Appendix 6

Noise Monitoring Reports

This appendices is presented on the CD included on the inside front cover this report

(No. of pages including blank pages = 220)

HEGGIES

REPORT Q34 30-1053-R1

Revision 0

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending June 2009

PREPARED FOR

Donaldson Coal Pty Ltd
PO Box 675
Green Hills NSW 2320

15 JULY 2009

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Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending June 2009

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
Q34 30-1053-R1	Revision 0	15 July 2009	Nathan Archer	Katie Teyhan	Katie Teyhan
Q34 30-1053-R1D1	Draft 1	14 July 2009	Nathan Archer	Katie Teyhan	

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1 INTRODUCTION

Development consent was obtained by Donaldson Coal Pty Ltd for the Donaldson Mine in October 1999 following a Commission of Inquiry. Development Consent number N97/00147 was issued by the Minister for Urban Affairs pursuant to Section 101 of the Environmental Planning and Assessment Act 1979.

Project Approval (Application No. 05_0136) granted by the Minister of Planning was obtained by Donaldson Coal Pty Ltd for Abel Coal Mine in 2008.

Donaldson Coal Pty Ltd has commissioned Heggies Pty Ltd (Heggies) to conduct quarterly noise monitoring surveys for the Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Mine Project Noise Monitoring Program, dated 27 May 2008.

The objectives of the noise monitoring survey for this operating quarter were as follows:

- Measure the ambient noise levels at five (5) focus receptor locations (potentially worst affected) surrounding Donaldson Coal Mine and Abel Coal Mine.
- Qualify all sources of noise within each of the attended surveys, including estimated contribution or maximum level of individual noise sources.
- Assess the noise emissions of Donaldson Coal Mine and Abel Coal Mine with respect to the limits contained in the Development Consent.

2 DEVELOPMENT CONSENT AND PROJECT APPROVAL

2.1 Donaldson Coal Mine Development Consent Conditions

The Development Consent nominates hours of operation and mine noise emission goals in the Sections entitled "*Operation of Development, Condition No. 3(1) and 3(2)"*, and *"Noise and Vibrational Noise Limits: Condition No. 15*" as follows:

"3.(1) Subject to (2) the approved hours of operation are as follows:

Works	*Period*	*Hours*
Construction, including construction of any bunds	*Monday to Friday* *Saturday*	*7 am to 6 pm* *8 am to 1 pm*
Mining operations, including mining, haulage of waste to dumps and coal processing	*Monday to Friday* *Saturday, Sunday*	*24 hours per day* *7 am to 6 pm*
Road Transportation and stockpiling of coal	*7 days per week*	*24 hours per day*
Rail loading of coal	*7 days per week*	*7 am to 10 pm*
Maintenance of mobile and fixed plant	*7 days per week*	*24 hours per day*
Blasting, not involving closure of John Renshaw Drive	*Monday to Saturday*	*7 am to 5 pm*
Blasting, involving closure of John Renshaw Drive	*Monday to Saturday*	*10 am to 2 pm*

Notes: Restrictions on Public Holidays are the same as Sundays

(2) The Applicant shall submit a report to the Director-General's satisfaction demonstrating the noise limits in Condition 15 can be met while rail loading of coal is occurring during the period from 6 pm to 10 pm. If that report does not demonstrate that the noise limits can be met to the Director-General's satisfaction, then the hours of operation for rail loading of coal shall be restricted to 7 am to 6 pm."

15. Unless subject to a negotiated agreement in accordance with Condition 23, the Applicant shall ensure that the noise emission from construction or mining operations, when measured or computed at the boundary of any dwelling not owned by the applicant (or within 30 metres of the dwelling, if the boundary is more that 30 metres from the dwelling), shall not exceed the following noise limits:

Location	***$L_{A10(15minute)}$ Noise Limits (dBA)***	
	Daytime	***Night-time***
Beresfield area (residential)	*45*	*35*
Steggles Poultry Farm	*50*	*40*
Ebenezer Park Area	*46*	*41*
Black Hill Area	*40*	*38*
Buchanan and Louth Park Area	*38*	*36*
Ashtonfield Area	*41*	*35*
Thornton Area	*48*	*40*

Note: Daytime is 7 am to 10 pm Monday-Saturday, and 8 am to 10 pm Sundays and Public Holidays. Night-time is 10 pm to 7 am Monday-Saturday, and 10 pm to 8 am Sundays and Public Holidays.

The noise limits apply for prevailing meteorological conditions (winds up to 3 m/s), except under conditions of temperature inversions."

Other Conditions of Consent relevant to noise are as follows:

"18. The applicant shall survey and investigate noise reduction measures from plant and equipment and set targets for noise reduction in each Annual Environmental Management Report (AEMR), taking into consideration valid noise complaints received in the previous year. The Report shall also include remedial measures.

19. The Applicant shall revise the Noise Management Plan as necessary and provide an updated Plan five years after commencement of mining to the Director-General, the independent noise expert (Condition 48), EPA, Councils and the Community Consultative Committee."

2.2 Abel Coal Mine – Project Approval

The relevant conditions relating to noise from the Abel Coal Mine approval are reproduced below.

Schedule 4

NOISE

Note: These conditions should be read in conjunction with section 3 of the Statement of Commitments.

Noise Limits

23 The Proponent shall ensure that the noise generated by the Project does not exceed at any privately-owned residence the levels set out in the following table for the monitoring location nearest that residence.

Table 1: Noise limits dB(A)

Day	Evening	Night		Location and Locality*
LAeq(15 minutes)	LAeq(15 minutes)	LAeq(15 minutes)	LA1(1 minute)	
50	48	41	51	**A** Weakleys Dr, Beresfield
50	48	41	51	**B** Yarrum Rd, Beresfield
43	44	38	50	**C** Phoenix Rd, Black Hill
41	40	36	46	**D** Black Hill School
41	40	36	46	**E** Brown Rd, Black Hill
41	40	36	46	**F** Black Hill Rd, Black Hill
43	41	36	46	**G** Buchanan Rd, Buchanan
43	41	36	46	**H** Mt Vincent Rd, Louth Park
44	46	38	48	**I** Lord Howe Dr, Ashtonfield
49	47	40	50	**J** Kilarney St, Avalon Estate
41	40	37	46	**K** Catholic Diocese (Former Bartter) K1, K2, K3
46	46	40	53	**L** Kilshanny Ave, Ashtonfield

Notes:

- To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the $L_{A1(1\ minute)}$ limit, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.
- These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

* Revised to list alphabetically

Noise Monitoring

24. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:

(a) be submitted to the Director-General for approval within 6 months of this approval;

(b) be prepared in consultation with the DECC; and

(c) use a combination of attended and unattended monitoring measures to monitor the performance of the project.

2.2.1 Statement of Commitments

3.3 Monitoring

Within 6 months of this approval being granted a Noise Monitoring Program shall be prepared and implemented for the Abel Underground Mine and the Bloomfield CHPP, to the satisfaction of the Director-General. The Noise Monitoring Program shall include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise environmental assessment. This plan will be integrated with the monitoring plans for the Tasman, Donaldson and Bloomfield Mines to provide a single integrated Noise Monitoring Program for all 4 mines.

3 PROCEDURES AND METHODOLOGY

3.1 General Requirements

The operational noise monitoring programme was conducted with reference to Development Consent N97/00147 (Donaldson Coal Mine), Project Approval 05_0136 (Abel Coal Mine), and in accordance with Heggies Report 30-1409-R2 dated 27 May 2008 (*Abel Mine Project Noise Monitoring Program)* and AS 1055-1997 "*Acoustics -Description and Measurement of Environmental Noise*".

3.2 Monitoring Locations

Baseline and preceding operational quarterly surveys have been conducted at 11 locations surrounding the Donaldson Mine and Abel Coal Mine sites. With the experience of these previous surveys, it was decided to concentrate noise monitoring at five (5) focus locations that represent the potentially most affected areas from noise from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1**.

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield
K	Catholic Diocese of Maitland (formerly Bartter Enterprises)

A map giving the approximate location of the noise monitoring sites is contained within **Appendix A**.

3.3 Unattended Continuous Noise Monitoring

Environmental noise loggers were deployed on Thursday 18 June 2009 at each of the five (5) nominated locations given in **Table 1**, and retrieved on Monday 29 June 2009. All unattended monitoring equipment was programmed to continuously record statistical noise level indices in 15 minute intervals including the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{A99}, L_{Amin} and L_{Aeq}. The statistical noise exceedance levels (L_{AN}) are the levels exceeded for N% of the 15 minute interval. The L_{A90} represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The L_{A10} is the level exceeded for 10% of the time and is usually referred to as the average maximum noise level. The L_{Aeq} is the equivalent continuous sound pressure level and represents the steady sound level which is equal in energy to the fluctuating level over the interval period. The L_{Amax} is the maximum noise level recorded over the interval. Instrument calibration was conducted before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

3.4 Operator Attended Monitoring

Operator attended surveys were conducted at each of the five (5) monitoring locations during daytime, evening and night-time periods, to verify the unattended logging results and to determine the character and contribution of ambient noise sources.

3.5 Equipment Operation

The mobile equipment operating on the Donaldson Mine site during the survey period are contained in **Appendix B**.

During the survey period the following operations were being undertaken:

- Coal mining operations were ongoing during the monitoring period, operating 24 hours a day.
- Overburden material and coal was being removed from strips CP09 – CP16 between 6.00 am and midnight Monday - Friday. The waste was generally being placed in Strips CP01 – CP07. The grader and water cart were operating on both day and afternoon shift where needed

The only surface equipment operating on the Abel Coal Mine site during the survey periods was a ventilation fan.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Monitoring

Operator attended noise measurements were conducted during the daytime on Thursday 18 June 2009, the evening on Wednesday 24 June 2009 and the night-time on Wednesday 24 June/Thursday 25 June 2009. The results of the operator attended noise measurements are given in **Table 2** to **Table 6**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations.

The tables provide the following information:

- Monitoring location.
- Date & start time.
- Wind velocity (m/s) and Temperature (ºC) at the measurement location.
- Typical maximum (L_{Amax}) and contributed noise levels.

Mine contributions listed in the tables are from Donaldson Mine and Abel Coal Mine and are stated only when a contribution could be quantified.

Table 2 Location A Weakleys Drive, Beresfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
18/6/2009 11:25 W = 0.5m/s E Temp = 17ºC	Daytime Ambient	78	63	55	46	54	Traffic noise dominant (Weakleys Drive) ~ up to 55, Geese ~ 65, Local industry noise ~ 51-55. Donaldson mine inaudible Abel mine inaudible
24/6/2009 21:30 W = Calm Temp = 8ºC	Evening Ambient	83	77	71	53	66	Traffic noise dominant (Weakleys Drive) ~ 60-84, Crickets/insects < 56, Other Industry ~ 57-63. Donaldson mine inaudible Abel mine inaudible
25/6/2009 00:15 W = Calm Temp = 8ºC	Night-time Ambient	83	77	69	49	66	Traffic noise dominant (Weakleys Drive) ~ 50- 83, Insects ~ 40, Distant road traffic 43. Donaldson mine inaudible Abel mine inaudible

Table 3 Location F Lot 684 Black Hill Road, Black Hill

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
18/6/2009 10:00 W = <0.5m/s E Temp = 16ºC	Daytime Ambient	78	71	58	45	58	Traffic (John Renshaw Dr) ~ up to 57, Traffic (Black Hill Rd) ~ 71-78, Crickets ~ 44-46, Rain ~ 44-46. Donaldson mine inaudible Abel mine inaudible
24/6/2009 20:05 W = Calm Temp = 9ºC	Evening Ambient	66	59	53	44	50	Traffic (John Renshaw Dr) ~ 57-66, Crickets/insects/frogs ~ 46, Donaldson mine inaudible Abel mine inaudible.
24/3/2009 22:42 W = Calm Temp = 8ºC	Night-time Ambient	74	65	55	47	54	Traffic (John Renshaw Dr) ~ 53-74, Crickets/insects/frogs ~ 44-47, Abel Mine inaudible. Donaldson mine; dozer just audible in lulls Donaldson L_{A10} Contribution ~ <37 dBA.

Table 4 Location G 156 Buchanan Road, Buchanan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
18/6/2009 11:48 W = <1m/s E Temp = 17ºC	Daytime Ambient	82	79	74	43	69	Traffic (Buchannan Rd) ~ 74-81, Birds/insects ~ 49-55. Bloomfields ~ 36 Donaldson mine inaudible Abel mine inaudible
24/6/2009 20:30 W = Calm Temp = 28ºC	Evening Ambient	80	72	55	35	57	Traffic (Buchannan Rd) ~ 74-80 Insects ~ 37, Plane ~ 42 Bloomfields dozer just audible in lulls Donaldson mine inaudible Abel mine inaudible
24/6/2009 23:10 W = Calm Temp = 7ºC	Night-time Ambient	79	69	51	31	55	Traffic (Buchannan Rd) ~up to 79. Distant road traffic ~ 40. Insects ~ 32-38. Bloomfields dozer just audible in lulls Donaldson mine inaudible Abel mine inaudible

Table 5 Location L 17 Kilshanny Ave, Ashtonfield

Date/Start	Measurement	Primary Noise Descriptor	Description of Noise Emission and Typical

Time/Weather	Description	(dBA re 20 µPa)					Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
18/6/2009 14:10 W = <1m/s E Temp = 17ºC	Daytime Ambient	78	68	57	39	55	Distant Traffic ~ 40-47, Birds ~ 48-50, Dog ~ 57-70 Local traffic ~ 70, 78 Bloomfield mine just audible in lulls ~ 40. Donaldson mine inaudible Abel mine inaudible
24/6/2009 21:05 W = Calm Temp = 8ºC	Evening Ambient	78	52	42	37	50	Distant Traffic ~ 36-38, Local Traffic up to 78, Insects/birds ~ 36-40, Water dripping in building ~ 41. Bloomfield mine just audible ~ 37. Donaldson mine inaudible Abel mine inaudible
24/6/2009 23:37 W = Calm Temp = 7ºC	Night-time Ambient	66	47	38	34	39	Dog Bark ~ 57-66, Crickets/insects ~ 36, Bloomfield mine just audible ~ 34-35. Donaldson mine inaudible Abel mine inaudible

Table 6 Location K Catholic Diocese of Maitland (formerly Bartter Enterprises)

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
18/6/2009 10:55 W = <1m/s E Temp = 16ºC	Daytime Ambient	68	56	51	43	45	Traffic (John Renshaw Dr) ~ 48-60, Birds/insects ~ 50-60, Operator noise ~ 68, Donaldson mine; Dozer ~ 40 Donaldson L_{A10} Contribution ~ 40 dBA. Abel mine inaudible
23/3/2009 18:03 W = <1m/s NE Temp = 25ºC	Evening Ambient	95	87	82	57	78	Traffic (John Renshaw Dr) ~ 60-98, Birds/insects ~ 46, Donaldson Mine ; excavator ~ 62,64,65, truck ~ 55-58. Donaldson L_{A10} Contribution ~ 54 dBA. Abel mine inaudible
24/6/2009 22:23 W = Calm Temp = 8ºC	Night-time Ambient	94	86	73	53	72	Traffic (John Renshaw Dr) ~ 55-94, Frogs ~ 55, Donaldson Mine; excavator ~ 55-58 reverse buzzer ~ 56 trucks ~ 55-56. Donaldson L_{A10} Contribution ~ 50 dBA. Abel mine inaudible

4.2 Operator Attended Monitoring Summary

4.2.1 Donaldson Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements. Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the daytime, evening and night-time and at Location F Black Hill Rd, during the night-time.

The operator attended surveys determined that the Donaldson mine contribution at Location F was less than L_{A10} 37 dBA during the evening and, as such, contributed noise levels at Location F do not exceed those specified in the Donaldson Mine consent.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, Heggies understand the dwellings on the Catholic Diocese site are currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Catholic Diocese site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution at these residential locations was approximately 30 dBA during the daytime, 34 during the evening and 30 dBA during the night-time which is in compliance with Donaldson Mine consent.

Based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine did not exceed noise emission goals for any period.

4.2.2 Abel Coal Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements.

Abel Project operations were inaudible at all residential locations during all operator attended noise surveys. As such, it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Monitoring

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices C1** to **C5**. A summary of the results of the unattended continuous noise monitoring is given in **Table 7**. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

The measured ambient noise levels were divided into three periods representing day, evening and night as designated in the NSW Industrial Noise Policy. The day, evening and night periods replace the day and night periods defined under the Environmental Noise Control Manual (ENCM). However, as the Donaldson conditions of consent are under the ENCM, these periods have also been reported.

Precautions can be taken to minimise influences from extraneous noise sources (eg optimum placement of the loggers away from creeks, trees, houses, etc), however not all these sources or their effects can be eliminated. This is particularly the case during the warmer times of year when noise from insects, frogs, birds and other animals can become quite prevalent.

Due to the vandalism of equipment at Location K (Catholic Diocese of Maitland) on the first day of monitoring, no data was obtained from the unattended noise logger at this location.

Noise data during periods of any rainfall and/or wind speeds in excess of 5 m/s (approximately 9 knots) were discarded in accordance with INP weather affected data exclusion methodology.

Table 7 Unattended Continuous Monitoring Ambient Noise Levels (dBa Re 20 µPa)

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive Beresfield	Daytime	61	57	49	56
	Evening	60	56	48	54
	ENCM Daytime	61	57	48	56
	Night	59	54	37	52
F Lot 684 Black Hill Road, Black Hill	Daytime	70	58	45	57
	Evening	64	54	46	54
	ENCM Daytime	69	56	45	57
	Night	58	52	44	52
G 156 Buchannan Road, Buchannan	Daytime	74	68	37	65
	Evening	74	59	38	60
	ENCM Daytime	74	67	37	63
	Night	65	44	37	55
L 17 Kilshanny, Ashtonfield	Daytime	57	47	32	50
	Evening	52	42	36	45
	ENCM Daytime	56	46	32	49
	Night	44	39	32	43
K Catholic Diocese of Maitland	Daytime	No Data			
	Evening				
	ENCM Daytime				
	Night				

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

5.2 Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

Based on observations made during operator attended noise surveys and previous monitoring periods, it is not likely that Donaldson Mine and Abel Project noise contributions exceeded the relevant criteria.

5.2.1 Ambient LA90 Noise Level Comparison

Baseline

The summary of results in **Table 7** show that ambient day, evening and night time LA90 noise levels recorded for the quarter ending March 2009 were 4 dBA higher than levels recorded during the baseline monitoring process at Location A in the daytime. Evening and night-time levels at Location A were the same or lower than those recorded during the baseline monitoring. Significant increases of 6 dBA, 11 dBA and 13 dBA were recorded respectively in the daytime, evening and night-time periods at Location F. Given observations made during operator attended noise surveys, it is likely that the rise in noise levels was caused by increase in traffic volumes and insect/cricket/frog activity and not from Donaldson Mine or Abel Project activity.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

Previous Quarter (March 2009)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were similar (within 2 dBA) at Locations A and G and were lower (up to 4 dBA) at Location L. Significant increases of 6 dBA, 9 dBA and 11 dBA were recorded respectively in the daytime, evening and night-time periods at Location F. Given observations made during operator attended noise surveys, it is likely that the rise in noise levels was caused by local traffic and natural noise sources and not from Donaldson Mine or Abel Coal Mine activity.

Given that limited data was available at Location K during December 2008 no comparison can be made.

Coinciding Period Last Year (June 2008)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A90} noise levels were 3 dBA and 4 dBA higher during the daytime and evening respectively at Location A whilst night-time levels were 3 dBA lower than the coinciding period last year. L_{A90} noise levels were similar (within 2 dBA) at Location F. Given observations made during operator attended noise surveys, it is likely that the variance in noise levels was caused by local traffic and insect/cricket/frog activity and not from Donaldson Mine or Abel Coal Mine activity.

Given that no data was available at Locations G and L during June 2008 no comparison can be made.

5.2.2 Ambient L_{A10} Noise Level Comparison

Baseline

The summary of results in **Table 7** show that ambient day, evening and night-time L_{A10} noise levels recorded for the quarter ending March 2009 were less than or similar (within 1 dBA) to levels recorded during the baseline monitoring process at Location A. Ambient evening and night-time L_{A10} noise levels were 5 dBA to 7 dBA greater than levels recorded during the baseline monitoring process at Location F. Operator attended noise surveys at this location (Location F) noted that the L_{A10} noise levels were dominated by local traffic and not from Donaldson Mine or Abel Coal Mine activity.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

Previous Quarter (March 2009)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at Location A were generally similar (within 2 dBA) to levels at Location A during the March 2009 quarterly monitoring. Noise levels at Location L were lower during all periods. Increases of 3 dBA to 4 dBA were recorded Location F. Significant increases of 20 dBA and 14 dBA were recorded respectively in the daytime and evening periods at Location G. Operator attended noise surveys at these locations (Location F and G) noted that the L_{A10} noise levels were dominated by local traffic and not from Donaldson Mine or Abel Coal Mine activity.

Given that limited data was available at Location K during December 2008 no comparison can be made.

Coinciding Period Last Year (June 2008)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels recorded at Location A were greater than last year with a maximum increase of 3 dBA being recorded during the evening. L_{A10} noise levels at Location F were 3 dBA and 2 dBA higher during the daytime and evening, respectively, whilst night-time noise levels were slightly lower than last year. Given observations made during operator attended noise surveys, it is likely that the variance in noise levels was caused by local traffic and insect/cricket/frog activity and not from Donaldson Mine or Abel Coal Mine activity.

Given that no data was available at Locations G and L during June 2008 no comparison can be made.

6 SUMMARY OF RESULTS AND FINDINGS

Heggies were engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2008.

The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 6**.

Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the daytime, evening and night-time and at Location F Black Hill Rd, during the night-time. However, Donaldson Mine contributions were found to be within the relevant consent conditions at all assessed locations.

Abel Project operations were inaudible at all residential locations during all periods and as such it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (March 2009), the baseline monitoring period, the last monitoring period (March 2009), and the coinciding monitoring period from last year (June 2008) has been conducted.

In summary, where noise levels have risen, the ambient noise environment has been identified to generally contain traffic and natural noise sources and not noise from Donaldson Mine or Abel Coal Mine activity. This is most applicable to Locations A and F. Generally noise levels at other monitoring locations (where valid data was obtained) were similar to or less than noise levels recorded during the baseline monitoring process and previous compliance monitoring periods.

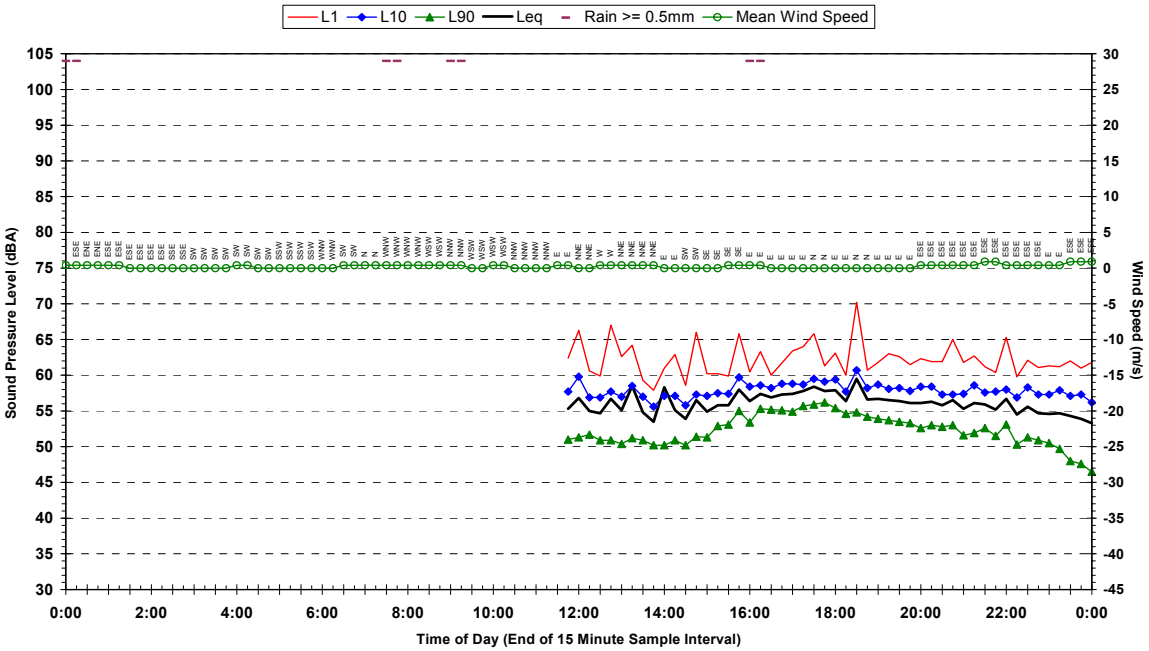
APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

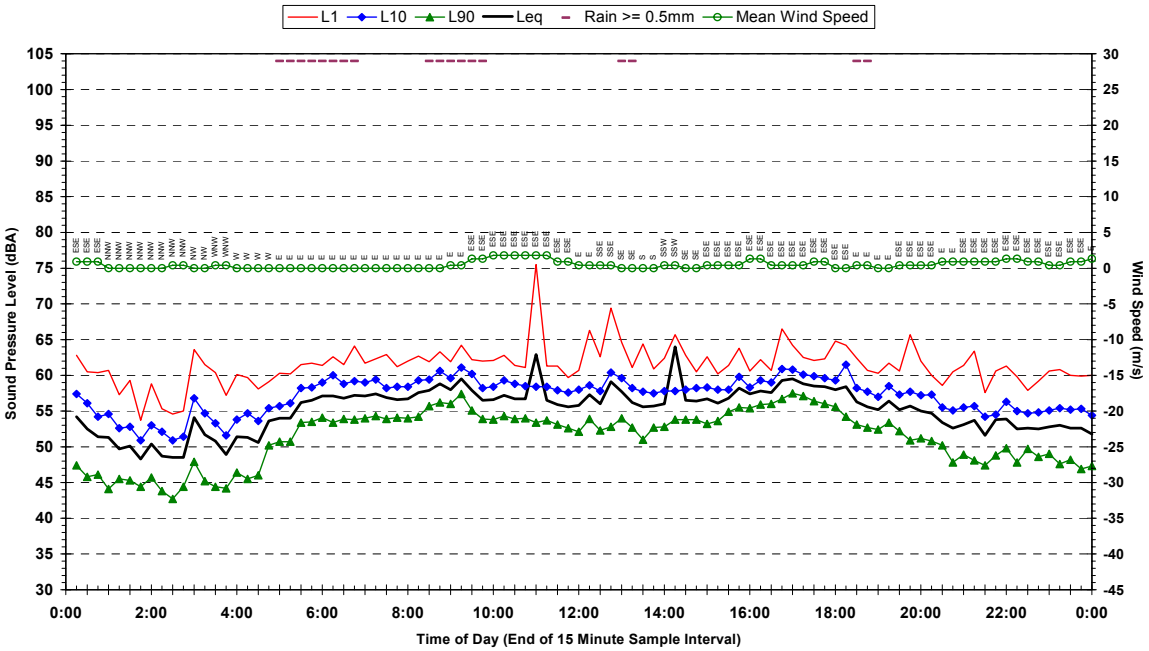
JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – June 2009

Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 5110B	AAA00311
9	LOD004	CATERPILLAR IT28G	CWAC00351
10	LOD044	KOMATSU WA700	10106
11	LOD149	CATERPILLAR 990II	4FR00394
12	RDT026	CATERPILLAR 777A W/CART	84A01034
13	RDT033	CATERPILLAR 740 W/CART	B1P02699
14	RDT100	CATERPILLAR 785	8GB00596
15	RDT107	CATERPILLAR 785	8GB00320
16	RDT140	CATERPILLAR 785	8GB00333
17	RDT143	CATERPILLAR 785	8GB00374
18	RDT155	CATERPILLAR 785	8GB00152
19	RDT162	CATERPILLAR 785	8GB00258
20	RDT163	CATERPILLAR 785	8GB00259
21	RDT182	CATERPILLAR 785	8GB00494
22	GRD004	CATERPILLAR 16H	6ZJ00678
23	GRD036	CATERPILLAR 16G	93U03039
24	CMP059	AIRMAN COMPRESSOR – STR034	
25	CMP061	SULLAIR COMPRESSOR 185CFM	200610160001
26	CMP062	SULLAIR COMPRESSOR 185CFM	206101100049
27	GEN001	KUBOTA GENERATOR – VEH154	
28	WEL057	LINCOLN SAM400 – VEH154	
29	VEH154	ISUZU NPS300 BOILY TRUCK	
30	STR034	VOLVO FL7 SERVICE TRUCK	YV5FAG6JD560318
31	UTE001	NISSAN PATROL SERVICE UTE	
32	UTE002	NISSAN NAVARA TRAYBACK	

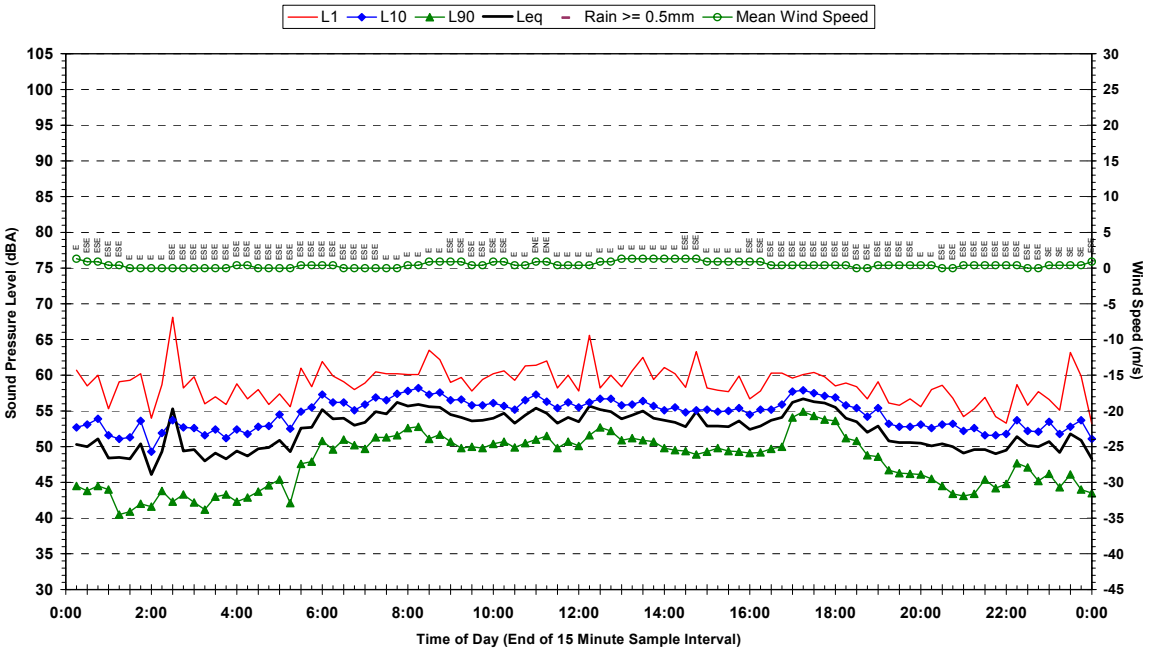
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Thursday 18 June 2009



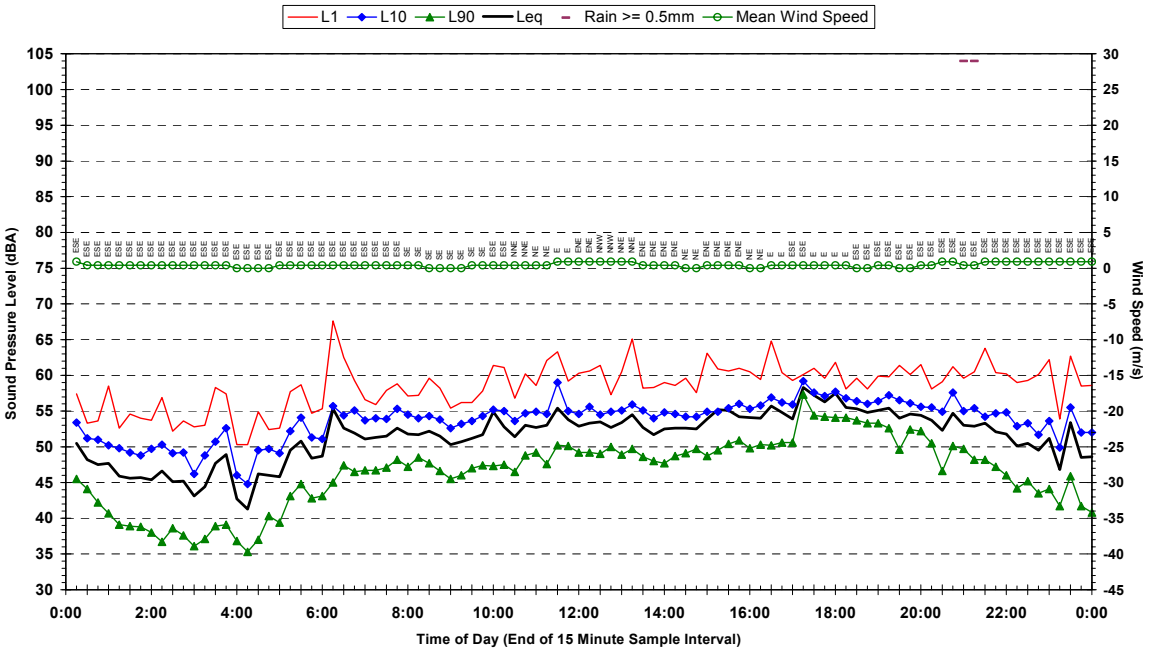
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Friday 19 June 2009



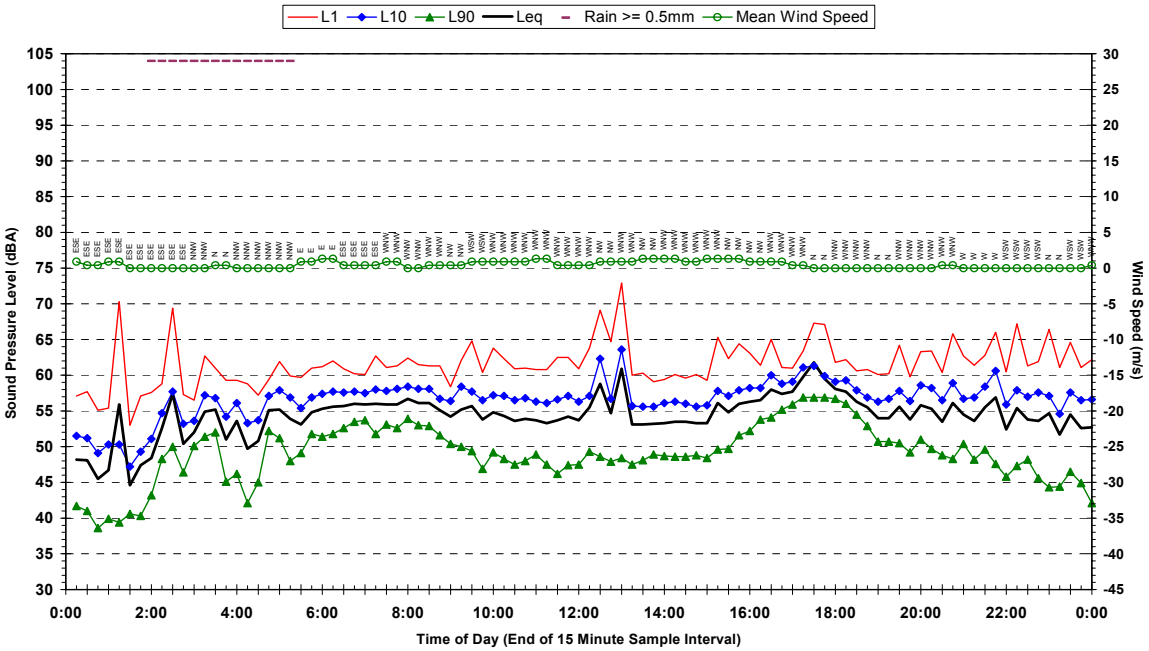
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Saturday 20 June 2009



