

**Appendix B:
Noise Reports.**

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F.J. Coyle & Associates

Civil & Environmental Consultants

Client	Basta Parsons Limited, Tubbercurry Co. Sligo					
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Document No.	Final Report					
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1.0 Introduction

This report deals with the noise monitoring requirements (section 8.1) of Basta Parsons Ltd, Tubbercurry, Co. Sligo. Integrated Pollution Prevention & Control Licence (IPPC) Licence Reg. No. 269.

2.0 Noise Survey

The survey methodology was undertaken in accordance with specifications in the 'Environmental Noise Survey Guidance Document' as published by the EPA.

Noise monitoring was carried out on 27th October 2011 at three locations on the site perimeter. Monitoring locations are indicated in Figure 1.

The measurement locations were all away from reflecting surfaces and at 1.5m height above local ground. Measurements were carried with all plant in operation.

The following conditions were adhered to in undertaking the survey:

- Measurement of ambient noise levels was undertaken using **Type 1** instrumentation.
- The survey was carried out in accordance with ISO 1996 Part 1 (Description and Measurement of Environmental Noise -Part 1 :Basic Quantities and Procedures)

Weather conditions, for the duration of the survey, were ideal; remaining dry with light winds.

3.0 Instrumentation Used

The following instrumentation was used in the survey:

- One Larson Davis 831 Type 1 Precision Integrating Sound Level Analyser/Data logger with *Real-Time Frequency Analyser* Facility
- Wind Shields; Type, Larson Davis 2120 Windscreen.

- Calibration Type: Larson Davis Precision Acoustic Calibrator Model CA250. (Serial No 1087).
- All acoustic instrumentation was calibrated before and after the survey period at 114dB (at 250HZ)
- No drift of calibration was observed.

All acoustic instrumentation was calibrated before and after the survey period and no drift of calibration was observed (calibration level 114dB at 250HZ).

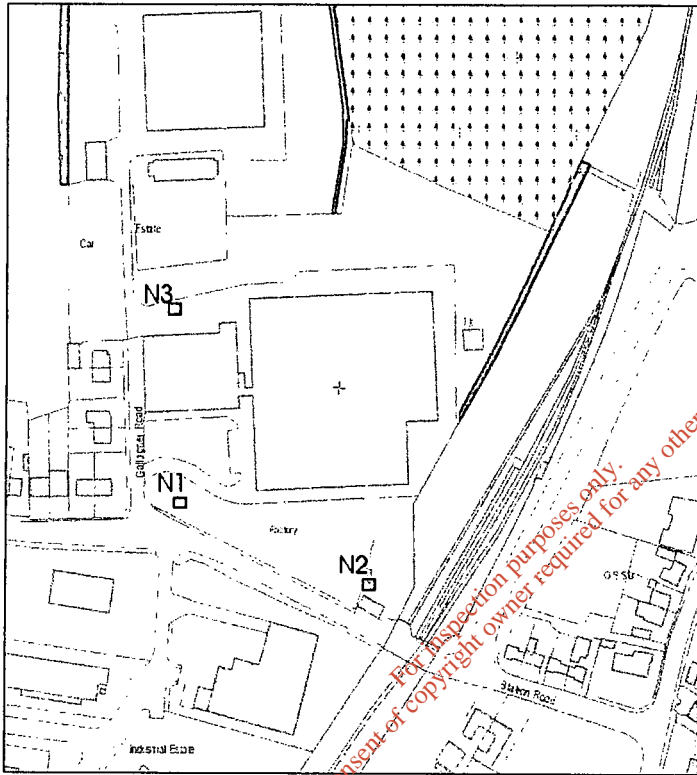


Figure 1.0 Noise Monitoring locations

4.0 Noise Survey Results

Summary noise level data are presented in tables 1 and 2. The complete set of monitoring data is presented in appendix i. Acoustic terminology is presented in appendix ii.

