8	55.3	51.3	49.3	47.8	46.8	45.8	49.8	Fencing being repaired
20/02/04	14:00:46	56.7	53.3	51.3	48.3	46.3	45.3	43.9	48.9	Fencing being repaired
20/02/04	14:05:46	80.3	61.3	51.3	48.8	46.3	45.3	44.8	54.2	Fencing being repaired
20/02/04	14:10:46	58.4	54.8	50.8	48.8	47.8	46.8	44.8	49.4	Fencing being repaired
Mean Period						**47.3**			**50.0**	
20/02/04	14:15:46	75.7	59.3	51.3	49.3	47.8	47.3	46.7	52.4	Fencing being repaired
20/02/04	14:20:46	52.9	51.3	50.3	48.3	47.3	46.3	45.6	48.6	Fencing being repaired
20/02/04	14:25:46	58.5	55.8	51.3	48.3	46.3	45.3	44.0	49.3	Fencing being repaired
20/02/04	14:30:46	74.3	69.3	61.3	49.8	46.8	45.3	44.9	57.6	Helicopter nearby
Mean Period						**47.1**			**53.6**	

Ben Bailey Homes Limited
Proposed Residential Development Of The Former Wombwell Foundry Site, Hough Lane, Wombwell.
Environmental Noise Monitoring Results
Instrumentation - Larson Davis Model 820 Precision Integrating SLM
Instrumentation Calibration Date - March 2005
Weather Conditions 21st - Dry, 40% overcast, slight south westerly wind, temp 7C.
Weather Conditions 22nd - Dry, 100% overcast, south westerly wind (1.6m/s), temp 11C.

Date	Time	Duration	Leq	SEL	Lmin	Lmax	L1	L5	L10	L50	L90	L99	COMMENTS	
A. Monitoring Position: 10m From Railway Boundary Opposite Nu Gas Wagon Parking Area.													**Railway**	**Nu Gas**
12/21/05	"04:56:17"	222.28	42.4	65.8	37.1	60.5	48.7	45.9	44.6	41.2	38.7	37.4		No Activity
12/21/05	"05:00:00"	300	58.0	82.8	36.4	79.9	71.0	51.2	47.7	42.0	39.1	37.1	2 Carriage Commuter Train	No Activity
12/21/05	"05:05:00"	300	44.4	69.2	37.2	54.2	52.4	49.6	47.4	42.6	39.2	38.0		No Activity
12/21/05	"05:10:00"	300	43.6	68.4	37.0	54.3	51.1	48.0	46.6	41.8	38.5	37.2		No Activity
12/21/05	"05:15:00"	300	43.5	68.3	36.9	52.3	48.8	46.8	45.8	42.8	39.9	37.5		No Activity
12/21/05	"05:20:00"	300	47.0	71.8	40.7	58.3	53.0	50.5	49.5	46.1	43.3	41.5		No Activity
12/21/05	"05:25:00"	300	61.9	86.7	39.6	80.9	79.0	60.2	51.9	45.3	41.8	40.1	2 Carriage Commuter Train	No Activity
12/21/05	"05:30:00"	300	46.5	71.3	40.0	58.3	53.8	50.3	49.4	44.9	42.0	40.2		No Activity
12/21/05	"05:35:00"	300	47.2	72.0	41.7	54.3	51.9	50.5	49.6	46.4	44.2	42.5		No Activity
12/21/05	"05:40:00"	300	57.9	82.7	42.2	79.5	72.8	58.9	51.4	47.1	44.3	43.0	2 Carriage Commuter Train	No Activity
12/21/05	"05:45:00"	300	47.8	72.6	41.5	55.3	52.6	50.9	50.2	47.1	44.0	42.1		No Activity
12/21/05	"05:50:00"	300	48.2	73.0	42.2	57.0	54.0	51.9	50.7	47.2	45.0	42.7		No Activity
12/21/05	"05:55:00"	300	54.6	79.4	40.7	73.8	70.0	55.7	51.6	46.9	43.2	41.3	2 Carriage Commuter Train	No Activity
Mean Period:			**54.2**								**41.8**		**4 Commuter Trains**	