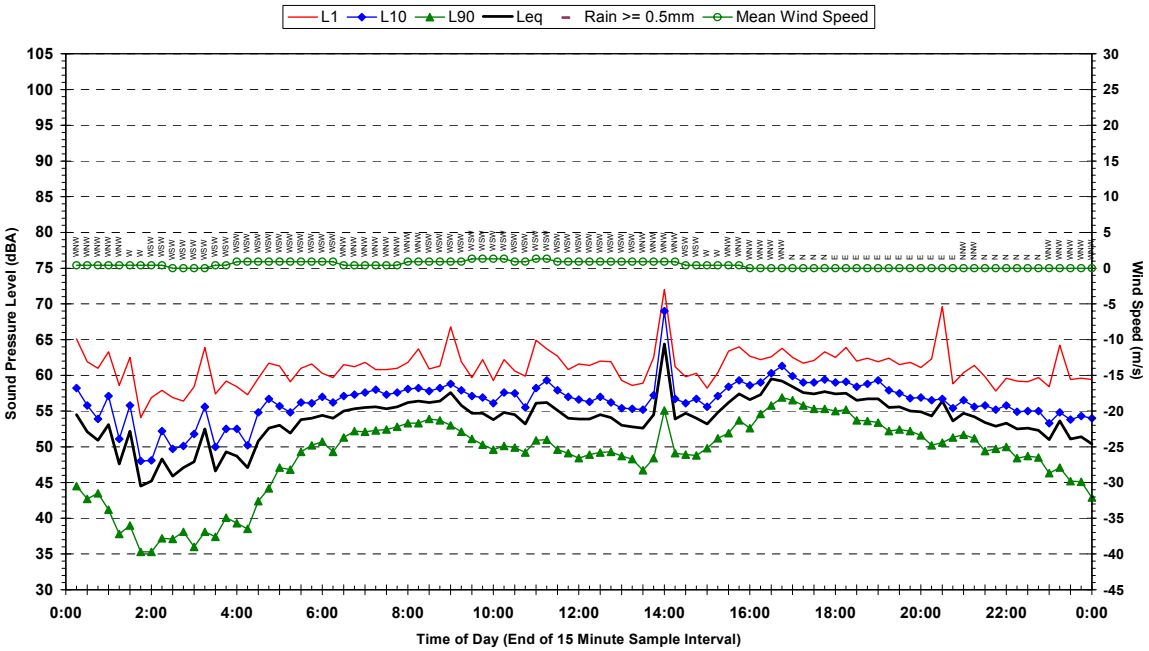
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Sunday 21 June 2009



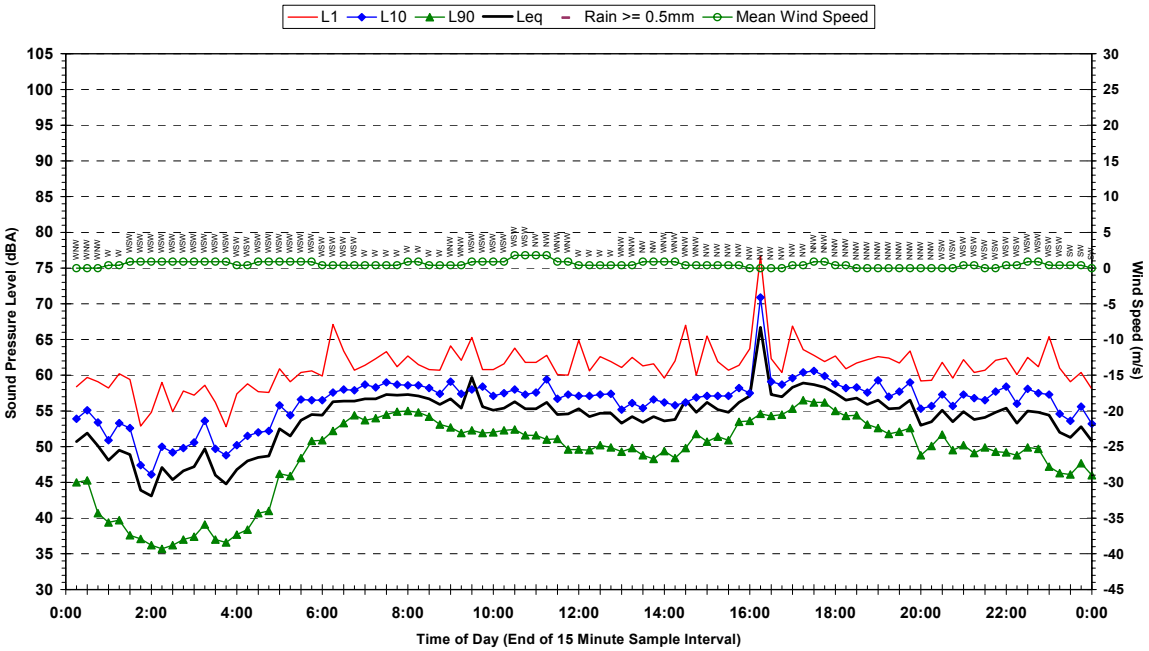
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Monday 22 June 2009



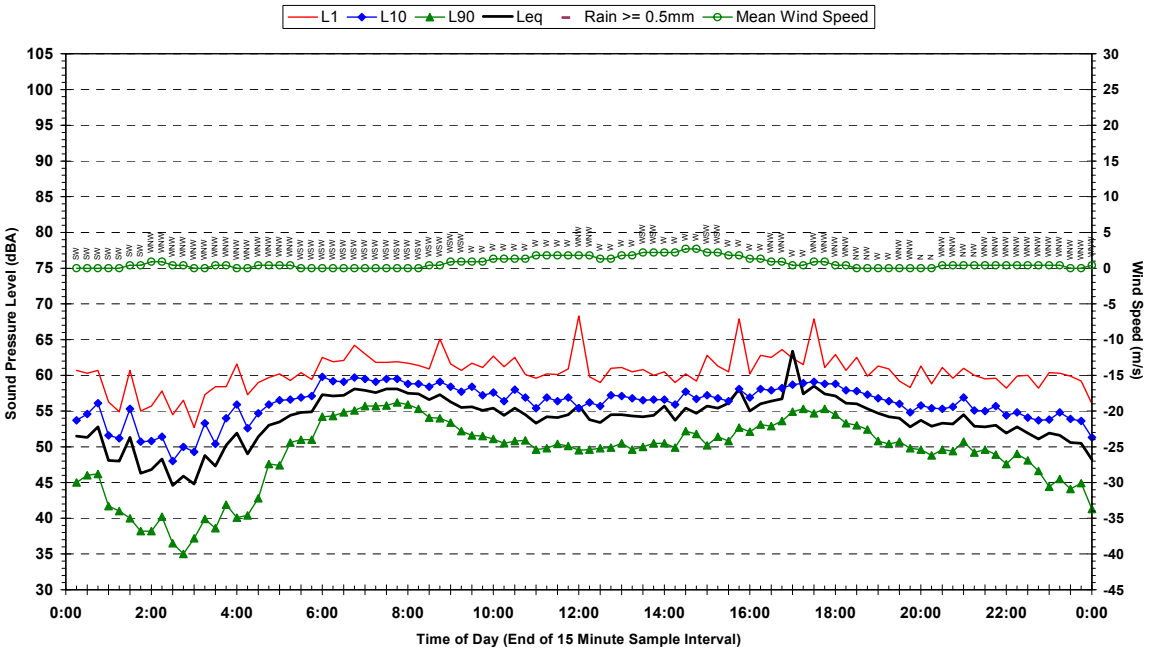
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Tuesday 23 June 2009



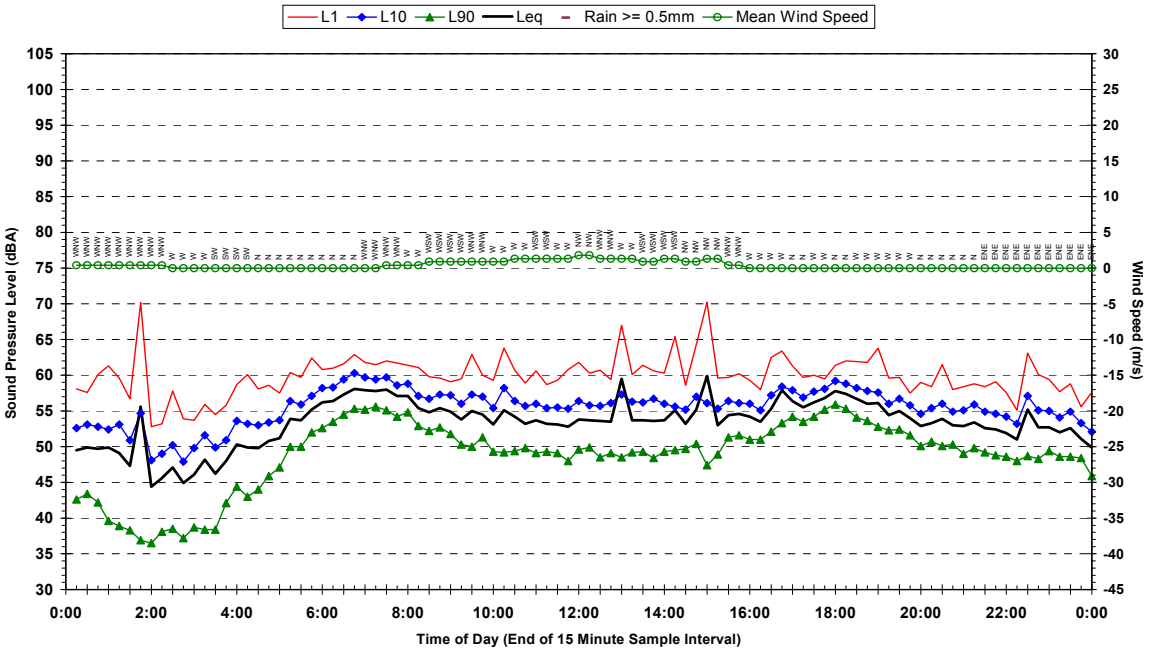
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Wednesday 24 June 2009



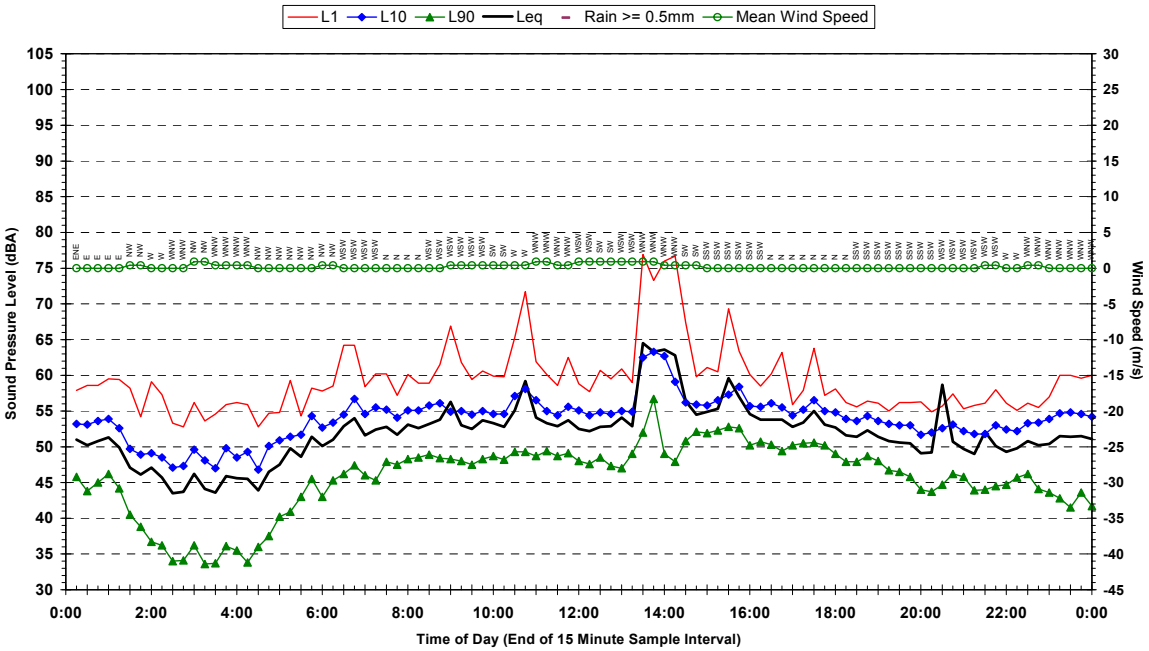
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Thursday 25 June 2009

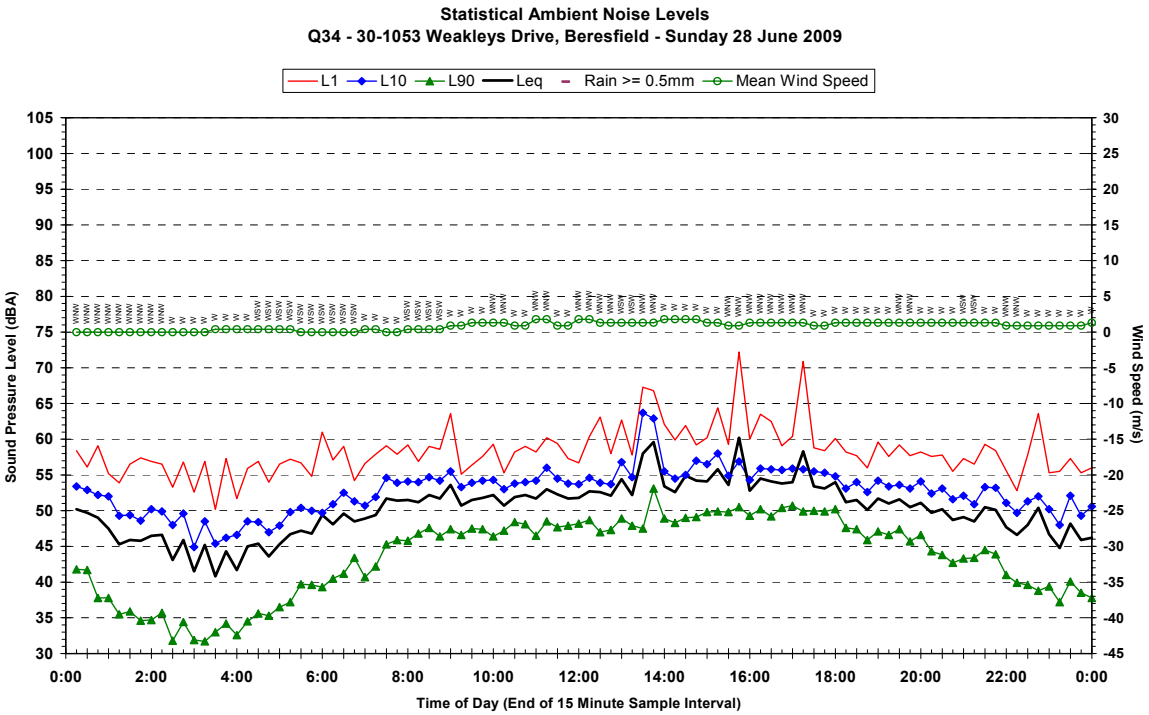


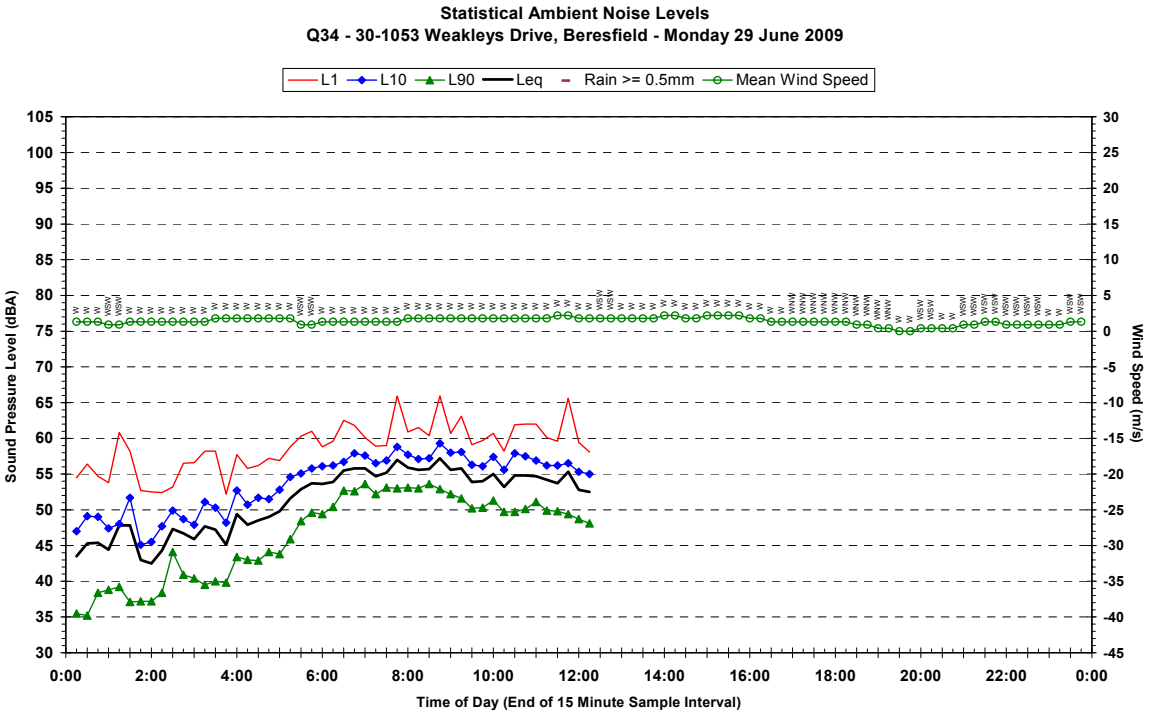
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Friday 26 June 2009



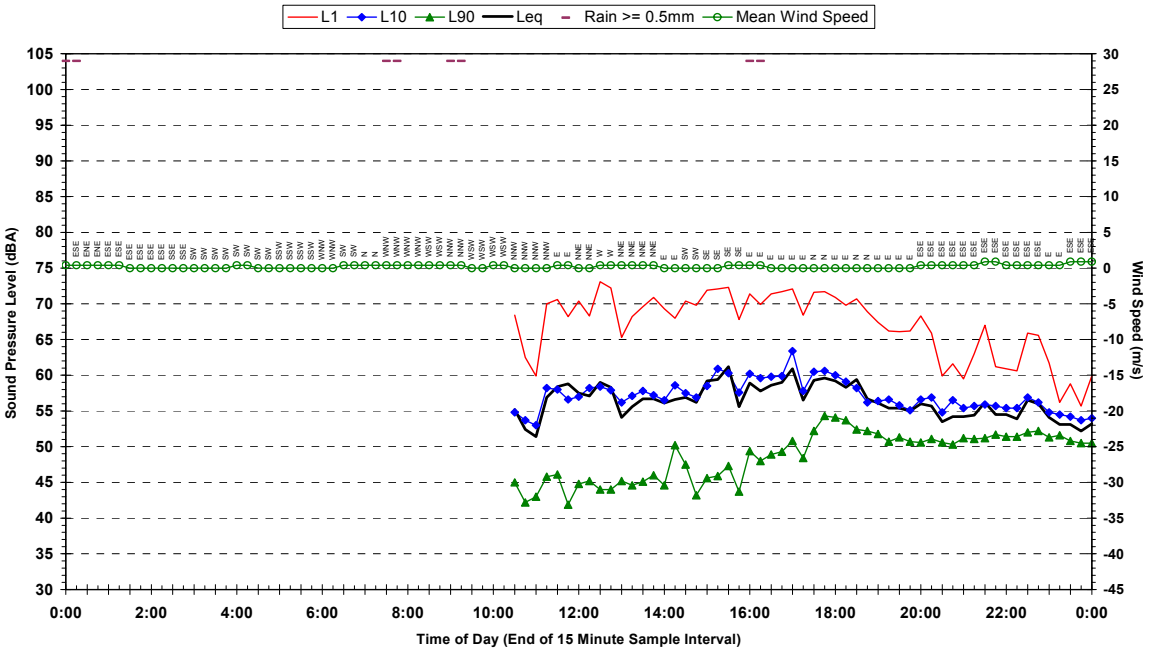
Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Saturday 27 June 2009



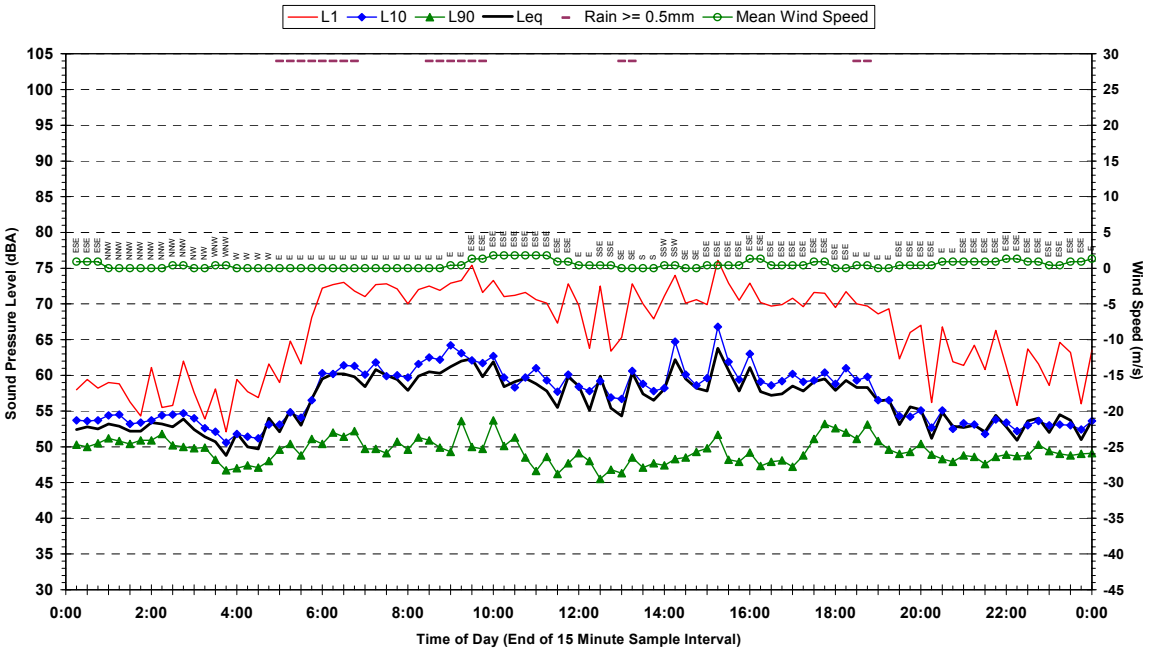

Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Sunday 28 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Q34 - 30-1053 Weakleys Drive, Beresfield - Monday 29 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

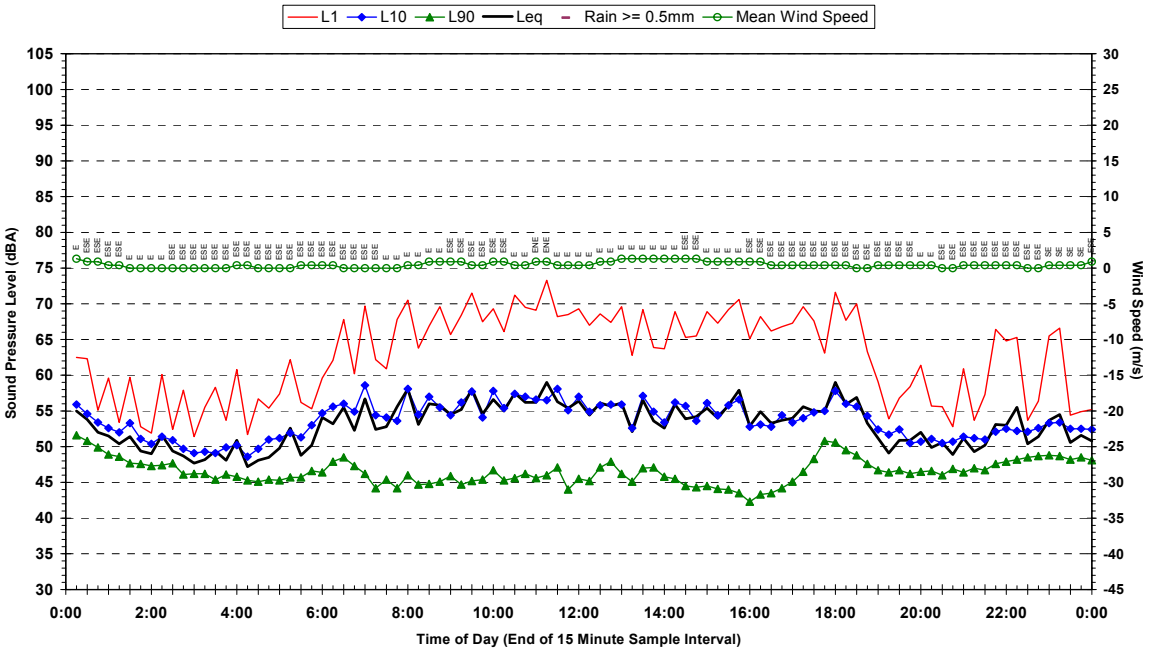
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Thursday 18 June 2009



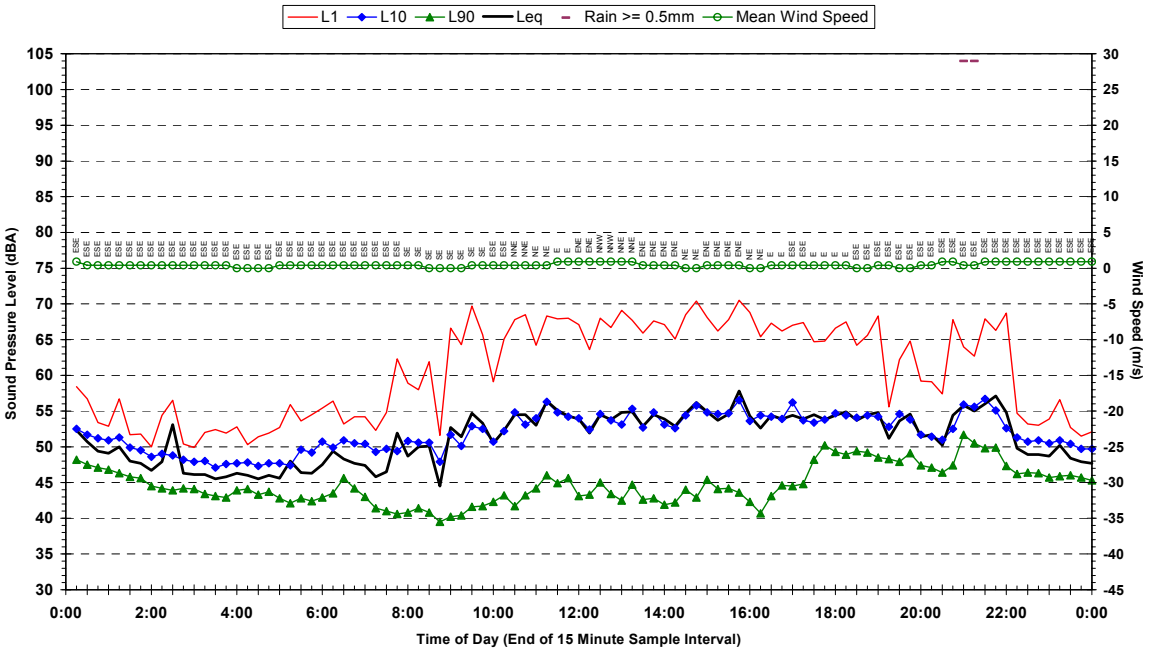
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Friday 19 June 2009



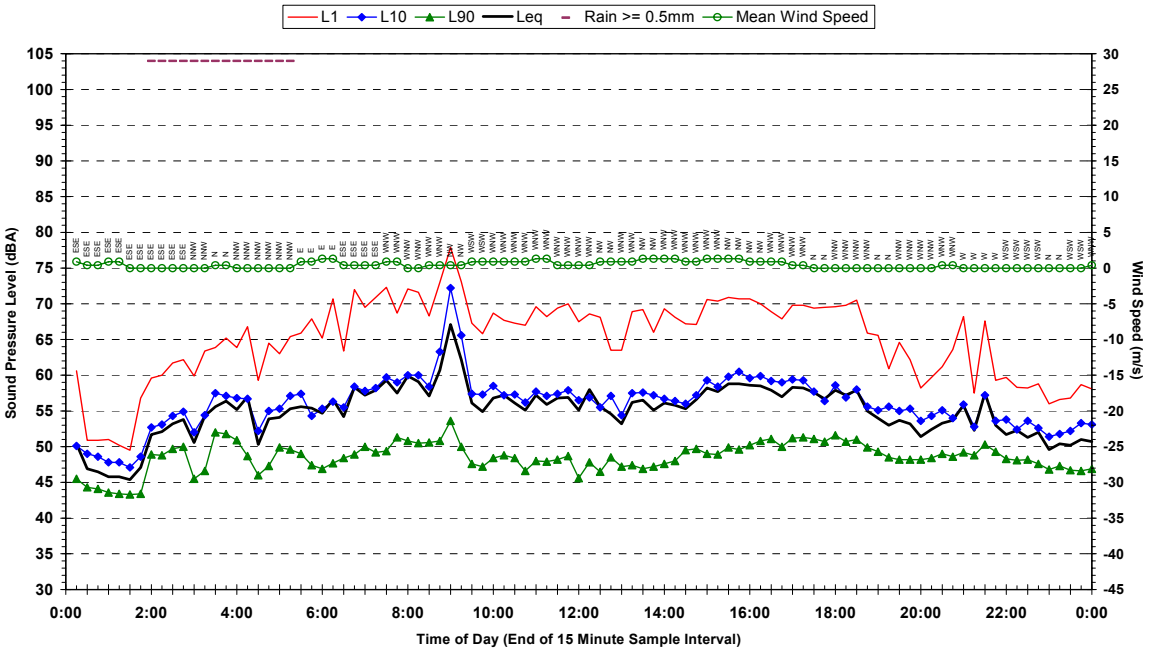
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Saturday 20 June 2009



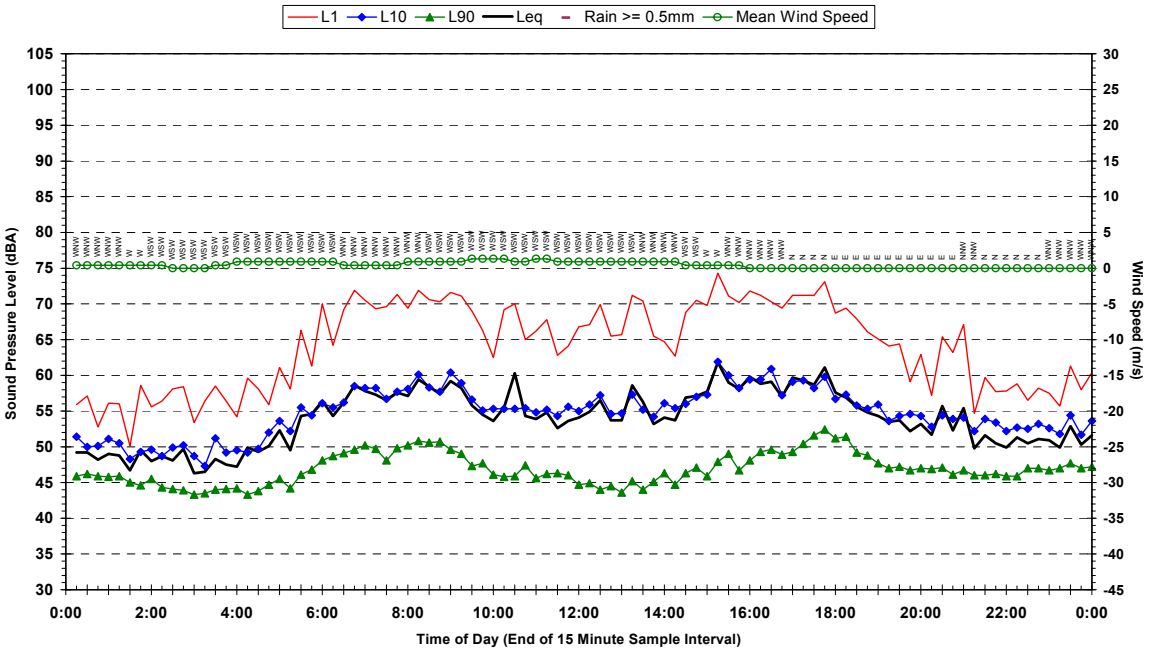
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Sunday 21 June 2009



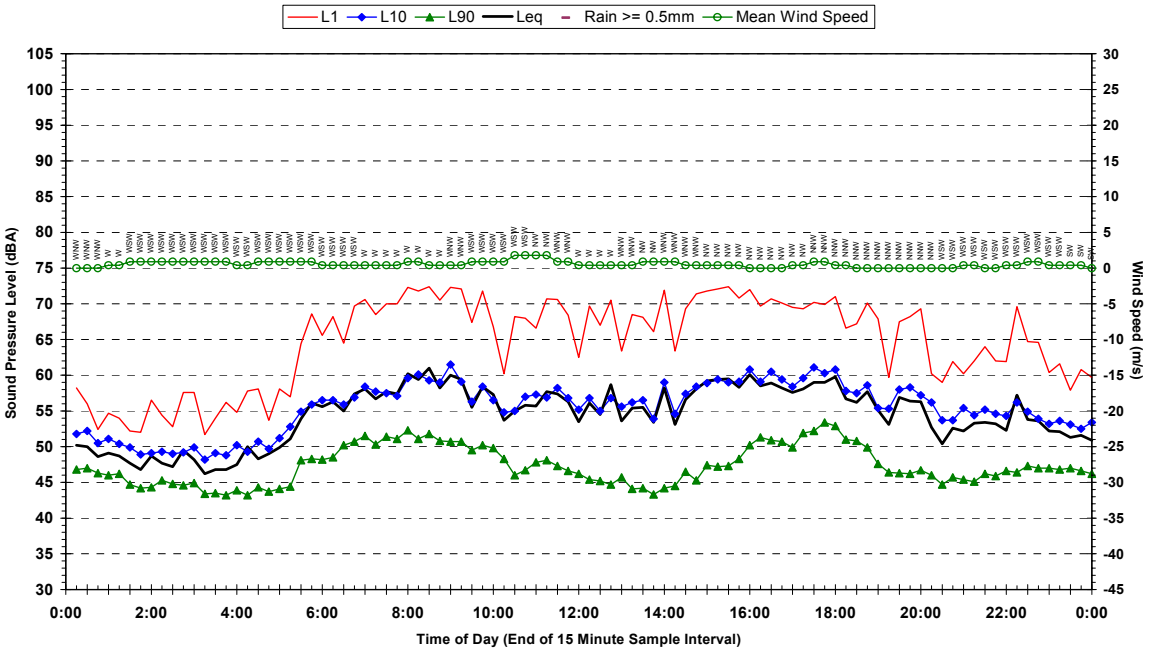
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Monday 22 June 2009