Table 1.0 Summary noise levels - daytime

Location	Laeq	L10	L90
N1	53.2	57.6	39.6
N2	54.4	58.1	42.7
N3	53.6	53.6	51.1

Limit of Leq 15 minute, 55 dB(A) for daytime activity at site boundary

5.0 Assessment

The **Basta Parsons Limited** manufacturing facility is located in the town of *Tubbercurry* along the busy R 294 road. The facility is bounded by the main road to the front, by a row of residential dwellings and access road to one side and by waste ground to the other side and rear. The noise environment is typical of an urban setting; noise levels are associated with anthropogenic activity in particular traffic movements.

During the time of the noise investigation work continued at the premises as normal.

Monitoring locations N1, N2, and N3 were chosen to coincide with the closest noise sensitive locations on the boundary of the facility. Locations N2 and N3 are close to the roadway and are therefore noise levels are heavily influenced by road traffic movements.

Day-time noise levels at:

N1 averaged L_{eq} 15 minute 53.2 dB(A)

N2 averaged L_{eq} 15 minute 54.4 dB(A)

N3 averaged L_{eq} 15 minute 53.6 dB(A)

Location N3 is at the rear of the plant and is partially sheltered from road traffic induced noise. The dominant noise source during the day time operation is the air compressor housed at the rear of the plant. The compressor does not operate during the night-time period.

Noise levels at N2 and N3 are influenced by road traffic.

The criterion for environmental noise control is of annoyance or nuisance rather than damage. In general, a noise level is liable to provoke a complaint whenever its level exceeds by a certain margin the pre-existing noise level or when it attains an absolute level. A change in noise level of 3 dB (A) is 'barely perceptible' while an increase in noise level of 10 dB (A) is perceived as a twofold increase in loudness.

Noise emissions from the plant are only just audible above the background noise level. The licence stipulates that daytime noise levels should be below 55 dB(A). Night Time monitoring has been carried out but as advised by client this information does not form a component of this report.

Recorded noise levels demonstrate compliance with these levels. Acoustic observation made during the duration of the noise survey were noted and it is obvious that the main source of noise in the vicinity of the premises **was that emanating from road traffic movements.**

There are no clearly audible, tonal or impulsive noise emissions from the manufacturing facility.

The noise emissions from the facility have a negligible contribution to the overall noise environment and are therefore unlikely to cause reason for complaint under normal circumstances.

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Appendix i

Day Time Monitoring data

Location
N3

Record #	Date	Time	Duration	LAeq	LAFmin	LAFmax	LAF5.00	LAF10.00	LAF50.00	LAF66.60	LAF90.00
1	27/10/2011	11:09:08	00:05:51.6	52.4	49.7	68.2	53.6	53.0	51.8	51.6	51.1
2	27/10/2011	11:15:00	00:15:00.0	53.7	50.0	73.3	54.6	53.1	52.0	51.8	51.3
3	27/10/2011	11:30:00	00:15:00.0	53.1	49.3	71.6	53.9	53.1	52.0	51.8	51.3
4	27/10/2011	11:45:00	00:15:00.0	54.3	49.4	70.3	58.5	54.0	52.0	51.8	51.3
5	27/10/2011	12:00:00	00:15:00.0	54.6	48.7	73.3	57.6	54.4	51.9	51.6	51.0
6	27/10/2011	12:15:00	00:06:57.8	52.0	49.5	69.3	52.9	52.5	51.5	51.3	50.9
				53.6				53.6			51.1

Location
N1

Record #	Date	Time	Duration	LAeq	LAFmin	LAFmax	LAF5.00	LAF10.00	LAF50.00	LAF66.60	LAF90.00
1	27/10/2011	12:25:57	00:04:02.3	51.4	37.0	65.6	58.5	56.7	43.2	40.7	38.7
2	27/10/2011	12:30:00	00:15:00.0	52.9	37.0	64.9	59.0	57.3	47.8	44.3	40.1
3	27/10/2011	12:45:00	00:15:00.0	55.4	35.7	74.8	61.1	58.8	49.5	45.8	39.9
				53.2				57.6			39.6

Location
N2

Record #	Date	Time	Duration	LAeq	LAFmin	LAFmax	LAF5.00	LAF10.00	LAF50.00	LAF66.60	LAF90.00
1	27/10/2011	13:06:17	00:08:42.7	53.3	35.6	63.3	58.2	57.0	51.5	48.1	39.1
2	27/10/2011	13:15:00	00:15:00.0	54.0	37.6	63.4	59.1	57.9	51.8	48.5	43.3
3	27/10/2011	13:30:00	00:03:49.3	55.8	39.5	72.6	60.8	59.5	52.6	50.6	45.8
				54.4				58.1			42.7

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Appendix ii

Acoustic terminology

Criterion Noise Level:

The long-term mean value of the noise level that must not be exceeded. This is generally stipulated in the IPC licence and it may be applied to a noise source, a boundary of the activity or to noise sensitive locations in the vicinity of the facility.