Date	Time	Duration	Leq	SEL	Lmin	Lmax	L1	L5	L10	L50	L90	L99	COMMENTS	
A. Monitoring Position: 10m From Railway Boundary Opposite Nu Gas Wagon Parking Area.													**Railway**	**Nu Gas**
12/21/05	"06:00:00"	300	59.3	84.1	44.0	77.7	75.7	58.7	52.9	48.0	45.6	44.4	2 Carriage Commuter Train	No Activity
12/21/05	"06:05:00"	300	50.1	74.9	44.3	61.8	56.7	53.3	52.3	49.1	46.4	44.8		No Activity
12/21/05	"06:10:00"	300	58.9	83.7	44.3	80.6	72.0	54.4	52.5	48.9	46.5	45.0	2 Carriage Commuter Train	No Activity
12/21/05	"06:15:00"	300	50.0	74.8	44.9	62.8	56.7	53.2	52.1	49.0	47.0	45.3		No Activity
12/21/05	"06:20:00"	300	50.3	75.1	44.6	59.1	55.4	53.3	52.4	49.8	47.3	45.3		No Activity
12/21/05	"06:25:00"	300	49.7	74.4	45.7	56.6	53.6	52.3	51.6	49.3	47.0	46.1		No Activity
12/21/05	"06:30:00"	300	49.2	74.0	44.7	54.6	53.0	52.1	51.5	48.6	46.4	45.1		No Activity
12/21/05	"06:35:00"	300	54.3	79.1	44.8	72.2	68.8	54.8	52.5	48.9	46.3	45.2	2 Carriage Commuter Train	No Activity
12/21/05	"06:40:00"	300	60.7	85.5	46.9	79.9	76.5	60.2	54.3	51.4	49.2	47.8	2 x 2 Carriage Commuter Train	No Activity
12/21/05	"06:45:00"	300	52.1	76.9	48.2	60.3	55.7	54.5	53.8	51.8	50.0	48.5	2 Carriage Commuter Train	Car arrived, Offices Opened
12/21/05	"06:50:00"	300	61.4	86.2	49.6	80.1	72.0	57.5	55.8	52.9	51.1	50.0	1 Carriage Commuter Train	Car arrived
12/21/05	"06:55:00"	300	56.8	81.6	48.1	74.2	71.0	57.6	55.5	52.9	50.3	48.8	2 Carriage Commuter Train	
Mean Period:			**56.7**								**47.8**		**8 Commuter Trains**	
12/21/05	"07:00:00"	300	52.9	77.7	49.6	56.9	55.9	54.9	54.4	52.7	51.2	50.0		2 x Cars arrived
12/21/05	"07:05:00"	300	63.8	88.6	48.7	81.1	79.2	64.5	56.8	52.9	51.1	49.4	2 x 2 Carriage Commuter Train	
12/21/05	"07:10:00"	300	54.0	78.8	48.9	58.7	57.4	56.4	55.8	53.8	51.9	50.0		Loading wagons
12/21/05	"07:15:00"	300	54.1	78.8	51.3	69.6	57.8	55.8	55.0	53.6	52.3	51.5		Loading wagons
12/21/05	"07:20:00"	300	55.4	80.2	51.7	69.7	59.7	57.6	56.9	54.9	53.4	52.3		Van arrived
12/21/05	"07:25:00"	300	58.6	83.4	51.4	72.1	71.2	59.9	57.9	55.7	53.6	52.1	4 Carriage Commuter Train	Van arrived
12/21/05	"07:30:00"	300	55.2	80.0	50.8	60.1	58.3	57.4	56.8	55.0	52.9	51.4		Wagons departed
12/21/05	"07:35:00"	300	55.7	80.5	52.2	62.3	58.8	57.8	57.2	55.5	54.0	52.9		
12/21/05	"07:40:00"	300	62.7	87.5	51.9	81.2	79.2	58.9	57.6	55.2	53.5	52.4	4 Carriage Commuter Train	
12/21/05	"07:45:00"	300	55.9	80.7	52.1	61.7	59.5	58.3	57.7	55.5	53.6	52.8		
12/21/05	"07:50:00"	300	61.6	86.4	51.8	80.4	76.9	59.9	57.6	54.8	52.8	52.0	2 Carriage Commuter Train	