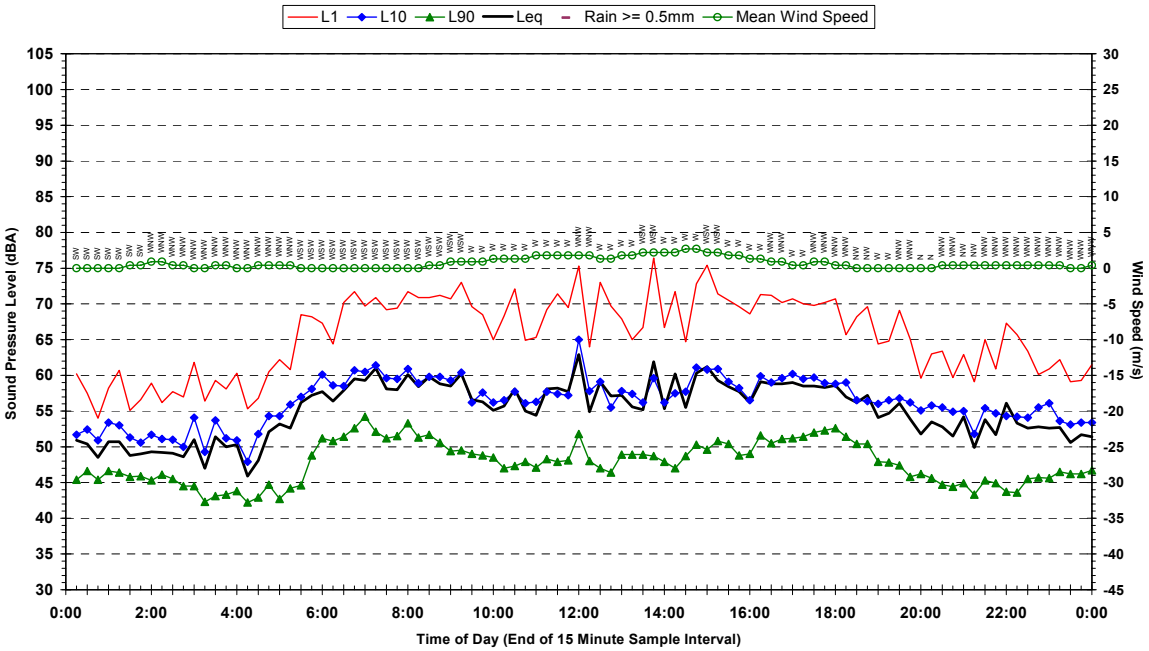
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Tuesday 23 June 2009



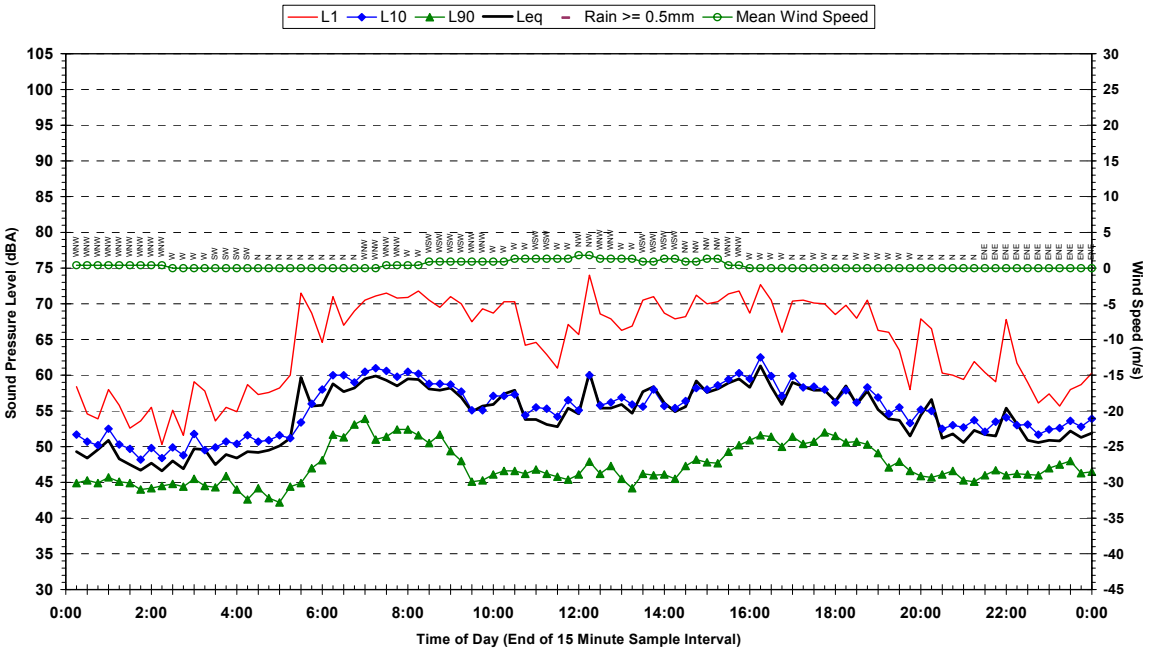
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Wednesday 24 June 2009



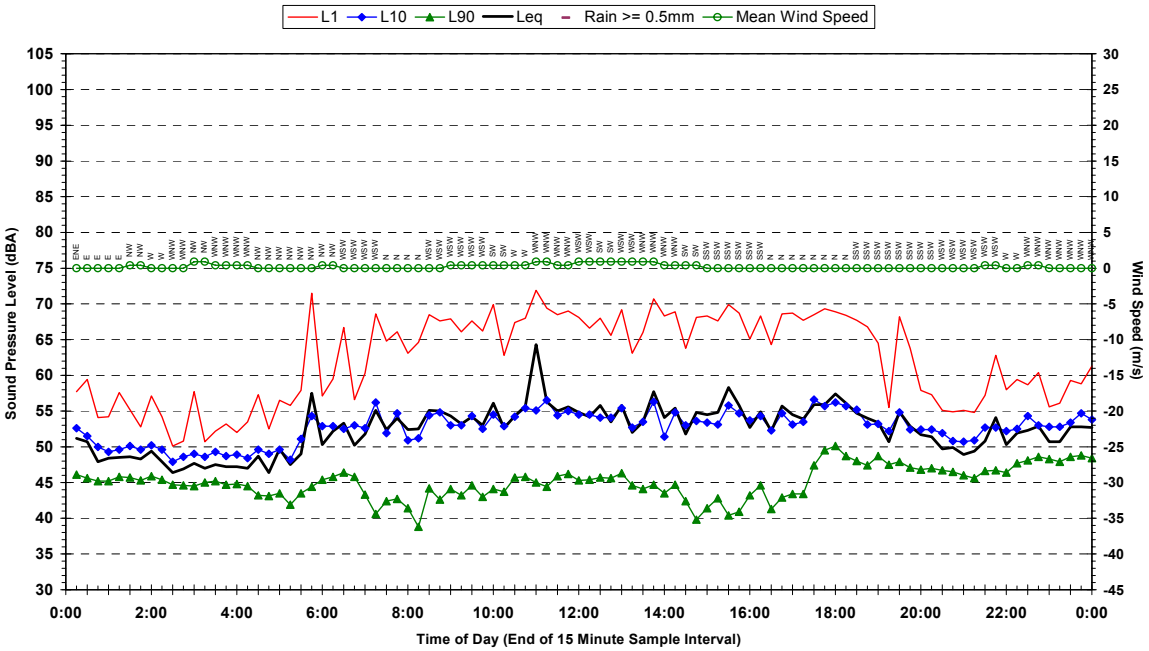
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Thursday 25 June 2009

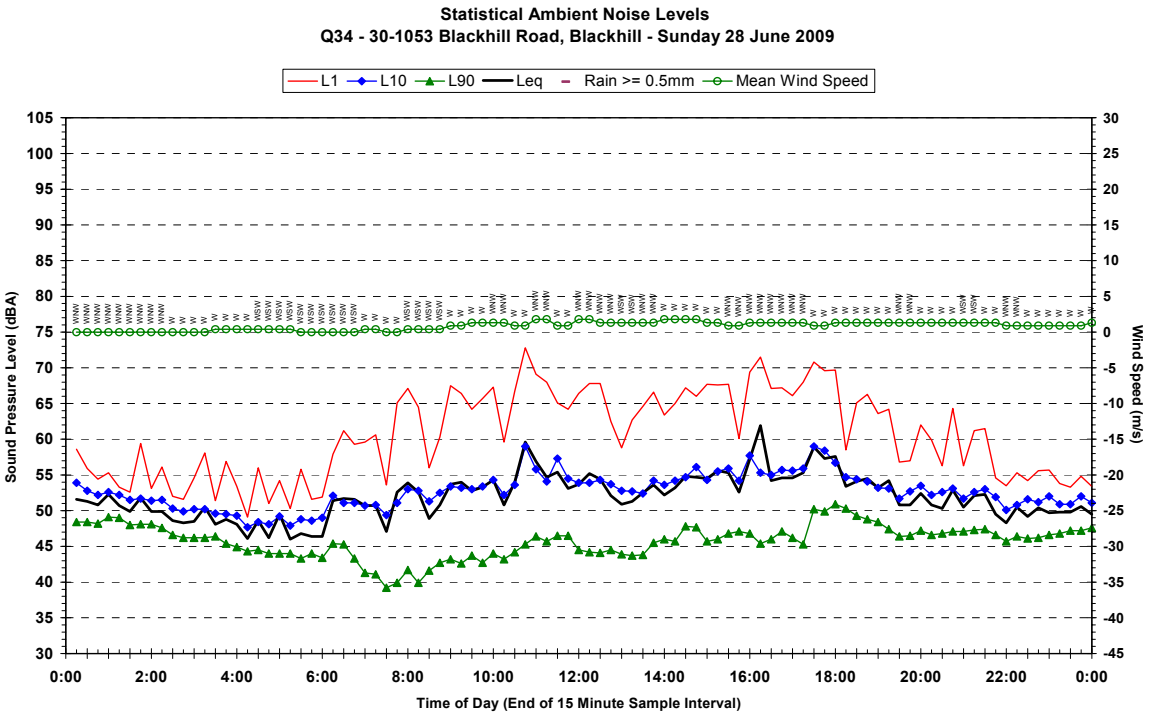


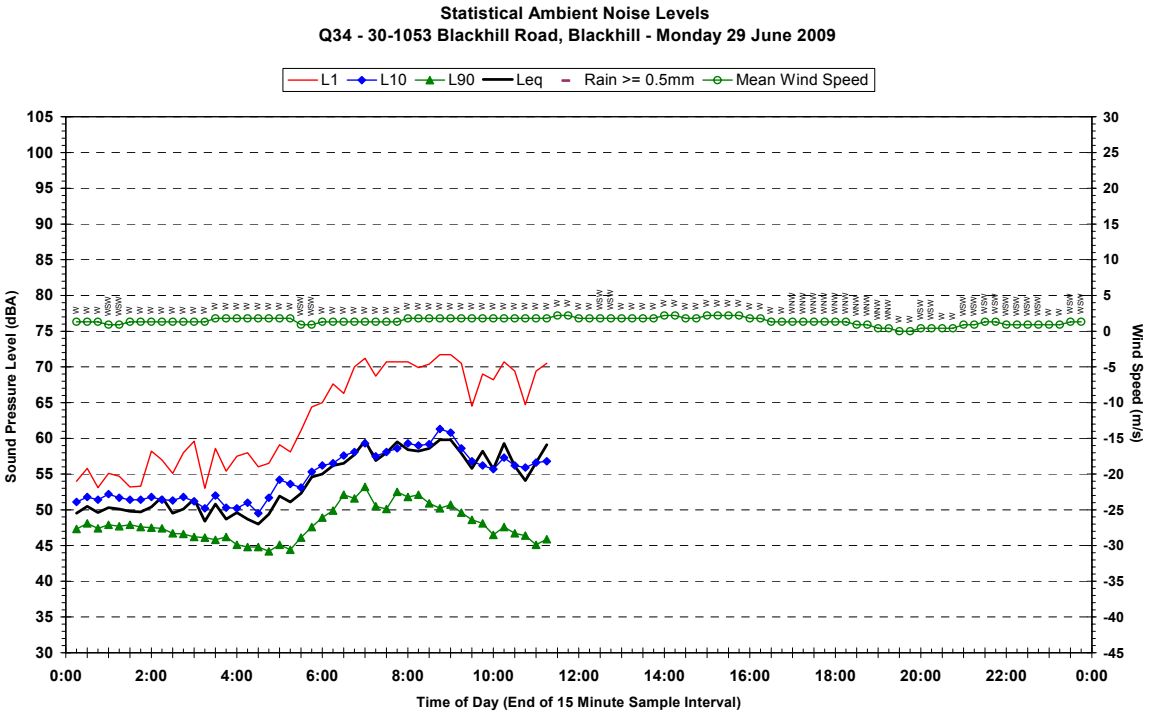
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Friday 26 June 2009



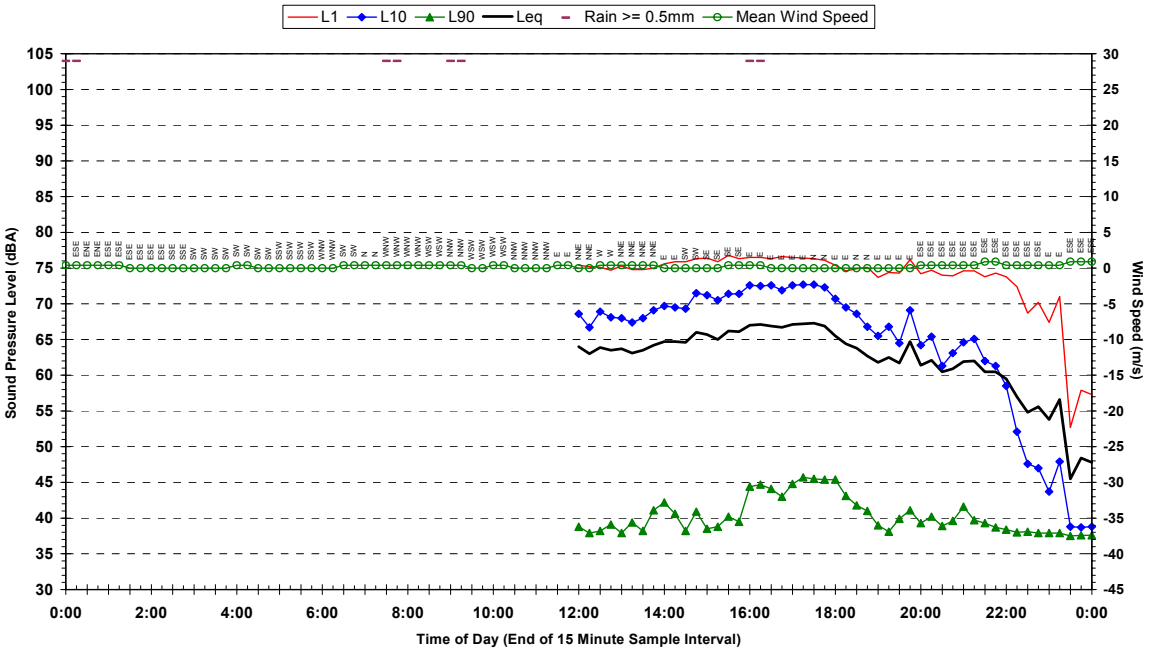
Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Saturday 27 June 2009



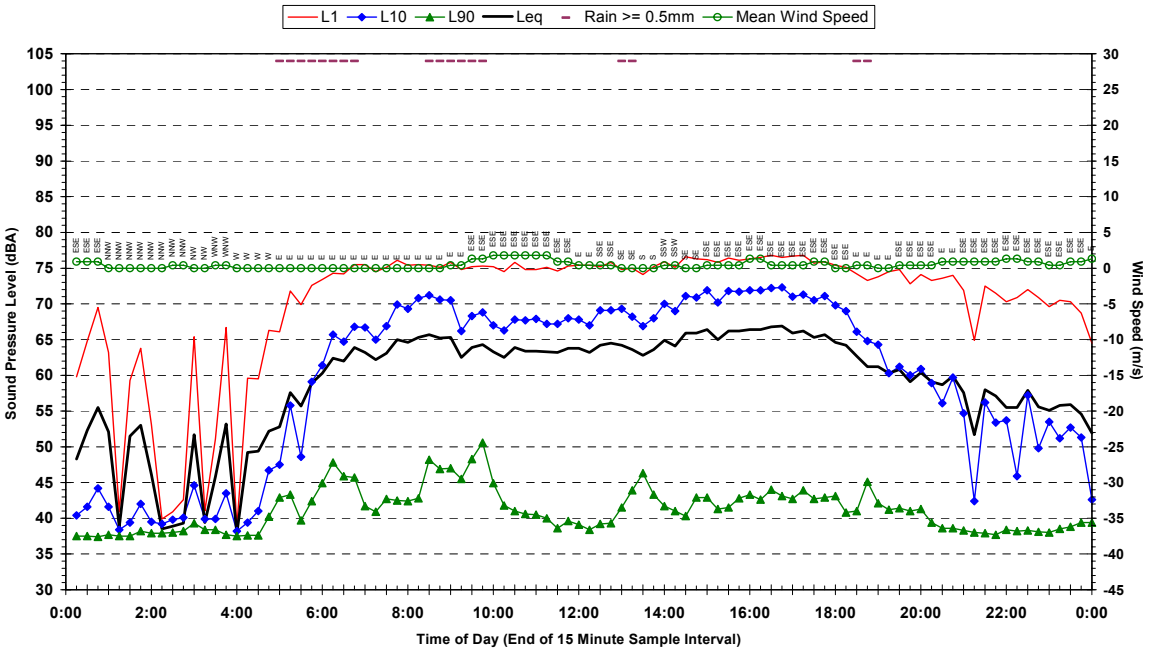

Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Sunday 28 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Q34 - 30-1053 Blackhill Road, Blackhill - Monday 29 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

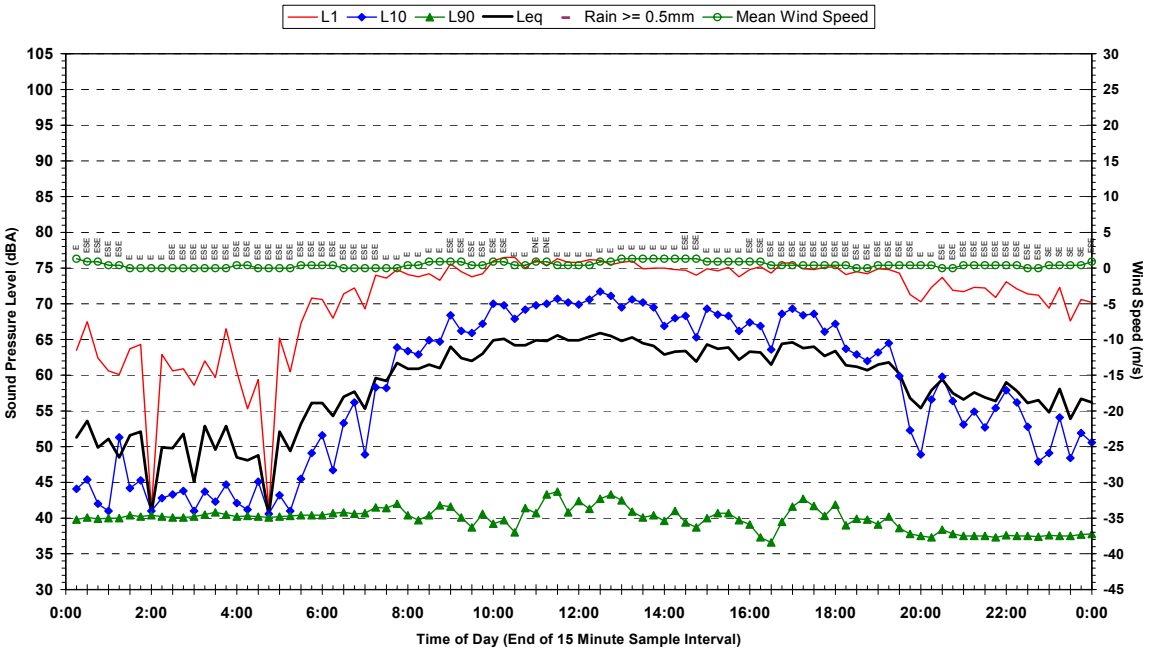
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Thursday 18 June 2009



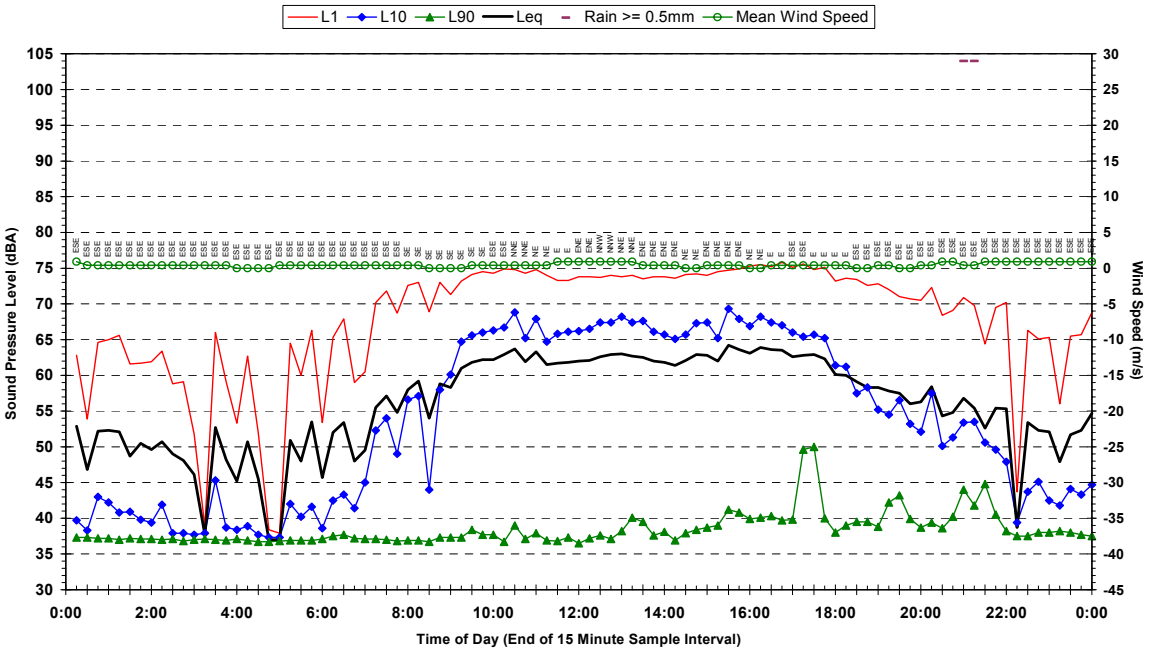
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Friday 19 June 2009



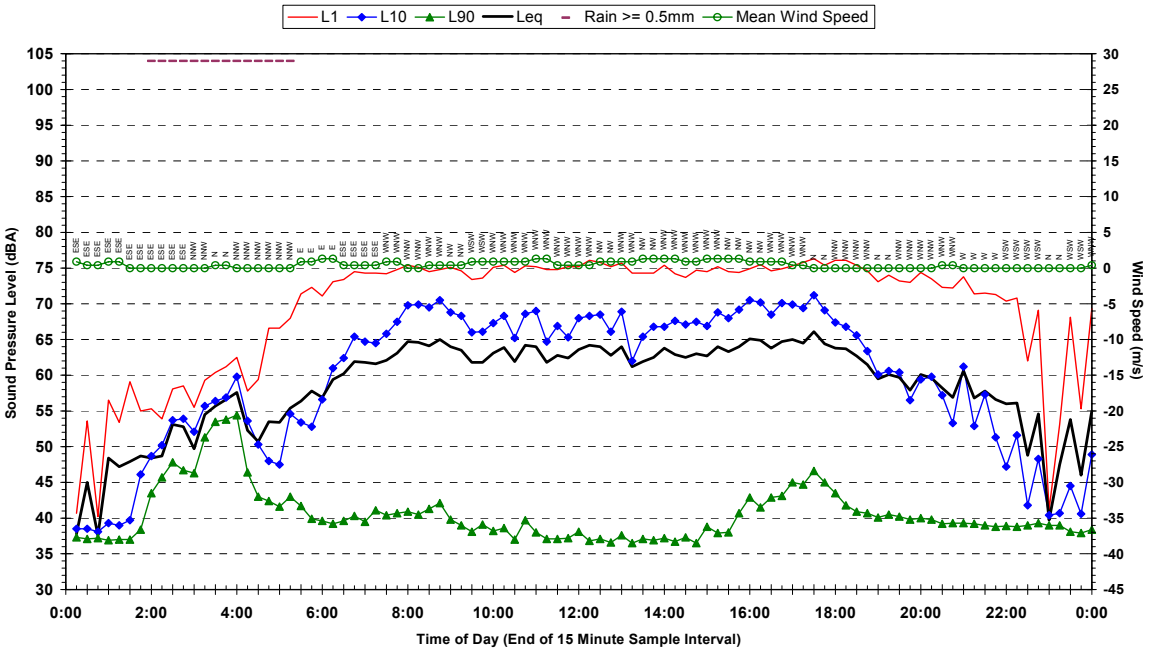
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Saturday 20 June 2009



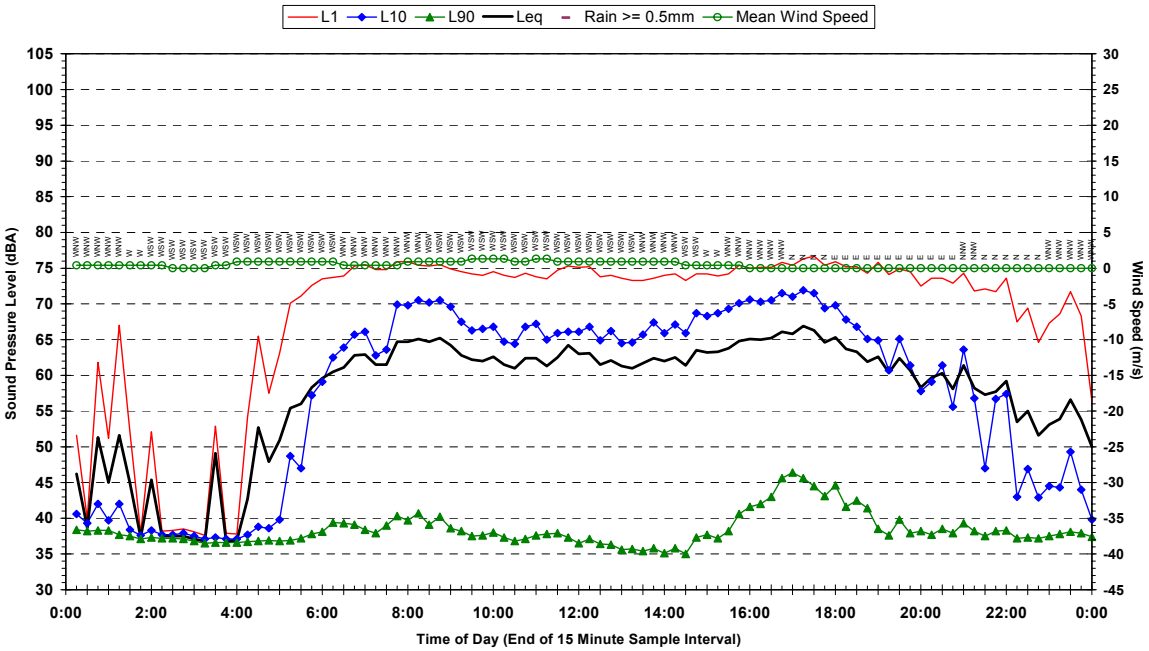
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Sunday 21 June 2009



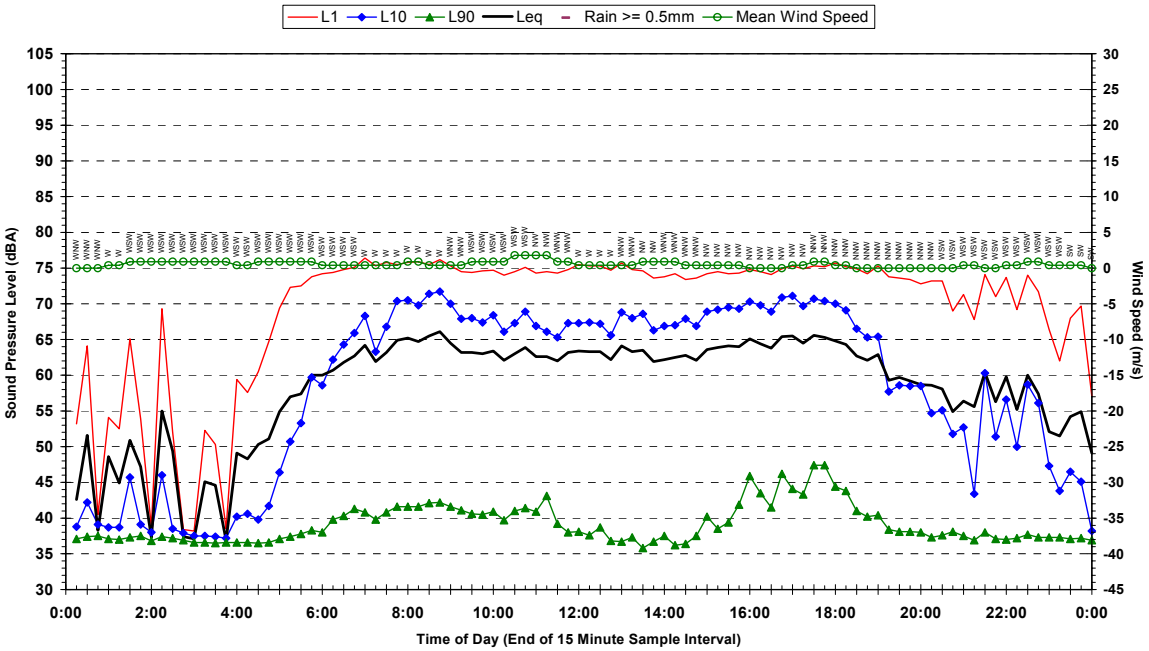
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Monday 22 June 2009



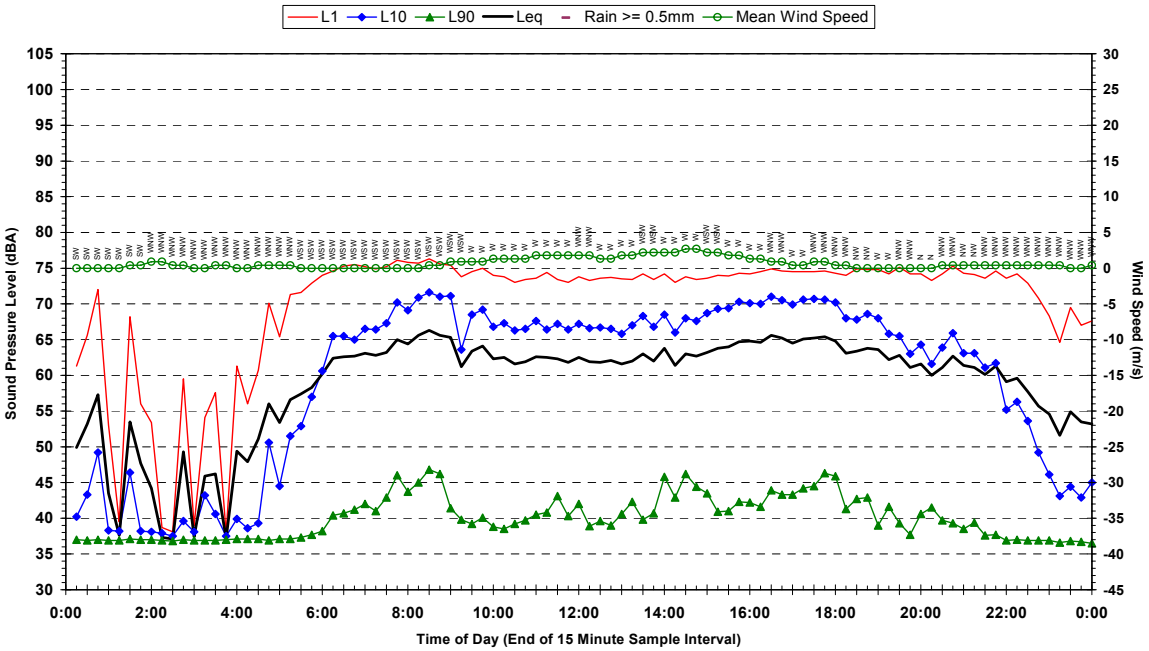
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Tuesday 23 June 2009



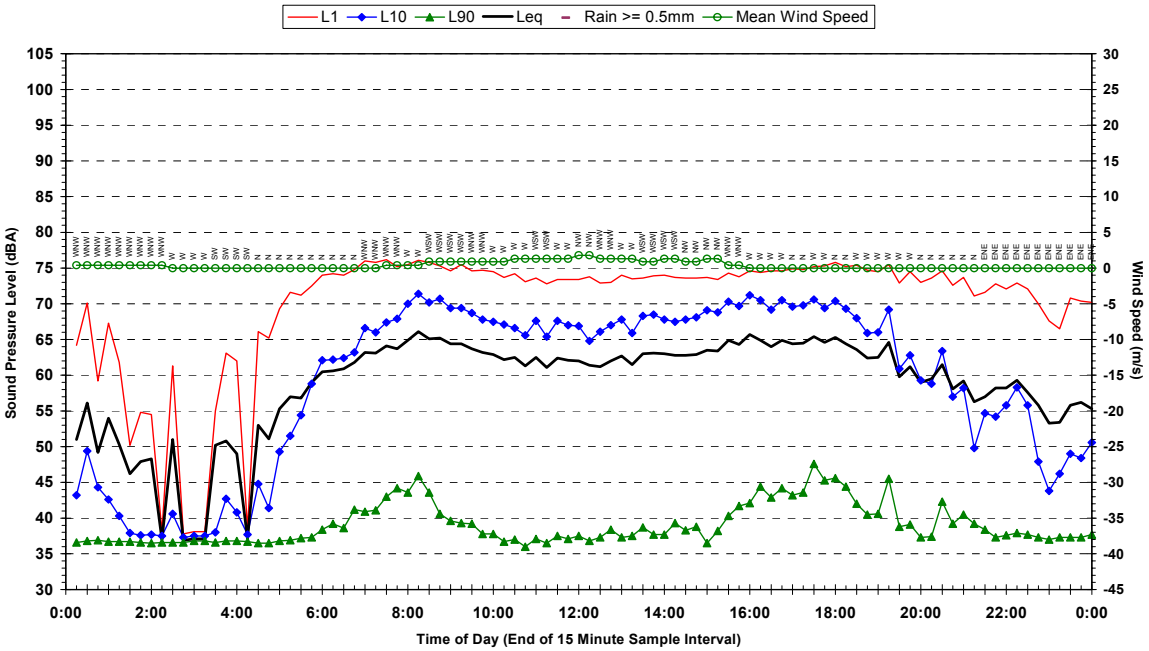
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Wednesday 24 June 2009



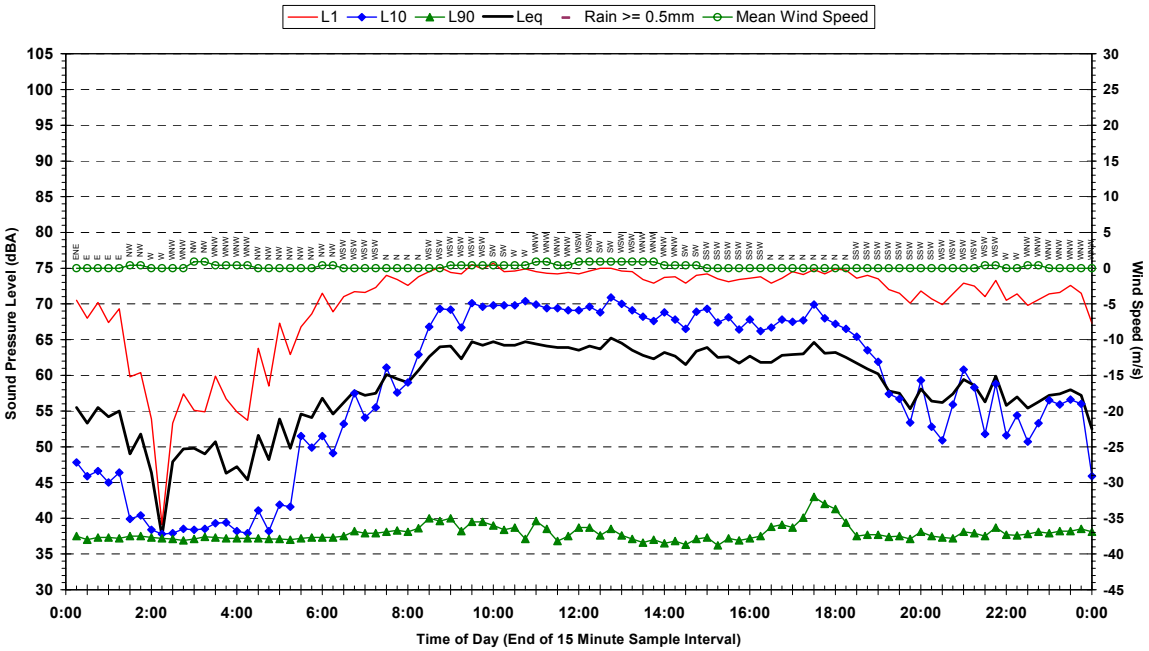
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Thursday 25 June 2009

