

ATTACHMENT C  
NOISE SURVEY REPORT, OCTOBER 2004

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# Noise Monitoring Report:

For  
Seamus Kelly & Sons,

October 2004

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Reference: Seamus Kelly & Sons				
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**ENVIRONMENTAL NOISE SURVEY REPORT**

**SEAMUS KELLY & SONS,**  
**GOREY BUSINESS PARK,**  
**GOREY,**  
**CO. WEXFORD**

**OCTOBER 2004**

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## 1. INTRODUCTION

Seamus Kelly & Sons commissioned White Young Green (WYG) to carry out an environmental noise monitoring survey and subsequent report at its facility in Gorey Business Park, Gorey, Co. Wexford. The survey was carried out on the 14<sup>th</sup> and 15<sup>th</sup> of October 2004. This monitoring was undertaken in order to comply with an Article 16(1), request for further information by the Environmental Protection Agency.

## 2. EXISTING NOISE SOURCES

In summary, Seamus Kelly operates a waste transfer and recovery facility, which handles non-hazardous, industrial, commercial and construction/demolition waste.

The predominant noise source in the area consists of non-site vehicular traffic associated with the third class road that runs to the east of the facility and the N11 that runs to the north of the facility. On site noise sources include the inward and outward movements of vehicles and associated reverse alarms and the unloading of trucks/skips. On site noise sources include;

- 1 Gradear Baler
- 1 Boss Forklift
- 1 JCB Front end Loader
- 1 Untha Shredder (C&D)
- 1 JCB Rubber Loader
- 1 Baughan Screener (Trommel)
- 1 Avery Berkel Weighbridge
- 4 Refuse Trucks Rear End Loaders – Hino
- 4 Skip Lorries (Volvos & Hinos)

### 2.1 Local Environmental Setting

The receiving environment surrounding the site is predominantly commercial, residential and agricultural in nature. The facility is located within the Gorey Business Park, which is bounded to the west and south by agricultural land and to the north and east by residential areas. A local road runs to the east of the business park and the N11 road runs to the north of the business park.

## 3. SURVEY PROTOCOL

### 3.1 Choice of Measurement Positions and Survey Details

For the daytime survey a thirty-minute ambient noise level measurement was carried out at 14 locations, using an integrating sound level meter. Four measurements were carried out at the site boundaries, N1 (southern boundary), N2 (western boundary), N3 (northwestern boundary) and N4 (outside the eastern boundary) and ten measurements at potential noise sensitive locations, (N5 to N14).

It was agreed with the Agency prior to the survey that noise monitoring would be carried out 17 locations, however on the day of the survey it was discovered that there was no dwelling at noise monitoring location N15 therefore monitoring was not necessary at this location. Furthermore it was not possible to gain access to noise monitoring location N16, located approximately 500m to the southeast of the facility. Observations on the day of the survey indicated that noise from the business park was not audible in this area. Noise monitoring location N17 located 500m to the west of the facility was affected by traffic noise from the N11, similar to noise monitoring locations N13 and N14. Observations on the day of the survey also indicated that noise from the business park was not audible in this area therefore it was not deemed necessary to carry out noise monitoring at this point. Noise monitoring locations are illustrated in Figures 1 and 2.

Weather conditions during the survey were dry with occasional showers and a light to moderate breeze. Windspeed measured during the monitoring period ranged from 0.5 – 2.5 meters per second (m/s), in a predominantly southeasterly direction. Windspeed was measured using a hand held Solomat 510e weather meter.

The EPA defines a noise sensitive receptor as “any dwelling, house, hotel or hostel, health building, educational establishment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels”. Noise monitoring locations were chosen according to the guidelines in *ISO 1996: Acoustics – Description and Measurement of Environmental Noise*. In all cases, the microphone was mounted on an outdoor microphone stand, which in turn was mounted on a tripod at 1.5m above ground level and at least 3.5m away from any sound reflecting objects. A windshield was placed on the microphone to reduce any wind interference during measurements.

### 3.2 Instrumentation and Methodology

The measurements were made according to the requirements of *ISO 1996: Acoustics – Description and Measurement of Environmental Noise, Part 1*, and the EPA “*Environmental Noise Guidance Document*”.

The measurements were made using a Cirrus 831A Data logging integrating sound level meter fitted with 1:1 and 1:3 Octave Band Filters.

The instrument was calibrated *in situ* at 94dB prior to and after use using a Cirrus CR 513A acoustic calibrator. Factory calibration certificates for the noise level meter and acoustic calibrator, detailing equipment serial numbers, calibration traceability and re-calibration dates are presented in Appendix B of this report.

The sound level meter was orientated towards the noise source during all measurement surveys. This instrument is a Type 1 instrument in accordance with IEC 651 regulations. The Time Weighting used was Fast and the Frequency Weighting was A-weighted as per IEC 651. A glossary of noise related terms is presented in Appendix C.

### 3.3 Survey Implementation

The survey was conducted by White Young Green personnel on the 14<sup>th</sup> and 15<sup>th</sup> of October 2004. The measurement parameters included meteorological observations of prevailing conditions at the time of the survey. The primary measurement parameter was the equivalent continuous A-Weighted Sound Pressure level,  $L_{Aeq, T}$ , over 30-minute measurement intervals for the duration of the day-time monitoring survey. A statistical analysis of the measurement results was also completed so that the percentile levels,  $L_{AN, T}$ , for  $N = 90\%$  and  $10\%$  over 30-minute measurement intervals were also recorded. The percentile levels represent the noise level in dB(A) exceeded for  $N\%$  of the measurement time.  $L_{A10}$  values are used to describe intermittent, high-energy noise events whereas  $L_{A90}$  values are representative of background noise levels.

In addition, frequency was measured in the 1/3-octave band at each of the 14 noise monitoring locations to assess the potential tonal components of ambient noise generated in the vicinity of the recycling facility. All sources of noise were noted, recorded and where possible, identified during the course of this survey.

## 4. NOISE SURVEY RESULTS

The noise measurement results for the day-time noise monitoring survey are reported in Table 4.1 overleaf. A graphical representation of noise measurement spectra, including octave band frequency analysis is presented in Appendix A.

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Table 4.1: Noise Survey Results

Location	Survey Date & Time	L <sub>Aeq,30 mins</sub> dB	L <sub>A90,30 mins</sub> dB	L <sub>A10,30 mins</sub> dB	Traffic Count		Description of Sources
					Car	HGV	
N1	14/10/04 11:37	73	55	76	-	-	Machinery noise, idling trucks.
N2	14/10/04 12:16	68	53	75	-	-	Machinery noise, site traffic.
N3	14/10/04 12:55	60	45	66	-	-	Site traffic, distant traffic noise, adjacent site noise.
N4	14/10/04 13:38	64	55	74	-	-	Machinery noise, adjacent site noise.
N5 <sup>1</sup>	14/10/04 14:22	64	40	55	23	1	Non-site traffic noise, machinery noise.
N6 <sup>1</sup>	14/10/04 14:59	66	41	68	25	7	Non-site traffic noise, machinery noise, birdsong.
N7 <sup>1</sup>	14/10/04 16:02	66	41	64	24	0	Non-site traffic noise, machinery noise, birdsong.
N8 <sup>1</sup>	14/10/02 16:40	68	45	76	33	3	Non-site traffic noise, machinery noise, barking dog.
N9	15/10/02 08:06	63	47	62	25	3	Non-site traffic noise, barking dog.
N10	15/10/04 08:46	58	47	67	-	-	Distant traffic noise, barking dog.
N11	15/10/04 09:26	61	41	51	-	-	Distant traffic noise, barking dog.
N12 <sup>1</sup>	15/10/04 10:14	60	41	49	11	0	Non-site traffic noise.
N13 <sup>2</sup>	15/10/04 10:58	76	52	84	220	36	Non-site traffic noise, birdsong.
N14 <sup>2</sup>	15/10/04 11:35	78	48	82	240	40	Non-site traffic noise.

Note: [1] Traffic count on local road to the east of the facility

Note: [2] Traffic count on N11 road to the north of the facility

- Indicates that noise monitoring was conducted either within the business park or housing estate therefore a traffic count was not possible.

## 5. DISCUSSION

The World Health Organisation (WHO) guideline limit values for noise at sites of an industrial nature, taking all noise sources into account are,  $L_{Aeq, 30min}$  55dB(A) for day-time (0800 to 2200) and  $L_{Aeq, 30 min}$  45dB(A) for night-time. These noise limits are commonly adopted in Ireland by both the Environmental Protection Agency (EPA) and by Local Authorities, in order to minimise the environmental noise impact that existing or proposed industrial activities may have on the receiving environment. For the purpose of this report the daytime  $L_{Aeq, 30min}$  55dB(A) may be used as a guideline value.

Observations made during the survey indicate that the noise climate in the vicinity of the Seamus Kelly & Sons facility is influenced by a combination of existing on-site activities and passing non-site road traffic along the roads to the north and east of the site.

### 5.1 Site Boundary Noise Monitoring Locations

Four measurements were carried out at the site boundaries, N1 (southern boundary, N2 (western boundary), N3 (northwestern boundary) and N4 (outside the eastern boundary). Predominant noise sources generated at the site include the operation of site machinery, the unloading of waste and the movement of site traffic. Although Seamus Kelly & Sons site activities contribute to the overall noise climate it is reasonable to conclude that noise from adjacent sites within the business park and non-site traffic also influences the receiving noise environment.

Seamus Kelly & Sons, as described in Table 4.1 predominantly influence the recorded noise levels at the site boundary monitoring locations. Noise levels ( $L_{Aeq}$ ) of 73dB(A), 68dB(A), 60dB(A) and 64dB(A), were recorded at N1 to N4 respectively. With the exception of N2, the sound pressure level graphs corresponding to the boundary locations show relatively steady noise levels with occasional peaks arising from activities, such as waste transporters being unloaded and reversing alarms. During the measurement at N2, a truck was being unloaded characterised by an extremely unsteady sound pressure level graph.

### 5.2 Potential Noise Sensitive Locations – Northeast of the Facility

The noise levels ( $L_{Aeq}$ ) recorded at the potential noise sensitive receptors N5 to N9 to the northeast of the facility were 64dB(A), 66dB(A), 66dB(A), 68dB(A) and 63dB(A) respectively. As noted during the monitoring survey, these monitoring locations were influenced by existing background road traffic. Noise from the business park was audible at these locations during the monitoring period, the predominant noise sources at monitoring locations N5 to N9 were due to passing traffic on the adjacent third class road. This can be seen graphically on the sound pressure level graphs attached. The graphs show a highly fluctuating SPL graph, indicating a high level of passing vehicles i.e. short-term high level noise events. At noise monitoring locations N6, N7 and N9 the  $L_{Aeq}$  and  $L_{A10}$  are similar indicating non-site traffic noise as the dominant noise source. The  $L_{A90}$  recorded at these points represents the background noise level including the noise generated from site, the  $L_{A90}$  was within the guideline limit of 55 dB(A) at each of these points.



The noise levels ( $L_{Aeq}$ ) recorded at the potential noise sensitive receptors N10 and N11 were 58dB(A) and 61dB(A) respectively. These monitoring locations were within the nearby housing estate and influenced by distant road traffic noise and barking dogs within the estate. Seamus Kelly & Sons site activities were not audible at these locations during the monitoring period. This can be seen graphically on the sound pressure level graphs attached. The graph for monitoring location N10 shows a highly fluctuating SPL graph, indicating a constant barking dog i.e. short-term high level noise event. The graph for monitoring location N11 shows a steady SPL graph with occasional peaks, indicating an occasional barking dog.

### 5.3 Potential Noise Sensitive Locations – South of the Facility

The noise level ( $L_{Aeq}$ ) recorded at the noise sensitive receptor N12, located to the south of the facility, was 60dB(A). As noted during the monitoring survey, this monitoring location was significantly influenced by existing background road traffic. Seamus Kelly & Sons site activities were not audible at this location during the monitoring period; the predominant noise source at this monitoring location was due to passing site and non-site traffic on the adjacent third class road. This can be seen graphically on the sound pressure level graph attached. The graph show a highly fluctuating SPL graph, indicating a high level of passing vehicles i.e. short-term high level noise events.

### 5.4 Potential Noise Sensitive Locations – West of the Facility

The noise levels ( $L_{Aeq}$ ) recorded at the two potential noise sensitive receptors N13 and N14, located to the west of the facility were 76dB(A), and 78dB(A) respectively. As noted during the monitoring survey, these monitoring locations were significantly influenced by existing background non-site road traffic. Seamus Kelly & Sons site activities were not audible at these locations during the monitoring period, the predominant noise sources at monitoring locations N13 and N14 were due to passing traffic on the adjacent N11 road. This can be seen graphically on the sound pressure level graphs attached. The graphs show a highly fluctuating SPL graph, indicating a high level of passing vehicles i.e. short-term high level noise events.

### 5.5 1/3 Octave Band Frequency Analysis

An octave band frequency analysis was also carried out as part of this assessment to obtain more detailed information regarding any potential tonal components at each of the noise monitoring locations. There was no continuous tonal noise source subjectively noted during the survey at any location. High or very low frequency noise is generally considered to be more disturbing than middle range frequency noise. In general, in order to minimise the potential for a noise source to be a nuisance or cause disturbance, and given 1/3-octave band must not exceed its adjacent band by 5dB or more (cf ISO 1996 Part 2). This can be seen in the attached 1/3 octave frequency analysis graphs.

The analysis of the 1/3-octave frequency spectra (Appendix A) measured at each of the noise monitoring locations shows that there is a general broadband noise spectrum associated with ambient noise generated in the vicinity of the facility. There are a number of frequency bands, which exceed their neighbouring band by more than 5dB. It is reasonable to conclude that this is as a result of the operation of items of plant, reversing warning alarms and Heavy Goods Vehicle (HGV) movements on-site, loading trucks with metal. The frequencies at which these tonal elements occur do not correspond to those at the nearest sensitive receptors with the exception of noise monitoring location N6, where a tonal element was recorded at 5kHz. However, observations during the sampling period indicate that tonal components were not audible at the sensitive locations and hence did not impact on the sensitive receptors.