Date	Time	Duration	Leq	SEL	Lmin	Lmax	L1	L5	L10	L50	L90	L99	COMMENTS	
A. Monitoring Position: 10m From Railway Boundary Opposite Nu Gas Wagon Parking Area.													**Railway**	**Nu Gas**
12/21/05	"07:55:00"	300	57.3	82.0	51.6	70.4	68.5	59.1	57.9	55.5	53.6	52.0	2 Carriage Commuter Train	
12/21/05	"08:00:00"	103.19	56.0	76.1	53.5	62.1	60.2	57.9	57.5	55.7	54.4	53.7		
Mean Period:			**58.6**								**52.9**		**6 Commuter Trains**	
B. Monitoring Position: Rear Site Boundary Overlooking By-Pass.														
12/21/05	"08:03:59"	60.53	56.7	74.5	53.6	66.1	63.2	58.7	57.9	56.1	55.0	53.9	By-Pass traffic noise	By-Pass traffic noise
12/21/05	"08:05:00"	300	57.7	82.5	53.4	69.0	66.5	60.1	59.0	56.8	54.9	54.0	By-Pass traffic noise	By-Pass traffic noise
12/21/05	"08:10:00"	300	59.0	83.7	53.3	71.5	69.8	61.6	59.6	57.1	55.0	53.6	By-Pass traffic noise	By-Pass traffic noise
12/21/05	"08:15:00"	300	59.4	84.2	53.3	73.1	71.7	61.4	58.9	56.7	55.1	54.0	By-Pass traffic noise	By-Pass traffic noise
12/21/05	"08:20:00"	300	59.4	84.2	52.4	74.3	72.4	61.2	58.8	56.3	54.6	53.2	By-Pass traffic noise	By-Pass traffic noise
12/21/05	"08:25:00"	300	56.4	81.2	51.0	61.0	59.8	58.9	58.4	56.1	54.1	51.6	By-Pass traffic noise	By-Pass traffic noise
12/21/05	"08:30:00"	105.44	56.2	76.5	51.7	67.8	65.7	59.0	57.6	54.8	53.1	52.1	By-Pass traffic noise	By-Pass traffic noise
Mean Period:			**58.0**								**54.5**			
C. Monitoring Position: Approx 10m From Hough Lane.														
12/21/05	"08:36:03"	236.78	61.3	85.1	52.4	72.9	68.0	65.2	64.0	60.1	55.6	53.5	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"08:40:00"	300	61.6	86.4	50.9	70.3	66.8	65.1	64.4	60.9	56.4	51.7	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"08:45:00"	300	61.8	86.5	53.3	70.8	67.9	65.3	64.4	61.0	56.3	54.2	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"08:50:00"	300	62.1	86.9	51.2	69.4	67.0	65.8	64.9	61.5	57.0	52.4	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"08:55:00"	300	61.3	86.1	49.9	72.4	67.6	65.5	64.4	60.1	55.1	51.0	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"09:00:00"	300	62.0	86.8	50.9	73.2	68.8	65.9	64.9	60.9	56.4	51.5	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"09:05:00"	300	62.3	87.1	52.2	73.6	68.2	65.9	65.2	61.3	57.5	54.2	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"09:10:00"	300	60.9	85.7	48.6	71.7	67.0	64.7	63.7	59.9	55.7	49.2	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"09:15:00"	300	61.0	85.8	50.4	68.3	66.3	64.8	63.9	60.2	55.4	51.4	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"09:20:00"	300	59.7	84.4	50.0	67.6	65.4	63.8	62.8	58.5	53.8	51.0	Hough Lane traffic noise	Hough Lane traffic noise