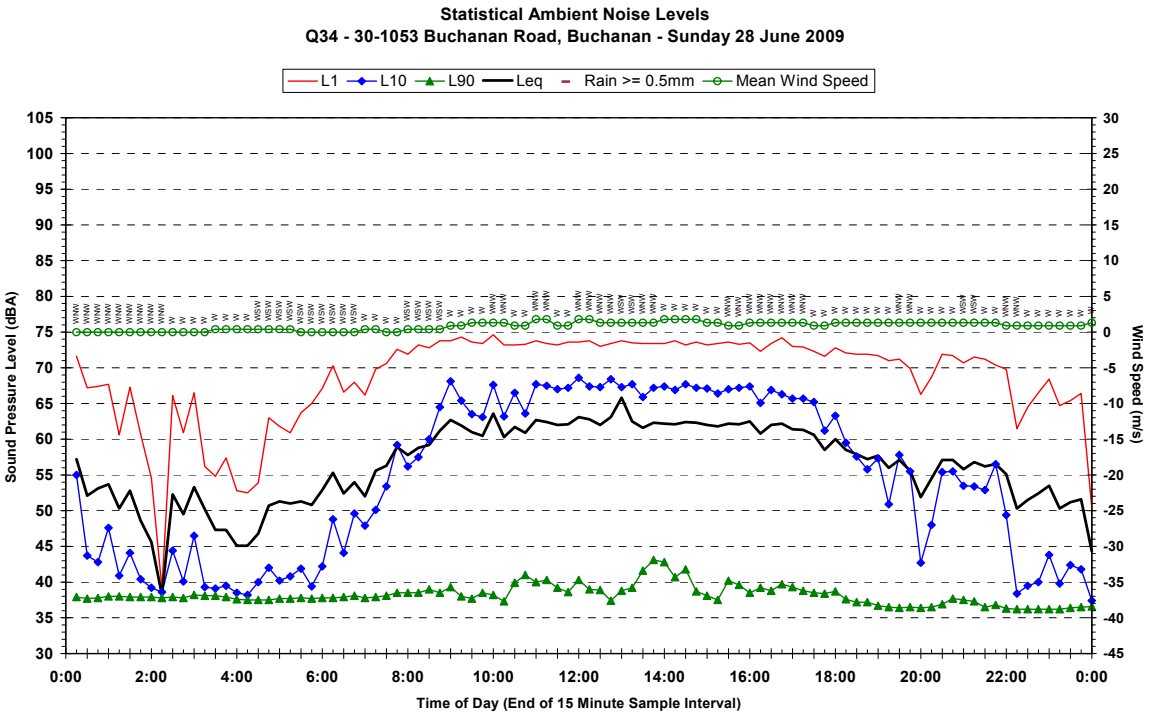


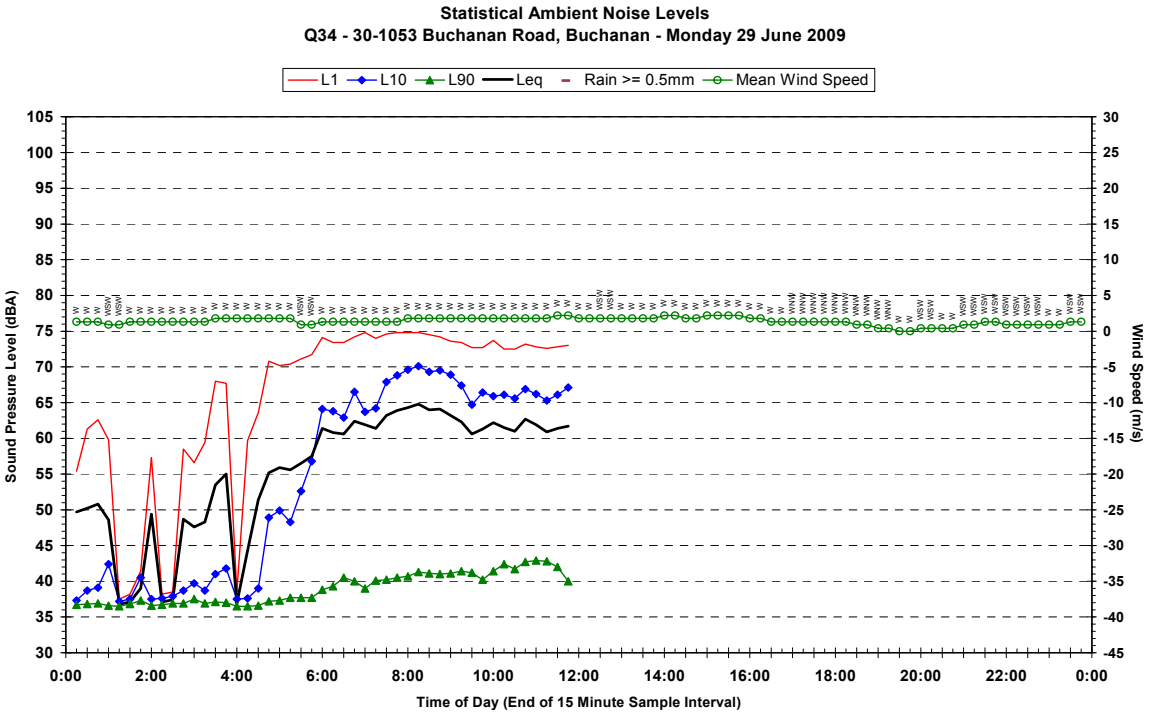
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Friday 26 June 2009

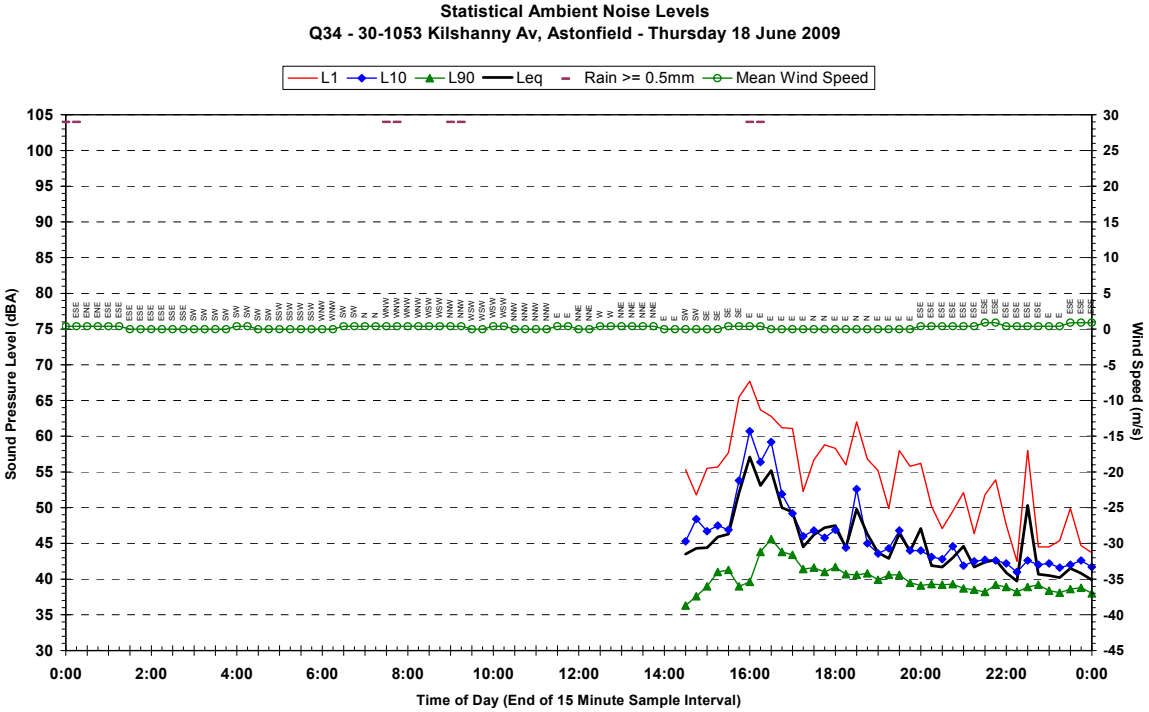


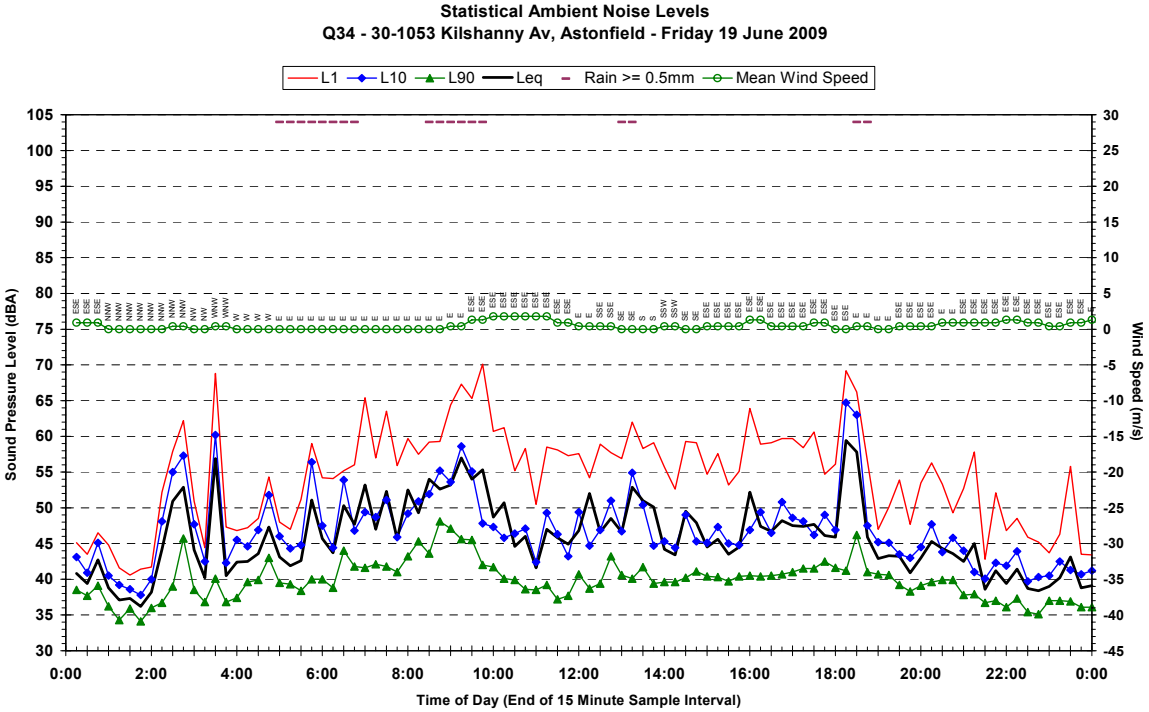
Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Saturday 27 June 2009



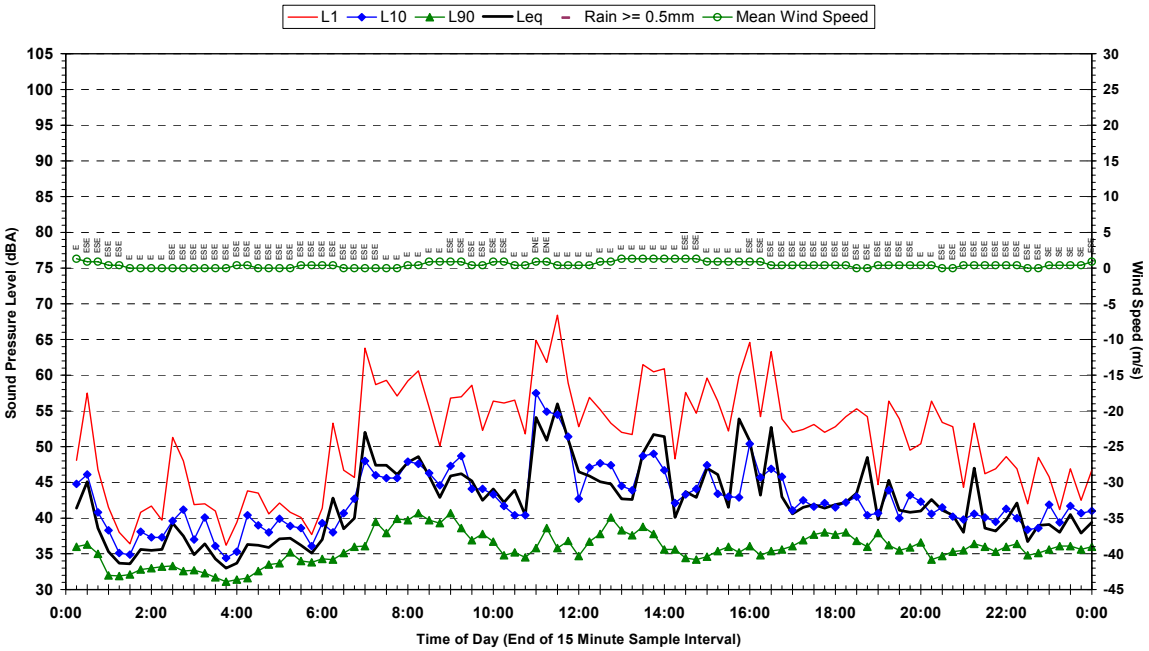

Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Sunday 28 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Q34 - 30-1053 Buchanan Road, Buchanan - Monday 29 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

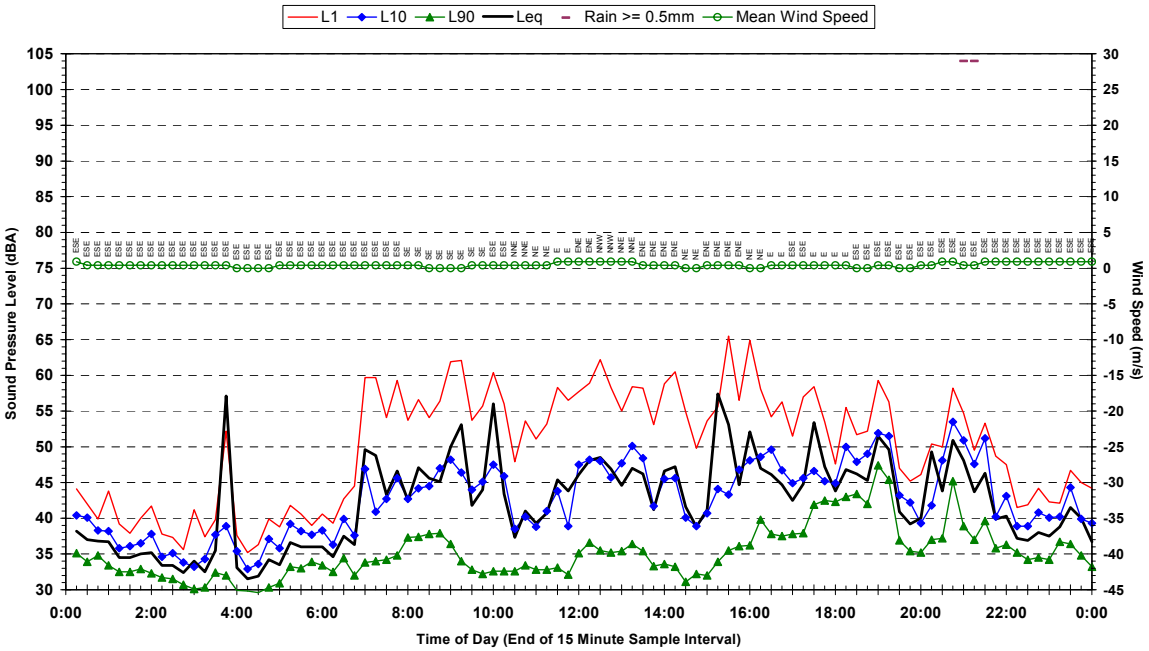

Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Thursday 18 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

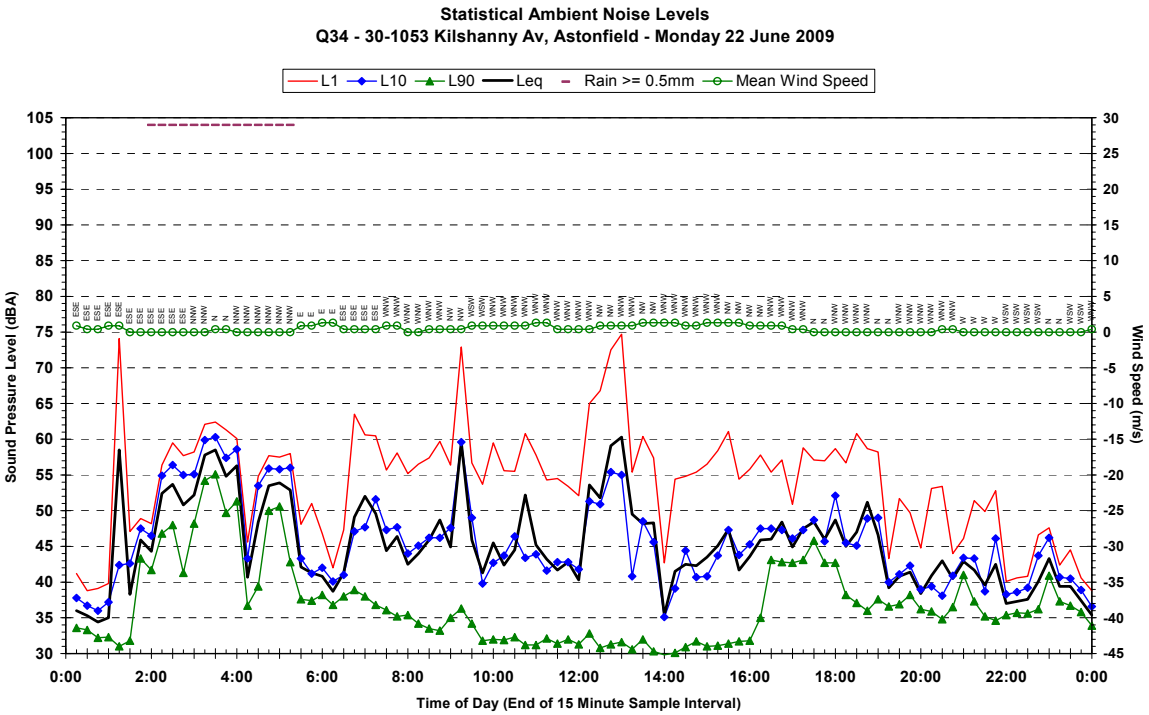

Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Friday 19 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

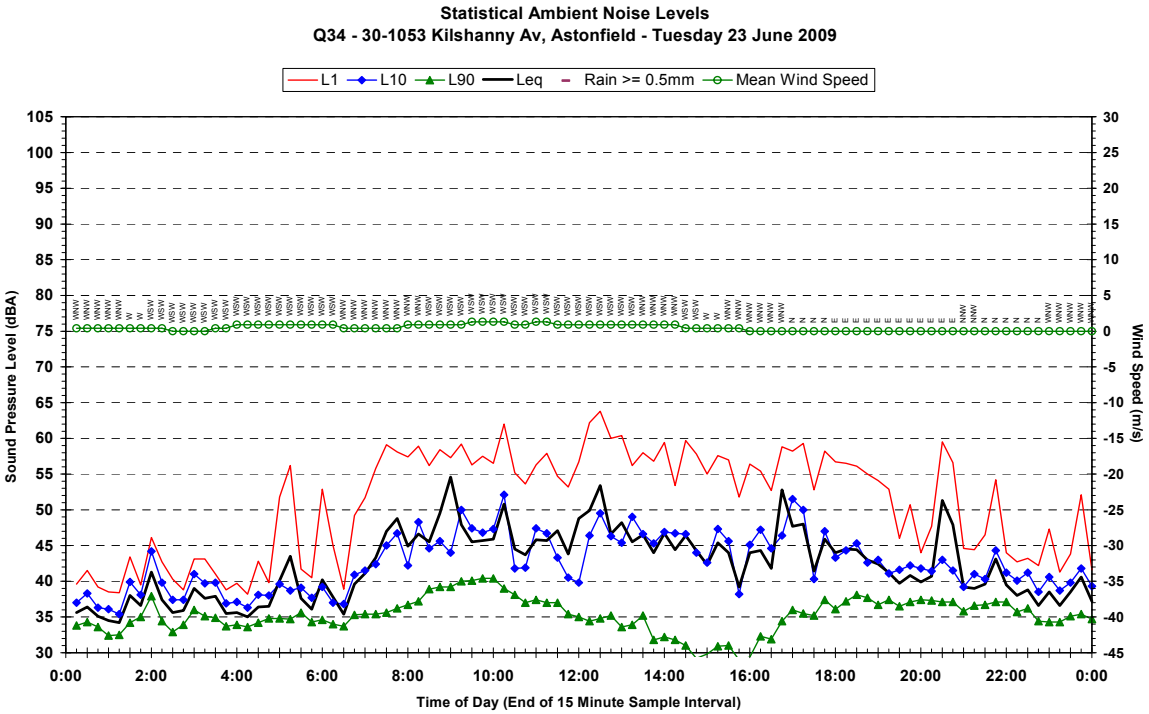
Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Saturday 20 June 2009



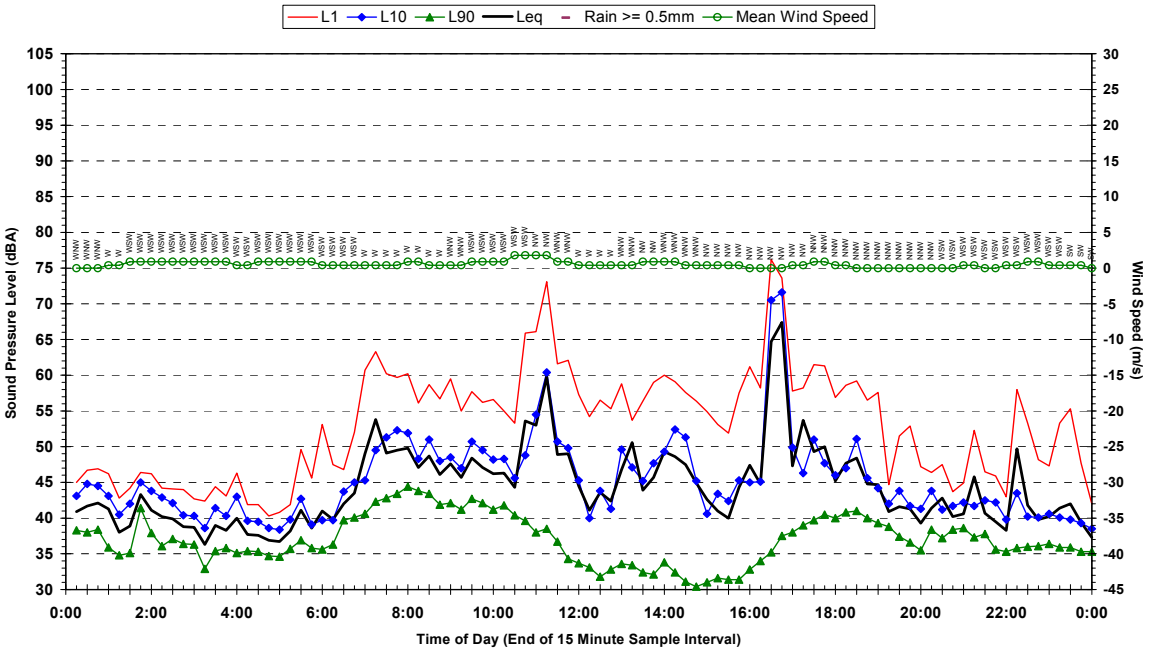
Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Sunday 21 June 2009



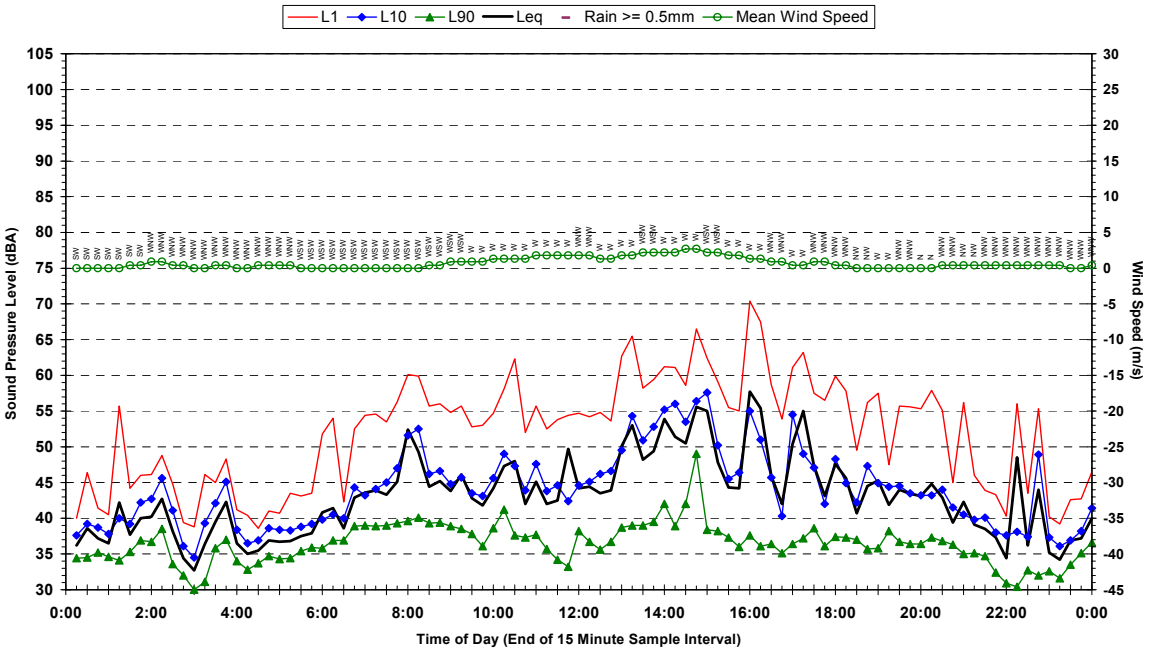

Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Monday 22 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)


Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Tuesday 23 June 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

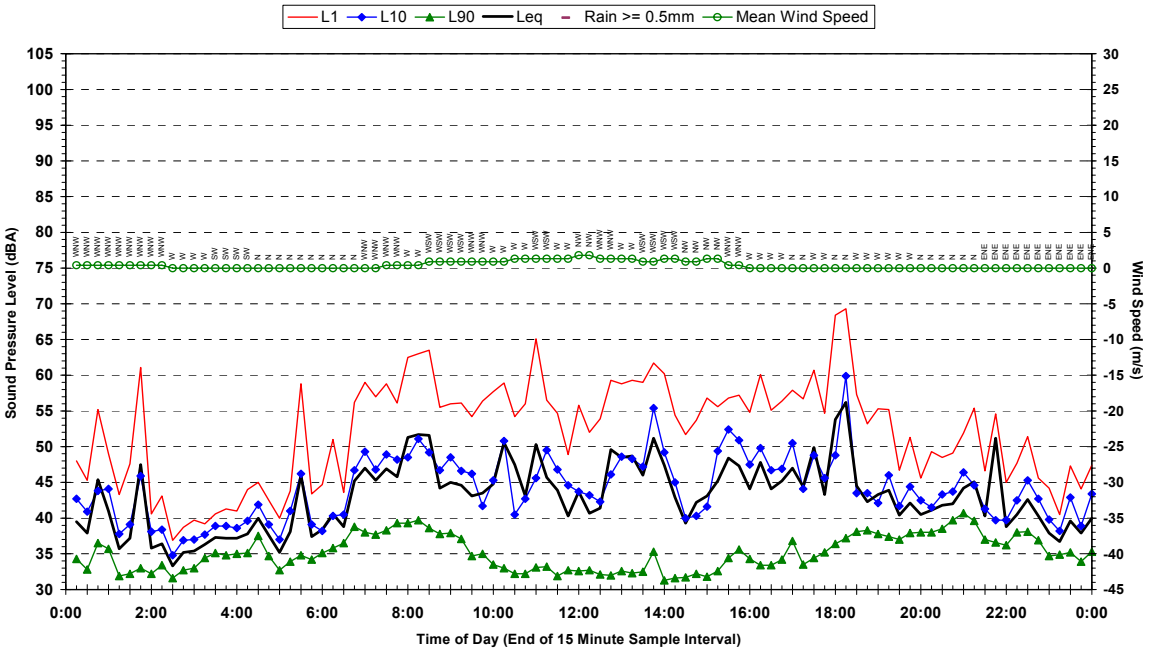
Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Wednesday 24 June 2009



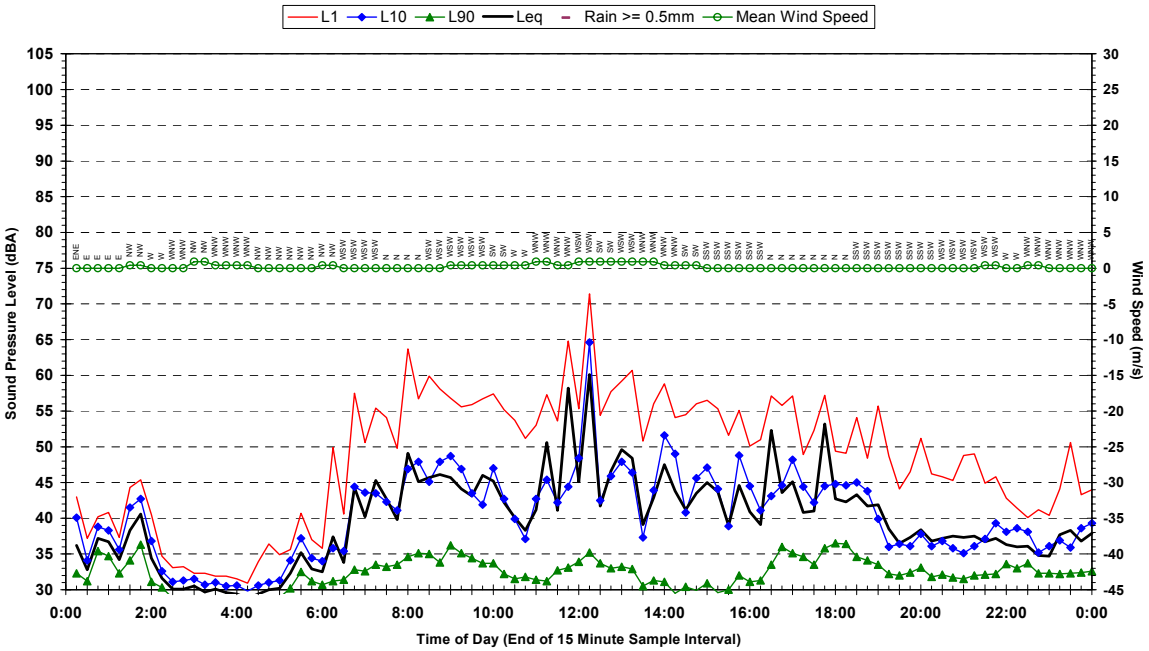
Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Thursday 25 June 2009



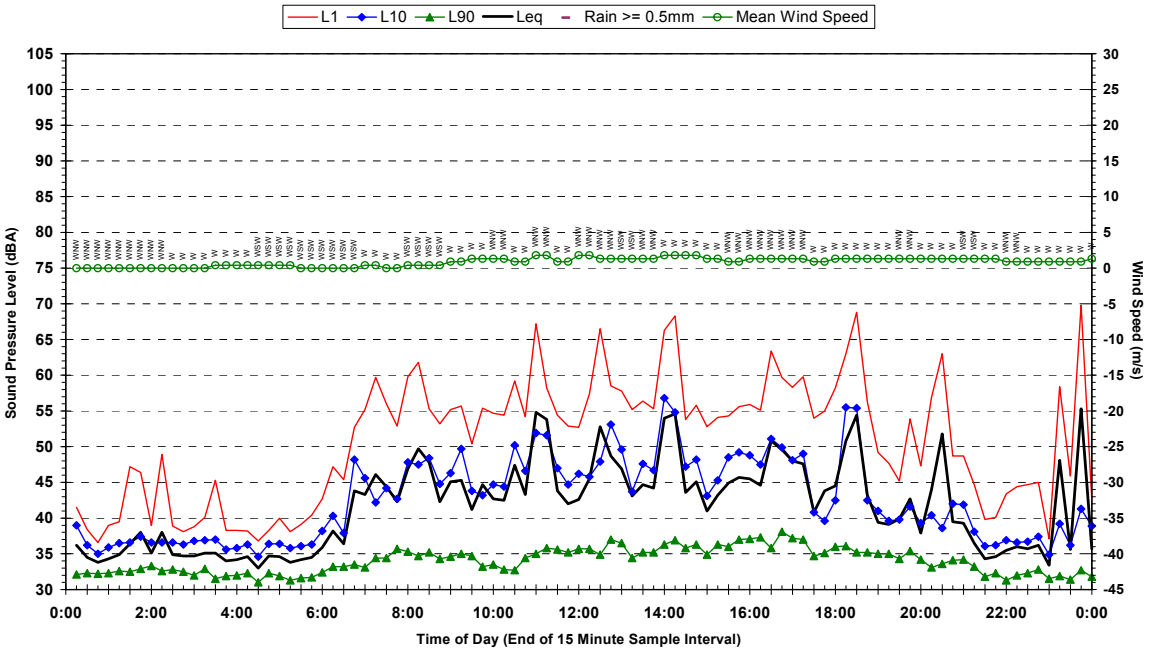
Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Friday 26 June 2009



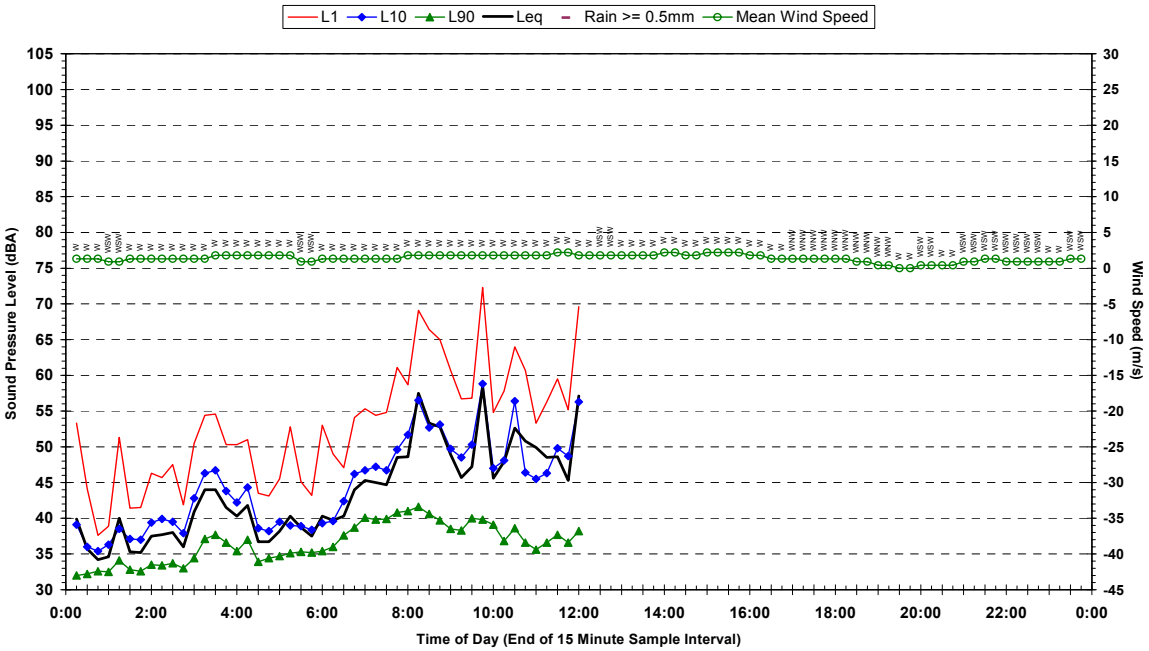
Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Saturday 27 June 2009



Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Sunday 28 June 2009



Statistical Ambient Noise Levels
Q34 - 30-1053 Kilshanny Av, Astonfield - Monday 29 June 2009



HEGGIES

REPORT Q35 30-1053-R1

Revision 0

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending September 2009

PREPARED FOR

Donaldson Coal Pty Ltd
PO Box 675
Green Hills NSW 2320

29 SEPTEMBER 2009

HEGGIES PTY LTD
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Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending September 2009

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DOCUMENT CONTROL

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Q35 30-1053-R1	Revision 0	29 September 2009	Nathan Archer	Katie Teyhan	

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1 INTRODUCTION

Development consent was obtained by Donaldson Coal Pty Ltd for the Donaldson Mine in October 1999 following a Commission of Inquiry. Development Consent number N97/00147 was issued by the Minister for Urban Affairs pursuant to Section 101 of the Environmental Planning and Assessment Act 1979.