Noise:

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

dB (decibel):

The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μ Pa).

dBA or dB(A):

An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'-weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

LAeq,T:

The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T.

L10:

The sound pressure level that is exceeded for 10% of the time for which the given sound is measured

L90:

The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).

Noise Sensitive Location:

Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.

Rating level (L Ar,T) : The specific noise level, plus any adjustment for the characteristic features of the noise.

Tonal Noise:

Noise containing a prominent frequency and characterised by a definite pitch.

Noise which contains a clearly audible tone, i.e. a distinguishable, discrete or continuous note (whine, hiss screech or hum etc.).

Appendix iii

Frequency Analysis & Graphical Representation of Monitoring Data

Frequency analysis was undertaken at each of the monitoring locations using a Larson Davis 831 Type 1, Precision Integrating Sound Level Analyser/Data logger with Real-Time Frequency Analysis capability.

A graphical representation of the monitoring data is presented for each of the monitoring locations, N1, N2 and N3 in figures 1, 2 and 3.

No audible tones were audible or detectable at the time of monitoring.

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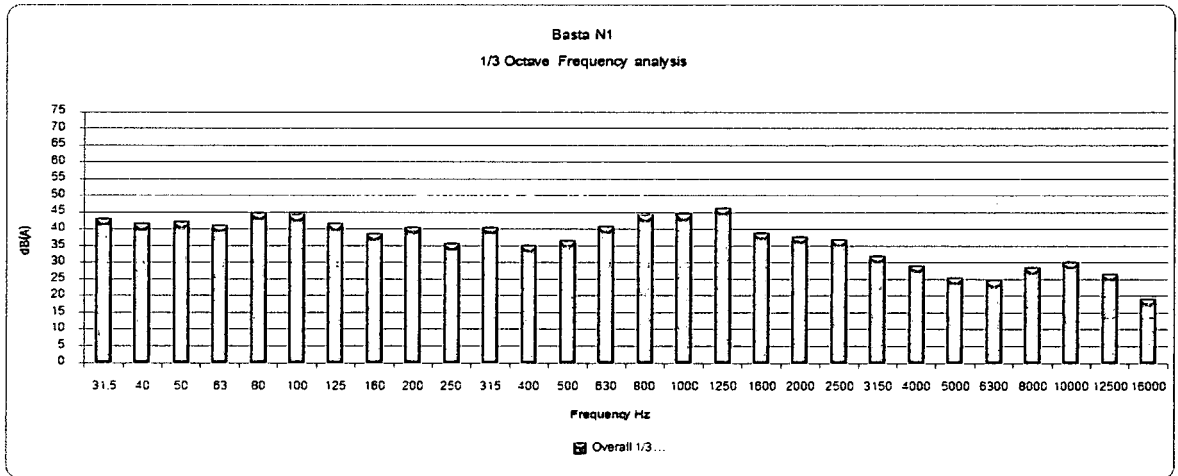