Date	Time	Duration	Leq	SEL	Lmin	Lmax	L1	L5	L10	L50	L90	L99	COMMENTS	
C. Monitoring Position: Approx 10m From Hough Lane.													**Railway**	**Nu Gas**
12/21/05	"09:25:00"	300	60.4	85.2	50.2	72.3	67.3	64.8	63.7	58.7	54.2	51.3	*Hough Lane traffic noise*	*Hough Lane traffic noise*
12/21/05	"09:30:00"	300	59.8	84.6	48.6	67.9	66.0	63.7	62.8	58.8	53.7	49.2	Hough Lane traffic noise	Hough Lane traffic noise
12/21/05	"09:35:00"	91.94	58.7	78.3	50.9	65.2	64.4	62.8	62.0	57.2	52.2	51.0	Hough Lane traffic noise	Hough Lane traffic noise
Mean Period:			**61.1**								**55.3**			
D. Monitoring Position: 15m From Calglass Boundary (Delapidated Stone Wall).													**Railway**	**Calgas**
12/22/05	"10:29:10"	49.31	52.9	69.8	50.3	58.8	55 5	54.6	54.0	52.7	51.2	50.3		Occassional metal impacts
12/22/05	"10:30:00"	300	55.9	80.7	50.3	68.3	66.4	57.8	55.7	53.6	52.0	51.0	2 Carriage Commuter Train	but not significant
12/22/05	"10:35:00"	300	55.5	80.3	50.5	66.1	63.9	59.3	56.5	54.2	52.3	51.1	2 Carriage Commuter Train	
12/22/05	"10:40:00"	300	53.5	78.3	49.3	58.5	56.8	55.3	54.8	53.4	52.0	50.4		
12/22/05	"10:45:00"	300	53.6	78.4	49.4	57.9	56.7	55.7	55.1	53.5	52.1	50.5		
12/22/05	"10:50:00"	300	53.7	78.5	50.2	58.6	57.2	55.7	55.1	53.4	52.1	51.0		
12/22/05	"10:55:00"	300	56.0	80.8	49.7	69.0	67.2	60.8	56.8	53.4	51.6	50.4	2 x 2 Carriage Commuter Train	
Mean Period:			**54.6**								**51.9**			
12/22/05	"11:00:00"	300	53.1	77.9	50.1	57.7	56.7	55.5	54.7	52.7	51.3	50.4		
12/22/05	"11:05:00"	300	54.8	79.6	48.5	66.7	64.0	58.8	56.7	53.3	51.1	49.3	2 Carriage Commuter Train	
12/22/05	"11:10:00"	300	53.4	78.2	49.5	58.8	56.6	55.0	54.7	53.3	51.4	50.2		
12/22/05	"11:15:00"	300	55.3	80.0	49.6	65.7	64.4	60.7	55.9	53.4	51.6	50.2	2 Carriage Commuter Train	
12/22/05	"11:20:00"	300	54.9	79.7	49.9	69.3	65.7	56.8	55.6	53.3	51.5	50.3		
12/22/05	"11:25:00"	300	53.8	78.6	49.9	58.8	56.7	55.7	55.2	53.6	52.0	50.5		
Mean Period:			**54.2**								**51.5**			
12/22/05	"11:30:00"	300	54.5	79.3	50.6	60.7	59.9	57.4	55.9	53.9	52.4	51.2	2 Carriage Commuter Train	