Project Approval (Application No. 05_0136) granted by the Minister of Planning was obtained by Donaldson Coal Pty Ltd for Abel Coal Mine in 2008.

Donaldson Coal Pty Ltd has commissioned Heggies Pty Ltd (Heggies) to conduct quarterly noise monitoring surveys for the Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Mine Project Noise Monitoring Program, dated 27 May 2008.

The objectives of the noise monitoring survey for this operating quarter were as follows:

- Measure the ambient noise levels at five (5) focus receptor locations (potentially worst affected) surrounding Donaldson Coal Mine and Abel Coal Mine.
- Qualify all sources of noise within each of the attended surveys, including estimated contribution or maximum level of individual noise sources.
- Assess the noise emissions of Donaldson Coal Mine and Abel Coal Mine with respect to the limits contained in the Development Consent.

2 DEVELOPMENT CONSENT AND PROJECT APPROVAL

2.1 Donaldson Coal Mine Development Consent Conditions

The Development Consent nominates hours of operation and mine noise emission goals in the Sections entitled "*Operation of Development, Condition No. 3(1) and 3(2)"*, and *"Noise and Vibrational Noise Limits: Condition No. 15*" as follows:

"3.(1) Subject to (2) the approved hours of operation are as follows:

Works	*Period*	*Hours*
Construction, including construction of any bunds	*Monday to Friday* *Saturday*	*7 am to 6 pm* *8 am to 1 pm*
Mining operations, including mining, haulage of waste to dumps and coal processing	*Monday to Friday* *Saturday, Sunday*	*24 hours per day* *7 am to 6 pm*
Road Transportation and stockpiling of coal	*7 days per week*	*24 hours per day*
Rail loading of coal	*7 days per week*	*7 am to 10 pm*
Maintenance of mobile and fixed plant	*7 days per week*	*24 hours per day*
Blasting, not involving closure of John Renshaw Drive	*Monday to Saturday*	*7 am to 5 pm*
Blasting, involving closure of John Renshaw Drive	*Monday to Saturday*	*10 am to 2 pm*

Notes: Restrictions on Public Holidays are the same as Sundays

(2) The Applicant shall submit a report to the Director-General's satisfaction demonstrating the noise limits in Condition 15 can be met while rail loading of coal is occurring during the period from 6 pm to 10 pm. If that report does not demonstrate that the noise limits can be met to the Director-General's satisfaction, then the hours of operation for rail loading of coal shall be restricted to 7 am to 6 pm."

15. Unless subject to a negotiated agreement in accordance with Condition 23, the Applicant shall ensure that the noise emission from construction or mining operations, when measured or computed at the boundary of any dwelling not owned by the applicant (or within 30 metres of the dwelling, if the boundary is more that 30 metres from the dwelling), shall not exceed the following noise limits:

Location	***$L_{A10(15minute)}$ Noise Limits (dBA)***	
	Daytime	***Night-time***
Beresfield area (residential)	*45*	*35*
Steggles Poultry Farm	*50*	*40*
Ebenezer Park Area	*46*	*41*
Black Hill Area	*40*	*38*
Buchanan and Louth Park Area	*38*	*36*
Ashtonfield Area	*41*	*35*
Thornton Area	*48*	*40*

Note: Daytime is 7 am to 10 pm Monday-Saturday, and 8 am to 10 pm Sundays and Public Holidays. Night-time is 10 pm to 7 am Monday-Saturday, and 10 pm to 8 am Sundays and Public Holidays.

The noise limits apply for prevailing meteorological conditions (winds up to 3 m/s), except under conditions of temperature inversions."

Other Conditions of Consent relevant to noise are as follows:

"18. The applicant shall survey and investigate noise reduction measures from plant and equipment and set targets for noise reduction in each Annual Environmental Management Report (AEMR), taking into consideration valid noise complaints received in the previous year. The Report shall also include remedial measures.

19. The Applicant shall revise the Noise Management Plan as necessary and provide an updated Plan five years after commencement of mining to the Director-General, the independent noise expert (Condition 48), EPA, Councils and the Community Consultative Committee."

2.2 Abel Coal Mine – Project Approval

The relevant conditions relating to noise from the Abel Coal Mine approval are reproduced below.

Schedule 4

NOISE

Note: These conditions should be read in conjunction with section 3 of the Statement of Commitments.

Noise Limits

23 The Proponent shall ensure that the noise generated by the Project does not exceed at any privately-owned residence the levels set out in the following table for the monitoring location nearest that residence.

Table 1: Noise limits dB(A)

Day	Evening	Night		Location and Locality*
LAeq(15 minutes)	LAeq(15 minutes)	LAeq(15 minutes)	LA1(1 minute)	
50	48	41	51	**A** Weakleys Dr, Beresfield
50	48	41	51	**B** Yarrum Rd, Beresfield
43	44	38	50	**C** Phoenix Rd, Black Hill
41	40	36	46	**D** Black Hill School
41	40	36	46	**E** Brown Rd, Black Hill
41	40	36	46	**F** Black Hill Rd, Black Hill
43	41	36	46	**G** Buchanan Rd, Buchanan
43	41	36	46	**H** Mt Vincent Rd, Louth Park
44	46	38	48	**I** Lord Howe Dr, Ashtonfield
49	47	40	50	**J** Kilarney St, Avalon Estate
41	40	37	46	**K** Catholic Diocese (Former Bartter) K1, K2, K3
46	46	40	53	**L** Kilshanny Ave, Ashtonfield

Notes:

- To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the $L_{A1(1\ minute)}$ limit, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.
- These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

* Revised to list alphabetically

Noise Monitoring

24. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:

(a) be submitted to the Director-General for approval within 6 months of this approval;

(b) be prepared in consultation with the DECC; and

(c) use a combination of attended and unattended monitoring measures to monitor the performance of the project.

2.2.1 Statement of Commitments

3.3 Monitoring

Within 6 months of this approval being granted a Noise Monitoring Program shall be prepared and implemented for the Abel Underground Mine and the Bloomfield CHPP, to the satisfaction of the Director-General. The Noise Monitoring Program shall include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise environmental assessment. This plan will be integrated with the monitoring plans for the Tasman, Donaldson and Bloomfield Mines to provide a single integrated Noise Monitoring Program for all 4 mines.

3 PROCEDURES AND METHODOLOGY

3.1 General Requirements

The operational noise monitoring programme was conducted with reference to Development Consent N97/00147 (Donaldson Coal Mine), Project Approval 05_0136 (Abel Coal Mine), and in accordance with Heggies Report 30-1409-R2 dated 27 May 2008 (*Abel Mine Project Noise Monitoring Program)* and AS 1055-1997 "*Acoustics -Description and Measurement of Environmental Noise*".

3.2 Monitoring Locations

Baseline and preceding operational quarterly surveys have been conducted at 11 locations surrounding the Donaldson Mine and Abel Coal Mine sites. With the experience of these previous surveys, it was decided to concentrate noise monitoring at five (5) focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1**.

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield
K	Catholic Diocese of Maitland (formerly Bartter Enterprises)

A map giving the approximate location of the noise monitoring sites is contained within **Appendix A**.

3.3 Unattended Continuous Noise Monitoring

Environmental noise loggers were deployed on Wednesday 2 September 2009 at each of the five (5) nominated locations given in **Table 1**, and retrieved on Wednesday 9 September 2009. All unattended monitoring equipment was programmed to continuously record statistical noise level indices in 15 minute intervals including the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{A99}, L_{Amin} and L_{Aeq}. The statistical noise exceedance levels (L_{AN}) are the levels exceeded for N% of the 15 minute interval. The L_{A90} represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The L_{A10} is the level exceeded for 10% of the time and is usually referred to as the average maximum noise level. The L_{Aeq} is the equivalent continuous sound pressure level and represents the steady sound level which is equal in energy to the fluctuating level over the interval period. The L_{Amax} is the maximum noise level recorded over the interval. Instrument calibration was conducted before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

3.4 Operator Attended Monitoring

Operator attended surveys were conducted at each of the five (5) monitoring locations during daytime, evening and night-time periods, to verify the unattended logging results and to determine the character and contribution of ambient noise sources.

3.5 Equipment Operation

The mobile equipment operating on the Donaldson Mine site during the survey period are contained in **Appendix B**.

During the survey period the following operations were being undertaken:

- Coal mining operations were ongoing during the monitoring period, operating 7.00 am to 12.30 am Monday to Friday and day shift Saturday and Sunday.
- Overburden material and coal were being removed from strips CP09 – CP16 between 6.00 am and midnight Monday – Friday and day shift on Saturday and Sunday. The waste was generally being placed in Strips CP01 – CP07. The grader and water cart were operating on both day and afternoon shift where needed.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was a ventilation fan.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Monitoring

Operator attended noise measurements were conducted during the daytime on Wednesday 2 September 2009, the evening on Wednesday 2 September 2009/Thursday 3 September 2009 and the night-time on Thursday 3 September 2009/Friday 4 September 2009. All operator attended noise surveys were conducted using a Brüel & Kjær 2250 Type 1, 1/3 octave band, integrating sound level meter (s/n: 20600507).

The results of the operator attended noise measurements are given in **Table 2** to **Table 6**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations.

The tables provide the following information:

- Monitoring location.
- Date & start time.
- Wind velocity (m/s) and Temperature (ºC) at the measurement location.
- Typical maximum (L_{Amax}) and contributed noise levels.

Mine contributions listed in the tables are from Donaldson Mine and Abel Coal Mine and are stated only when a contribution could be quantified.

Table 2 Location A Weakleys Drive, Beresfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
2/09/2009 14:16 W = <2 m/s SW Temp = 24ºC Cloud cover = 0/8	Daytime Ambient	87	66	60	53	59	Traffic noise dominant (Weakleys Drive) ~ up to 60, Geese ~ 65, Residential noise ~ 55-60 (max 87). Donaldson mine inaudible Abel mine inaudible
2/9/2009 20:14 W = <1 m/s SW Temp = 12ºC Cloud cover = 0/8	Evening Ambient	83	79	71	55	69	Traffic noise dominant (Weakleys Drive) ~ 60-83, Distant road traffic from NE Highway ~ 55-57. Donaldson mine inaudible Abel mine inaudible
3/9/2009 22:06 W = Calm Temp = 14ºC Cloud cover = 8/8	Night-time Ambient	84	79	71	50	67	Traffic noise dominant (Weakleys Drive) ~ up to 84, Vehicle idling nearby ~ 50, Distant road traffic 50. Donaldson mine inaudible Abel mine inaudible

Table 3 Location F Lot 684 Black Hill Road, Black Hill

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels
		LAmax	LA1	LA10	LA90	LAeq	LAmax – dBA
2/09/2009 11:30 W = <2 m/s SW Temp = 20ºC Cloud cover = 0/8	Daytime Ambient	89	74	59	44	63	Traffic (John Renshaw Dr) ~ up to 64, Traffic (Black Hill Rd) ~ 75-89, Birds/insects ~ 44-47, Leaf rustle ~ 47, Road works on John Renshaw Dr audible in lulls but not measurable. Donaldson mine inaudible Abel mine inaudible
2/9/2009 19:47 W = Calm Temp = 11ºC Cloud cover = 0/8	Evening Ambient	83	65	55	49	57	Traffic (John Renshaw Dr) ~ 55-65, Aircraft ~ 55, Crickets/insects/frogs ~ 50-52, Donaldson mine; Haul trucks ~ 52-54, Dozer track slap ~ 50-51, Abel mine inaudible. Donaldson LA10 Contribution ~ 46 dBA.
3/9/2009 21:42 W = Calm Temp = 15ºC Cloud cover = 8/8	Evening Ambient	74	61	53	48	53	Traffic (John Renshaw Dr) ~ 57-59, Traffic (Black Hill Road) ~ 74, Crickets/insects/frogs ~ 50, Donaldson mine occasionally just audible; Haul truck breaking ~ 51, Dozer track slap audible once ~ 49, Abel mine inaudible. Donaldson LA10 Contribution ~ 39 dBA.
3/9/2009 23:02 W = Calm Temp = 14ºC Cloud cover = 7/8	Night-time Ambient	73	61	54	49	53	Traffic (John Renshaw Dr) ~ up to 64, Traffic (Black Hill Road) ~ 73, Crickets/insects/frogs ~ 49-51, Bloomfield colliery haul trucks and dozer ~ up to 53, Abel Mine inaudible. Donaldson mine; dozer (49-51) and quackers (49) occasionally audible in lulls. Donaldson LA10 Contribution ~ 39 dBA.

Table 4 Location G 156 Buchanan Road, Buchanan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
2/09/2009 14:16 W = <2 m/s SW Temp = 24ºC Cloud cover = 0/8	Daytime Ambient	83	77	72	42	67	Traffic (Buchannan Rd) ~ 74-83, Birds/insects ~ 45-46. Nearby people talking ~ 45-50. Donaldson mine inaudible Abel mine inaudible
2/9/2009 20:14 W = Calm Temp = 13ºC Cloud cover = 0/8	Evening Ambient	82	78	67	37	65	Traffic (Buchannan Rd) ~ 77-82 Insects ~ 37, Aircraft ~ 49, Leaf rustle ~ 39-40, Bloomfield trucks occasionally just audible in lulls Donaldson mine inaudible Abel mine inaudible
4/9/2009 00:15 W = Calm Temp = 14ºC Cloud cover = 7/8	Night-time Ambient	49	43	41	35	38	Traffic (Buchannan Rd) ~up to 46. Distant road traffic ~ 40. Insects ~ 38-39. Bloomfields dozer and haul trucks up to 44. Donaldson mine inaudible Abel mine inaudible

Table 5 Location L 17 Kilshanny Ave, Ashtonfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
2/09/2009 14:16 W = <2 m/s SW Temp = 24ºC Cloud cover = 0/8	Daytime Ambient	69	62	52	38	50	Distant Traffic ~ 40-43, Distant motorbikes ~ 54-55, Birds/insects ~ 38, Dog barking ~ 57-69 Local traffic ~ 69 Leaf rustle ~ 38-39, Donaldson mine inaudible Abel mine inaudible
2/9/2009 20:48 W = Calm Temp = 11ºC Cloud cover = 0/8	Evening Ambient	73	48	44	40	43	Distant Traffic ~ 41-45, Insects/birds ~ 40-42, Reverse beepers (non mine) ~ 47, Dogs barking ~ 58-62, Donaldson mine inaudible Abel mine inaudible
4/9/2009 00:55 W = Calm Temp = 14ºC Cloud cover = 7/8	Night-time Ambient	70	42	38	31	40	Operator noise ~ 70, Crickets/insects ~ 33, Donaldson haul trucks occasionally just audible ~ 32-35, Distant road traffic 35.. Donaldson L_{A10} Contribution ~ <30 dBA. Abel mine inaudible

Table 6 Location K Catholic Diocese of Maitland (formerly Bartter Enterprises)

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
2/09/2009 14:16 W = <2 m/s SW Temp = 24°C Cloud cover = 0/8	Daytime Ambient	70	54	50	39	47	Traffic (John Renshaw Dr) ~ 51-55, Birds/insects ~ 45, Operator noise ~ 70, Donaldson mine inaudible. Abel mine inaudible
2/9/2009 21:34 W = Calm Temp = 11°C Cloud cover = 0/8	Evening Ambient	87	81	69	46	68	Traffic (John Renshaw Dr) ~ 79-87, Distant road traffic ~ 45, Distant industrial noise ~ 46, Donaldson Mine ; Dozer track slap~ 46,47,50,54, Haul trucks ~ 46-51. Donaldson L_{A10} Contribution ~ 48 dBA. Abel mine inaudible
3/9/2009 22:27 W = Calm Temp = 14°C Cloud cover = 8/8	Night-time Ambient	92	81	72	46	70	Traffic (John Renshaw Dr) ~ up to 92, Frogs, insects and birds ~ 53, Donaldson Mine; Dozer track slap ~ 45, 47, 48, Reverse buzzer ~ 46, Haul trucks ~ 46. Donaldson L_{A10} Contribution ~ 45 dBA. Abel mine inaudible

4.2 Operator Attended Monitoring Summary

4.2.1 Donaldson Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements. Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) and Location F Black Hill Rd during the evening and night-time and just audible at Location L Kilshanny Avenue, Ashtonfield, during the night-time.

During the operator attended noise survey on the evening of 2 September 2009, measured noise levels indicated that the Donaldson Mine contribution at Location F was in excess of those specified in the Donaldson Mine Consent. However, the evening attended noise monitoring was undertaken in September 2009 with the prevailing meteorological conditions on the evening of the survey being cool (less than 11°C) and calm with clear skies. These conditions typify those required for the formation of a temperature inversion during the winter months as described in the INP.

The Donaldson Mine consent states the following with regards meteorological conditions under which the consent conditions apply:

> *"The noise limits apply for prevailing meteorological conditions (winds up to 3 m/s), except under conditions of temperature inversions."*

Due to the above, an additional attended noise survey was conducted at Location F on the evening of 3 September 2009, with meteorological conditions which were overcast and warm (15ºC), therefore un-conducive to the formation of a temperature inversion. Measured noise levels during the additional survey determined that the Donaldson Mine contribution at Location F was approximately 39 dBA and, as such, did not exceed those specified in the Donaldson Mine consent.

The operator attended surveys determined that the Donaldson mine contribution at Location F was approximately L_{A10} 39 dBA during the night-time. This is within the 2 dBA tolerance as per Chapter 11 of the INP and, as such, contributed noise levels at Location F are deemed to comply with those specified in the Donaldson Mine consent.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, Heggies understand the dwellings on the Catholic Diocese site are currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Catholic Diocese site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution at these residential locations was approximately 34 dBA during the evening and 31 dBA during the night-time which is in compliance with Donaldson Mine consent.

The operator attended surveys determined that the Donaldson mine contribution at Location L was less than L_{A10} 30 dBA during the night and, as such, was in compliance with those specified in the Donaldson Mine consent.

Based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine comply with noise emission goals for all periods.

4.2.2 Abel Coal Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements.

Abel Project operations were inaudible at all residential locations during all operator attended noise surveys. As such, it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Monitoring

Unattended continuous noise monitoring was conducted between Wednesday 2 September 2009 and Wednesday 9 September 2009 at each of the five (5) nominated locations given in **Table 1**. ARL Type EL-316 noise loggers were used to monitor the ambient noise levels at each location. Details of the noise loggers used for the unattended continuous noise monitoring are given in Table 7.

Table 7 Noise Loggers and Noise Monitoring Locations

Location	Noise Logger Serial Number
A – Weakleys Drive, Beresfield	16-302-482
F – Black Hill Road, Black Hill	16-203-531
G – Buchanan Road, Buchanan	16-103-494
L – Kilshanny Ave, Kilshanny	16-301-473
K – Catholic Diocese of Maitland (formerly Bartter Enterprises)	16-306-039

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices C1** to **C5**. A summary of the results of the unattended continuous noise monitoring is given in **Table 8**. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

The measured ambient noise levels were divided into three periods representing day, evening and night as designated in the NSW Industrial Noise Policy. The day, evening and night periods replace the day and night periods defined under the Environmental Noise Control Manual (ENCM). However, as the Donaldson conditions of consent are under the ENCM, these periods have also been reported.

Precautions can be taken to minimise influences from extraneous noise sources (eg optimum placement of the loggers away from creeks, trees, houses, etc), however not all these sources or their effects can be eliminated. This is particularly the case during the warmer times of year when noise from insects, frogs, birds and other animals can become quite prevalent.

Weather data for the subject area during the noise monitoring period was provided by Donaldson Coal. Noise data during periods of any rainfall and/or wind speeds in excess of 5 m/s (approximately 9 knots) were discarded in accordance with INP weather affected data exclusion methodology.

Table 8 Unattended Continuous Monitoring Ambient Noise Levels (dBa Re 20 µPa)

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	59	54	47	57
	Evening	56	53	43	52
	ENCM Daytime	58	53	44	56
	Night	57	52	37	52
F Lot 684 Black Hill Road, Black Hill	Daytime	68	57	42	56
	Evening	63	54	47	53
	ENCM Daytime	67	55	42	56
	Night	59	51	40	53
G 156 Buchannan Road, Buchannan	Daytime	72	66	38	62
	Evening	70	60	32	58
	ENCM Daytime	71	56	33	61
	Night	65	43	29	55
L 17 Kilshanny Ave, Ashtonfield	Daytime	58	47	32	58
	Evening	50	41	33	42
	ENCM Daytime	56	45	32	58
	Night	42	36	29	52
K Catholic Diocese of Maitland	Daytime	58	55	44	65
	Evening	57	53	39	50
	ENCM Daytime	57	54	42	52
	Night	57	51	33	52

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

5.2 Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

Based on observations made during operator attended noise surveys and previous monitoring periods, it is not likely that Donaldson Mine and Abel Project noise contributions exceeded the relevant criteria under the meteorological conditions stated in the relevant Consent Conditions.

5.2.1 Ambient LA90 Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient day, evening and night time LA90 noise levels recorded for the quarter ending September 2009 were lower than levels recorded during the baseline monitoring process at Location A in the daytime, evening and night-time. Significant increases of 13 dBA, 22 dBA and 19 dBA were recorded respectively in the daytime, evening and night-time periods at Location F.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

Previous Quarter (June 2009)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were generally lower at Locations A, G and L. Significant increases of 7 dBA, 11 dBA and 6 dBA were recorded respectively in the daytime, evening and night-time periods at Location F.

Given that no data was available at Location K during June 2009 no comparison can be made.

Coinciding Period Last Year (September 2008)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A90} noise levels were 10 dBA, 13 dBA and 8 dBA higher during the daytime, evening and night-time respectively at Location F. L_{A90} noise levels at Location K were 3 dBA higher during the daytime and were lower during the evening and night-time periods.

Given that no data was available at Locations A, G and L during September 2008 no comparison can be made.

Discussion

Given observations made during operator attended noise surveys, it is likely that the increase in background noise levels at Location F during the evening and night-time was predominantly due to a combination of insect/cricket/frog activity. Whilst Donaldson operations were audible during the evening and night-time periods, they are unlikely to have contributed to the background, L_{A90}, noise levels.

5.2.2 Ambient L_{A10} Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient day, evening and night-time L_{A10} noise levels recorded for the quarter ending September 2009 were less than levels recorded during the baseline monitoring process at Location A. Ambient daytime, evening and night-time L_{A10} noise levels were 4 dBA to 6 dBA greater than levels recorded during the baseline monitoring process at Location F.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

Previous Quarter (June 2009)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at Location A were lower than levels at Location A during the June 2009 quarterly monitoring. Noise levels at Locations F, G and L were the similar (within 1 dBA) or lower during all periods.

Given that limited data was available at Location K during December 2008 no comparison can be made.

Coinciding Period Last Year (June 2008)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels recorded at Locations F and K were slightly higher than last year with a maximum increase of 2 dBA being recorded during the daytime at both locations.

Given that no data was available at Locations A, G and L during June 2008 no comparison can be made.

Discussion

Given observations made during operator attended noise surveys, it is likely that the increase in ambient noise levels at Location F during the evening and night-time was due to a combination of increased traffic volumes and insect/cricket/frog activity as well as both Donaldson and Bloomfield mining operations which were both audible during the evening and night-time monitoring periods. In particular, the impact of Bloomfield operations was noted to be higher than during previous quarterly monitoring.

6 SUMMARY OF RESULTS AND FINDINGS

Heggies were engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2008.

The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 6**.

Donaldson Mine operations were observed to be audible at Location F Black Hill Road and Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the evening and night-time and at Location F Black Hill Road, during the evening and night-time. However, Donaldson Mine contributions were found to be within the relevant consent conditions at all assessed locations.

Abel Mine operations were inaudible at all residential locations during all periods and as such it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (September 2009), the baseline monitoring period, the last monitoring period (June 2009), and the coinciding monitoring period from last year (September 2008) has been conducted.

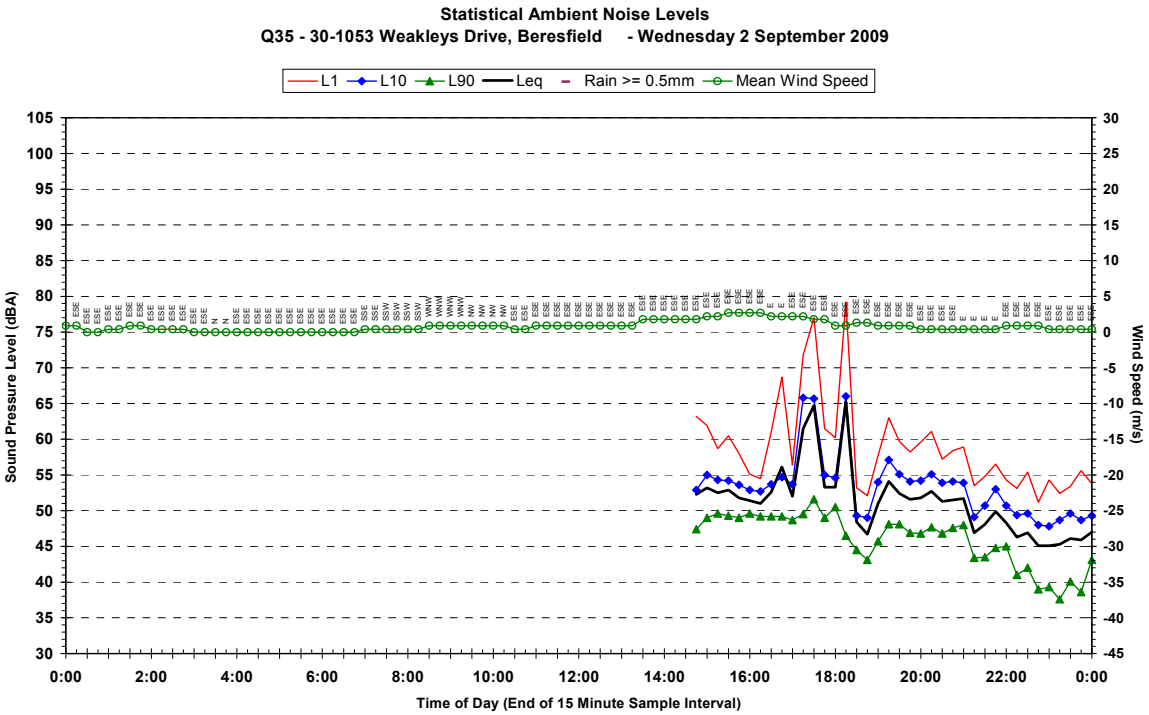
In summary, where noise levels have risen, the ambient noise environment has been identified to generally contain traffic and natural noise sources and not noise from Donaldson Mine or Abel Coal Mine activity. However, at Location F noise levels from mining operations in the area, including Donaldson operations, were observed to have increased from those noise levels recorded during the baseline monitoring process and previous compliance monitoring periods.

APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – June 2009

Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 5110B	AAA00311
9	LOD004	CATERPILLAR IT28G	CWAC00351
10	LOD044	KOMATSU WA700	10106
11	LOD149	CATERPILLAR 990II	4FR00394
12	RDT026	CATERPILLAR 777A W/CART	84A01034
13	RDT033	CATERPILLAR 740 W/CART	B1P02699
14	RDT100	CATERPILLAR 785	8GB00596
15	RDT107	CATERPILLAR 785	8GB00320
16	RDT140	CATERPILLAR 785	8GB00333
17	RDT143	CATERPILLAR 785	8GB00374
18	RDT155	CATERPILLAR 785	8GB00152
19	RDT162	CATERPILLAR 785	8GB00258
20	RDT163	CATERPILLAR 785	8GB00259
21	RDT182	CATERPILLAR 785	8GB00494
22	GRD004	CATERPILLAR 16H	6ZJ00678
23	GRD036	CATERPILLAR 16G	93U03039
24	CMP059	AIRMAN COMPRESSOR – STR034	
25	CMP061	SULLAIR COMPRESSOR 185CFM	200610160001
26	CMP062	SULLAIR COMPRESSOR 185CFM	206101100049
27	GEN001	KUBOTA GENERATOR – VEH154	
28	WEL057	LINCOLN SAM400 – VEH154	
29	VEH154	ISUZU NPS300 BOILY TRUCK	
30	STR034	VOLVO FL7 SERVICE TRUCK	YV5FAG6JD560318
31	UTE001	NISSAN PATROL SERVICE UTE	
32	UTE002	NISSAN NAVARA TRAYBACK	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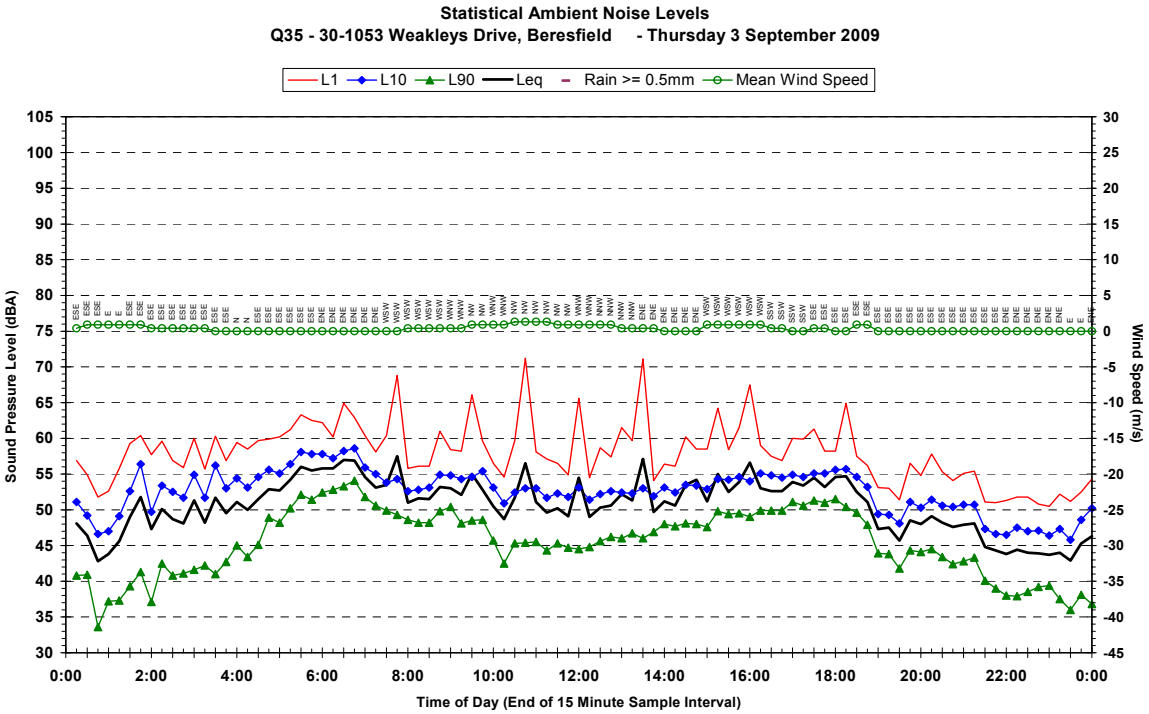
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)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L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

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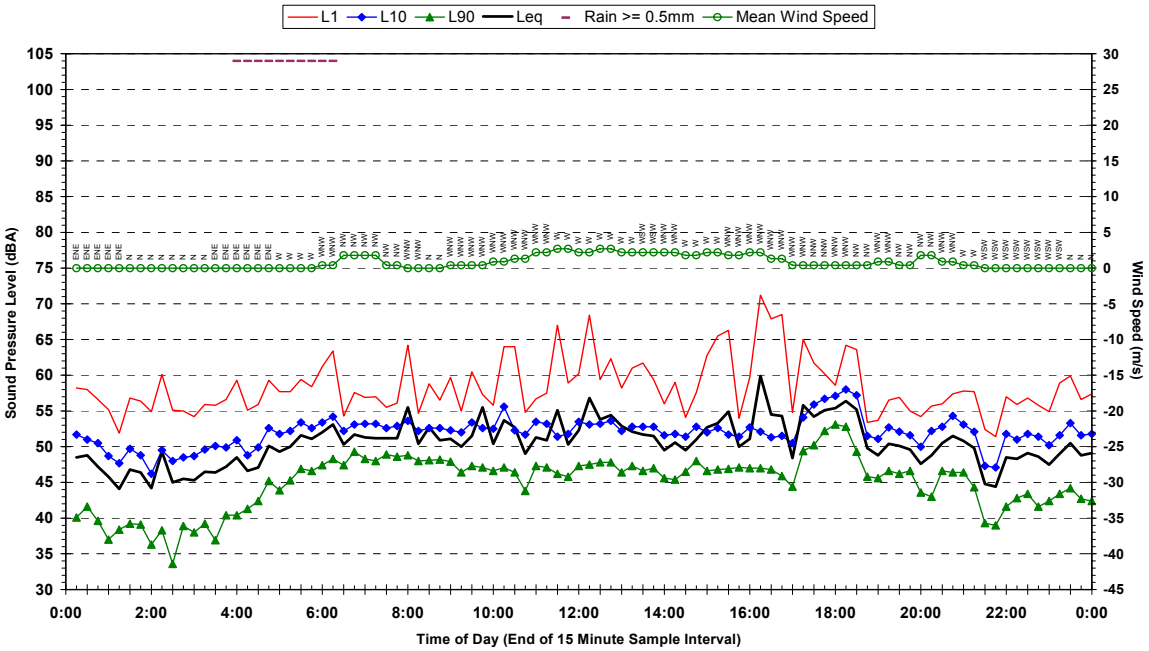

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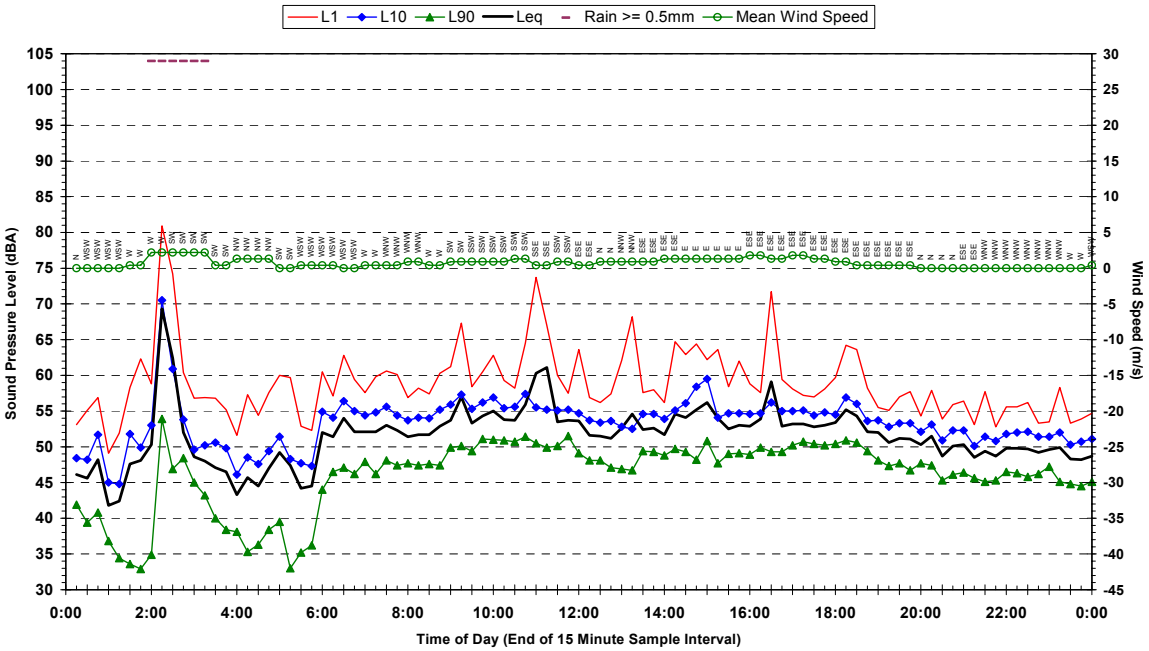