Figure 1: Frequency analysis for location N1

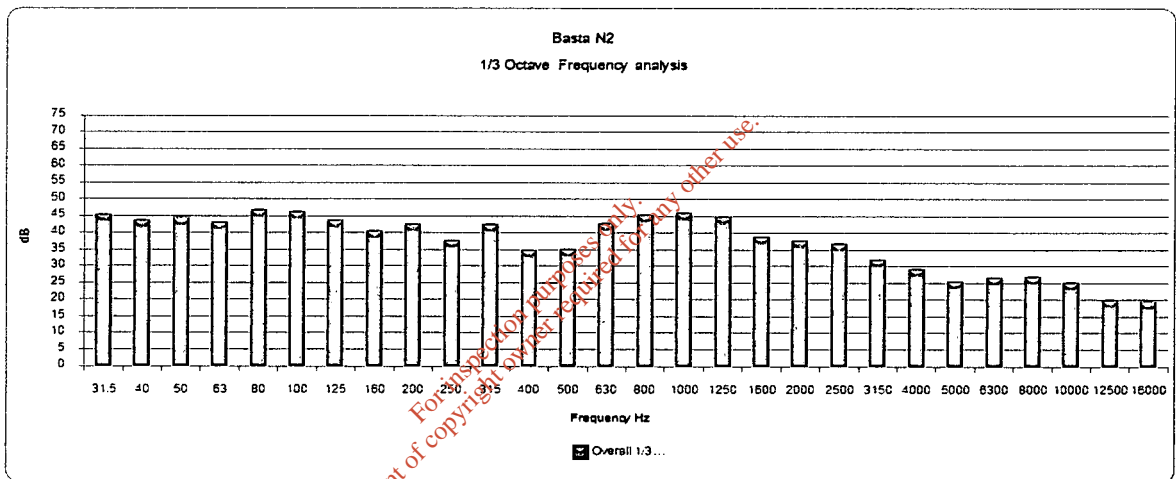


Figure 2: Frequency analysis for location N2

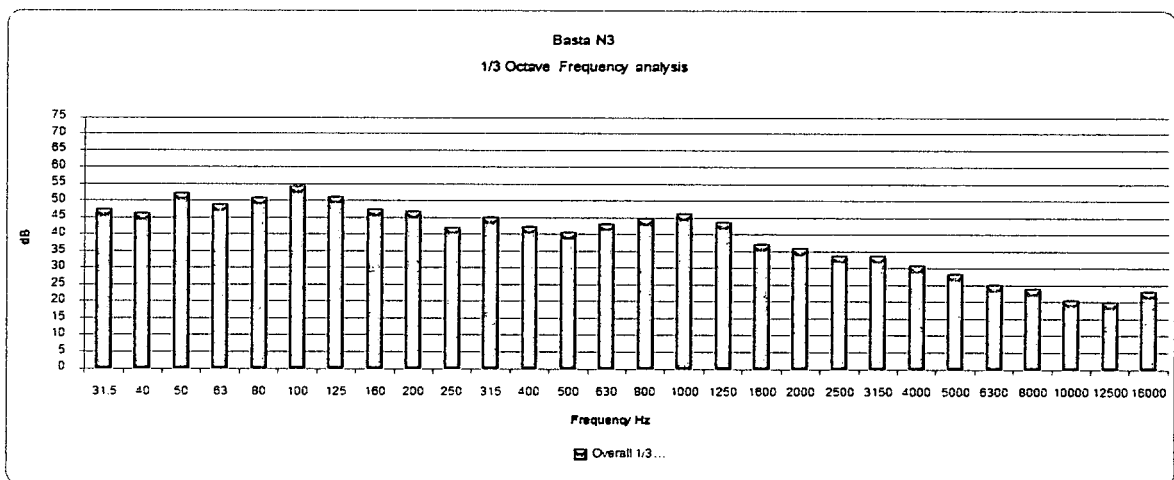
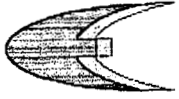


Figure 3: Frequency analysis for location N3



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Environmental Noise Survey

For

Basta Parsons

2008

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1. Introduction

Environmental Efficiency Consultants Limited (EEC) were commissioned by Basta Parsons to carry out an environmental noise survey on their site in order to assess the level of noise generated by the site during normal operating hours at noise monitoring locations laid out in the licence.

This environmental noise survey was carried out on the 21st November 2008 and was performed in accordance with the EPA Environmental Noise Survey Guidance Document.

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2. Executive Summary

- The company's IPPC Licence states that:

3.4.1 Noise from the activity shall not give rise to sound pressure levels (Leq, 15 Minute) measured at the specified noise sensitive locations which exceed the limit value(s) by more than 2 dB(A).