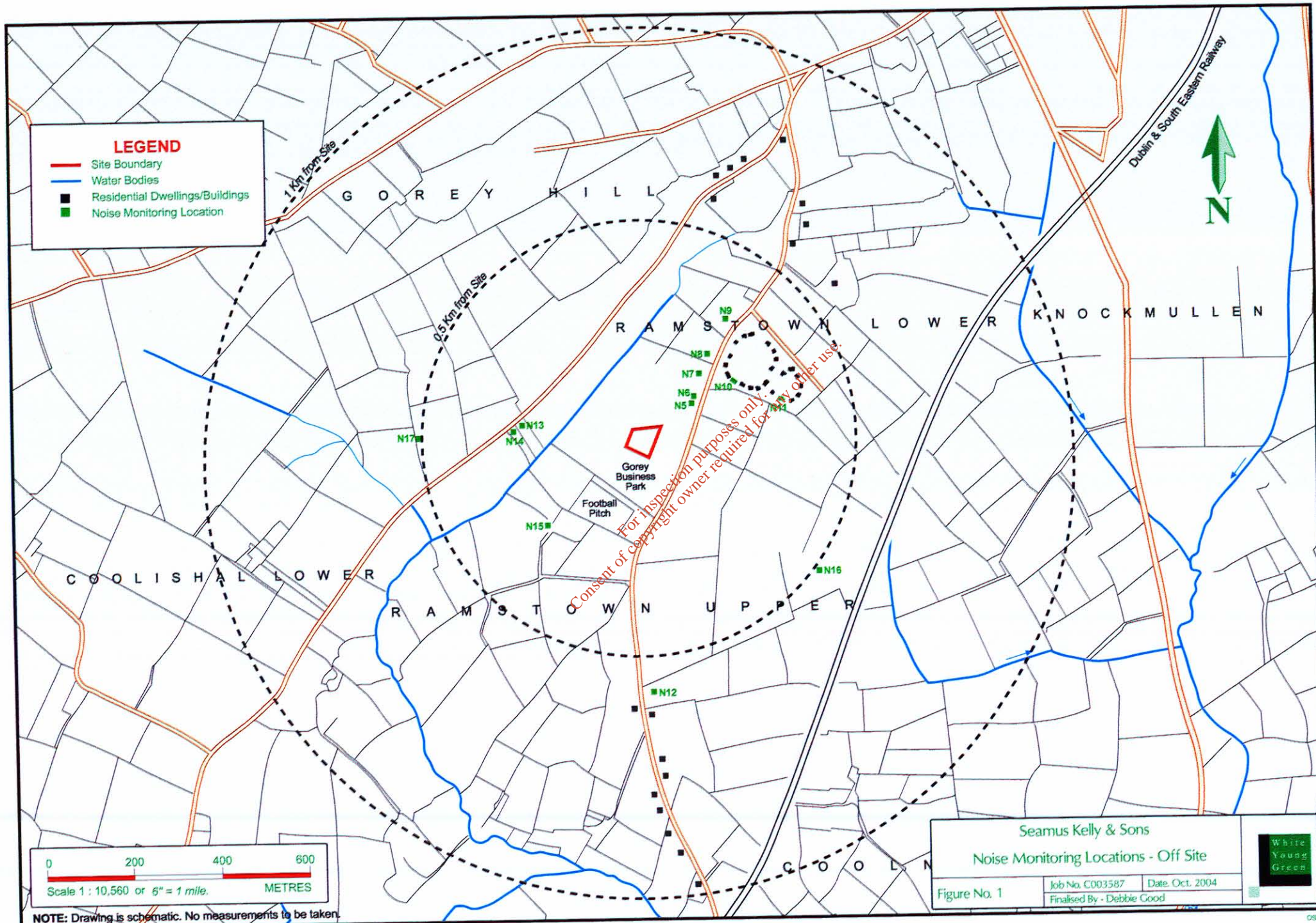
## 6. CONCLUSION

The results of this noise monitoring survey indicate that the existing noise climate in the vicinity of the recycling facility is influenced by a combination of site activities, passing road traffic and neighbouring activities. Noise from the business park was audible at monitoring locations N5 to N9.

The plan for the proposed facility is to cover the entire site so that all operations will take place indoors, thereby containing the operations and greatly reducing the potential noise impacts. Further noise mitigation measures will include fitting all vehicles and mechanical plant used for the purpose of works with exhaust silencers. Also machines in intermittent use shall be shut down in the intervening period between work or throttled down to a minimum. Mitigation measures such as these will help to ensure that noise from the site does not impact on the surrounding environment.

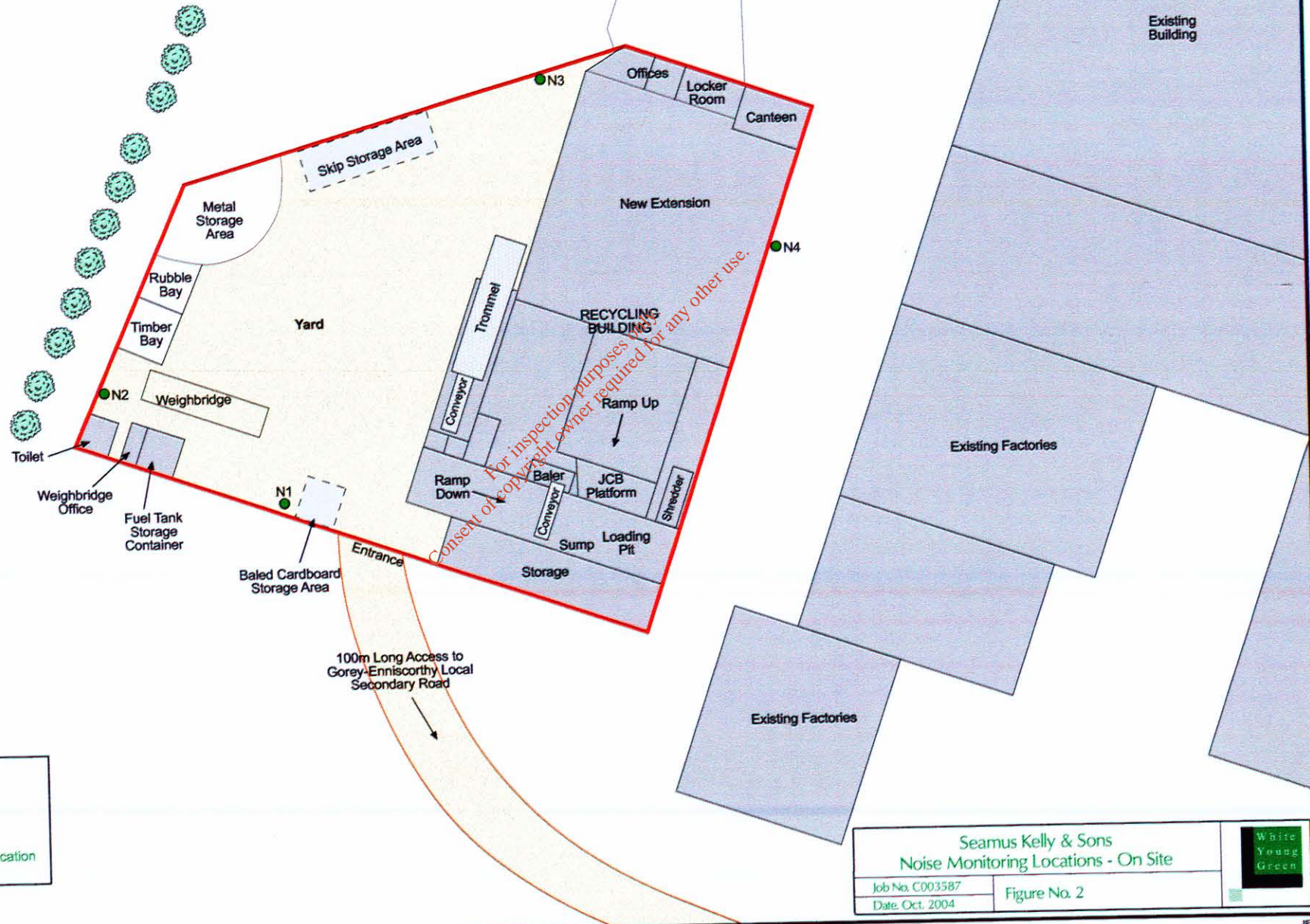
# FIGURES

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NOTE: Drawing is schematic. No measurements to be taken.



**LEGEND**

- Site Boundary
- Buildings
- Coniferous Trees
- Noise Monitoring Location

Seamus Kelly & Sons  
Noise Monitoring Locations - On Site

Job No. C003587	Figure No. 2
Date. Oct. 2004	

# APPENDIX 1

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# Noise Measurement Report

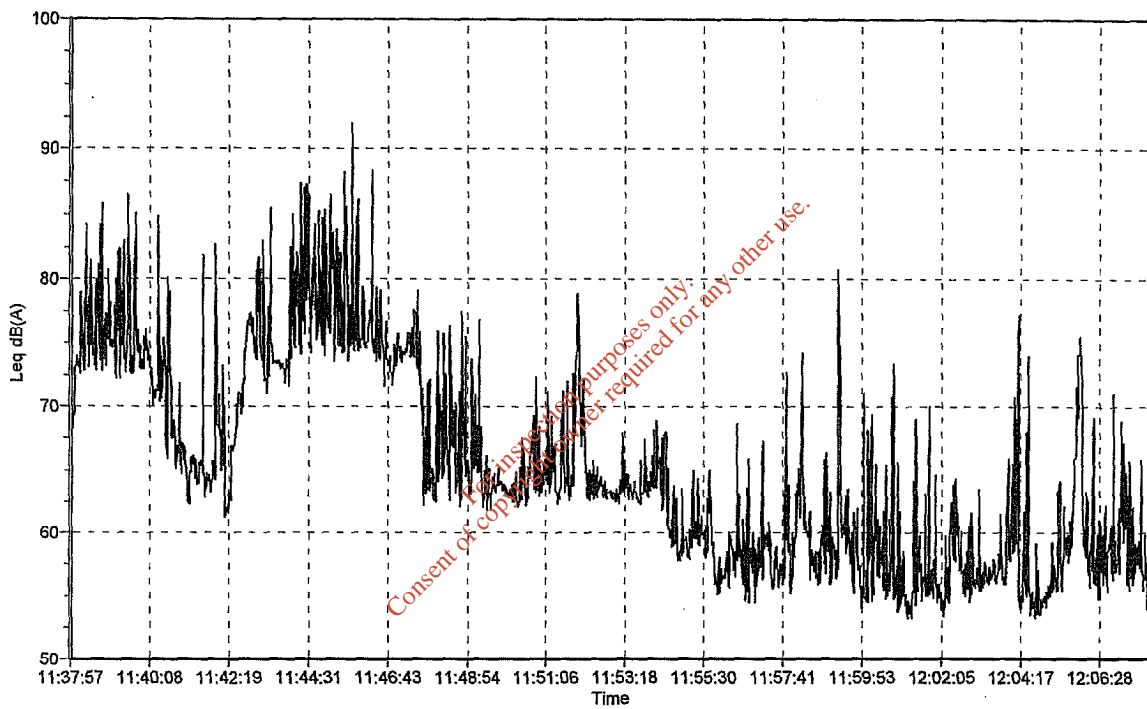
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 11:37:57

Run Time: 00:30:00  
Range: 50-110 dB

Leq 73.3 dBA  
Lepd 61.2 dBA  
LAE 105.6 dBA  
LAFmax 95.8 dBA  
Peak 112.8 dBC

L1.0	L10.0	L50.0	L90.0	L95.0	L99.0
84.8 dBA	75.8 dBA	63.2 dBA	55.3 dBA	54.4 dBA	53.0 dBA



Notes: Measurement Location N-1

Printed: 22/10/04 11:21:03

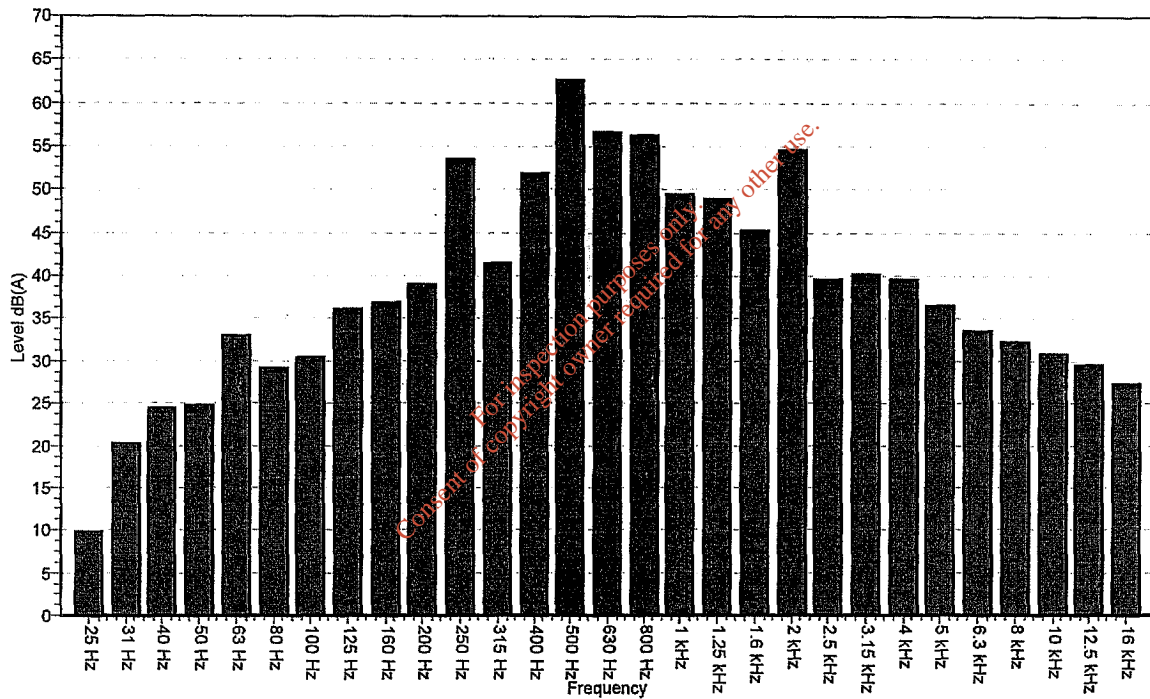
# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 12:09:24

Run Time: 00:04:48  
 Range: 50-110 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	9.9	20.3	24.5	24.9	33.0	29.3	30.5	36.3	36.9	39.1	53.5
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	41.5	51.8	62.7	56.7	56.3	49.5	49.0	45.4	54.6	39.6	40.1
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	39.8	36.5	33.6	32.3	30.9	29.6	27.4	57.4	71.3	71.4	
Duration (s)	9	9	9	9	9	9	9	9	9	9	