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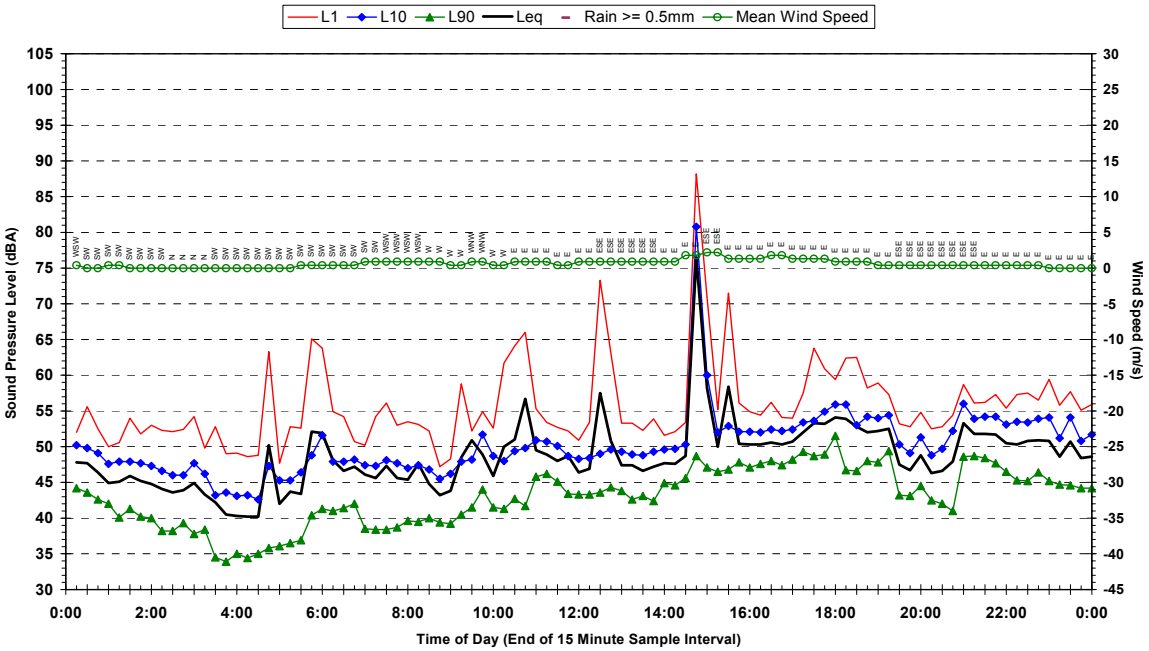

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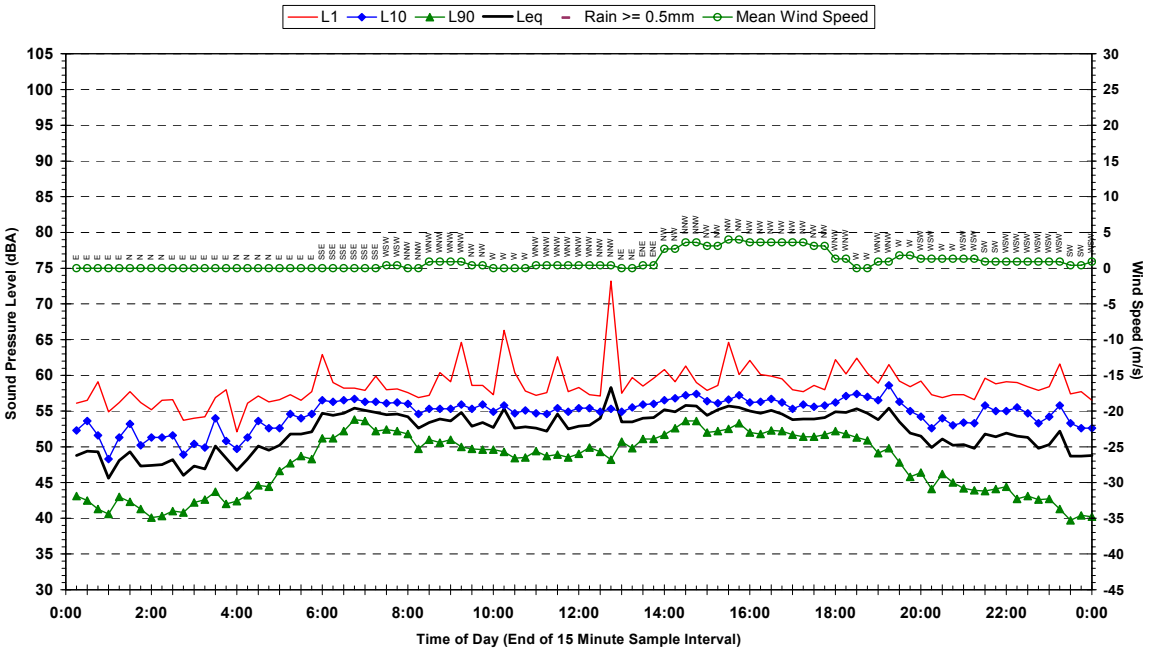

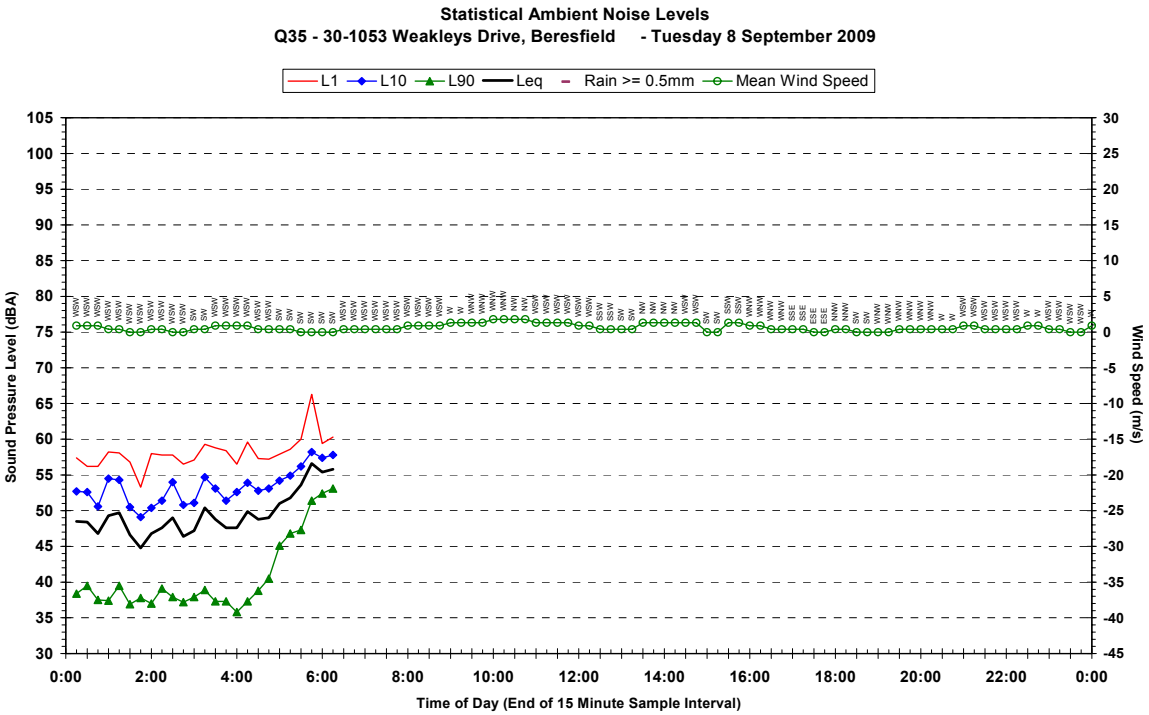
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L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

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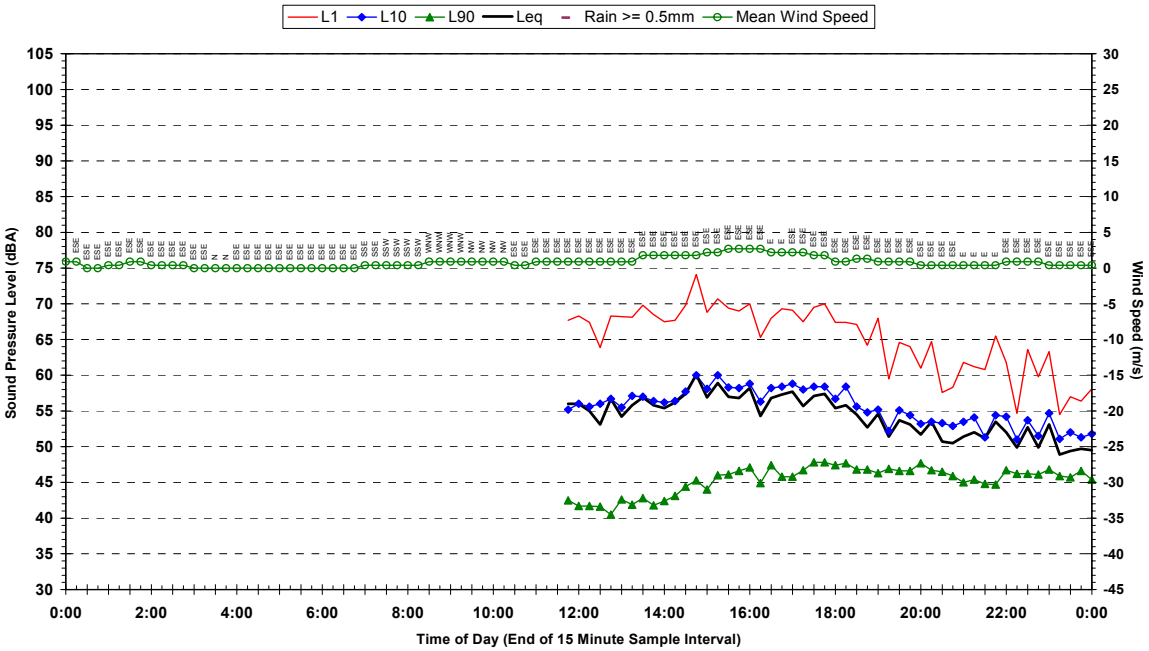

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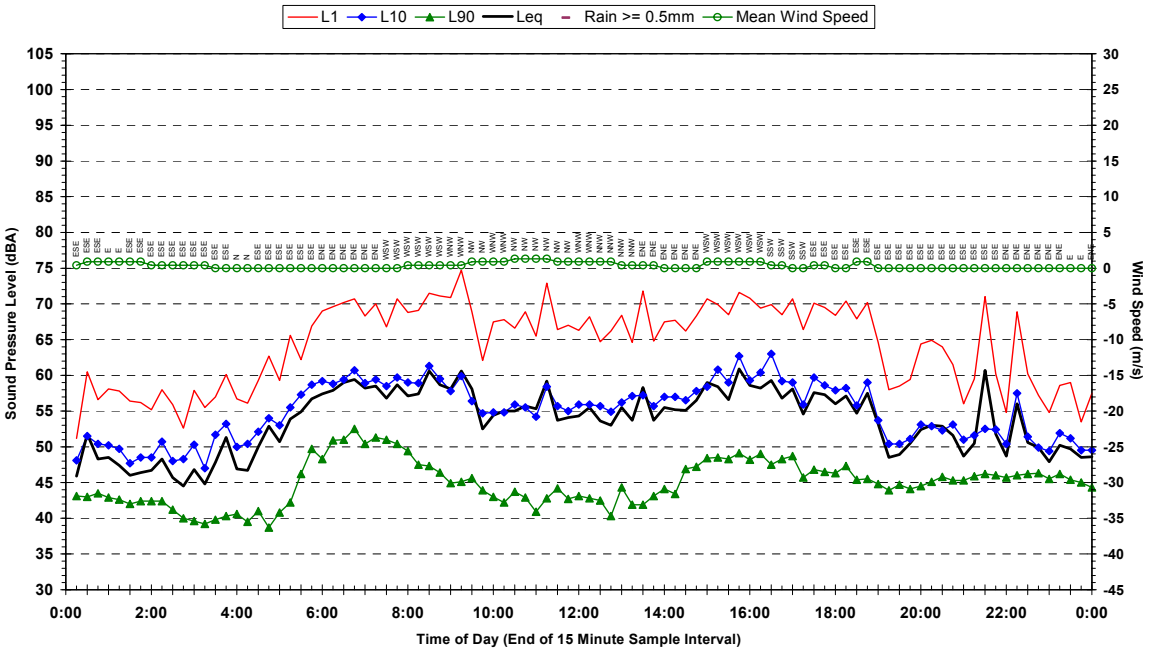

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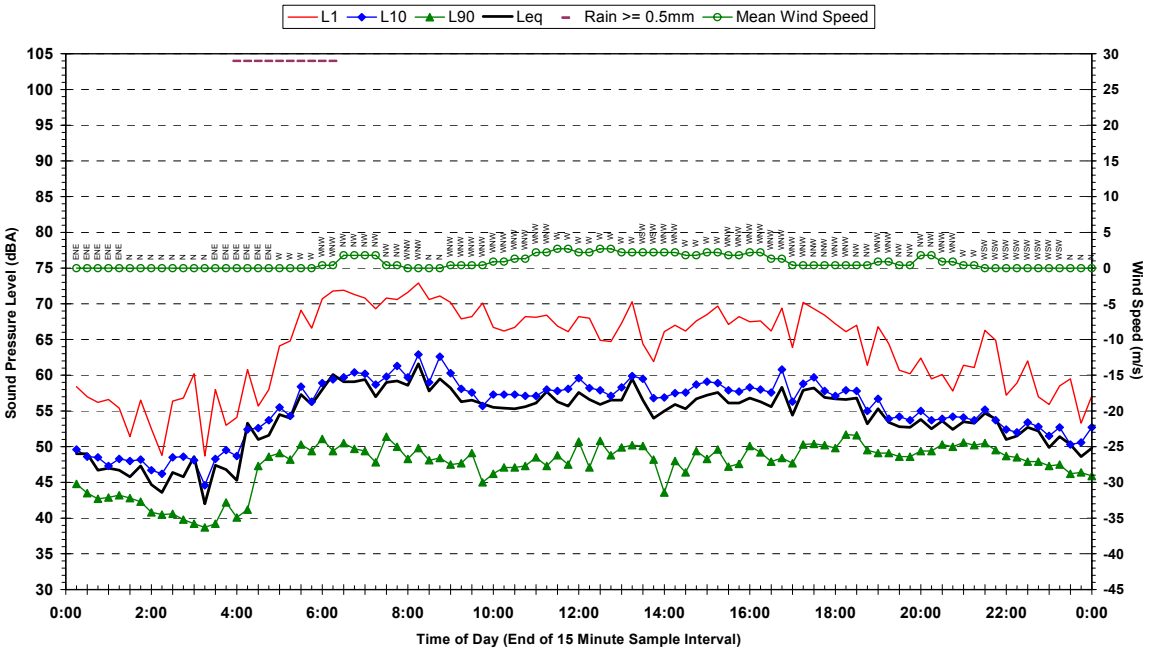

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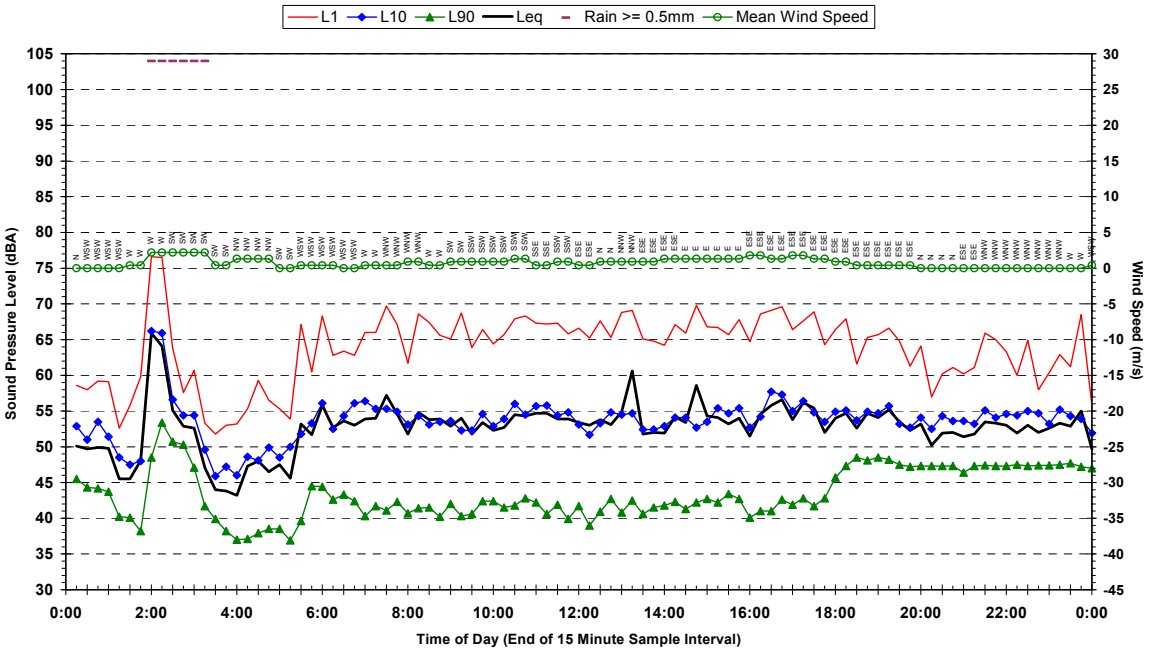

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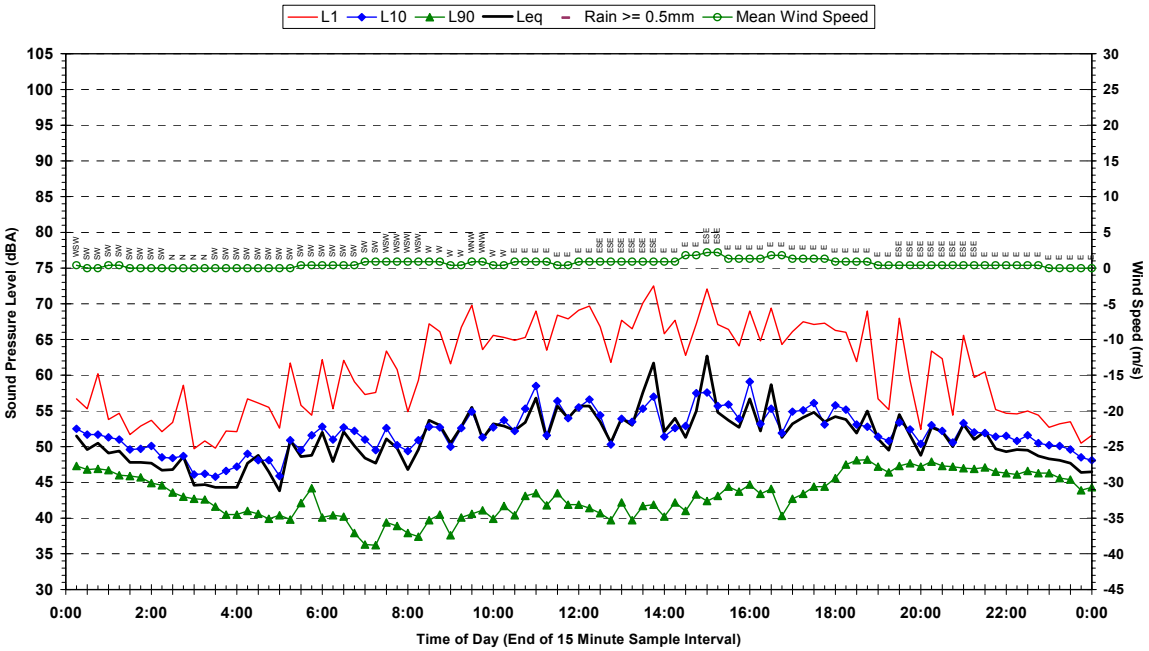

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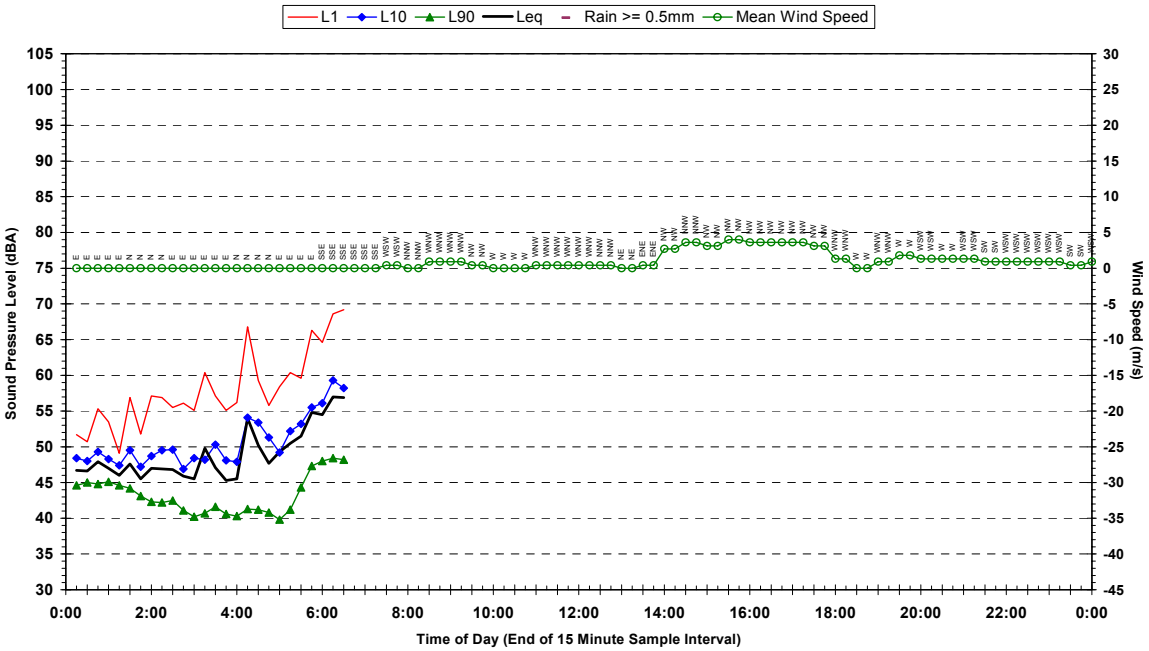

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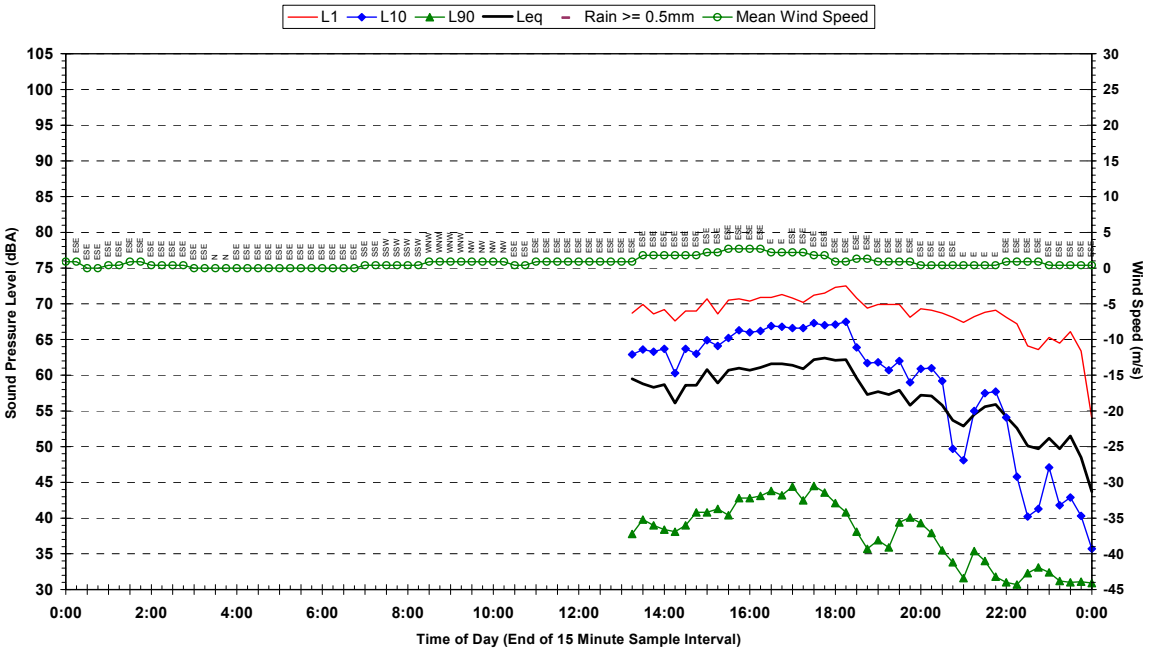

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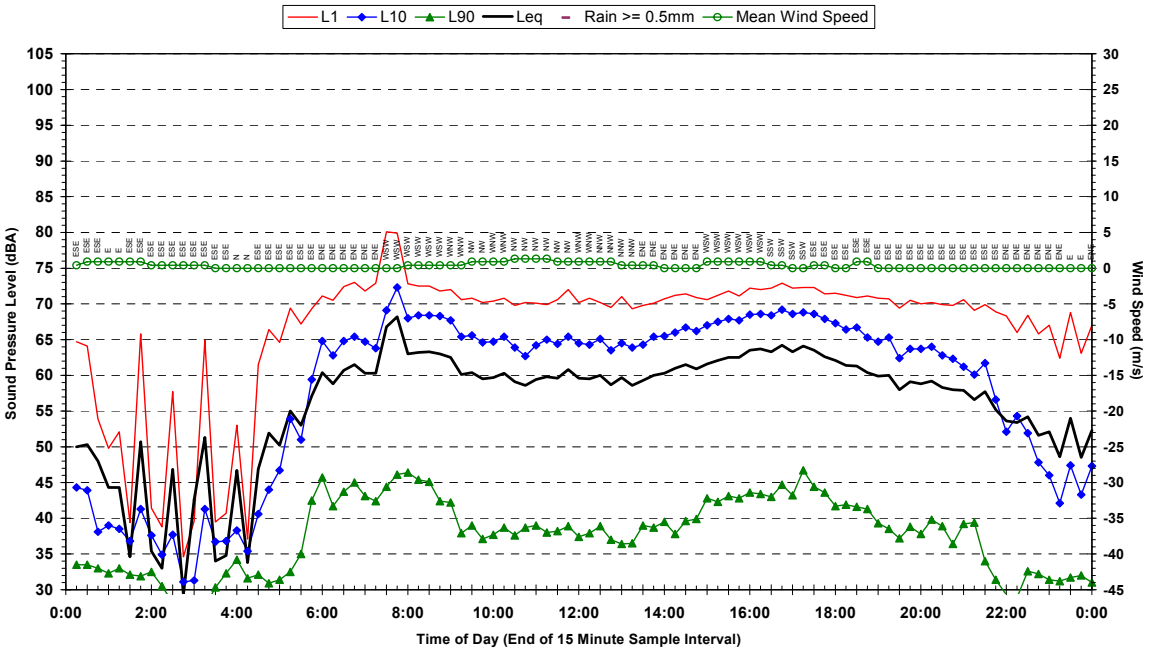

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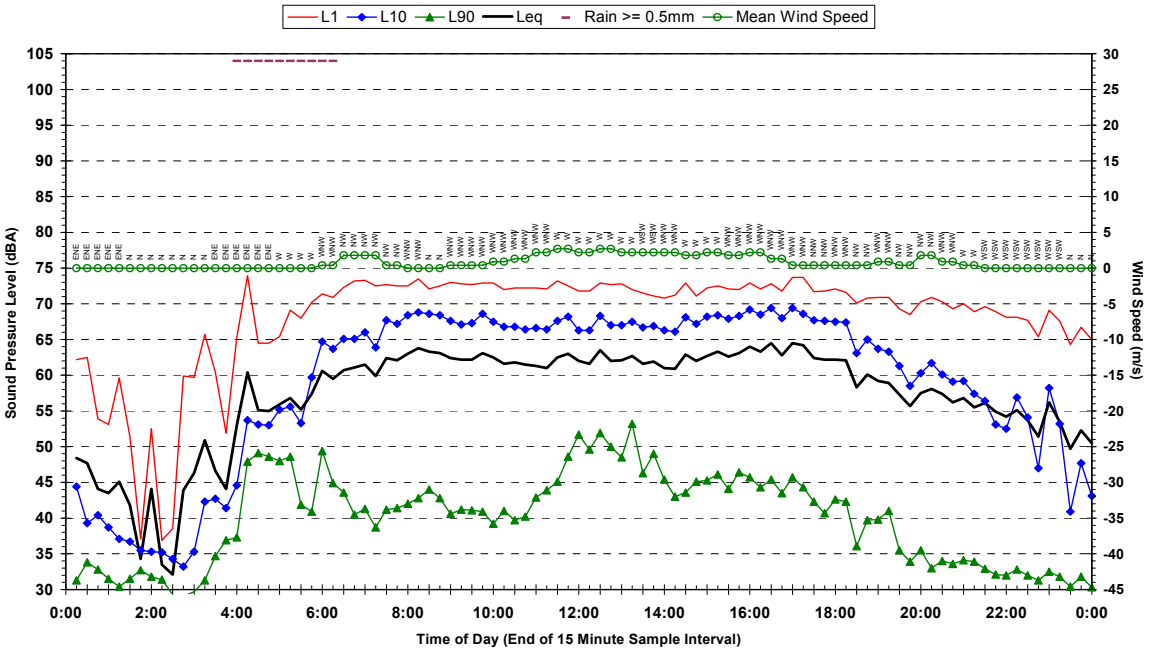

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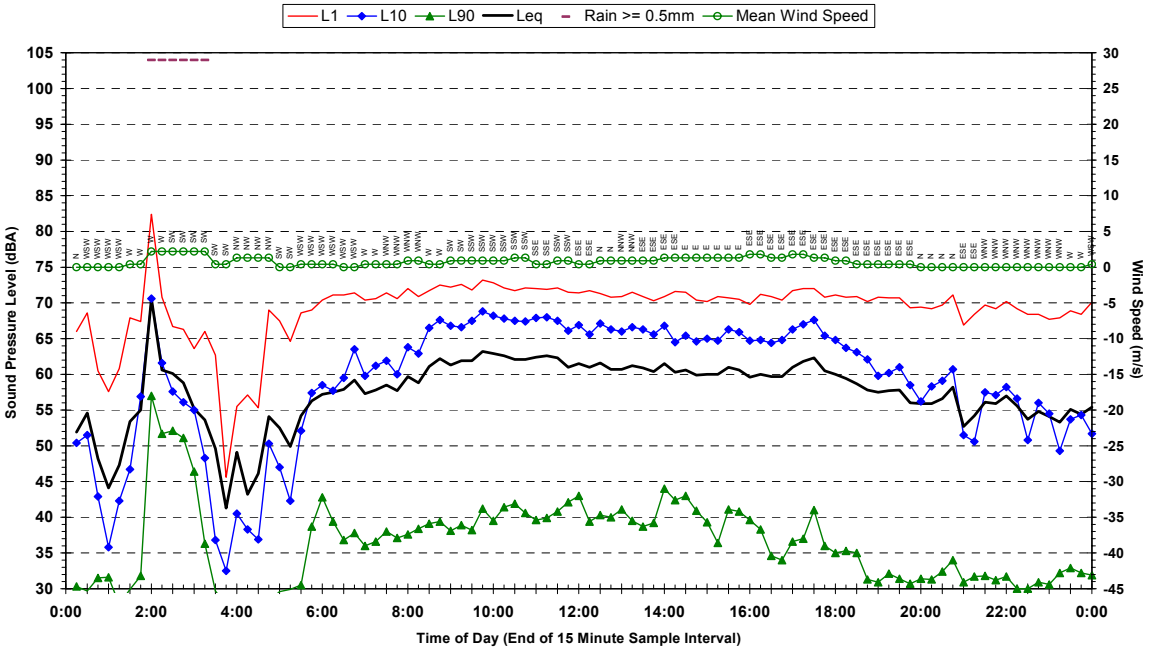

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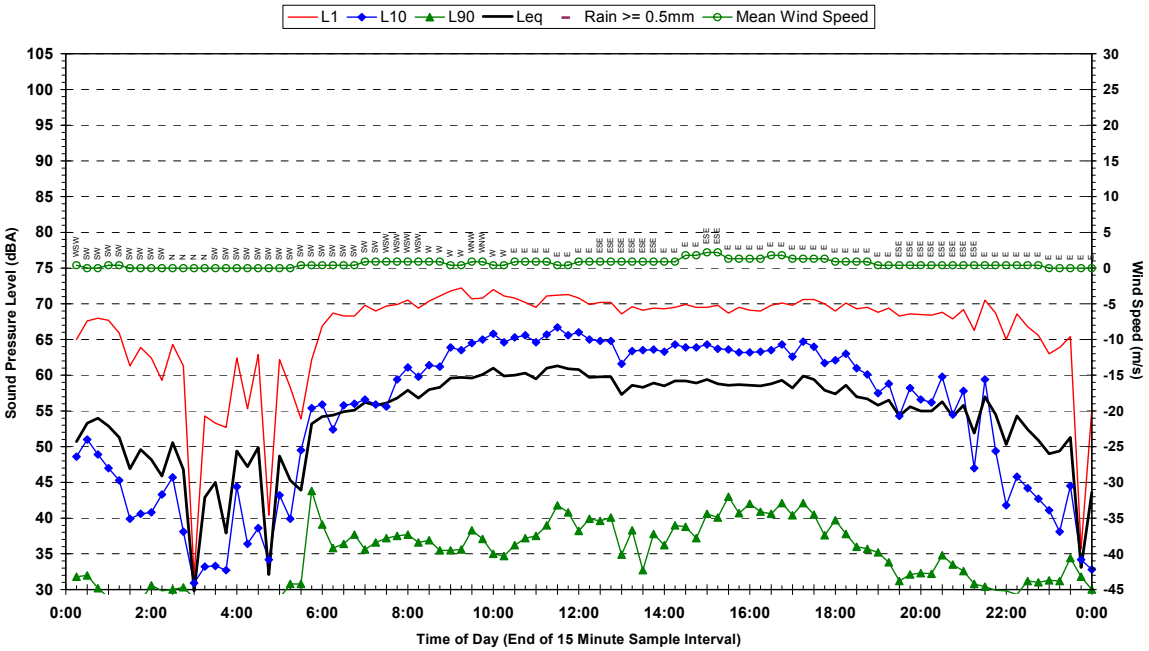