8.2 Activities on-site shall not give rise to noise levels off site, at noise sensitive locations, which exceed the following sound pressure limits (Leq, 15 minute) subject to Condition 3:

8.2.1 Daytime: 55 dB(A)

8.2.2 Night-time: 45 dB(A)

- The site is no longer operating during night-time and therefore no night-time noise monitoring was carried out. However, the noise levels when the company was closed (after 15:30 on Friday 21st November 2008) were monitored for comparison with the results obtained when the company was in operation to reflect the background noise.
- The main source of noise was found to be traffic on the R294. For M1, M3 and M4, the noise from the company was barely audible and the noise levels after the last shift were very similar to the noise levels when the company was in operation. For Location M2, the traffic still has a significant impact on the noise levels and the L₉₀ readings were below 55dB(A).
- The results of the noise survey show that the noise generated at the site does not constitute a nuisance at the noise sensitive locations as the traffic on the R294 is main source of noise.

3. Sampling Methodology and Analytical Techniques

3.1 Instrumentation Used

The following equipment was used during the noise assessment:

Table 3-1: Equipment Used

Equipment	Model (Cirrus)	Serial No.
Sound Level Meter (SLM) (Type 1), (with windshield attached)	CR:811B	C16569FD
Microphone	MK:224	20020028
Calibrator	CR:511E	035066
Tripod	N/A	N/A

The sound level meter was calibrated to 94 dB(A) on-site immediately before measurement and checked on completion of the study. No drift in calibration level was noted. The Certificates of Calibration for the SLM and calibrator are provided in Appendix A.

1.1 Noise Survey Personnel

The noise survey was undertaken by Richard Mc Elroy, BEng Env Eng

Report Terminology

The parameters used to assess the noise are as follows:

$L_{eq}(t)$: is the continuous equivalent sound level over a specified time (t), where t represented a 15-minute period during this survey. This measure is used to give an indication of the average noise level over the specified time period.

L_{10} and L_{90} : are both statistical noise levels. L_{10} indicates that for 10% of the monitoring period, the sound levels were greater than the quoted value. L_{90} indicates that for 90% of the monitoring period, the sound levels were greater than the quoted value. L_{10} is used to express event noise. L_{90} is used to express background noise, usually filtering out loud, intermittent interferences such as traffic noise.

The following terms may be used to describe the characteristics of the noise:

Continuous: noise produced without interruption.

Intermittent: noise that is punctuated with interruptions e.g. equipment operating in cycles or events such as single passing vehicle

Impulsive: a noise of short duration (typically less than one second), the sound pressure of which is significantly higher than the background; brief and abrupt.

Tonal: noise that contains a clearly audible tone i.e. a distinguishable, discrete or continuous note (whine, hiss, hum or screech, etc.).

The noise measurements were 'A' weighted and the time-weighting 'Fast' was applied (to equate to human ear hearing).

3.2 Meteorological Conditions

Weather conditions during the survey did not affect the readings i.e. conditions were dry with a slight breeze at the time of the survey. The Sound Level Meter was also fitted with a windshield to minimise interference from meteorological conditions.