Notes: Noise Measurement Location N-1

Printed: 22/10/04 11:22:56



# Noise Measurement Report

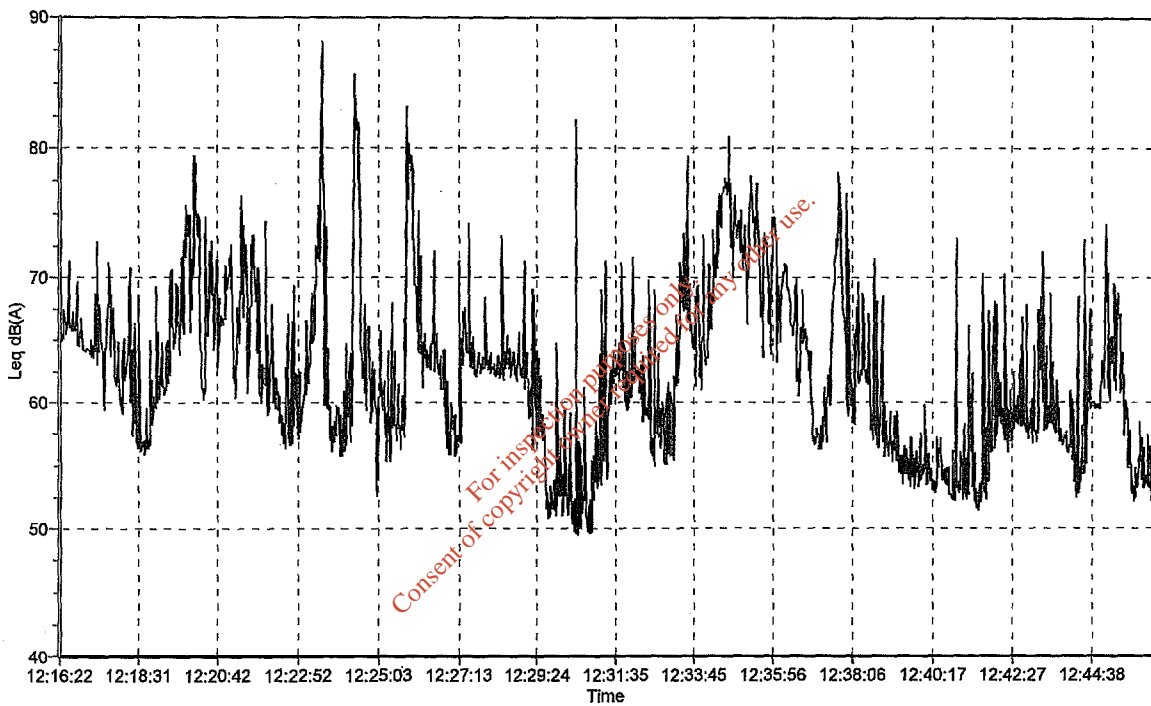
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 12:16:22

Run Time: 00:30:00  
Range: 50-110 dB

Leq 68.3 dBA  
Lepd 56.2 dBA  
LAE 100.6 dBA  
LAFmax 91.7 dBA  
Peak 109.1 dBC

L1.0	L10.0	L50.0	L90.0	L95.0	L99.0
150.0 dBA	75.2 dBA	61.7 dBA	53.2 dBA	51.7 dBA	49.2 dBA



Notes: Noise Measurement Location N-2

Printed: 22/10/04 11:24:46

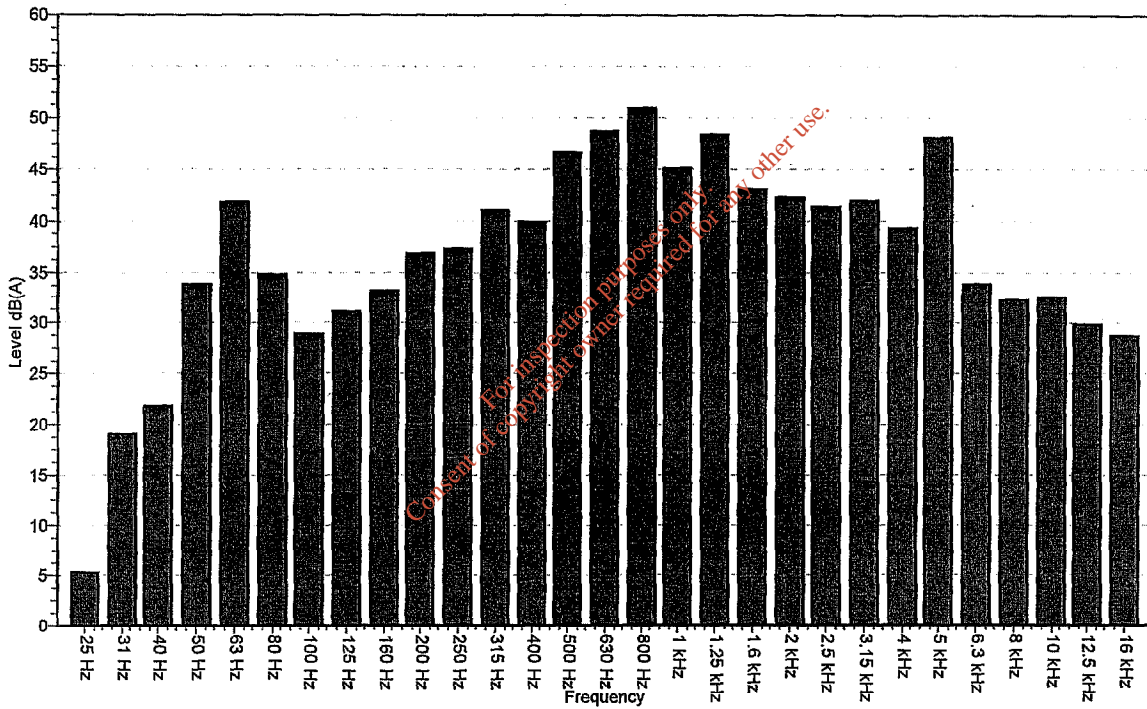
# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 12:48:54

Run Time: 00:04:48  
 Range: 50-110 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	5.3	19.2	22.0	33.8	41.9	34.8	29.0	31.1	33.2	36.8	37.2
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	41.0	40.0	46.7	48.7	50.9	45.1	48.5	43.1	42.3	41.3	42.0
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	39.4	48.1	33.8	32.2	32.5	29.9	28.8	58.3	70.8	72.1	
Duration (s)	9	9	9	9	9	9	9	9	9	9	



Notes: Noise Measurement Location N-2

Printed: 22/10/04 11:26:07

# Noise Measurement Report

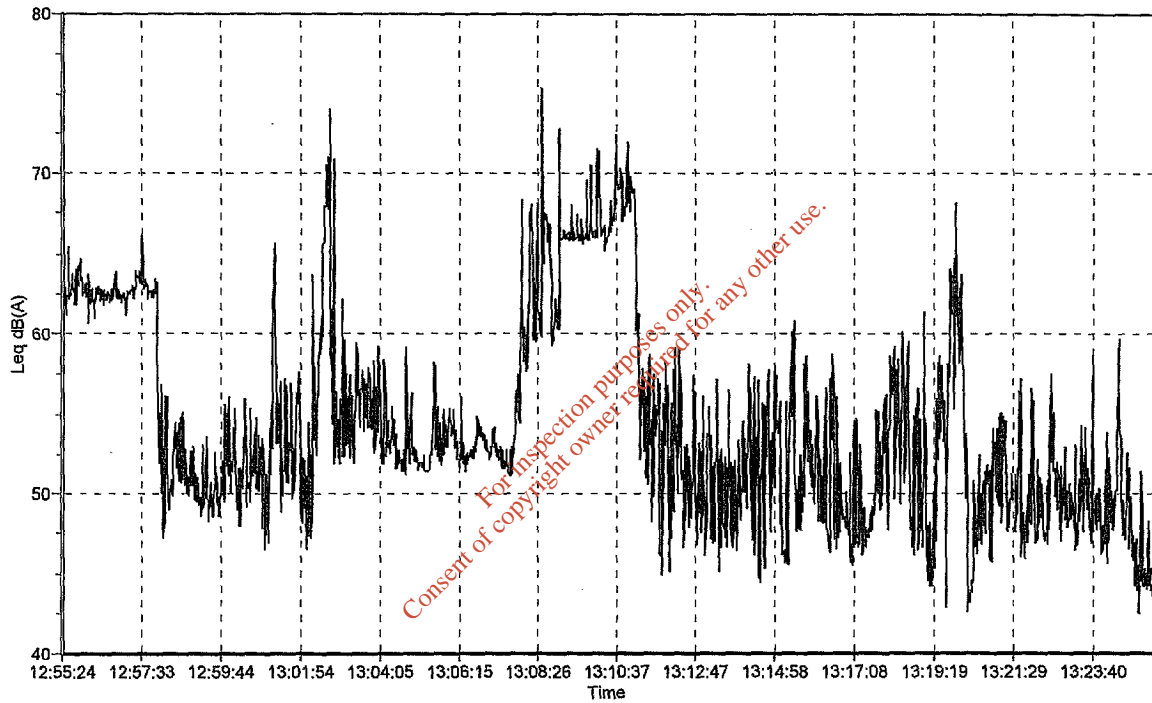
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 12:55:24

Run Time: 00:30:00  
Range: 50-110 dB

Leq 59.8 dBA  
Lepd 47.7 dBA  
LAE 92.1 dBA  
LAFmax 79.5 dBA  
Peak 98.8 dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
150.0 dBA 66.0 dBA 51.7 dBA 45.5 dBA 43.9 dBA 42.1 dBA



Notes: Noise Measurement Location N-3

Printed: 22/10/04 11:27:52

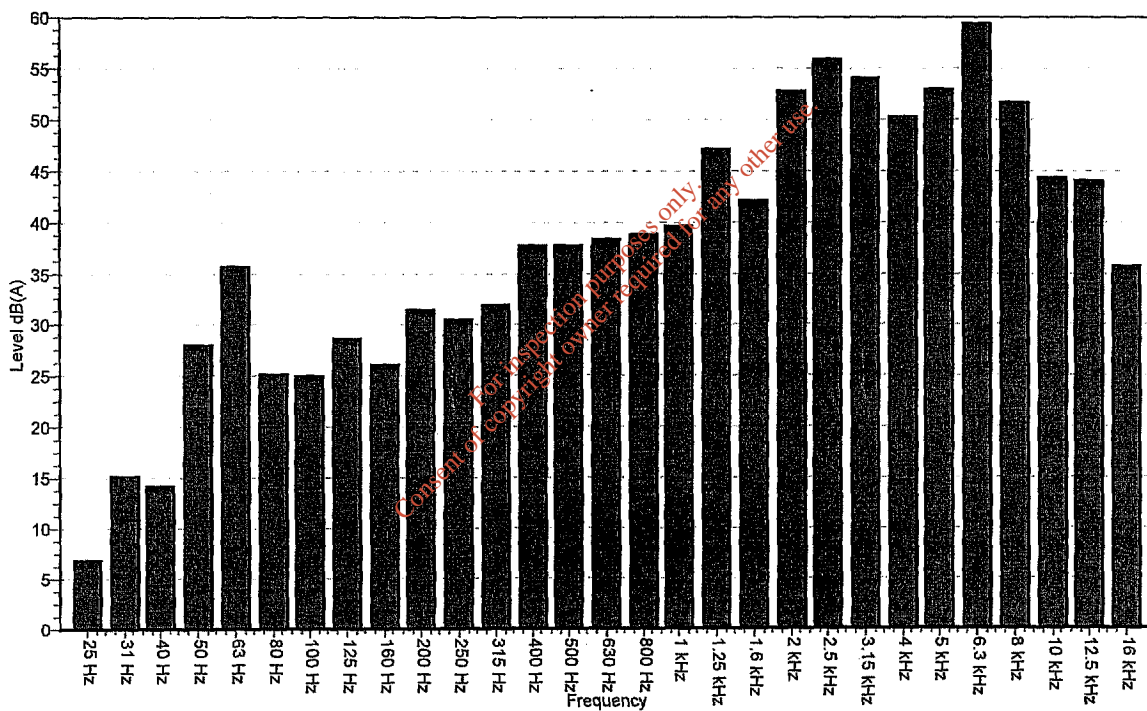
# Noise Measurement Report

Serial No.: B16438FF -Recal Due: 31/12/04

Date: 14/10/04 Time: 13:26:30

Run Time: 00:04:48  
 Range: 50-110 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	6.9	15.1	14.3	28.0	35.7	25.2	25.0	28.6	26.2	31.5	30.5
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	31.9	37.8	37.8	38.4	38.9	39.6	47.2	42.2	52.8	55.9	54.1
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	50.2	53.0	59.4	51.7	44.4	44.0	35.7	72.1	83.5	82.7	
Duration (s)	9	9	9	9	9	9	9	9	9	9	



Notes: Noise Measurement Location N-3

Printed: 22/10/04 11:29:20

# Noise Measurement Report

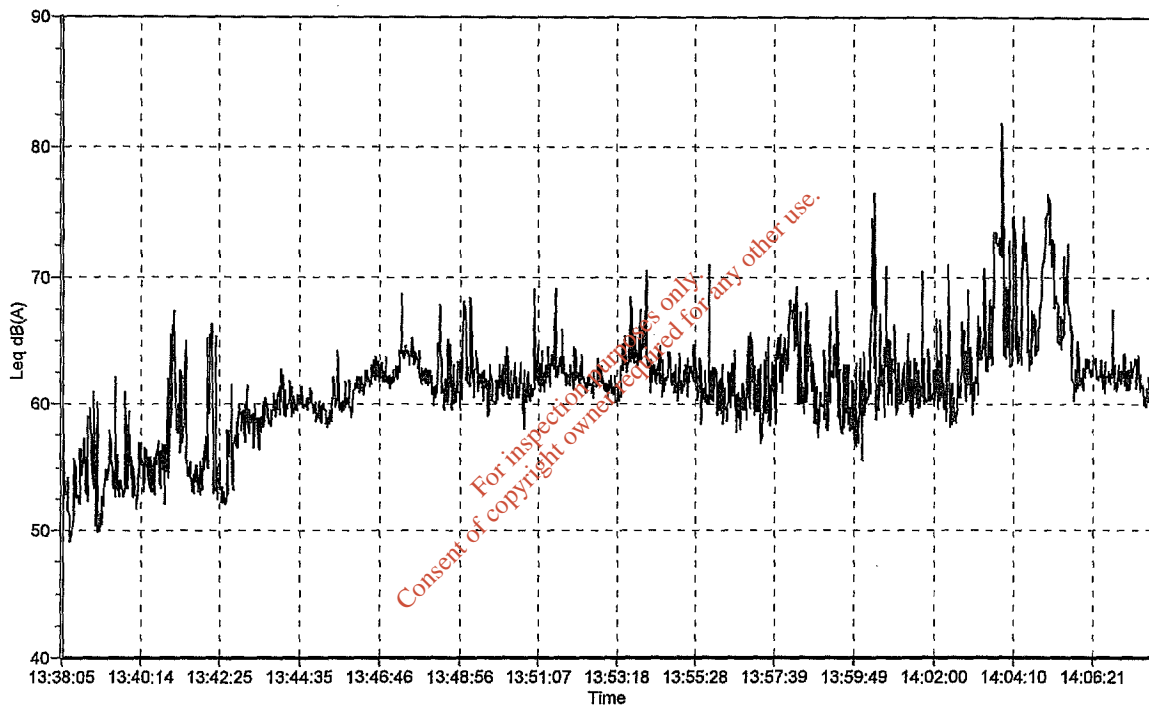
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 13:38:05