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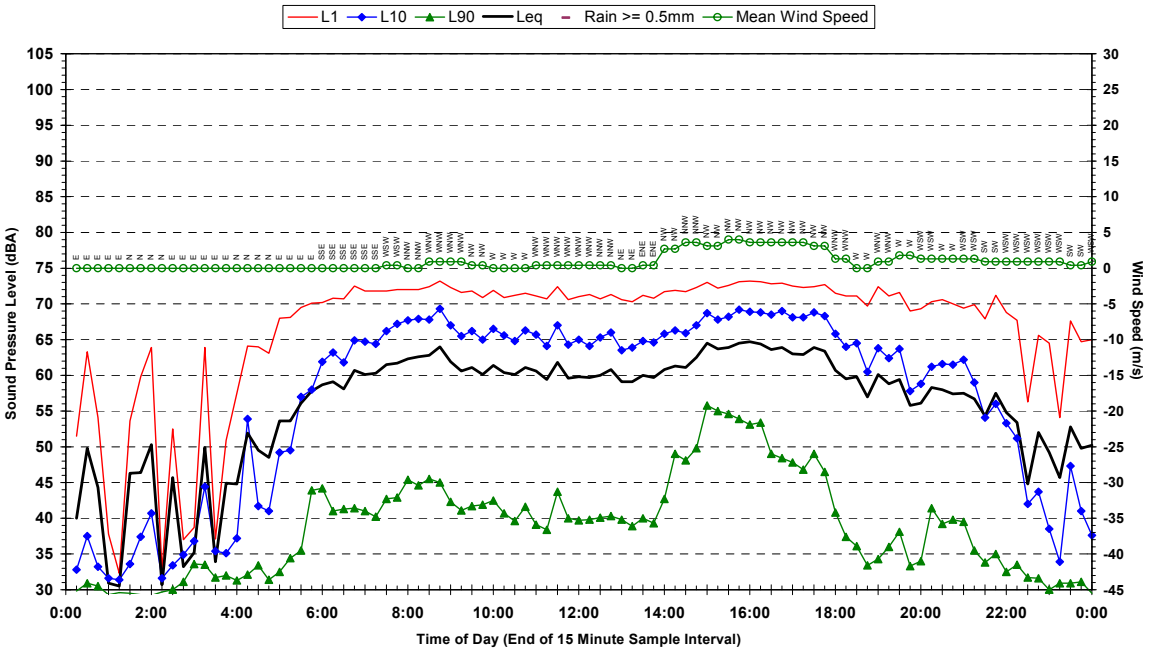

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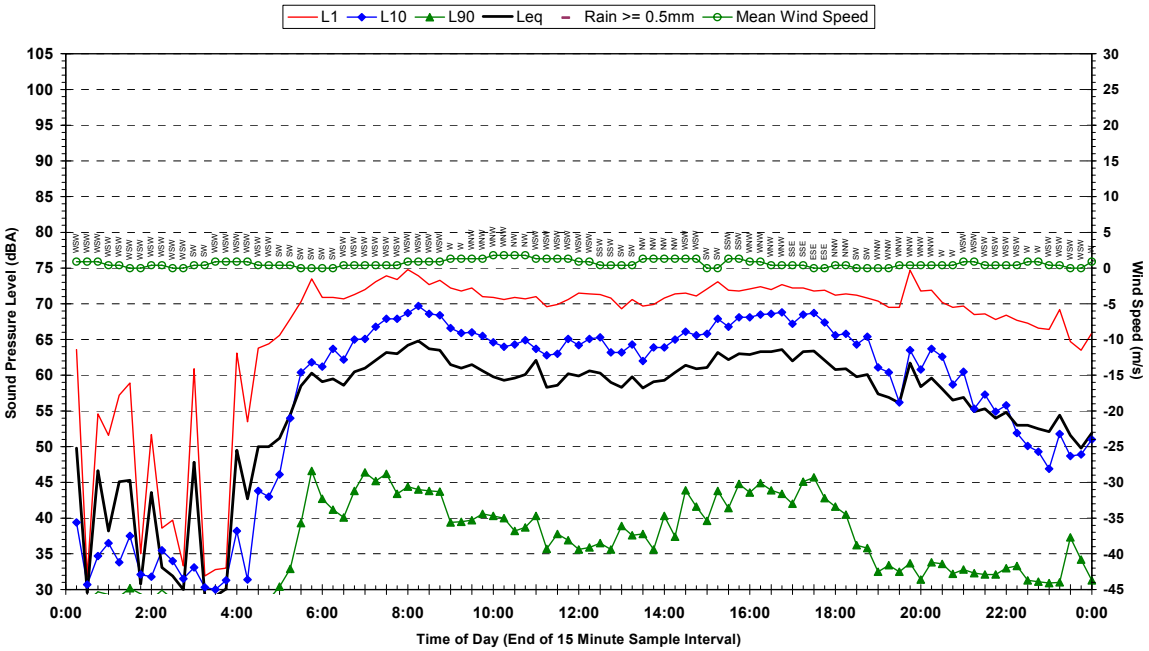

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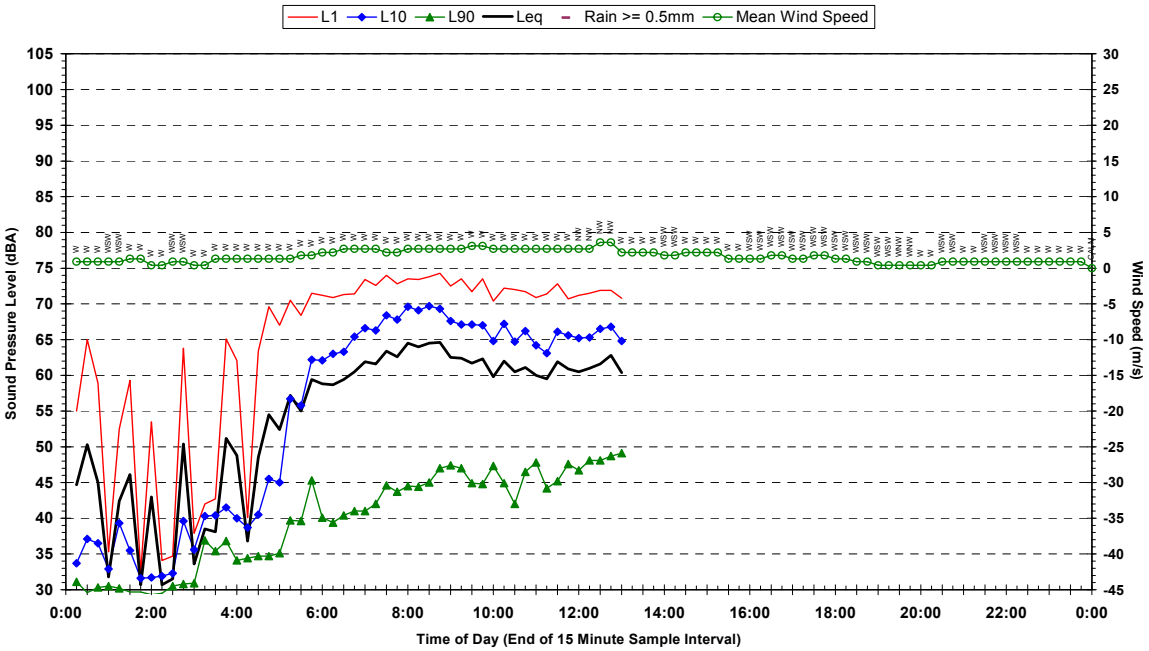

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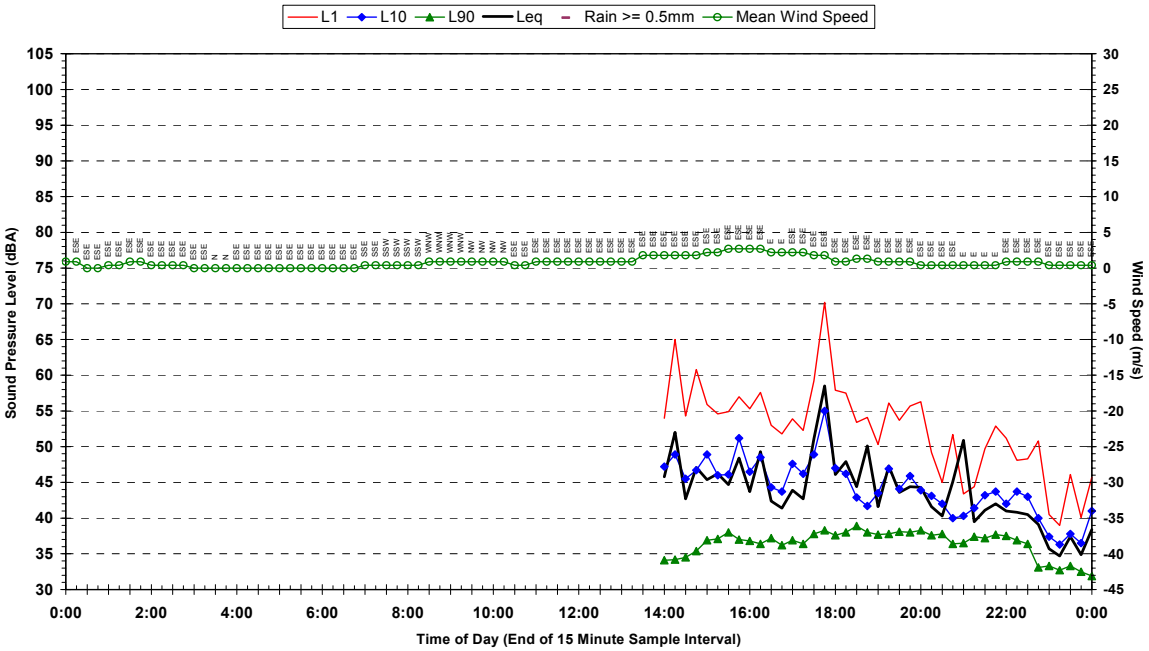

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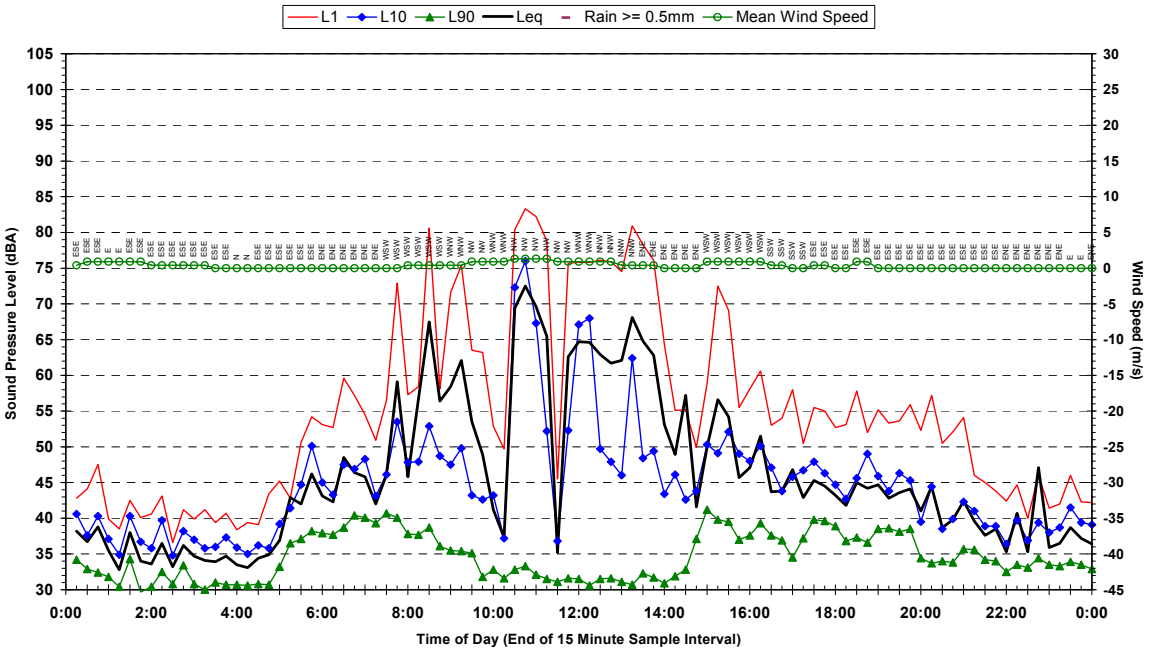

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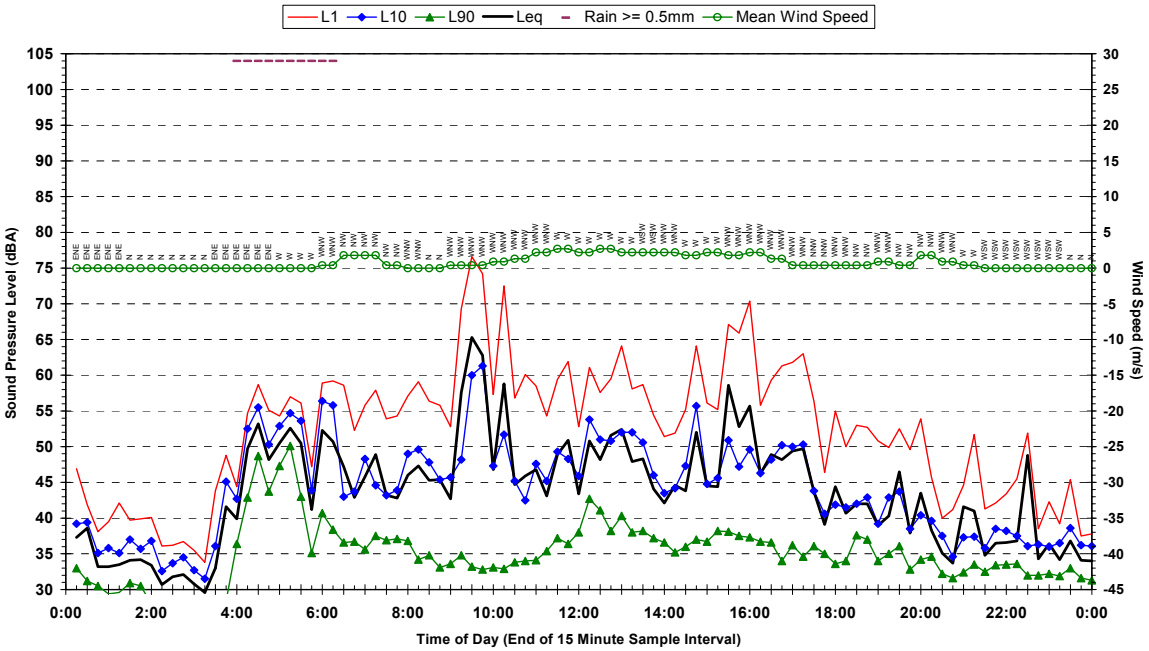

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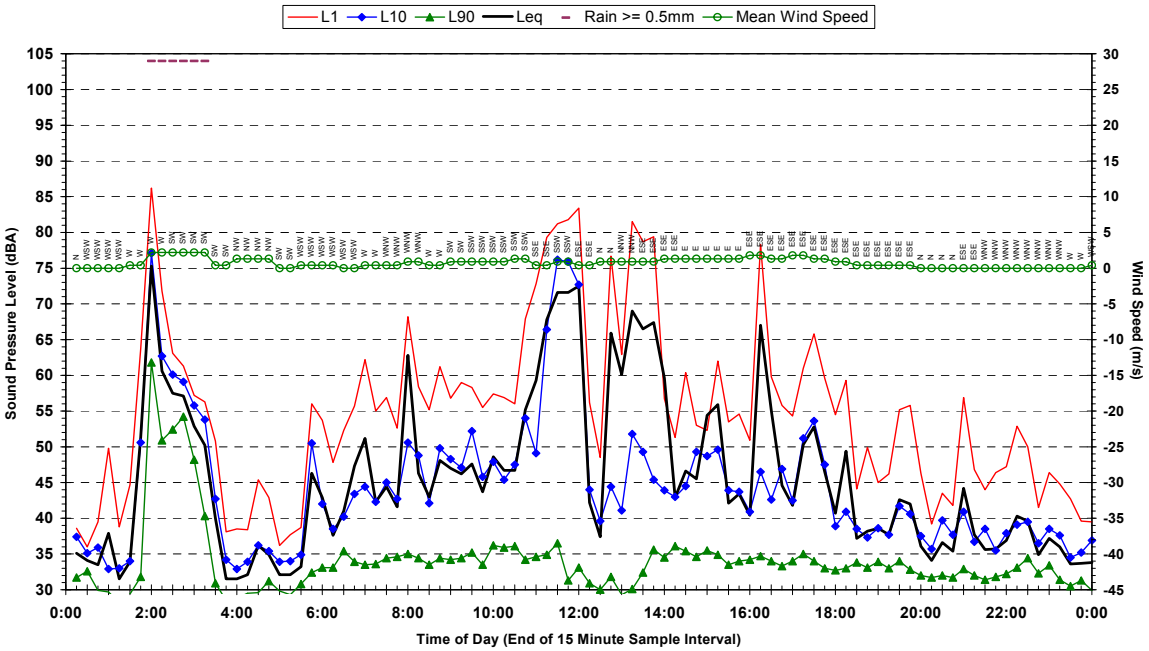

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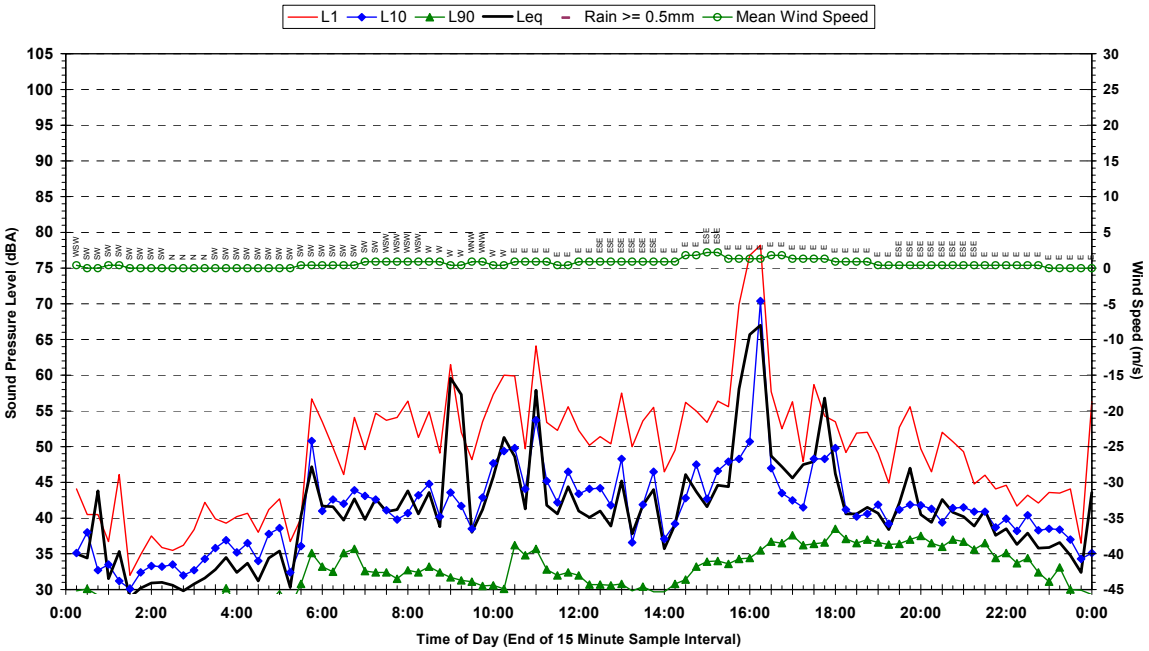

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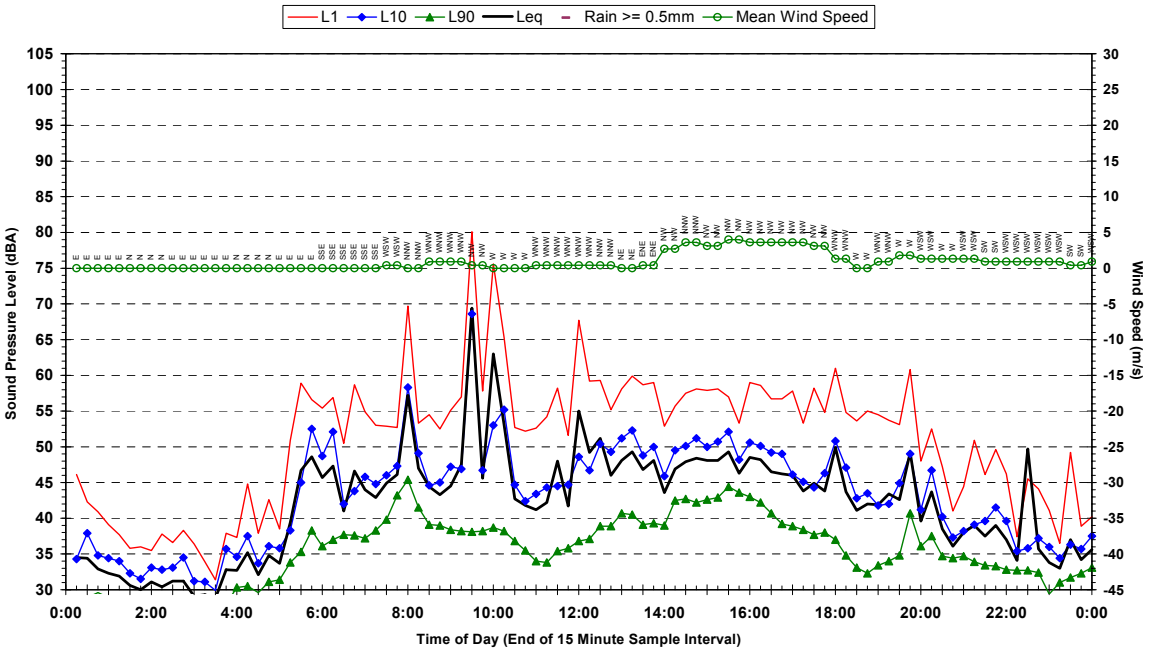

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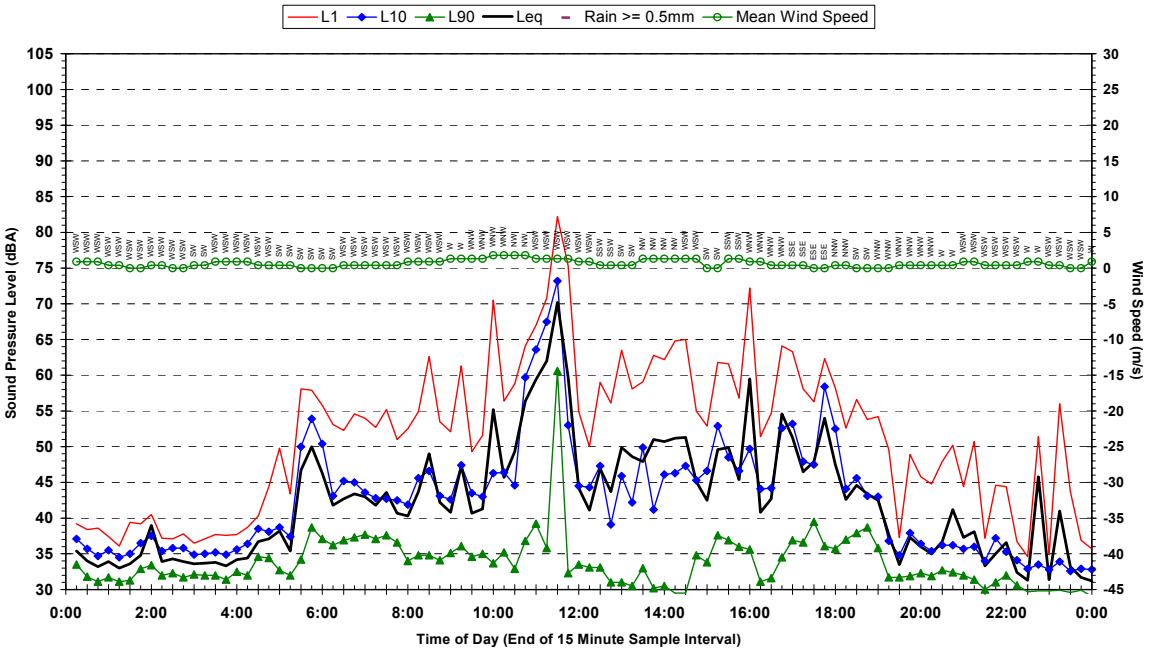

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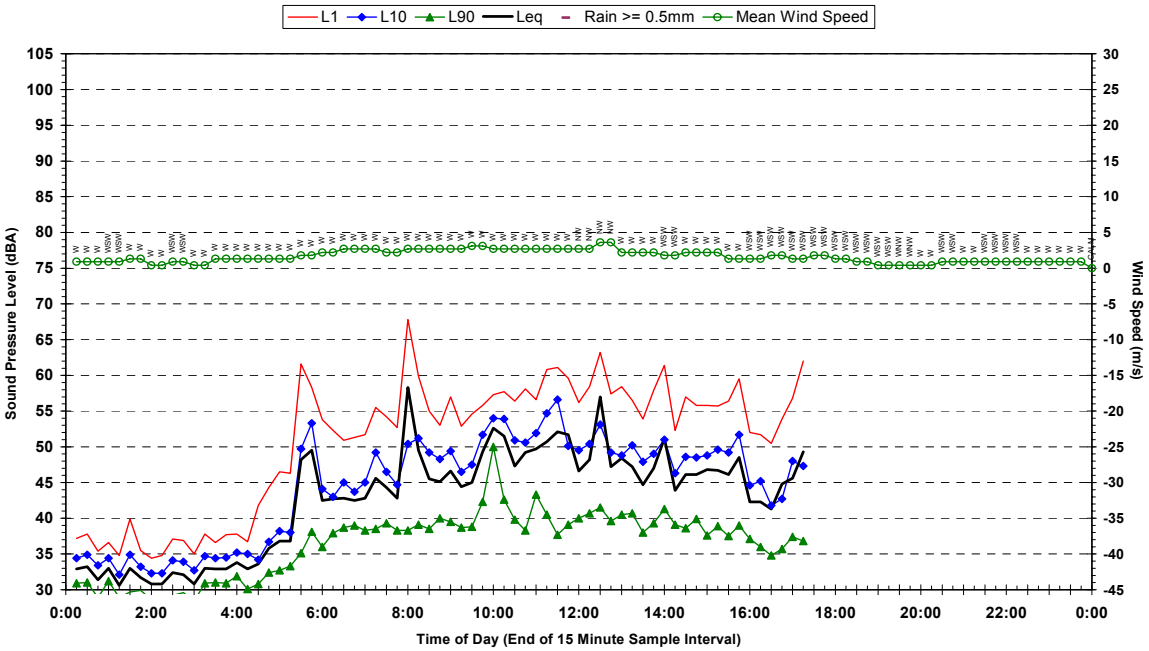
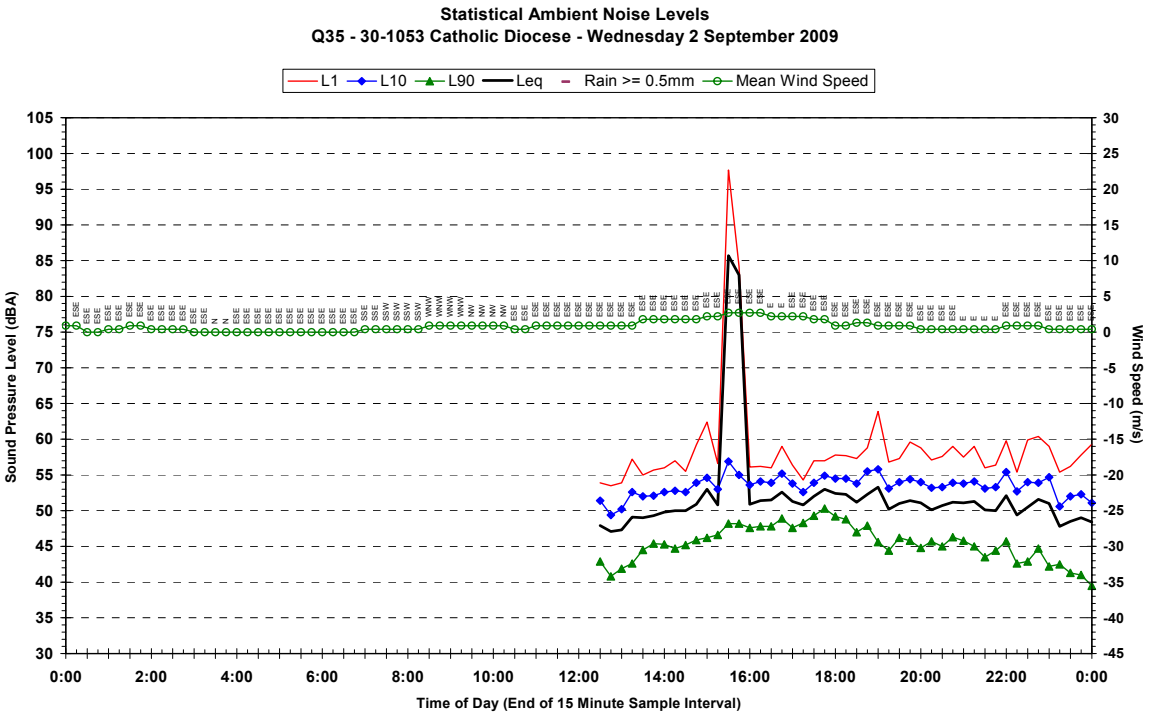
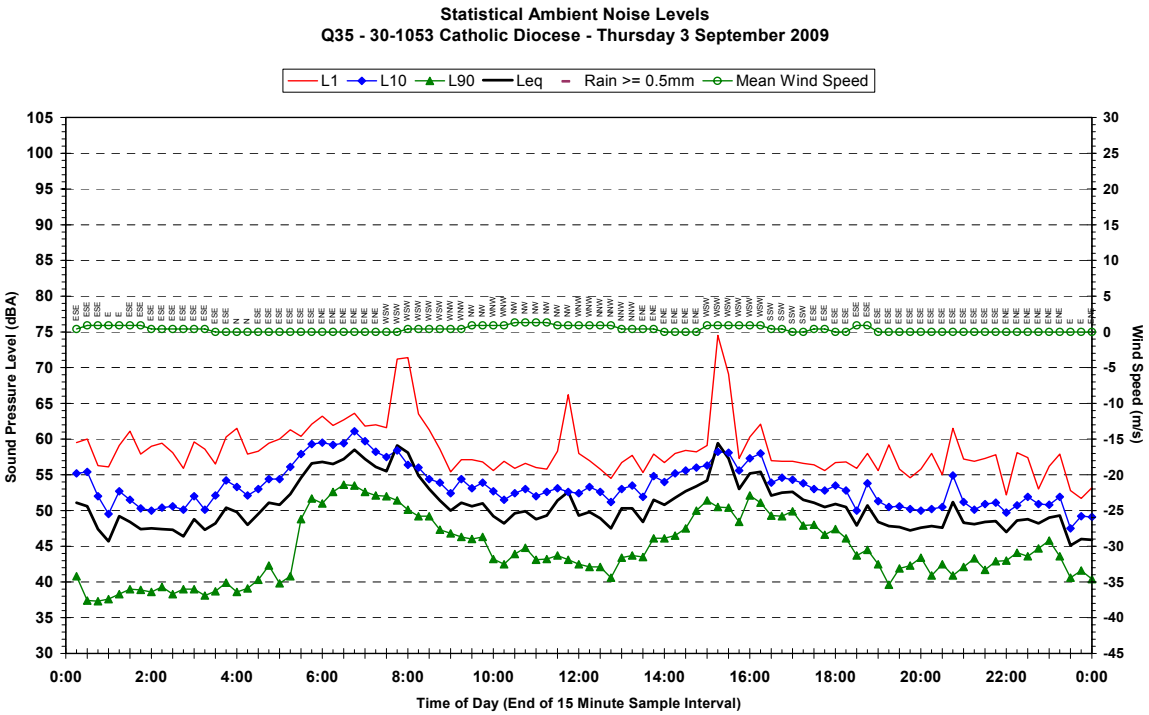



Statistical Ambient Noise Levels
Q35 - 30-1053 Catholic Diocese - Wednesday 2 September 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)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L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

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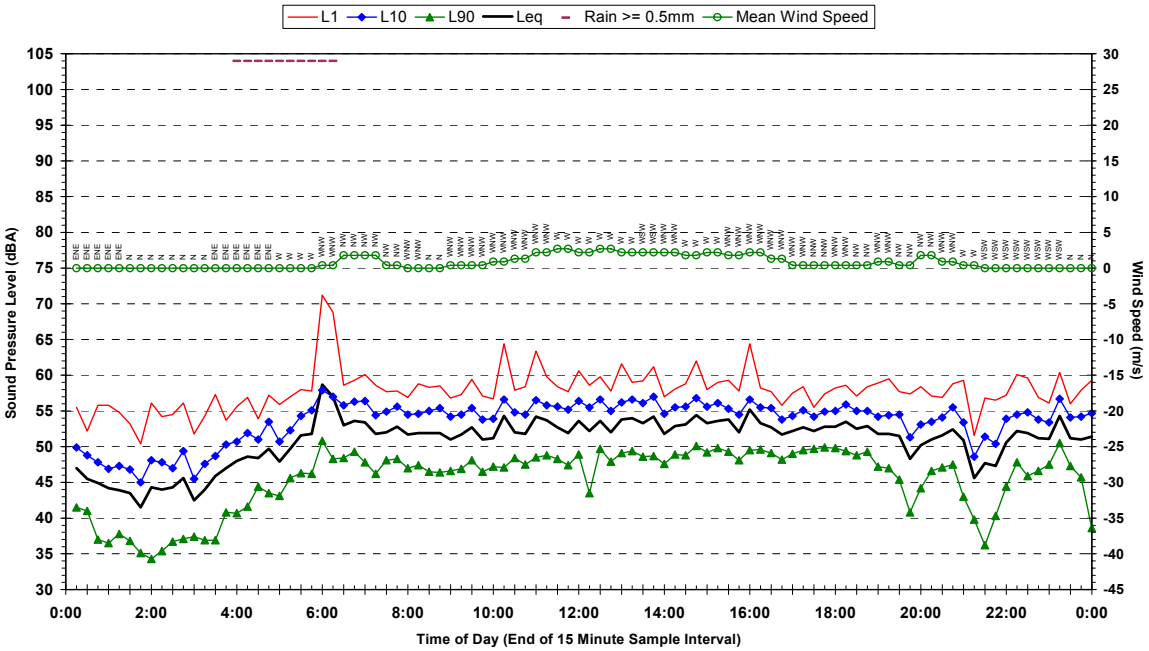

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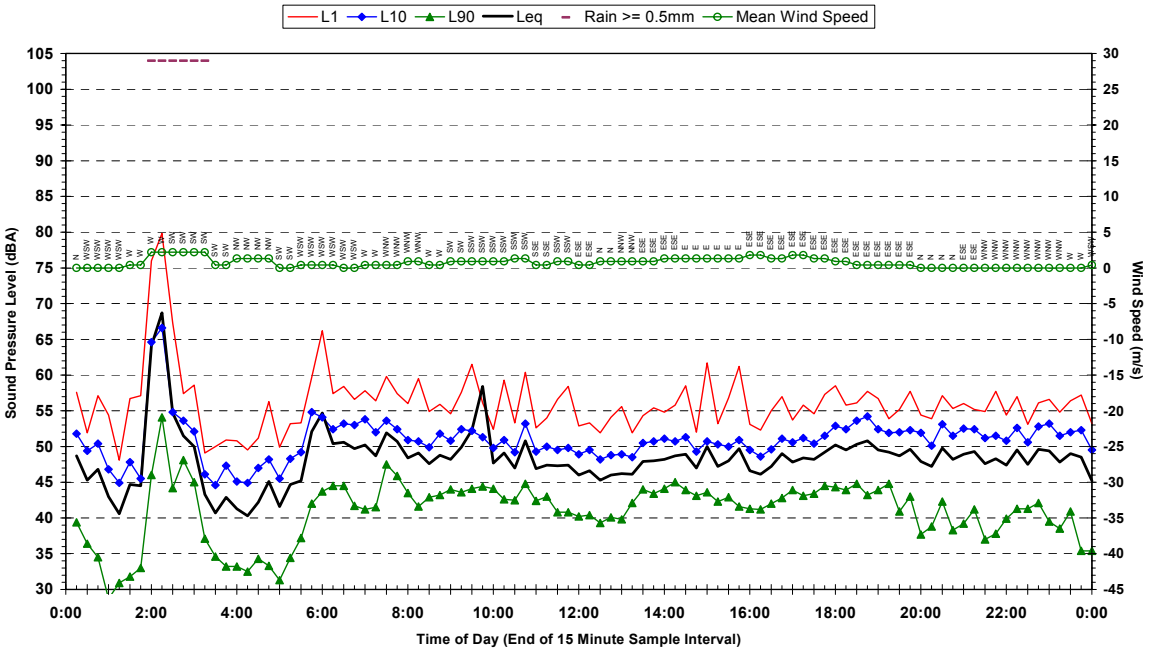