3.3 Measurement Positions

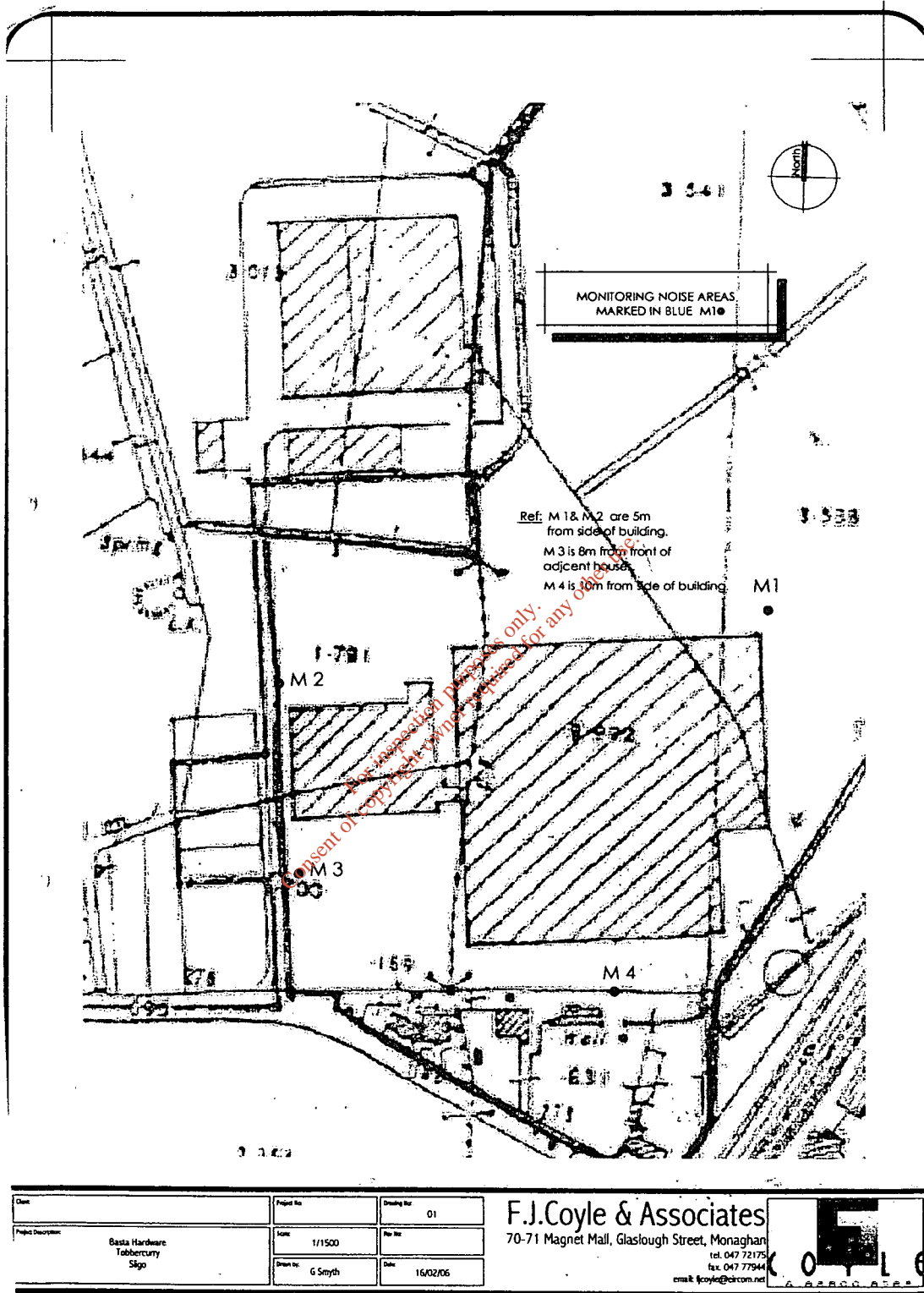
All measurements were taken at:

- 1.2 – 1.5 m height above local ground level

3.4 Measurement Locations

The locations of noise monitoring points are described in the following table and shown in Figure 3-1.

Figure 3-1: Site Boundary and Noise Locations



4. Noise Survey

Table 4-1 shows the measurement results for the monitoring locations at the site. Associated particulars such as a description of the noise recorded, in each location are also provided in the table. As per the previous noise report, the monitoring locations were chosen to coincide with the closest noise sensitive locations on the boundary of the site.

- Locations M3 and M4 are located nearer to the R294 Road and therefore the monitoring results at these positions were greatly influenced by the traffic on this busy road.
- M1 is located at the back of the site and is not as exposed to the traffic noise. Therefore this location reflects in a better manner the noise levels generated by the activities carried out at the site.
- M2 is also located at the back of the site, but closer to the R294 and close to the adjacent roadway to access the premises at the back of the factory.