Run Time: 00:30:00  
Range: 40-100 dB

Leq 63.7^dBA  
Lepd 51.6^dBA  
LAE 96.0 dBA  
LAFmax 85.6^dBA  
Peak 104.4^dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
150.0^dBA 73.7^dBA 61.6^dBA 55.0^dBA 53.0^dBA 50.0^dBA



Notes: Noise Measurement Location N-4

Printed: 22/10/04 11:31:01

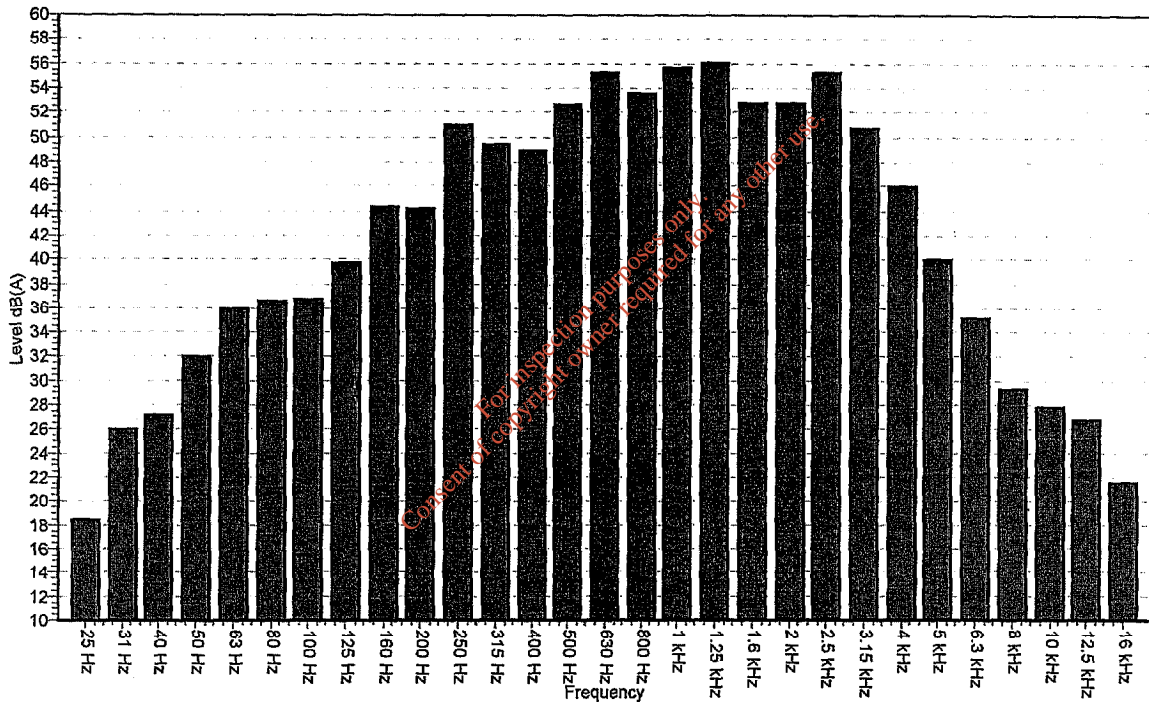
# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 14:09:24

Run Time: 00:04:48  
 Range: 40-100 dB  
 Spectrum: 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	18.5	26.0	27.2	32.0	36.0	36.7	36.8	39.7	44.4	44.2	50.9
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	49.4	48.9	52.6	55.3	53.5	55.7	56.1	52.8	52.9	55.3	50.7
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	46.0	40.1	35.2	29.3	27.9	26.8	21.7	64.0	73.9	77.6	
Duration (s)	9	9	9	9	9	9	9	9	9	9	



Notes: Noise Measurement Location N-4

Printed: 22/10/04 11:32:24

# Noise Measurement Report

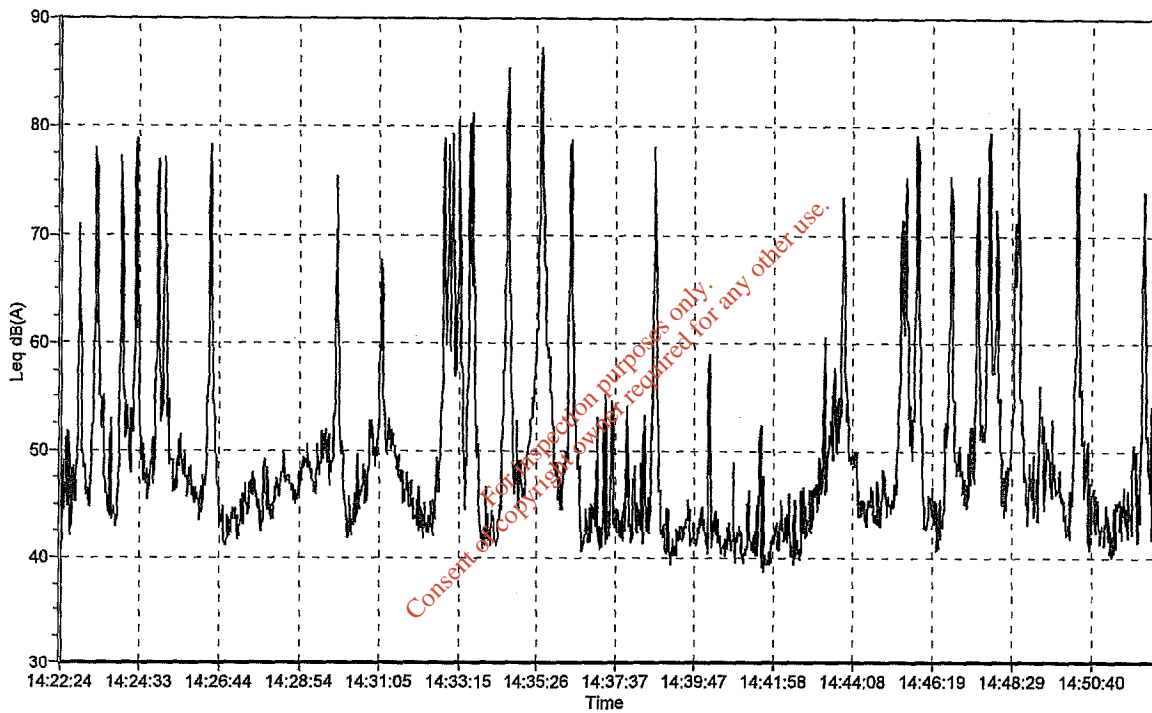
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 14:22:24

Run Time: 00:30:00  
Range: 30-90 dB

Leq 64.3^dBA  
Lepd 52.2^dBA  
LAE 96.6 dBA  
LAFmax 88.6^dBA  
Peak 98.2^dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
59.8^dBA 54.7^dBA 45.6^dBA 40.2^dBA 38.9^dBA 37.4^dBA



Notes: Noise Measurement Location N-5

Printed: 22/10/04 11:33:55

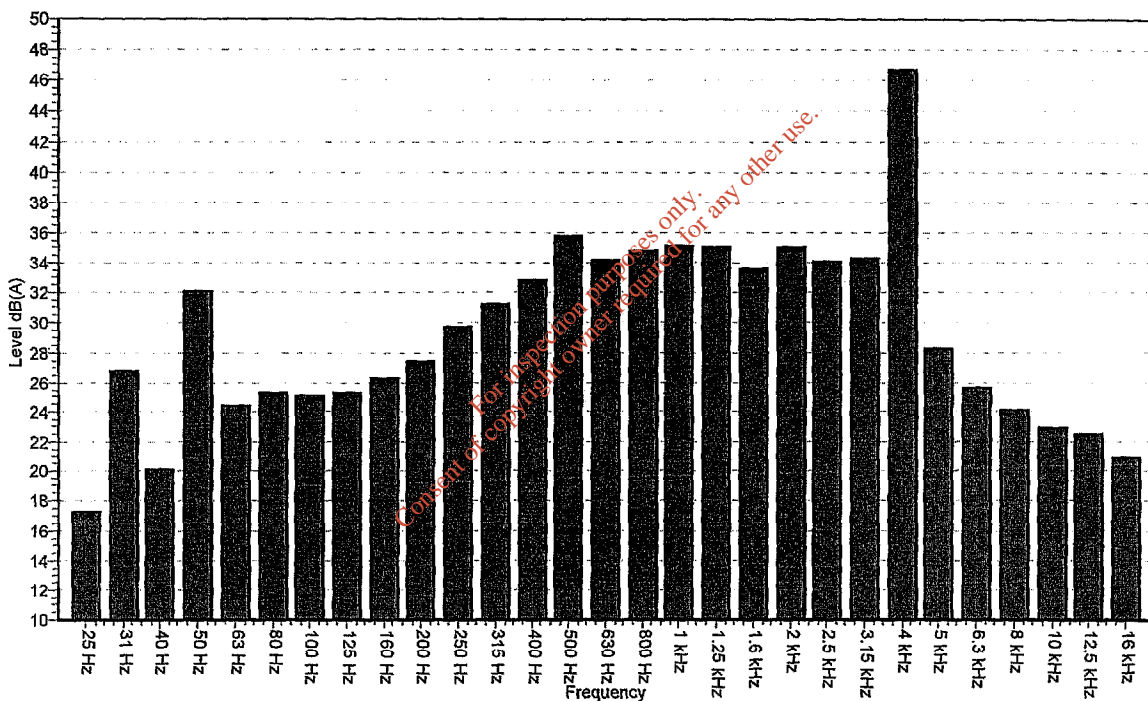
# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 14:53:26

Run Time: 00:04:48  
 Range: 40-100 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	17.3	26.8	20.1	32.1	24.4	25.4	25.2	25.4	26.3	27.4	29.7
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	31.3	32.8	35.7	34.3	34.8	35.1	35.1	33.6	35.1	34.1	34.4
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	46.8	28.3	25.7	24.1	23.0	22.5	21.0	50.0	63.6	70.2	
Duration (s)	9	9	9	9	9	9	9	9	9	9	



Notes: Noise Measurement Location N-5

Printed: 22/10/04 11:36:37



# Noise Measurement Report

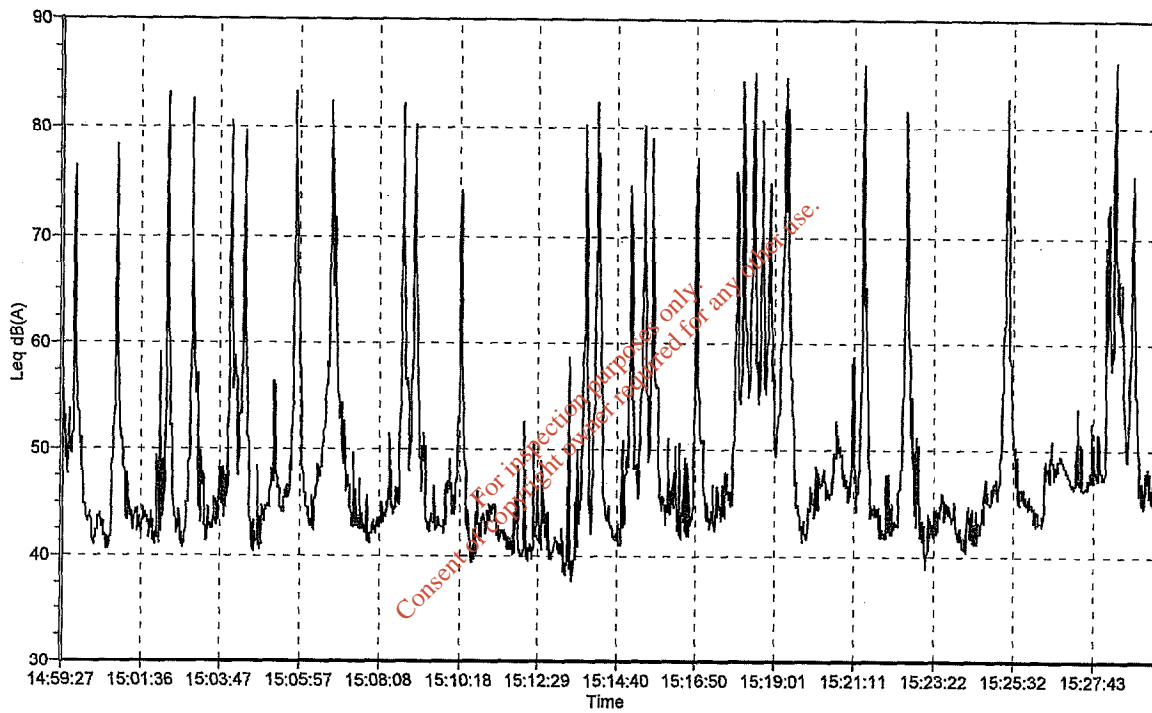
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 14:59:27

Run Time: 00:30:00  
Range: 30-90 dB

Leq 65.9^dBA  
Lepd 53.8^dBA  
LAE 98.2 dBA  
LAFmax 89.1^dBA  
Peak 98.7^dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
150.0^dBA 68.0^dBA 46.1^dBA 41.0^dBA 39.5^dBA 37.1^dBA