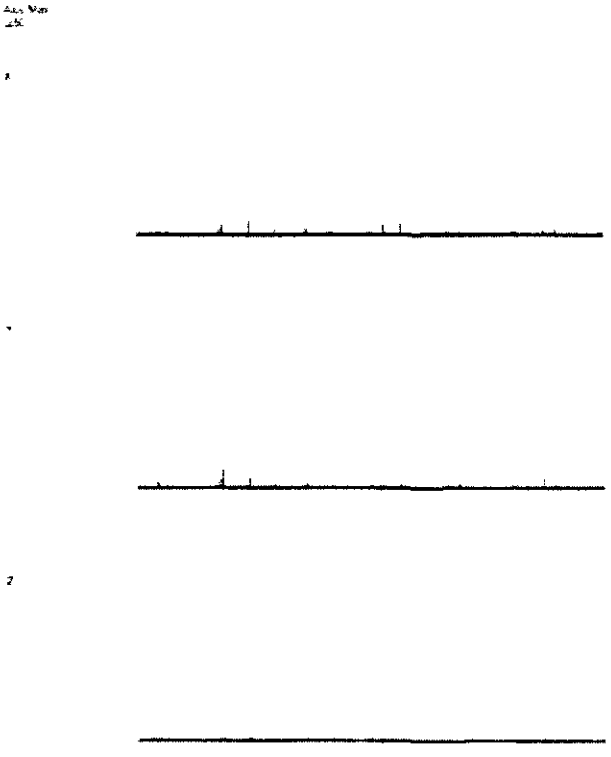
Date	Time	Duration	Leq	SEL	Lmin	Lmax	L1	L5	L10	L50	L90	L99	COMMENTS	
C. Monitoring Position: 15m From CalGas Boundary (Delapidated Stone Wall Boundary).													*Railway*	*Calgas*
12/22/05	"11:35:00"	300	53.9	78.7	49.8	57.7	56.7	55.8	55.4	53.7	52.1	50.5		Van into Calgas
12/22/05	"11:40:00"	300	56.7	81.5	51.4	66.6	65.6	61.9	57.9	54.8	53.0	52.1	3 Carriage Commuter Train	Plane overhead
12/22/05	"11:45:00"	300	54.4	79.2	51.1	58.8	58.0	56.7	55.9	54.1	52.7	51.6		
12/22/05	"11:50:00"	300	54.9	79.7	51.6	59.9	57.9	56.8	56.3	54.7	53.1	52.0		
12/22/05	"11:55:00"	300	57.0	81.8	51.3	71.3	68.6	59.7	57.4	54.7	53.2	52.0	3 Carriage Commuter Train	
Mean Period:			**55.4**								**52.8**			
12/22/05	"12:00:00"	300	54.9	79.7	51.2	61.2	59.8	56.8	56.2	54.6	53.2	51.7	2 Carriage Commuter Train	
12/22/05	"12:05:00"	300	54.9	79.7	52.1	59.1	58.0	56.9	56.3	54.6	53.3	52.3		
12/22/05	"12:10:00"	300	54.8	79.6	49.8	60.4	59.1	57.8	56.7	54.4	52.4	50.7	2 Carriage Commuter Train	
12/22/05	"12:15:00"	300	53.9	78.7	50.4	60.2	57.2	55.9	55.3	53.7	52.2	50.8		
12/22/05	"12:20:00"	300	55.4	80.2	51.4	62.1	60.0	57.9	57.1	54.9	53.2	52.1		Helicopter nearby
12/22/05	"12:25:00"	300	55.1	79.8	50.9	61.2	60.5	57.5	56.3	54.6	52.8	51.4	2 Carriage Commuter Train	
Mean Period:			**54.9**								**52.9**			
12/22/05	"12:30:00"	300	56.9	81.7	50.1	67.8	66.8	62.9	58.8	54.2	52.2	50.8	2 Carriage Commuter Train	
12/22/05	"12:35:00"	300	54.3	79.1	50.2	63.1	58.0	56.7	55.9	53.9	52.3	51.2		
12/22/05	"12:40:00"	300	55.5	80.3	51.4	66.4	62.6	59.6	57.5	54.4	52.7	51.5		Helicopter nearby
12/22/05	"12:45:00"	300	54.6	79.4	51.7	58.8	57.5	56.4	55.9	54.5	53.1	52.1		
12/22/05	"12:50:00"	300	55.3	80.0	51.4	69.8	61.0	57.7	56.6	54.4	53.0	52.1		
12/22/05	"12:55:00"	300	55.8	80.6	51.8	67.4	65.1	58.9	57.2	54.5	53.1	52.1	2 x 2 Carriage Commuter Train	
Mean Period:			**55.5**								**52.7**			
12/22/05	"13:00:00"	300	54.0	78.8	50.4	57.6	56.7	55.9	55.5	53.9	52.2	51.1		
12/22/05	"13:05:00"	300	57.1	81.9	52.4	70.3	68.6	58.0	57.1	55.5	54.1	53.0	2 Carriage Commuter Train	

Date	Time	Duration	Leq	SEL	Lmin	Lmax	L1	L5	L10	L50	L90	L99	COMMENTS	
C. Monitoring Position: 15m From CalGas Boundary (Delapidated Stone Wall Boundary).													**Railway**	**Calgas**
12/22/05	"13:10:00"	300	56.7	81.5	51.3	68.3	65.2	60.7	58.0	55.2	53.2	52.1	2 Carriage Commuter Train	
12/22/05	"13:15:00"	300	54.5	79.3	51.3	60.7	56.9	56.0	55.8	54.5	53.1	52.1		
12/22/05	"13:20:00"	300	54.1	78.9	50.4	60.1	56.9	55.9	55.6	54.1	52.3	51.1		
12/22/05	"13:30:00"	300	55.5	80.3	51.4	66.4	62.6	59.6	57.5	54.4	52.7	51.5		
12/22/05	"13:25:00"	275.38	54.0	78.4	50.9	59.3	56.9	55.9	55.5	53.8	52.2	51.2		
Mean Period:			**55.3**								**52.8**			

APPENDIX B

VIBRATION MONITORING RESULTS

Event 001 22/12/05 10 20 18 Calibrate by APR 06



	X	Y	Z	X	Y	Z
		16 Hour				
	077	076	060			
		1 Hour			Total	
Hour 1	026	037	029	025	033	025
Hour 2	026	039	032	035	043	035
Hour 3	027	037	029	036	048	039
Hour 4	026	036	027	035	050	040