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Table 4-1: Environmental Noise Monitoring Results

Location Ref No	Site in operation / Not in operation	Time	Noise Result			Description of On-site Noise Sources	Description of Off-site Noise Interference
			Leq(15)	L ₁₀	L ₅₀		
M1	In operation	10:15 – 10:30	43.3	47.5	42.5	<input type="checkbox"/> Noise from the company barely audible above the traffic noise	<input type="checkbox"/> Traffic on the R294 passing in near to the site
	Not in operation	15:30 – 15:45	45.7	47.6	41.8	<input type="checkbox"/> No noise from the company	<input type="checkbox"/> Busy traffic on the R294 passing in front of the site
M2	In operation	9:35 – 9:50	58.3	59.1	53.3	<input type="checkbox"/> Continuous noise from the utility room (doors open).	<input type="checkbox"/> Traffic on the R294 passing in front of the site
	Not in operation	16:10 – 16:25	50.5	51.2	45.2	<input type="checkbox"/> Continuous noise from the utility room (doors closed).	<input type="checkbox"/> Busy traffic on the R294 passing in front of the site
M3	In operation	9:00 – 9:15	60.5	62.3	47.9	<input type="checkbox"/> Noise from the company barely audible above the traffic noise	<input type="checkbox"/> Traffic on the R294 passing in front of the site
	Not in operation	16:50 – 17:05	58.4	61.2	50.2	<input type="checkbox"/> No noise from the company	<input type="checkbox"/> Busy traffic on the R294 passing in front of the site
M4	In operation	11:00 – 11:15	52.1	54.9	47.3	<input type="checkbox"/> Noise from the company barely audible above the traffic noise	<input type="checkbox"/> Traffic on the R294 passing in front of the site
	Not in operation	17:25 – 17:40	53.9	54.6	45.7	<input type="checkbox"/> No noise from the company	<input type="checkbox"/> Busy traffic on the R294 passing in front of the site

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5. Discussion

At locations M3 and M4, the main source of noise was the traffic on R294 which runs near to the site along the southern and eastern boundaries. At location M1 (located farther from the main road), although the noise from the traffic is not as loud, it was still the main source of noise at the time of the survey. This is confirmed by the facts that:

- The day-time noise levels when there is no activity at the site are similar and sometimes higher than when the company is operating.
- It can be noted that all the L_{90} readings were in below 55dB(A). L_{90} is used to express background noise, usually filtering out loud, intermittent interferences such as traffic noise. In this particular, the L_{90} values are considered to be much more representative of the actual noise emanating from the site activities.

Although Location M2 is not as close to the main road, there is still a significant impact from the traffic on R294. There is a roadway to access the premises at the back of the factory but there was no vehicle movement during the survey. The only audible noise emanating from the factory was the noise from the utility room at the back of the building. The measured noise levels at this location were of 58.3dB(A) when the site was in operation and 50.5dB(A) when the site was closed. As for the other locations, the L_{90} values remained below 55dB(A), suggesting that the traffic significantly contributed to the noise levels. It was noted during the survey that the doors to the utility rooms were open when the site was in operation and were closed after the last shift (although the equipment inside the rooms appeared to be still running). It is recommended that these doors are closed whenever possible to minimise the noise levels.

The results of the survey show that traffic on the R294 is the main significant source of noise and that noise from the company would be unlikely to cause reason for complaints. No tonal noise was audible at the time of the survey.

Appendix A: Certificates of Calibration

Certificate of Calibration



Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	Sound Level Meter
Model Number	CR:811B
Serial Number	C16569FD

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 International Standards.

The Cirrus Research plc calibration laboratory standards are:

Microphone Type	B&K4180	Serial Number	1893453	Calibration Ref.	S 5505
Pistonphone Type	B&K4220	Serial Number	613843	Calibration Ref.	S 5423

Calibrated by

T. A. Goodrich

Calibration Date

13 March 2008

Calibration Certificate Number

158880

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

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

Certificate of Calibration



Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	Acoustic Calibrator
Model Number	CR:511E
Serial Number	035066

Calibration Procedure

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

Calibration Traceability

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

Microphone Type	B&K4180	Serial Number	1893453	Calibration Ref.	S 5505
Pistonphone Type	B&K4220	Serial Number	613843	Calibration Ref.	S 5423

Calibration Climate Conditions

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

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

Measurement Results

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

94 dB Output	94.01	dB	Permitted band	93.95 to 94.05 dB
104 dB Output	103.95	dB	Permitted band	103.80 to 104.30 dB
Frequency	995	Hz	Permitted band	990 to 1010 Hz

Uncertainty

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

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

Calibrated by

T. A. Goodall

Calibration Date 13 March 2008

Calibration Certificate Number 158881

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

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