Notes: Noise Measurement Location N-6

Printed: 22/10/04 11:38:11

# Noise Measurement Report

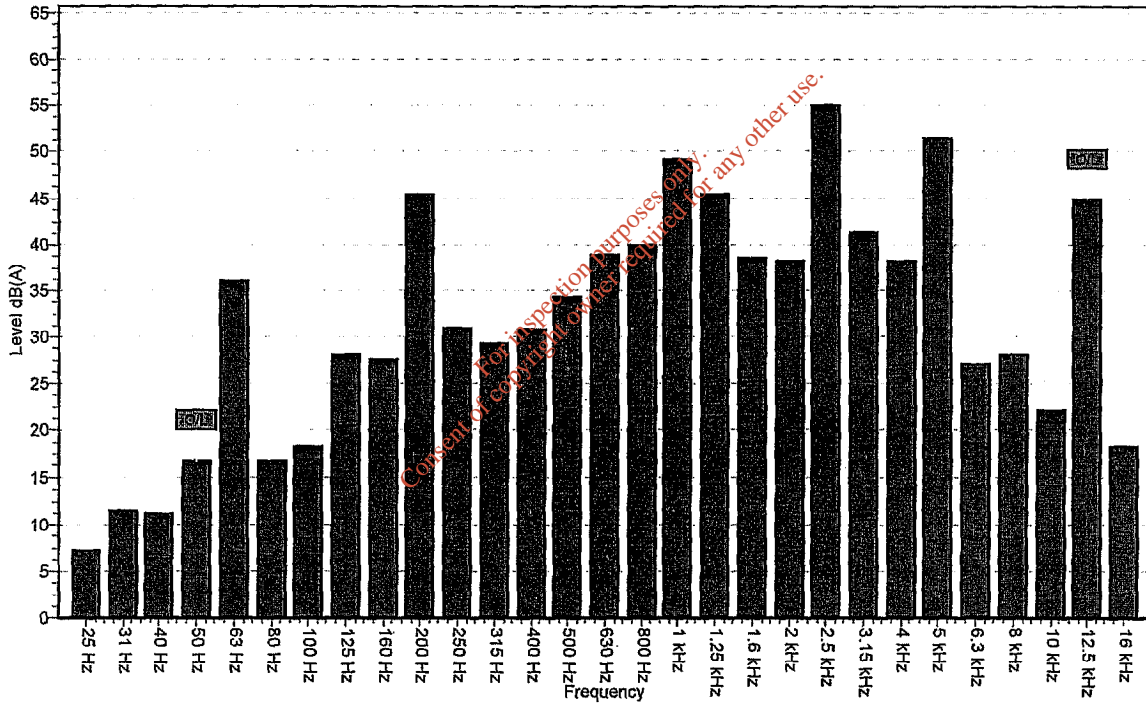
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 15:30:39

Run Time: 00:04:48  
 Range: 40-100 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	7.1	11.4	11.2	16.8 <sup>^</sup>	35.9	16.7	18.3	28.0	27.6	45.4	31.1
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	29.3	30.8	34.3	38.9	40.0	49.2	45.4	38.6	38.2	54.9	41.3
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCEq	LZeq	
Level (dB)	38.3	51.5	27.1	28.2	22.2	44.9 <sup>^</sup>	18.4	49.1	62.8	65.7	
Duration (s)	9	9	9	9	9	9	9	9	9	9	

<sup>^</sup> indicates overload



Notes: Noise Measurement Location N-6

Printed: 22/10/04 11:39:47

# Noise Measurement Report

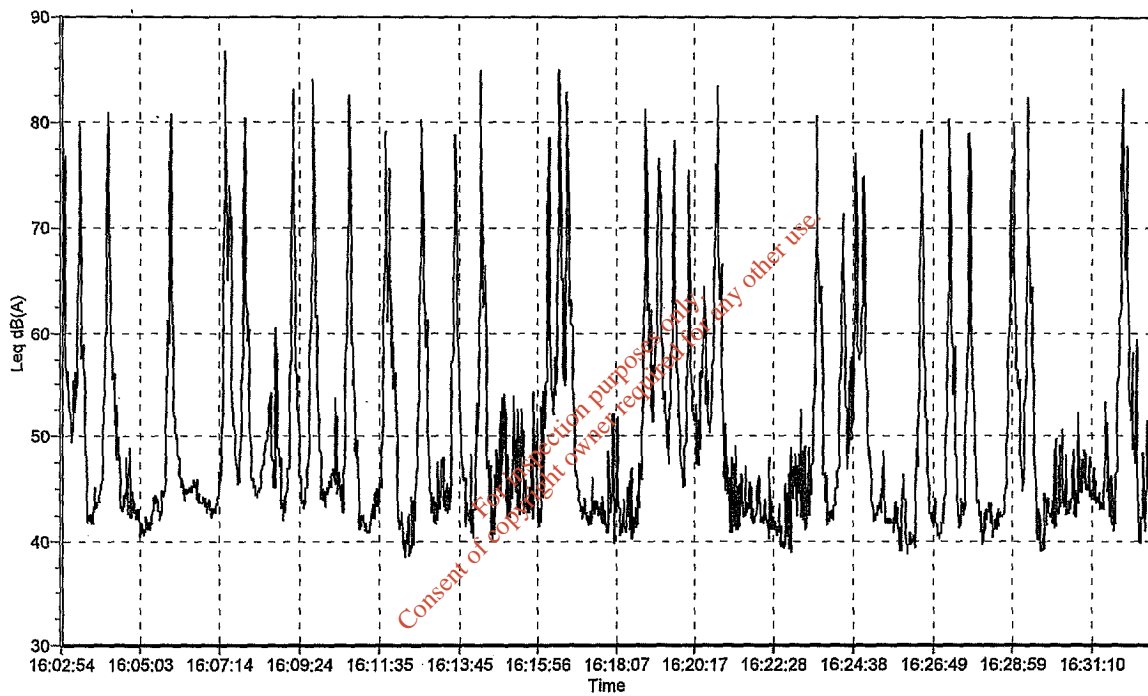
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 16:02:54

Run Time: 00:30:00  
Range: 30-90 dB

Leq 66.5<sup>^</sup>dba  
Lepd 54.5<sup>^</sup>dba  
LAE 98.8 dbA  
LAFmax 89.4<sup>^</sup>dba  
Peak 98.3<sup>^</sup>dbc

L1.0	L10.0	L50.0	L90.0	L95.0	L99.0
80.0 <sup>^</sup> dba	63.9 <sup>^</sup> dba	45.6 <sup>^</sup> dba	41.2 <sup>^</sup> dba	40.5 <sup>^</sup> dba	39.2 <sup>^</sup> dba



Notes: Noise Measurement Location N-7

Printed: 22/10/04 11:41:10

# Noise Measurement Report

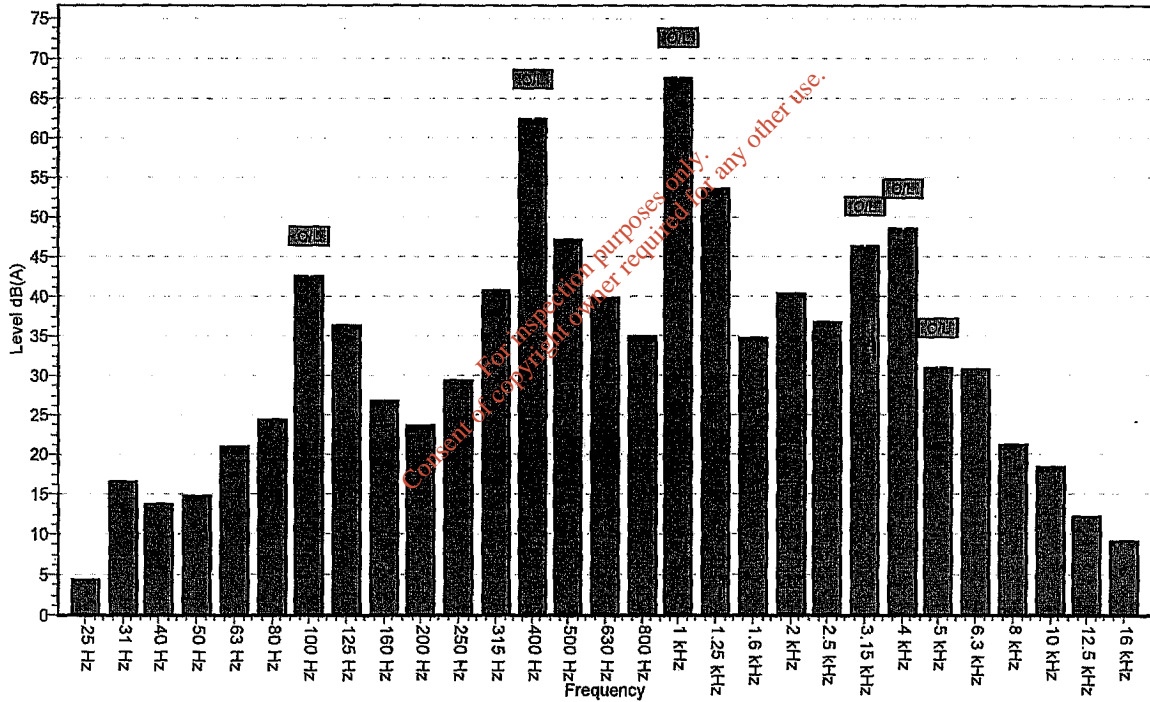
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 16:33:59

Run Time: 00:04:48  
 Range: 30-90 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	4.3	16.5	13.8	14.8	21.0	24.5	42.6 <sup>^</sup>	36.4	26.8	23.6	29.5
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	40.9	62.5 <sup>^</sup>	47.2	39.8	35.0	67.6 <sup>^</sup>	53.5	34.9	40.5	36.8	46.4 <sup>^</sup>
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	48.5 <sup>^</sup>	31.1 <sup>^</sup>	30.7	21.1	18.4	12.2	9.1	42.7	56.4	69.9 <sup>^</sup>	
Duration (s)	9	9	9	9	9	9	9	9	9	9	

<sup>^</sup> indicates overload



Notes: Noise Measurement Location N-7

Printed: 22/10/04 11:42:40

# Noise Measurement Report

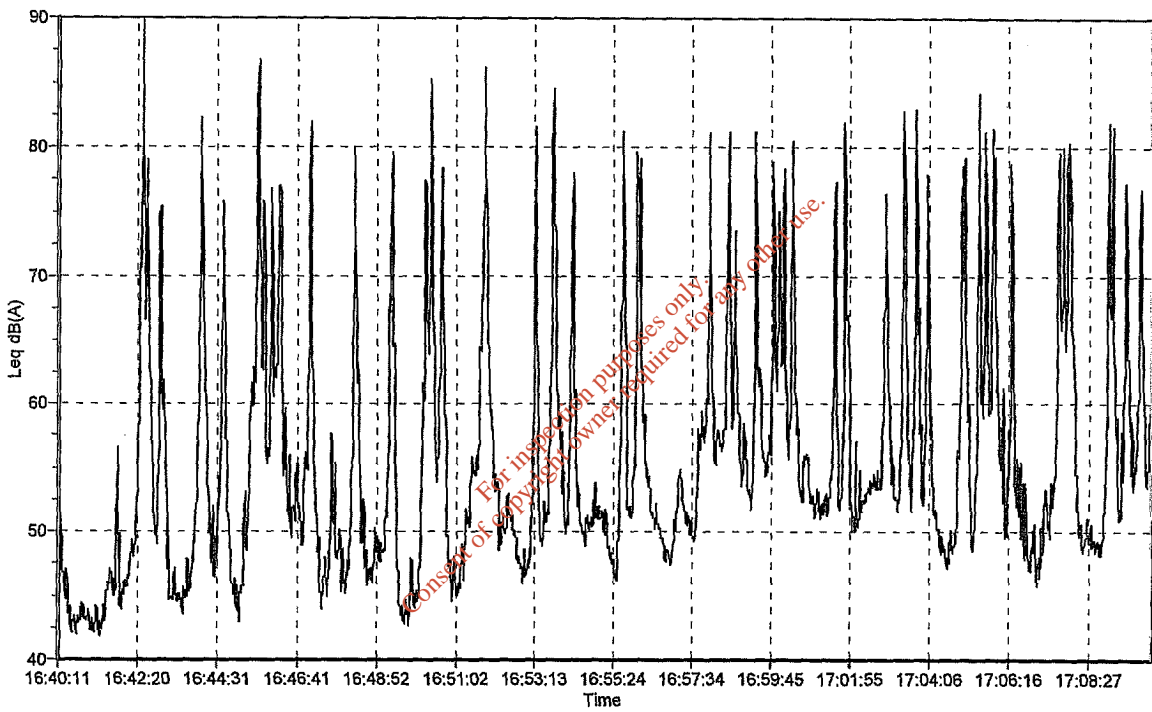
Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 16:40:11

Run Time: 00:30:00  
Range: 30-90 dB

Leq 68.5<sup>^</sup>dB  
Lepd 56.4<sup>^</sup>dB  
LAE 100.8 dB  
LAFmax 92.3<sup>^</sup>dB  
Peak 98.8<sup>^</sup>dB

L1.0 L1.0 L50.0 L90.0 L95.0 L99.0  
150.0<sup>^</sup>dB 75.7<sup>^</sup>dB 53.3<sup>^</sup>dB 45.5<sup>^</sup>dB 44.0<sup>^</sup>dB 42.2<sup>^</sup>dB



Notes: Noise Measurement Location N-8

Printed: 22/10/04 11:44:23

# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

Date: 14/10/04 Time: 17:11:37

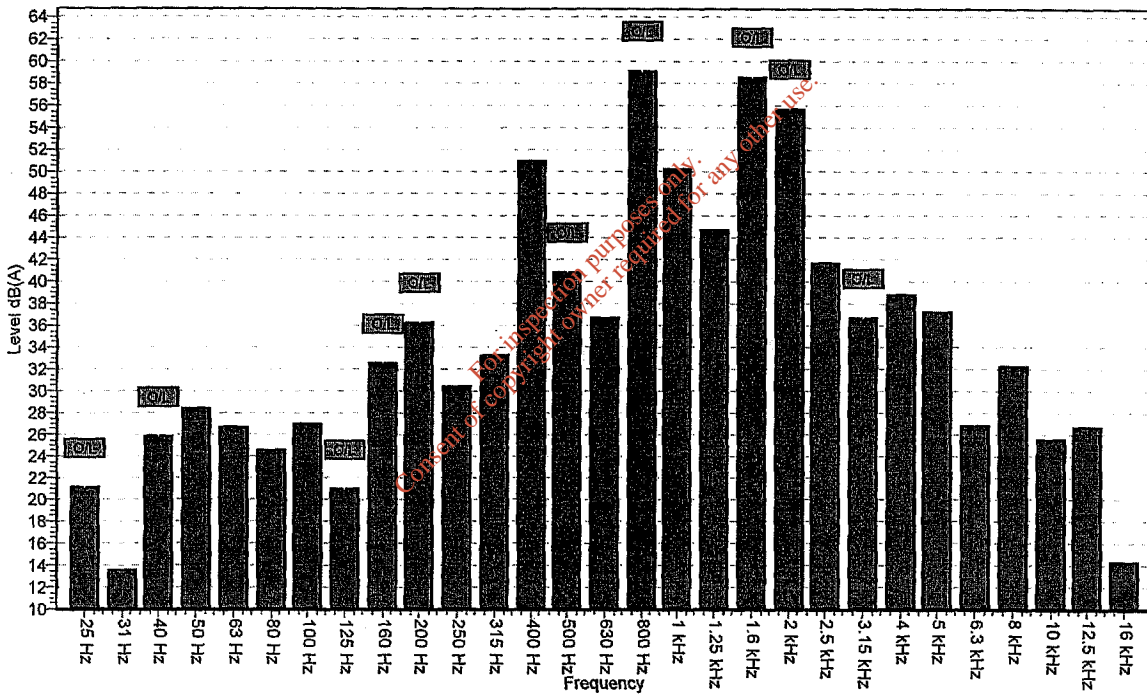
Run Time: 00:04:48  
 Range: 30-90 dB  
 Spectrum: 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	21.2 <sup>^</sup>	13.6	25.9 <sup>^</sup>	28.4	26.8	24.5	27.0	21.0 <sup>^</sup>	32.6 <sup>^</sup>	36.3 <sup>^</sup>	30.5
Duration (s)	9	9	9	9	9	9	9	9	9	9	9

Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	33.4	51.0	40.8 <sup>^</sup>	36.8	59.1 <sup>^</sup>	50.4	44.8	58.6 <sup>^</sup>	55.8 <sup>^</sup>	41.7	36.8 <sup>^</sup>
Duration (s)	9	9	9	9	9	9	9	9	9	9	9

Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq
Level (dB)	38.8	37.3	26.8	32.3	25.6	26.6	14.3	56.4 <sup>^</sup>	72.0	77.7 <sup>^</sup>
Duration (s)	9	9	9	9	9	9	9	9	9	9

<sup>^</sup> indicates overload



Notes: Noise Measurement Location N-8

Printed: 22/10/04 11:45:48

# Noise Measurement Report

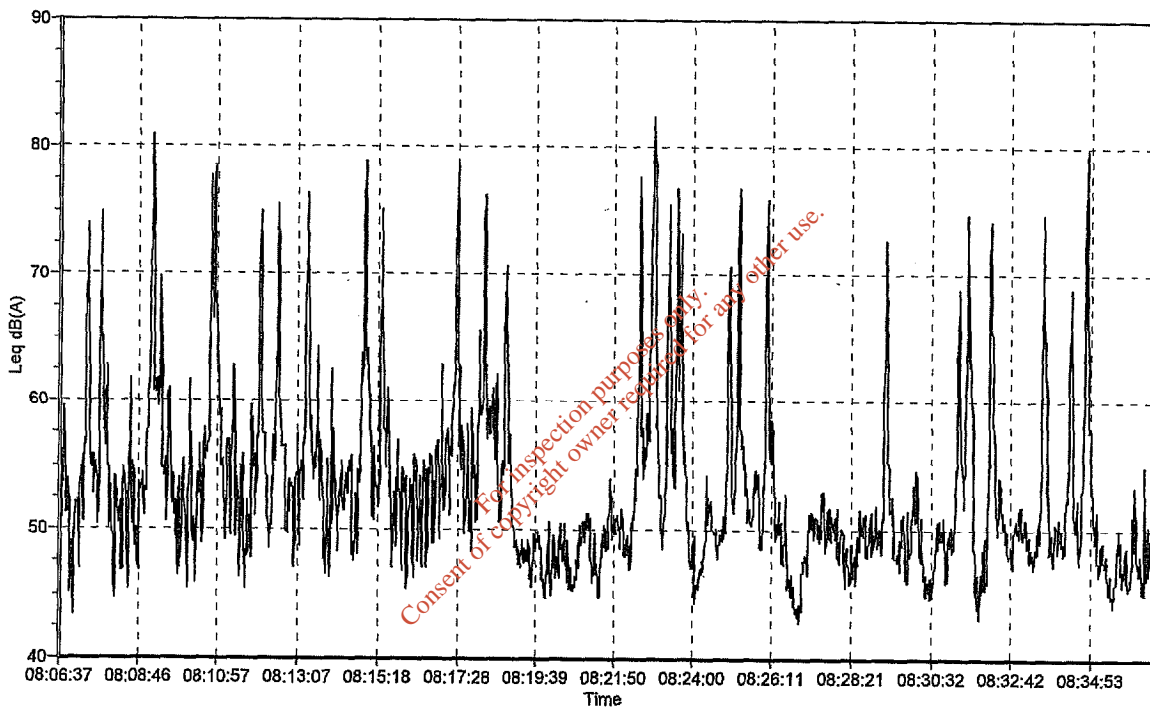
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 08:06:37

Run Time: 00:30:00  
Range: 30-90 dB

Leq 62.6^dBA  
Lepd 50.6^dBA  
LAE 94.9 dBA  
LAFmax 83.9^dBA  
Peak 96.1^dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
75.9^dBA 61.7^dBA 51.2^dBA 46.6^dBA 45.6^dBA 44.0^dBA



Notes: Noise Measurement Location N-9

Printed: 22/10/04 11:54:01

# Noise Measurement Report

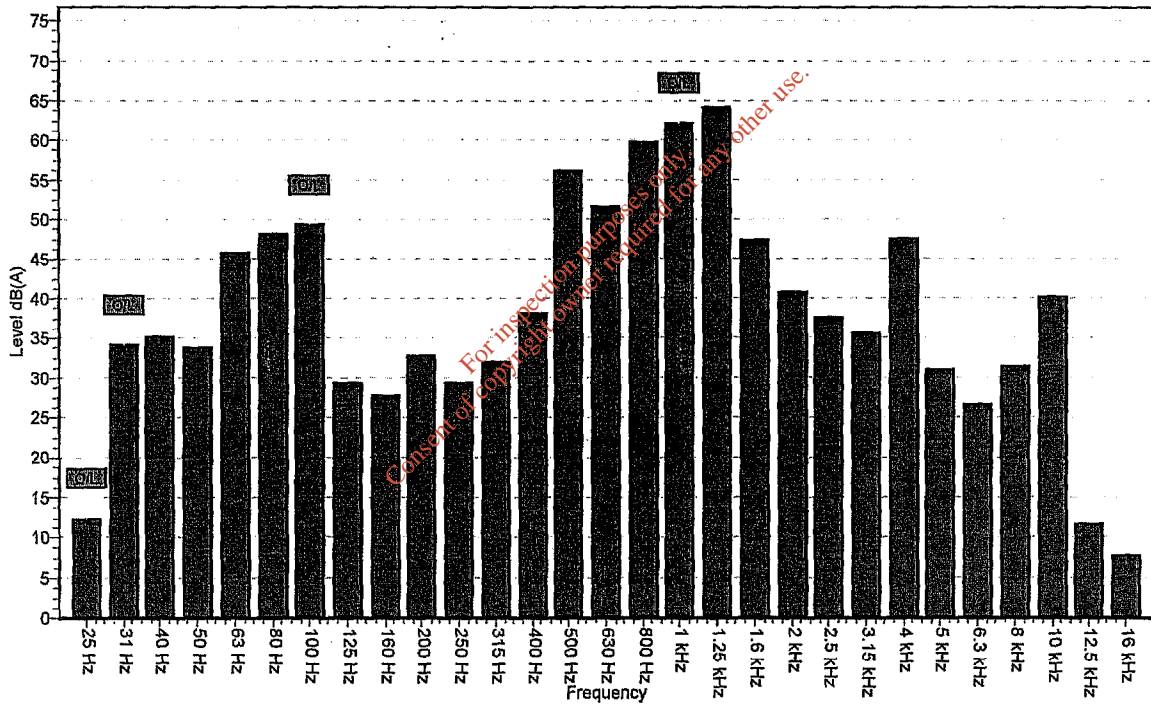
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 08:37:52

Run Time: 00:04:48  
 Range: 30-90 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	12.4 <sup>^</sup>	34.2 <sup>^</sup>	35.2	33.7	45.9	48.2	49.4 <sup>^</sup>	29.3	27.8	32.8	29.5
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	31.9	38.2	56.2	51.6	59.8	62.2 <sup>^</sup>	64.1	47.5	40.8	37.5	35.5
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	47.7	31.0	26.7	31.4	40.1	11.8	7.9	49.6	62.5	69.3 <sup>^</sup>	
Duration (s)	9	9	9	9	9	9	9	9	9	9	

<sup>^</sup> indicates overload



Notes: Noise Measurement Location N-9

Printed: 22/10/04 11:55:36



# Noise Measurement Report

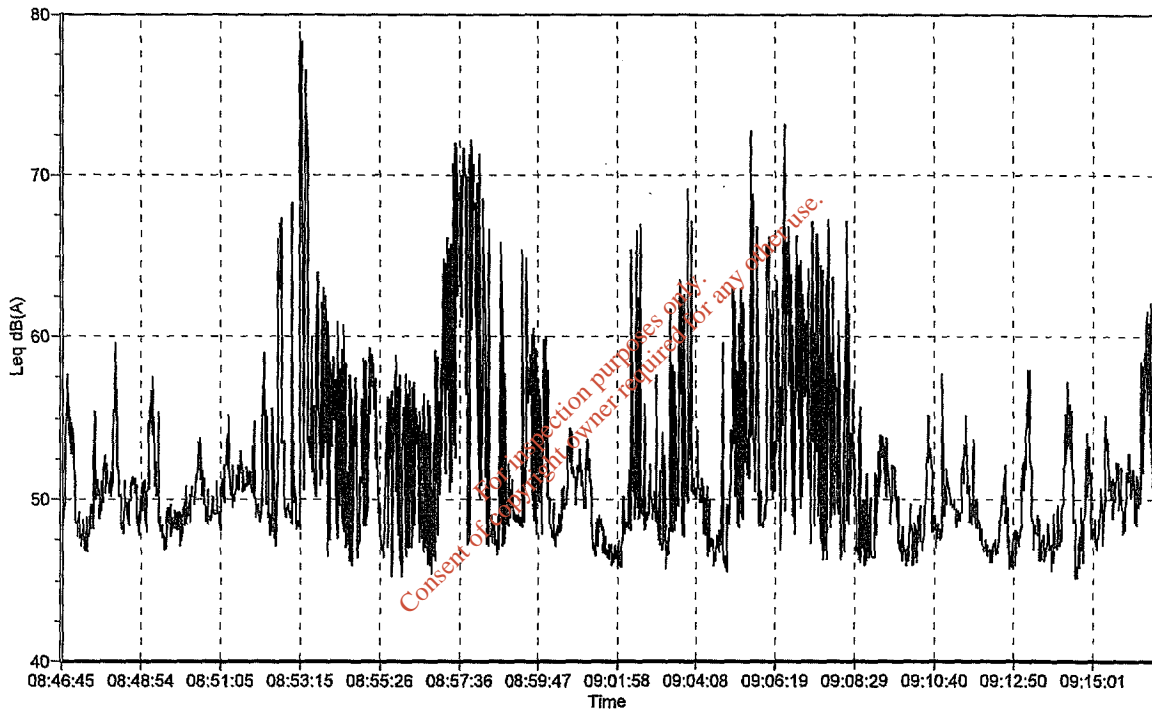
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 08:46:45

Run Time: 00:30:00  
Range: 30-90 dB

Leq 58.5^dBA  
Lepd 46.5^dBA  
LAE 90.9 dBA  
LAFmax 86.7^dBA  
Peak 96.8^dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
150.0^dBA 67.3^dBA 50.2^dBA 46.9^dBA 46.3^dBA 45.5^dBA



Notes: Noise Measurement Location N-10

Printed: 22/10/04 11:57:18

# Noise Measurement Report

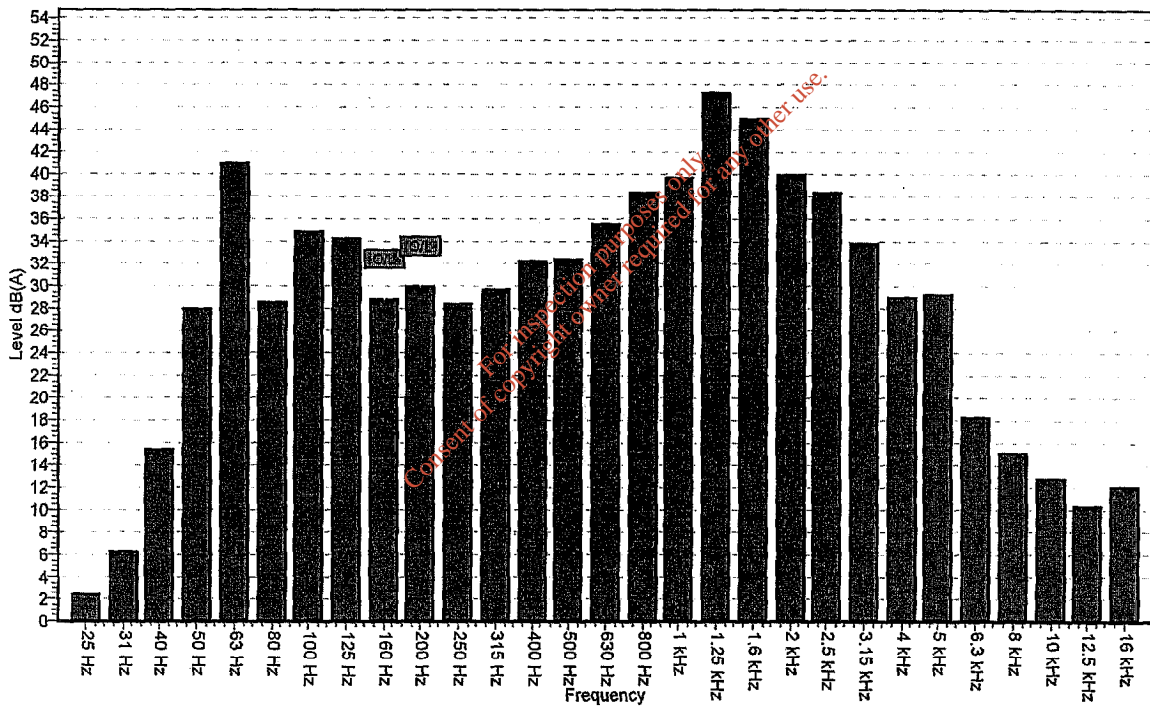
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 09:21:28

Run Time: 00:04:48  
 Range: 30-90 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	2.5	6.3	15.5	28.0	41.0	28.5	34.9	34.3	28.9 <sup>^</sup>	30.0 <sup>^</sup>	28.4
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	29.7	32.3	32.4	35.6	38.4	39.6	47.3	45.0	40.0	38.4	33.9
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	29.1	29.4	18.3	15.1	12.8	10.4	12.2	45.6	56.0	60.4	
Duration (s)	9	9	9	9	9	9	9	9	9	9	

<sup>^</sup> indicates overload



Notes: Noise Measurement Location N-10

Printed: 22/10/04 11:58:52

# Noise Measurement Report

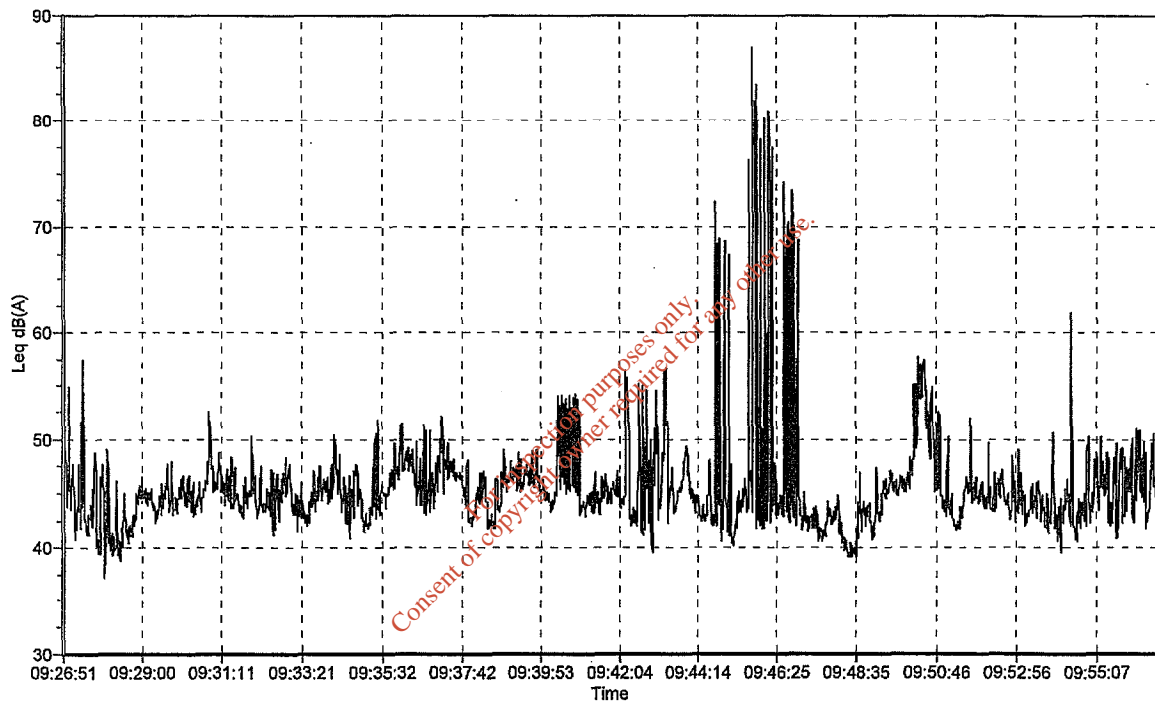
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 09:26:51

Run Time: 00:30:00  
Range: 30-90 dB

Leq 60.6^dBA  
Lepd 48.5^dBA  
LAE 92.9 dBA  
LAFmax 91.4^dBA  
Peak 95.6^dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
150.0^dBA 50.8^dBA 44.5^dBA 41.1^dBA 39.8^dBA 37.6^dBA



Notes: Noise Measurement Location N-11

Printed: 22/10/04 12:00:29

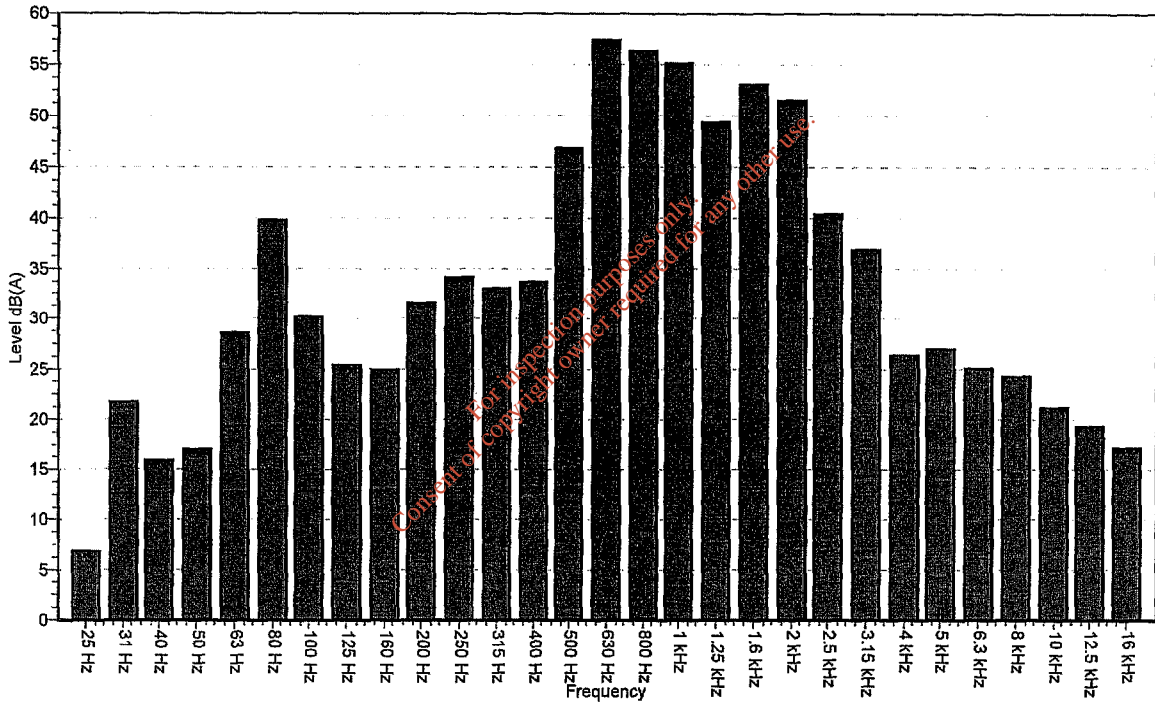
# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 09:57:53

Run Time: 00:04:48  
 Range: 40-100 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	6.8	21.7	16.0	17.0	28.6	39.8	30.2	25.5	25.0	31.6	34.1
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	33.1	33.6	46.8	57.5	56.3	55.1	49.4	53.2	51.5	40.4	36.8
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	26.5	27.2	25.2	24.4	21.3	19.4	17.3	66.3	64.7	66.8	
Duration (s)	9	9	9	9	9	9	9	9	9	9	



Notes: Noise Measurement Location N-11

Printed: 22/10/04 12:01:57

# Noise Measurement Report

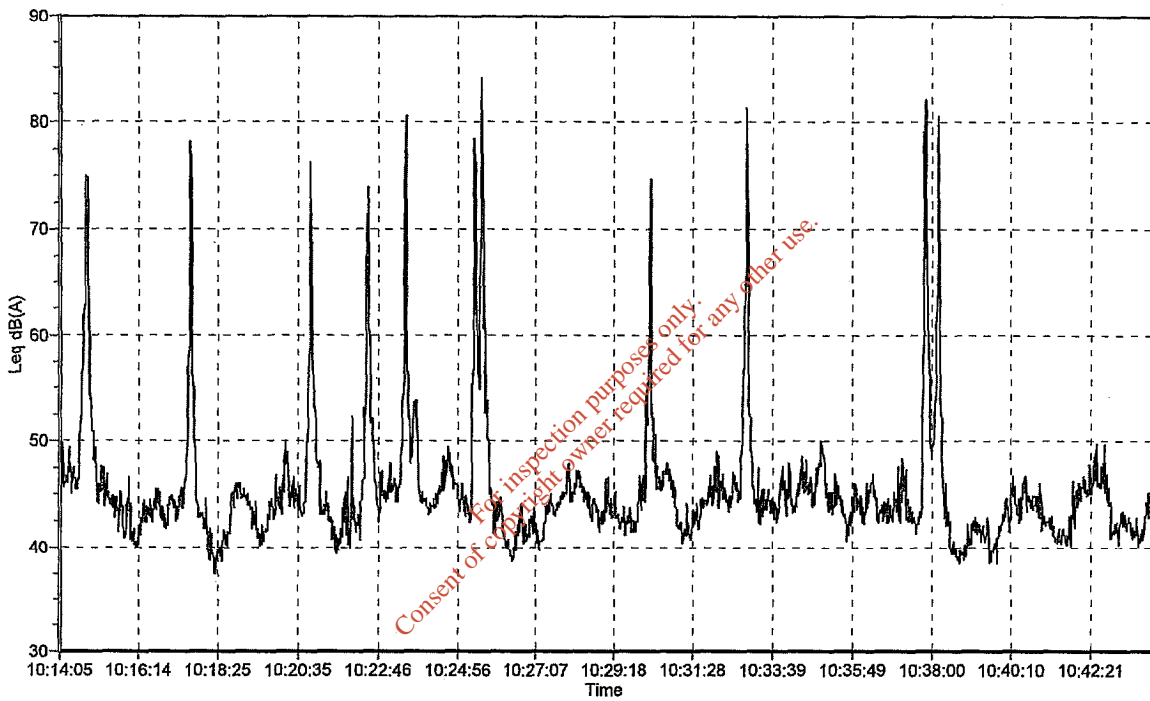
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 10:14:05

Run Time: 00:30:00  
Range: 30-90 dB

Leq 60.0<sup>^</sup>dB(A)  
Lepd 48.0<sup>^</sup>dB(A)  
LAE 92.4 dB(A)  
LAFmax 88.1<sup>^</sup>dB(A)  
Peak 98.0<sup>^</sup>dB(C)

L1.0	L10.0	L50.0	L90.0	L95.0	L99.0
63.6 <sup>^</sup> dB(A)	48.7 <sup>^</sup> dB(A)	43.9 <sup>^</sup> dB(A)	40.6 <sup>^</sup> dB(A)	39.6 <sup>^</sup> dB(A)	37.5 <sup>^</sup> dB(A)



Notes: Noise Measurement Location N-12

Printed: 22/10/04 12:03:17

# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

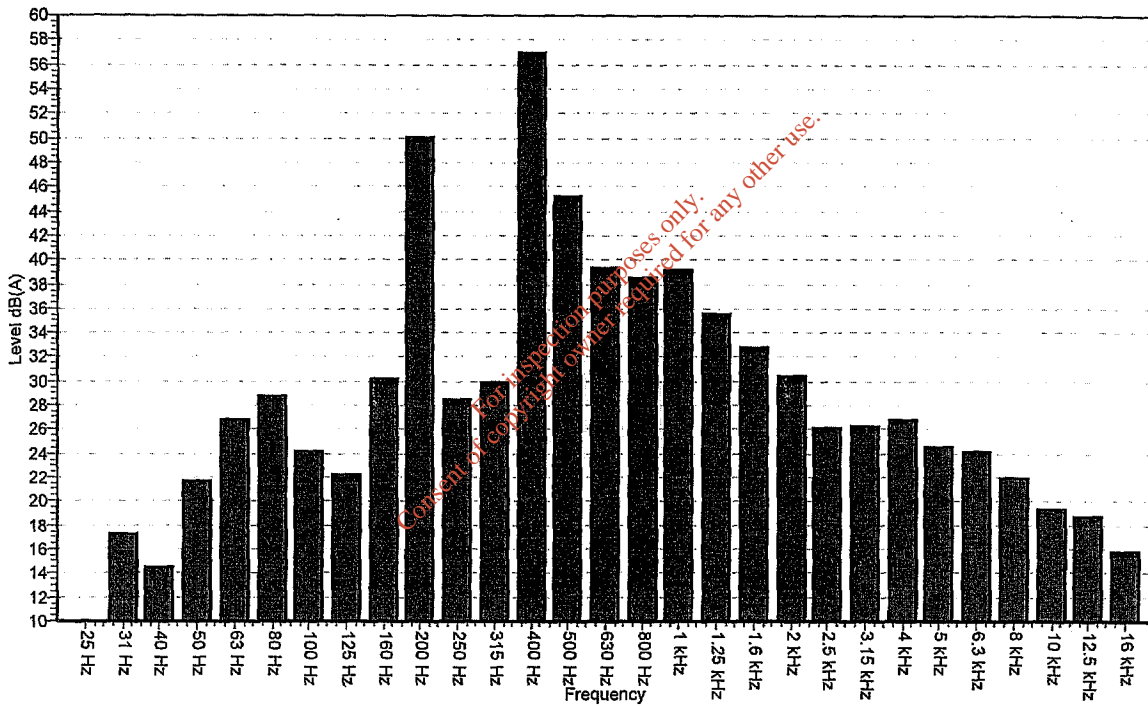
Date: 15/10/04 Time: 10:45:27

Run Time: 00:04:48  
 Range: 40-100 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	10.0	17.3	14.6	21.7	26.8	28.8	24.3	22.3	30.2	50.1	28.6
Duration (s)	9	9	9	9	9	9	9	9	9	9	9

Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	30.0	57.0	45.2	39.3	38.6	39.3	35.5	32.8	30.5	26.1	26.3
Duration (s)	9	9	9	9	9	9	9	9	9	9	9

Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq
Level (dB)	26.8	24.6	24.2	22.0	19.4	18.8	15.9	69.8	62.2	73.1
Duration (s)	9	9	9	9	9	9	9	9	9	9



Notes: Noise Measurement Location N-12

Printed: 22/10/04 12:04:51

# Noise Measurement Report

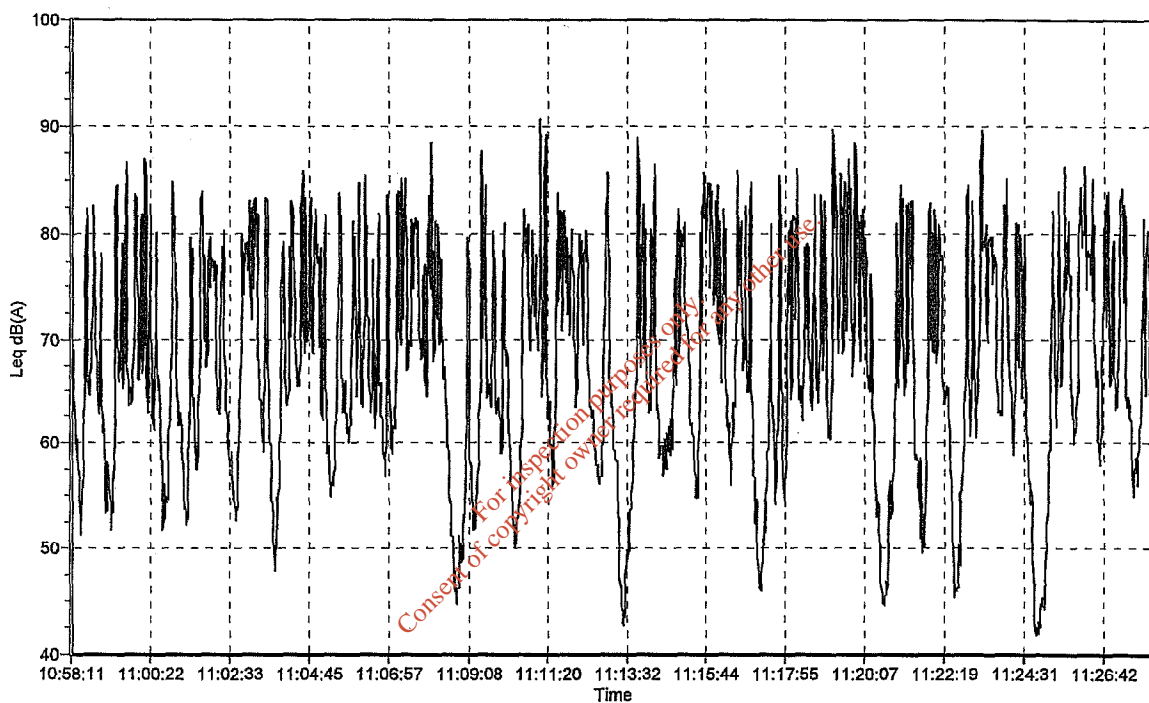
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 10:58:11

Run Time: 00:30:00  
Range: 50-110 dB

Leq 76.4 dBA  
Lepd 64.3 dBA  
LAE 108.7 dBA  
LAFmax 94.6 dBA  
Peak 111.5 dBC

L1.0 L10.0 L50.0 L90.0 L95.0 L99.0  
150.0 dBA 84.6 dBA 67.3 dBA 52.1 dBA 47.7 dBA 42.6 dBA



Notes: Noise Measurement Location N-13

Printed: 22/10/04 12:06:23

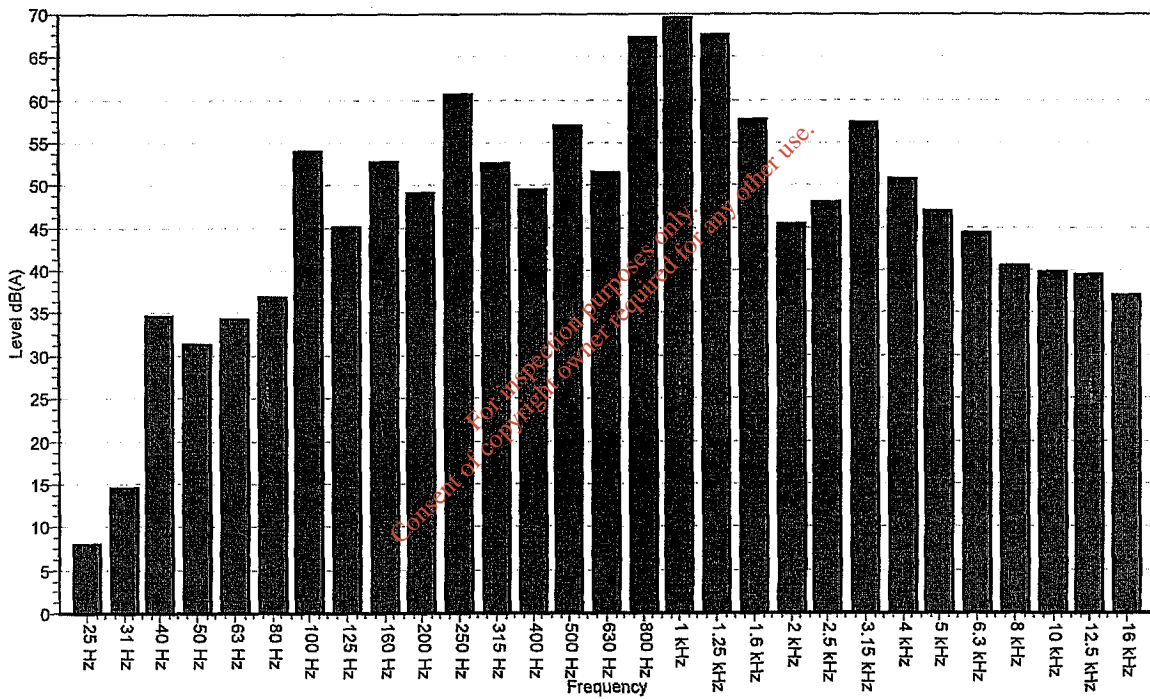
# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 11:29:13

Run Time: 00:04:48  
 Range: 60-120 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	8.1	14.7	34.8	31.4	34.3	37.0	54.0	45.2	52.9	49.1	60.6
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	52.7	49.6	56.9	51.5	67.2	69.6	67.6	57.8	45.6	48.1	57.4
Duration (s)	9	9	9	9	9	9	9	9	9	9	9
Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	LAeq	LCeq	LZeq	
Level (dB)	50.9	47.0	44.5	40.5	39.8	39.5	37.1	79.0	82.5	83.6	
Duration (s)	9	9	9	9	9	9	9	9	9	9	



Notes: Noise Measurement Location N-13

Printed: 22/10/04 12:07:39



# Noise Measurement Report

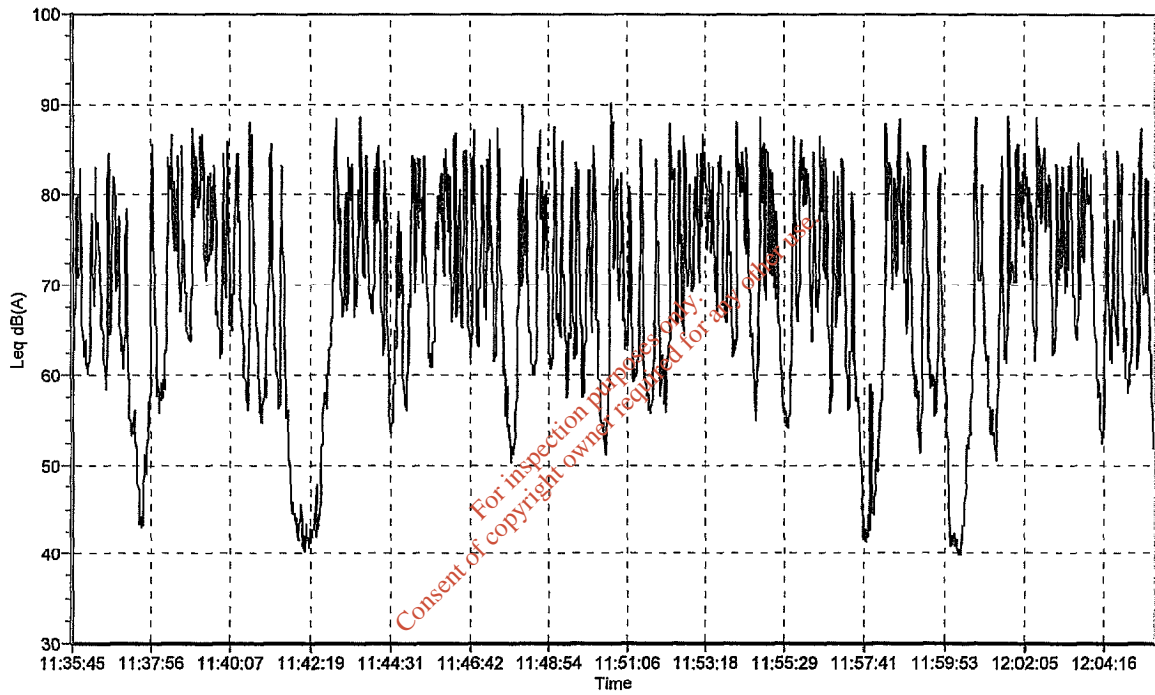
Serial No.: B16438FF Recal Due: 31/12/04

Date: 15/10/04 Time: 11:35:45

Run Time: 00:30:00  
Range: 50-110 dB

Leq 77.6 dBA  
Lepd 65.5 dBA  
LAE 109.9 dBA  
LAFmax 92.3 dBA  
Peak 108.8 dBC

L1.0	L10.0	L50.0	L90.0	L95.0	L99.0
87.0 dBA	81.9 dBA	66.9 dBA	48.5 dBA	44.5 dBA	40.5 dBA



Notes: Noise Measurement Location N-14

Printed: 22/10/04 12:08:59

# Noise Measurement Report

Serial No.: B16438FF Recal Due: 31/12/04

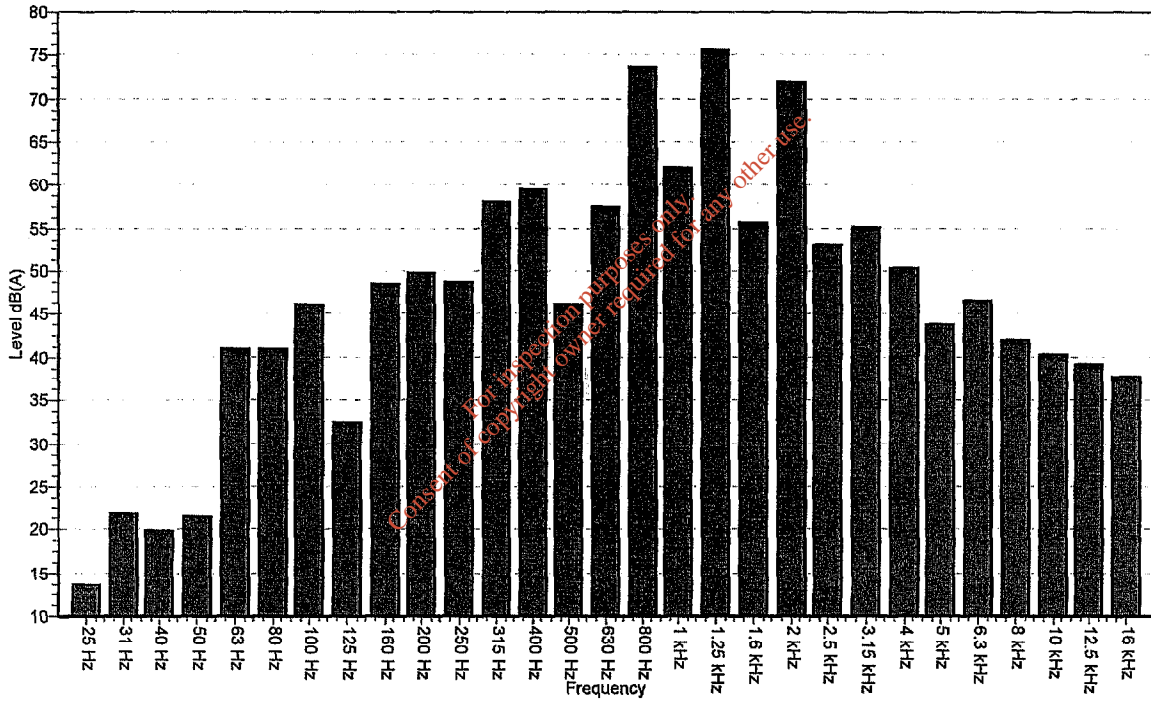
Date: 15/10/04 Time: 12:13:44

Run Time: 00:04:48  
 Range: 60-120 dB  
 Spectrum 'A' weighted

Measurement	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz
Level (dB)	13.6	21.9	19.9	21.5	41.0	41.1	46.2	32.5	48.7	49.8	48.7
Duration (s)	9	9	9	9	9	9	9	9	9	9	9

Measurement	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz
Level (dB)	58.1	59.6	46.2	57.5	73.6	62.0	75.6	55.7	72.0	53.1	55.2
Duration (s)	9	9	9	9	9	9	9	9	9	9	9

Measurement	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	L'Aeq	LCeq	LZeq
Level (dB)	50.4	43.9	46.5	41.9	40.4	39.3	37.7	69.3	82.9	77.8
Duration (s)	9	9	9	9	9	9	9	9	9	9



Notes: Noise Measurement Location N-14

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## APPENDIX 2

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# Certificate of Calibration



## Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	Sound Level Meter
Model Number	CR:831A
Serial Number	B16438FF

## 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 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 National Standards.

The Cirrus Research plc calibration laboratory standards are:

Microphone Type	B&K4180	Serial Number	1893453	Calibration Ref.	S 5008
Pistonphone Type	B&K4220	Serial Number	613843	Calibration Ref.	S 5009

Calibrated By

*T.A. Goodie*

Calibration Date

3 December 2003

Calibration Certificate Number

124711

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

Acoustic House Bridlington Road Hunmanby North Yorkshire YO14 0PH  
Telephone 01723 891655 Fax 01723 891742

## APPENDIX 3

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## GLOSSARY

### Ambient Noise

Totally encompassing sound in a given situation at a given time usually composed of a sound from many sources near and far.

### Background noise level

The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval, T measured using time weighting F, and quoted to the nearest whole number of decibels.

### **Day:**

0800 hrs to 2200 hrs

### **Night:**

2200 hrs to 0800 hrs

### Decibel (dB)

The unit of sound pressure level, calculated as a logarithm of the intensity of sound. 0 dB is the threshold of hearing, 140 dB is the threshold of pain. A change of 1 dB is detectable only under laboratory conditions. A change of 10 dB corresponds approximately to halving or doubling the loudness of sound.

### dB(A)

Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sound of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with peoples assessment of loudness.

### Hertz (Hz)

Unit of frequency (pitch) of a sound.

### Impulsive Noise

A noise which is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background.

### 1/3 Octave band analysis

Frequency analysis of sound such that the frequency spectrum is sub divided into bands of one third of an octave each. An octave is taken to be the frequency interval, the upper limit of which is twice the lower limit (in Hertz).

### $L_{Aeq}$

Equivalent Continuous A-weighted Sound Level. The continuous steady noise level, which would have the same total A-weighted acoustic energy as the real fluctuating noise measured over the same period of time.

### **L(A)<sub>10</sub>**

The noise level that is equaled or exceeded for 10% of the measurement period.

### **L(A)<sub>90</sub>**

The noise level that is equaled or exceeded for 90% of the measurement period.

### **Noise**

Unwanted sound. Any sound which has the potential to cause disturbance, discomfort or psychological stress to a subject exposed to it, or any sound which has the potential to cause actual physiological harm to a subject exposed to it or physical damage to any structure exposed to it, is known as noise.

### **Noise Sensitive Receptor**

A noise sensitive receptor is regarded as any dwelling house, hotel or hostel, health building, educational establishment, places of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.

### **Rating level L<sub>A,T</sub>**

The specific noise level plus any adjustment for the characteristic features of the noise.

### **Residual Noise**

The ambient noise remaining at a given position in a given situation when the specific noise source is suppressed to a degree such that it does not contribute to the ambient noise.

### **Sound Power**

The energy output from a source. It is measured in Watts (W).

### **Specific Noise source**

The noise source under investigation for assessing the likelihood of complaints.

### **Tone**

A noise with a narrow frequency composition.

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