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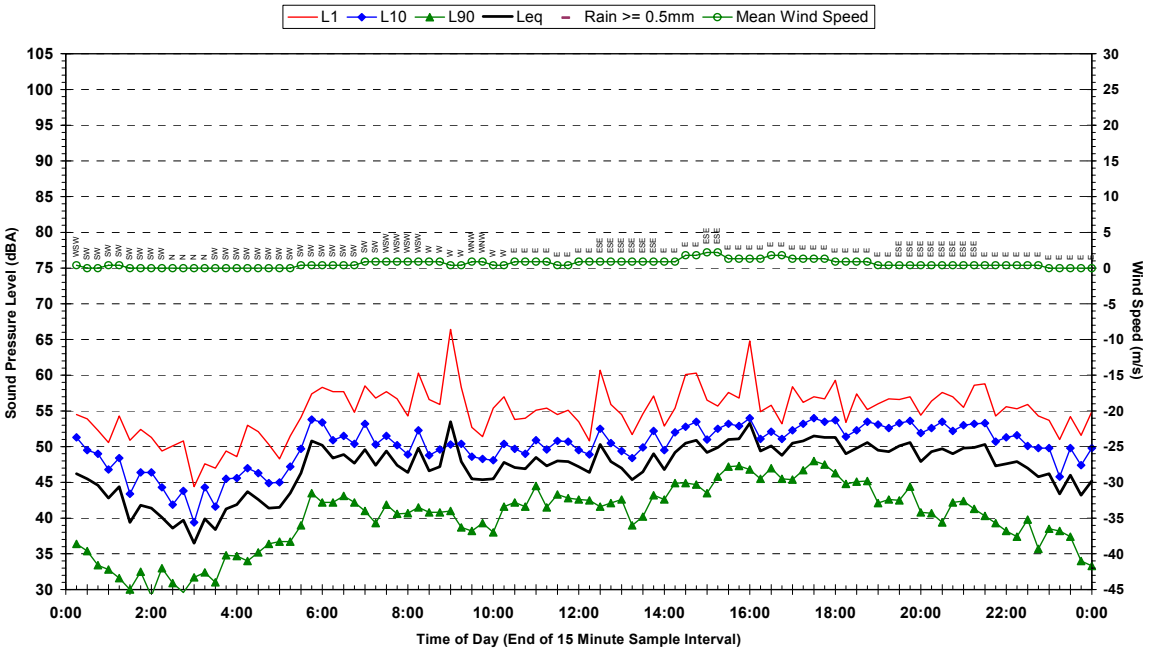

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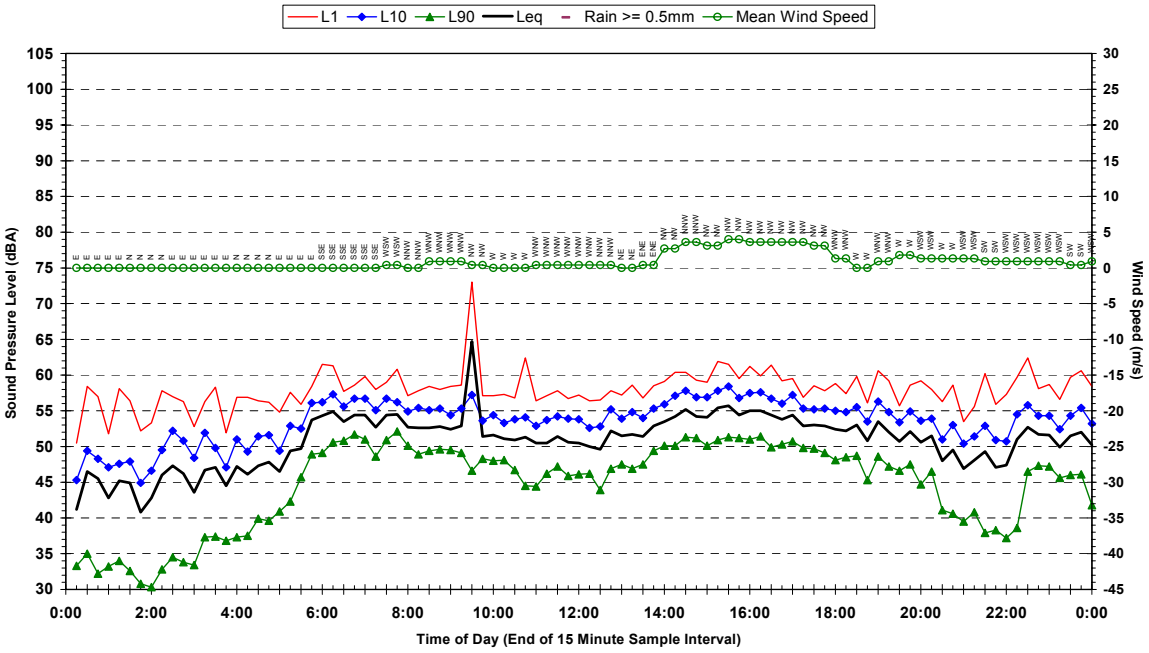

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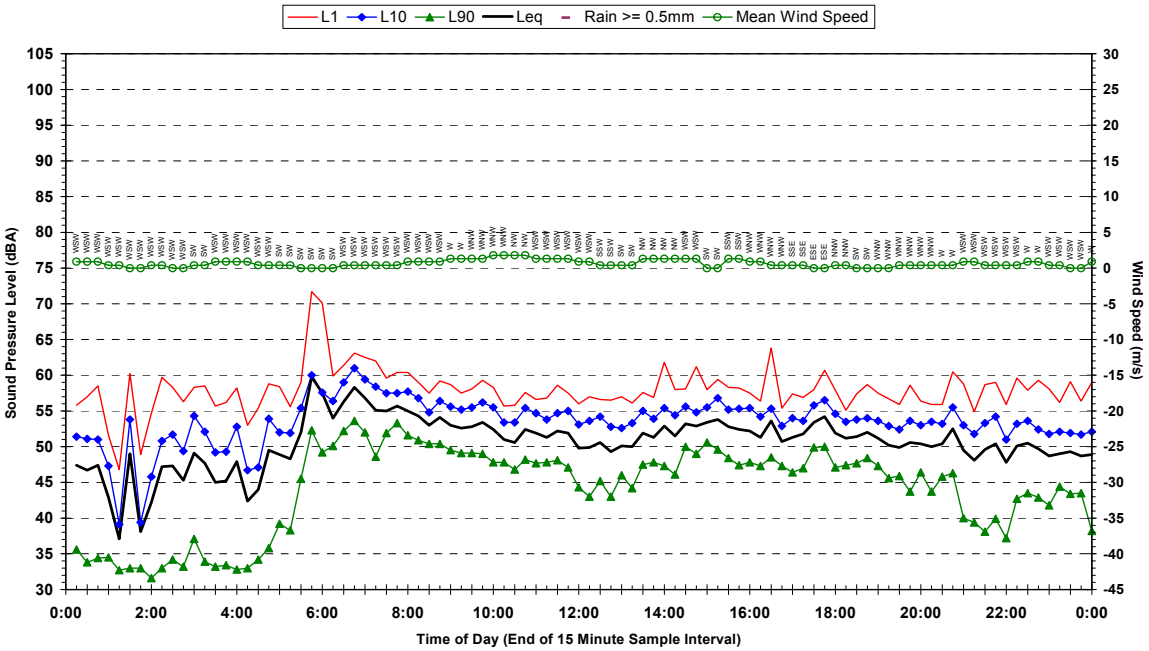

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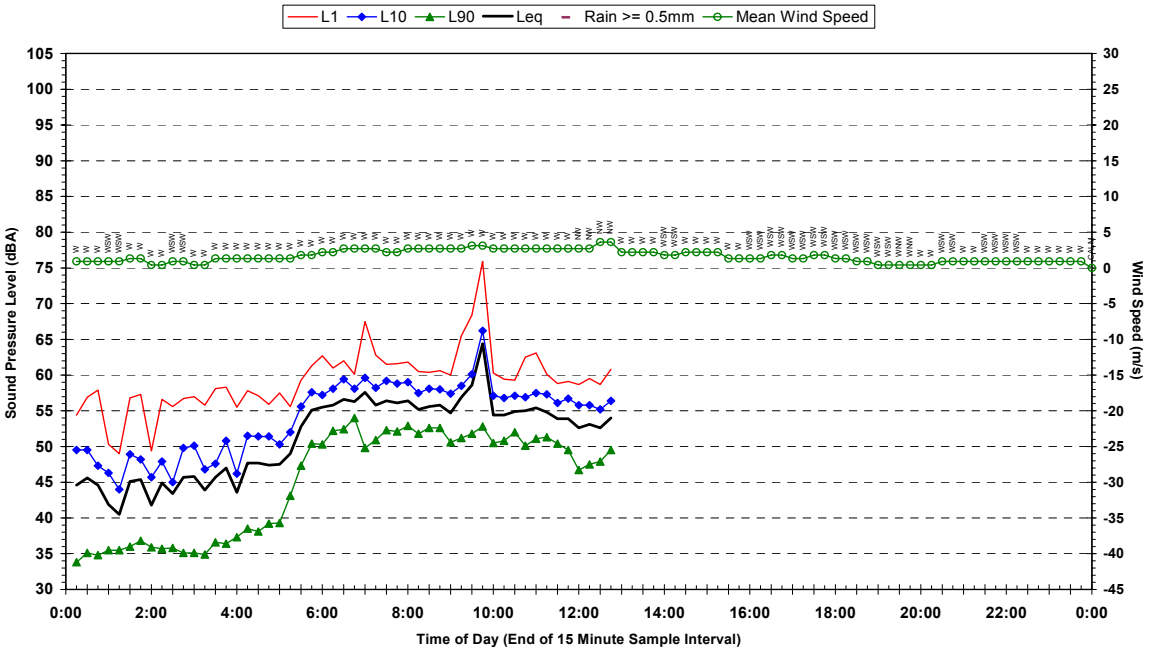

HEGGIES

REPORT Q36 30-1053-R1D1

Draft 1

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending December 2009

PREPARED FOR

Donaldson Coal Pty Ltd
PO Box 675
Green Hills NSW 2320

19 JANUARY 2010

HEGGIES PTY LTD
ABN 29 001 584 612

Incorporating New Environment Graeme E. Harding & Associates Eric Taylor Acoustics

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending December 2009

PREPARED BY:

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(PO Box 1768 Newcastle NSW 2300 Australia)
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Email newcastle@heggies.com Web www.heggies.com

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
Q36 30-1053-R1D1	Draft 1	19 January 2010	Nathan Archer	Katie Teyhan	

TABLE OF CONTENTS

1 INTRODUCTION

Development consent was obtained by Donaldson Coal Pty Ltd for the Donaldson Mine in October 1999 following a Commission of Inquiry. Development Consent number N97/00147 was issued by the Minister for Urban Affairs pursuant to Section 101 of the Environmental Planning and Assessment Act 1979.

Project Approval (Application No. 05_0136) granted by the Minister of Planning was obtained by Donaldson Coal Pty Ltd for Abel Coal Mine in 2008.

Donaldson Coal Pty Ltd has commissioned Heggies Pty Ltd (Heggies) to conduct quarterly noise monitoring surveys for the Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Mine Project Noise Monitoring Program, dated 27 May 2008.

The objectives of the noise monitoring survey for this operating quarter were as follows:

- Measure the ambient noise levels at five (5) focus receptor locations (potentially worst affected) surrounding Donaldson Coal Mine and Abel Coal Mine.
- Qualify all sources of noise within each of the attended surveys, including estimated contribution or maximum level of individual noise sources.
- Assess the noise emissions of Donaldson Coal Mine and Abel Coal Mine with respect to the limits contained in the Development Consent.

2 DEVELOPMENT CONSENT AND PROJECT APPROVAL

2.1 Donaldson Coal Mine Development Consent Conditions

The Development Consent nominates hours of operation and mine noise emission goals in the Sections entitled "*Operation of Development, Condition No. 3(1) and 3(2)"*, and *"Noise and Vibrational Noise Limits: Condition No. 15*" as follows:

"3.(1) Subject to (2) the approved hours of operation are as follows:

Works	*Period*	*Hours*
Construction, including construction of any bunds	*Monday to Friday* *Saturday*	*7 am to 6 pm* *8 am to 1 pm*
Mining operations, including mining, haulage of waste to dumps and coal processing	*Monday to Friday* *Saturday, Sunday*	*24 hours per day* *7 am to 6 pm*
Road Transportation and stockpiling of coal	*7 days per week*	*24 hours per day*
Rail loading of coal	*7 days per week*	*7 am to 10 pm*
Maintenance of mobile and fixed plant	*7 days per week*	*24 hours per day*
Blasting, not involving closure of John Renshaw Drive	*Monday to Saturday*	*7 am to 5 pm*
Blasting, involving closure of John Renshaw Drive	*Monday to Saturday*	*10 am to 2 pm*

Notes: Restrictions on Public Holidays are the same as Sundays

(2) The Applicant shall submit a report to the Director-General's satisfaction demonstrating the noise limits in Condition 15 can be met while rail loading of coal is occurring during the period from 6 pm to 10 pm. If that report does not demonstrate that the noise limits can be met to the Director-General's satisfaction, then the hours of operation for rail loading of coal shall be restricted to 7 am to 6 pm."

15. Unless subject to a negotiated agreement in accordance with Condition 23, the Applicant shall ensure that the noise emission from construction or mining operations, when measured or computed at the boundary of any dwelling not owned by the applicant (or within 30 metres of the dwelling, if the boundary is more that 30 metres from the dwelling), shall not exceed the following noise limits:

Location	***LA10(15minute) Noise Limits (dBA)***	
	Daytime	***Night-time***
Beresfield area (residential)	*45*	*35*
Steggles Poultry Farm	*50*	*40*
Ebenezer Park Area	*46*	*41*
Black Hill Area	*40*	*38*
Buchanan and Louth Park Area	*38*	*36*
Ashtonfield Area	*41*	*35*
Thornton Area	*48*	*40*

Note: Daytime is 7 am to 10 pm Monday-Saturday, and 8 am to 10 pm Sundays and Public Holidays. Night-time is 10 pm to 7 am Monday-Saturday, and 10 pm to 8 am Sundays and Public Holidays.

The noise limits apply for prevailing meteorological conditions (winds up to 3 m/s), except under conditions of temperature inversions."

Other Conditions of Consent relevant to noise are as follows:

"18. The applicant shall survey and investigate noise reduction measures from plant and equipment and set targets for noise reduction in each Annual Environmental Management Report (AEMR), taking into consideration valid noise complaints received in the previous year. The Report shall also include remedial measures.

19. The Applicant shall revise the Noise Management Plan as necessary and provide an updated Plan five years after commencement of mining to the Director-General, the independent noise expert (Condition 48), EPA, Councils and the Community Consultative Committee."

2.2 Abel Coal Mine – Project Approval

The relevant conditions relating to noise from the Abel Coal Mine approval are reproduced below.

Schedule 4

NOISE

Note: These conditions should be read in conjunction with section 3 of the Statement of Commitments.

Noise Limits

23 The Proponent shall ensure that the noise generated by the Project does not exceed at any privately-owned residence the levels set out in the following table for the monitoring location nearest that residence.

Table 1: Noise limits dB(A)

Day	Evening	Night		Location and Locality*
LAeq(15 minutes)	LAeq(15 minutes)	LAeq(15 minutes)	LA1(1 minute)	
50	48	41	51	**A** Weakleys Dr, Beresfield
50	48	41	51	**B** Yarrum Rd, Beresfield
43	44	38	50	**C** Phoenix Rd, Black Hill
41	40	36	46	**D** Black Hill School
41	40	36	46	**E** Brown Rd, Black Hill
41	40	36	46	**F** Black Hill Rd, Black Hill
43	41	36	46	**G** Buchanan Rd, Buchanan
43	41	36	46	**H** Mt Vincent Rd, Louth Park
44	46	38	48	**I** Lord Howe Dr, Ashtonfield
49	47	40	50	**J** Kilarney St, Avalon Estate
41	40	37	46	**K** Catholic Diocese (Former Bartter) K1, K2, K3
46	46	40	53	**L** Kilshanny Ave, Ashtonfield

Notes:

- To determine compliance with the LAeq(15 minute) limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the LA1(1 minute) limit, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.
- These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

* Revised to list alphabetically

Noise Monitoring

24. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:

(a) be submitted to the Director-General for approval within 6 months of this approval;

(b) be prepared in consultation with the DECC; and

(c) use a combination of attended and unattended monitoring measures to monitor the performance of the project.

2.2.1 Statement of Commitments

3.3 Monitoring

Within 6 months of this approval being granted a Noise Monitoring Program shall be prepared and implemented for the Abel Underground Mine and the Bloomfield CHPP, to the satisfaction of the Director-General. The Noise Monitoring Program shall include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise environmental assessment. This plan will be integrated with the monitoring plans for the Tasman, Donaldson and Bloomfield Mines to provide a single integrated Noise Monitoring Program for all 4 mines.

3 PROCEDURES AND METHODOLOGY

3.1 General Requirements

The operational noise monitoring programme was conducted with reference to Development Consent N97/00147 (Donaldson Coal Mine), Project Approval 05_0136 (Abel Coal Mine), and in accordance with Heggies Report 30-1409-R2 dated 27 May 2008 (*Abel Mine Project Noise Monitoring Program)* and AS 1055-1997 "*Acoustics - Description and Measurement of Environmental Noise*".

3.2 Monitoring Locations

Baseline and preceding operational quarterly surveys have been conducted at 11 locations surrounding the Donaldson Mine and Abel Coal Mine sites. With the experience of these previous surveys, it was decided to concentrate noise monitoring at five (5) focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1.**

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield
K	Catholic Diocese of Maitland (formerly Bartter Enterprises)

A map giving the approximate location of the noise monitoring sites is contained within **Appendix A**.

3.3 Unattended Continuous Noise Monitoring

Environmental noise loggers were deployed for a seven (7) day period between 7 December 2009 and 22 December 2009 at each of the five (5) nominated locations given in **Table 1**. All unattended monitoring equipment was programmed to continuously record statistical noise level indices in 15 minute intervals including the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{A99}, L_{Amin} and L_{Aeq}. The statistical noise exceedance levels (L_{AN}) are the levels exceeded for N% of the 15 minute interval. The L_{A90} represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The L_{A10} is the level exceeded for 10% of the time and is usually referred to as the average maximum noise level. The L_{Aeq} is the equivalent continuous sound pressure level and represents the steady sound level which is equal in energy to the fluctuating level over the interval period. The L_{Amax} is the maximum noise level recorded over the interval. Instrument calibration was conducted before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

3.4 Operator Attended Monitoring

Operator attended surveys were conducted at each of the five (5) monitoring locations during daytime, evening and night-time periods, to verify the unattended logging results and to determine the character and contribution of ambient noise sources.

3.5 Equipment Operation

The mobile equipment operating on the Donaldson Mine site during the survey period are contained in **Appendix B**.

During the survey period the following operations were being undertaken:

- Coal mining operations were ongoing during the monitoring period, operating 7.00 am to 12.30 am Monday to Friday and day shift Saturday and Sunday.
- Overburden material and coal were being removed from strips CP09 – CP16 between 6.00 am and midnight Monday – Friday and day shift on Saturday and Sunday. The waste was generally being placed in Strips CP01 – CP07. The grader and water cart were operating on both day and afternoon shift where needed.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was a ventilation fan.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Monitoring

Operator attended noise measurements were conducted during the daytime on Monday 7 December 2009 and Tuesday 15 December 2009; during the evening on Tuesday 15 December 2009; and during the night-time on Tuesday 15 December 2009 and Thursday 17 December 2009. All operator attended noise surveys were conducted using a Brüel & Kjær 2250 Type 1, 1/3 octave band, integrating sound level meter (s/n: 20600507).

The results of the operator attended noise measurements are given in **Table 2** to **Table 6**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations.

The tables provide the following information:

- Monitoring location.
- Date & start time.
- Wind velocity (m/s) and Temperature (ºC) at the measurement location.
- Typical maximum (L_{Amax}) and contributed noise levels.

Mine contributions listed in the tables are from Donaldson Mine and Abel Coal Mine and are stated only when a contribution could be quantified.

Table 2 Location A Weakleys Drive, Beresfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
7/12/2009 10:58 W = 2-3 m/s W Temp = 37ºC Cloud cover = 1/8	Daytime Ambient	77	57	54	48	52	Traffic noise dominant (Weakleys Drive) ~ up to 57, Birds/insects ~ 50, Wind gusts ~ 50-51, Operator noise ~ 77. Donaldson mine inaudible Abel mine inaudible
15/12/2009 20:25 W = 1-2 m/s NE Temp = 22ºC Cloud cover = 6/8	Evening Ambient	88	80	71	50	68	Traffic noise dominant (Weakleys Drive) ~ up to 88, Insects ~ 50, Wind/leaves ~ up to 58. Donaldson mine inaudible Abel mine inaudible
17/12/2009 23:30 W = Calm Temp = 27ºC Cloud cover = 1/8	Night-time Ambient	83	77	69	48	65	Traffic noise dominant (Weakleys Drive) ~ up to 83, Insects – 52, Distant road traffic – up to 53. Donaldson mine inaudible Abel mine inaudible

Table 3 Location F Lot 684 Black Hill Road, Black Hill

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels
		LAmax	LA1	LA10	LA90	LAeq	LAmax – dBA
7/12/2009 12:10 W = 1-2 m/s SW Temp = 36ºC Cloud cover = 1/8	Daytime Ambient	79	68	63	52	60	Traffic (John Renshaw Dr) ~ up to 62, Traffic (Black Hill Rd) ~ 67-79, Road works on John Renshaw Dr: Truck to compound ~ 67, Excavator ~ 58-64, Grader ~ 60, Watercart ~ 74, Reverse beepers ~ 63-66. Donaldson mine inaudible Abel mine inaudible
15/12/2009 19:45 W = 1m/s NW Temp = 23ºC Cloud cover = 7/8	Evening Ambient	81	71	69	53	65	Traffic (John Renshaw Dr) ~ 61-68, Traffic (Black Hill Road) ~ 81, Crickets/insects/frogs ~ up to 71, Wind/leaves ~ 56, Donaldson mine haul trucks occasionally just audible but not measureable ; Bloomfields dozer track slap just discernible in lulls but not measureable. Abel mine inaudible. Donaldson L_{A10} Contribution <43 dBA.
15/12/2009 23:35 W = Calm Temp = 21ºC Cloud cover = 8/8	Night-time Ambient	77	63	53	47	53	Traffic (John Renshaw Dr) ~ up to 68, Traffic (Black Hill Road) ~ 77, Crickets/insects/frogs ~ 50-53, Bloomfield colliery inaudible, Abel Mine inaudible. Donaldson mine; haul trucks just audible ~ 50-51. Donaldson L_{A10} Contribution ~ 41 dBA.

Table 4 Location G 156 Buchanan Road, Buchanan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
15/12/2009 15:30 W = Calm Temp = 28ºC Cloud cover = 7/8	Daytime Ambient	56	52	49	39	44	Distant Traffic (Buchannan Rd) ~ 39-42, Birds/insects ~ up to 56. Wind/leaves ~ 40-46. Bloomfields mine occasionally just audible <36. Donaldson mine inaudible Abel mine inaudible
15/12/2009 18:39 W = 2-3 m/s NE Temp = 25ºC Cloud cover = 2/8	Evening Ambient	70	54	47	42	46	Traffic (Buchannan Rd) ~ 42-48, Insects/birds ~ 48-52, Leaf rustle/wind ~ 45-47, Operator noise ~ 70, Bloomfield mine inaudible Donaldson mine inaudible Abel mine inaudible
15/12/2009 22:30 W = 1 m/s NE Temp = 21ºC Cloud cover = 8/8	Night-time Ambient	60	47	41	36	39	Traffic (Buchannan Rd) ~up to 42. Birds/Insects ~ 38-49, Operator noise ~ 60, Wind/leaves ~ 41-46. Bloomfields haul trucks occasionally audible at 37, dozer audible once at 36. Donaldson mine inaudible Abel mine inaudible

Table 5 Location L 17 Kilshanny Ave, Ashtonfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels
		LAmax	LA1	LA10	LA90	LAeq	LAmax – dBA
15/12/2009 16:10 W = 1-2 m/s NE Temp = 26ºC Cloud cover = 6/8	Daytime Ambient	80	63	53	42	51	Birds/insects ~ 38-46, Local traffic ~ 74, Leaf rustle ~ 40-48, Residential noise ~ 80. Donaldson mine inaudible Abel mine inaudible
15/12/2009 18:00 W = 2 m/s NE Temp = 26ºC Cloud cover = 4/8	Evening Ambient	74	65	52	43	52	Lawn mover ~ 51-52, Local traffic ~ 61-68, Distant Traffic ~ 48-49, Insects/birds ~ 48-49, Wind/leaves ~ 45-48, Reverse beepers (local) ~ 74, Dogs barking ~ 61, Donaldson mine inaudible Abel mine inaudible
15/12/2009 22:00 W = 1 m/s NE Temp = 22ºC Cloud cover = 6/8	Night-time Ambient	68	56	42	38	44	Crickets/insects ~ 42, Distant road traffic up to 44, Wind/leaves ~ 42, Dog barks ~ 51-54, Residential noise ~ 52-57. Donaldson mine inaudible. Abel mine inaudible

Table 6 Location K Catholic Diocese of Maitland (formerly Bartter Enterprises)

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
7/12/2009 11:40 W = <2 m/s SW Temp = 35°C Cloud cover = 1/8	Daytime Ambient	73	55	51	42	48	Traffic (John Renshaw Dr) ~ 48-55, Birds/insects ~ 42, Construction on John Renshaw Drive ~ 41-48, Operator noise ~ 73, Donaldson mine inaudible. Abel mine inaudible
15/12/2009 20:10 W = 1-2 m/s NE Temp = 22°C Cloud cover = 7/8	Evening Ambient	94	85	74	59	73	Traffic (John Renshaw Dr) ~ 77-94, Distant road traffic ~ 62, Birds/insects ~ 63-65, Donaldson mine inaudible. Abel mine inaudible.
17/12/2009 23:00 W = Calm Temp = 30°C Cloud cover = 0/8	Night-time Ambient	88	80	70	41	68	Traffic (John Renshaw Dr) ~ up to 88, Frogs, insects and birds ~ 52, Donaldson Mine; Dozer track slap ~ 42-43 (once at 52), Reverse buzzer ~ 39-40, Donaldson L_{A10} Contribution ~ 42 dBA. Abel mine inaudible

4.2 Operator Attended Monitoring Summary

4.2.1 Donaldson Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements. Donaldson Mine operations were observed to be audible at Location F Black Hill Rd during the evening and night-time and at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises), during the night-time.

The operator attended surveys determined that the Donaldson mine contribution at Location F was approximately L_{A10} 43 dBA and L_{A10} 41 dBA during the evening and night-time respectively. This is slightly above the 2 dBA tolerance as per Chapter 11 of the INP and, as such, contributed noise levels at Location F are deemed to exceed those specified in the Donaldson Mine consent.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, Heggies understand the dwellings on the Catholic Diocese site are currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Catholic Diocese site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution at these residential locations was less than 30 dBA during the night-time which is in compliance with Donaldson Mine consent.

Based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine comply with noise emission goals for all periods at locations A, G, K and L. An exceedence of 3 dBA was recorded at location F during the evening and night-time periods.

4.2.2 Abel Coal Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements.

Abel Project operations were inaudible at all residential locations during all operator attended noise surveys. As such, it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Monitoring

Unattended continuous noise monitoring was conducted between Monday 7 December 2009 and Tuesday 17 December 2009 at each of the five (5) nominated locations given in **Table 1**. ARL Type EL-316 noise loggers were used to monitor the ambient noise levels at each location. Details of the noise loggers used for the unattended continuous noise monitoring are given in Table 7.

Table 7 Noise Loggers and Noise Monitoring Locations

Location	Monitoring Date	Noise Logger Serial Number
A – Weakleys Drive, Beresfield	7/12/2009 – 15/12/2009	16-302-482
F – Black Hill Road, Black Hill	7/12/2009 – 15/12/2009	16-203-531
G – Buchanan Road, Buchanan	15/12/2009 – 22/12/2009	16-203-531
L – Kilshanny Ave, Kilshanny	15/12/2009 – 22/12/2009	16-302-482
K – Catholic Diocese of Maitland (formerly Bartter Enterprises)	7/12/2009 – 15/12/2009	16-103-494

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices C1** to **C5**. A summary of the results of the unattended continuous noise monitoring is given in **Table 8**. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

The measured ambient noise levels were divided into three periods representing day, evening and night as designated in the NSW Industrial Noise Policy. The day, evening and night periods replace the day and night periods defined under the Environmental Noise Control Manual (ENCM). However, as the Donaldson conditions of consent are under the ENCM, these periods have also been reported.

Precautions can be taken to minimise influences from extraneous noise sources (eg optimum placement of the loggers away from creeks, trees, houses, etc), however not all these sources or their effects can be eliminated. This is particularly the case during the warmer times of year when noise from insects, frogs, birds and other animals can become quite prevalent.

Weather data for the subject area during the noise monitoring period was provided by Donaldson Coal. Noise data during periods of any rainfall and/or wind speeds in excess of 5 m/s (approximately 9 knots) were discarded in accordance with INP weather affected data exclusion methodology.

Table 8 Unattended Continuous Monitoring Ambient Noise Levels (dBa Re 20 µPa)

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	59	56	48	55
	Evening	58	54	44	56
	ENCM Daytime	59	55	46	55
	Night	57	51	38	50
F Lot 684 Black Hill Road, Black Hill	Daytime	69	57	43	59
	Evening	65	53	41	55
	ENCM Daytime	68	56	42	58
	Night	58	51	36	52
G 156 Buchannan Road, Buchannan	Daytime	62	59	41	57
	Evening	56	52	41	52
	ENCM Daytime	61	56	39	56
	Night	46	44	35	44
L 17 Kilshanny Ave, Ashtonfield	Daytime	56	44	31	50
	Evening	54	47	33	48
	ENCM Daytime	55	44	31	49
	Night	40	36	27	42
K Catholic Diocese of Maitland	Daytime	56	52	43	51
	Evening	55	50	41	50
	ENCM Daytime	55	52	42	50
	Night	54	47	37	49

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

5.2 Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

5.2.1 Ambient LA90 Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient day, evening and night time LA90 noise levels recorded for the quarter ending December 2009 were lower than levels recorded during the baseline monitoring process at Location A in the evening and night-time. A slight increase of 3 dBA was recorded during the daytime. Increases of 4 dBA, 6 dBA and 5 dBA were recorded respectively in the daytime, evening and night-time periods at Location F. Noise levels at Location K showed a slight increase from baseline of 2 dBA, 1 dBA and 2 dBA respectively in the daytime, evening and night-time periods.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

Previous Quarter (September 2009)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were generally similar at Locations A and L (within 2 dBA). Increases of 3 dBA, 6 dBA and 6 dBA were recorded respectively in the daytime, evening and night-time periods at Location G. At Location F there were significant decreases in noise levels of 9 dBA, 16 dBA and 14 dBA respectively in the daytime, evening and night-time periods. A slight increase in evening and night-time noise levels was recorded at Location K of 2 dBA and 4 dBA respectively.

Coinciding Period Last Year (December 2008)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A90} noise levels were generally similar to or lower than those recorded in 2008 at Locations A, F and G.

Given that no data was available at Location L during December 2008 no comparison can be made.

5.2.2 Ambient L_{A10} Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient day, evening and night-time L_{A10} noise levels recorded for the quarter ending December 2009 were less than or equal to levels recorded during the baseline monitoring process at Location A and K. Ambient daytime, evening and night-time L_{A10} noise levels were 4 dBA to 6 dBA greater than levels recorded during the baseline monitoring process at Location F.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

Previous Quarter (June 2009)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at Locations A, F, G and K were similar (within 2 dBA) or lower than levels recorded during the June 2009 quarterly monitoring. Noise levels at Locations L were the same or lower during the daytime and night-time but 6 dBA higher during the evening.

Given that limited data was available at Location K during December 2008 no comparison can be made.

Coinciding Period Last Year (December 2008)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels recorded at all locations similar (within 2dBA) or lower than last year with a maximum increase of 2 dBA being recorded during the daytime at Locations A and F.

Given that no data was available at Location L during December 2008 no comparison can be made.

6 SUMMARY OF RESULTS AND FINDINGS

Heggies were engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2008.

The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 6**.

Donaldson Mine operations were observed to be audible at Location F Black Hill Road during the evening and night-time and Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the night-time.

Donaldson Mine contributions were found to exceed the relevant consent conditions at Location F.

Abel Mine operations were inaudible at all residential locations during all periods and as such it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (December 2009), the baseline monitoring period, the last monitoring period (September 2009), and the coinciding monitoring period from last year (December 2008) has been conducted.

In summary, where noise levels have risen, the ambient noise environment has been identified to generally contain traffic and natural noise sources and not noise from Donaldson Mine or Abel Coal Mine activity. However, at Location F noise levels from mining operations in the area, including Donaldson operations, were observed to have increased from those noise levels recorded during the baseline monitoring process and previous compliance monitoring periods.

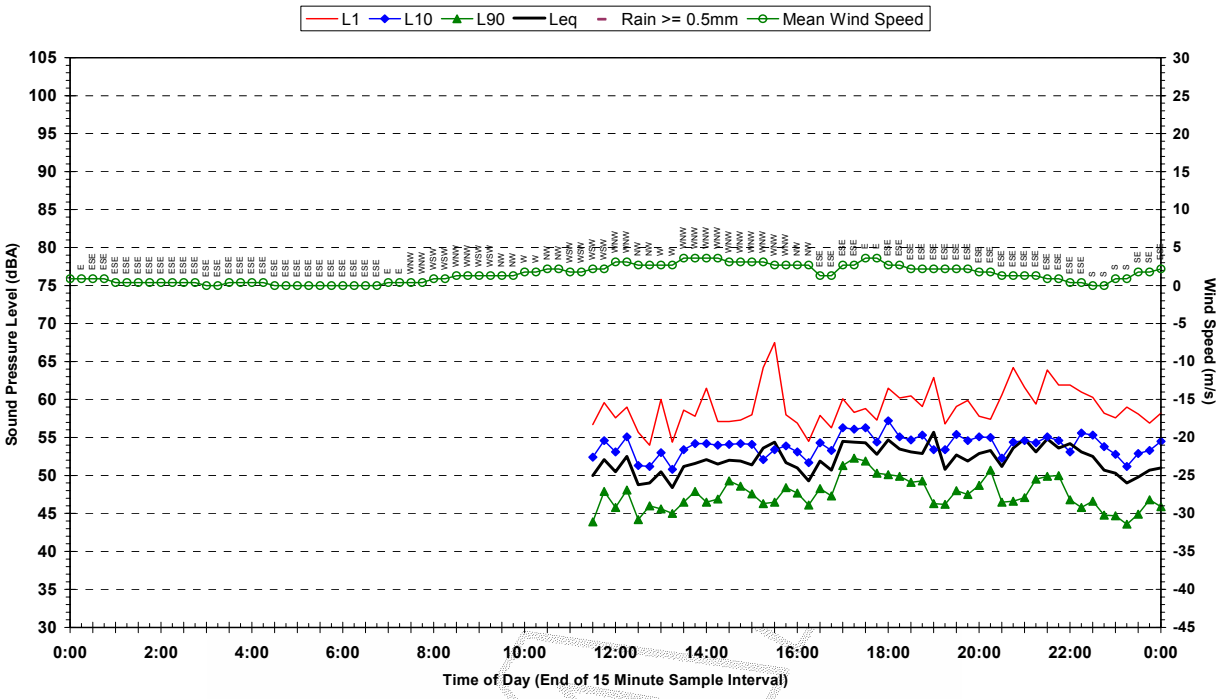
APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

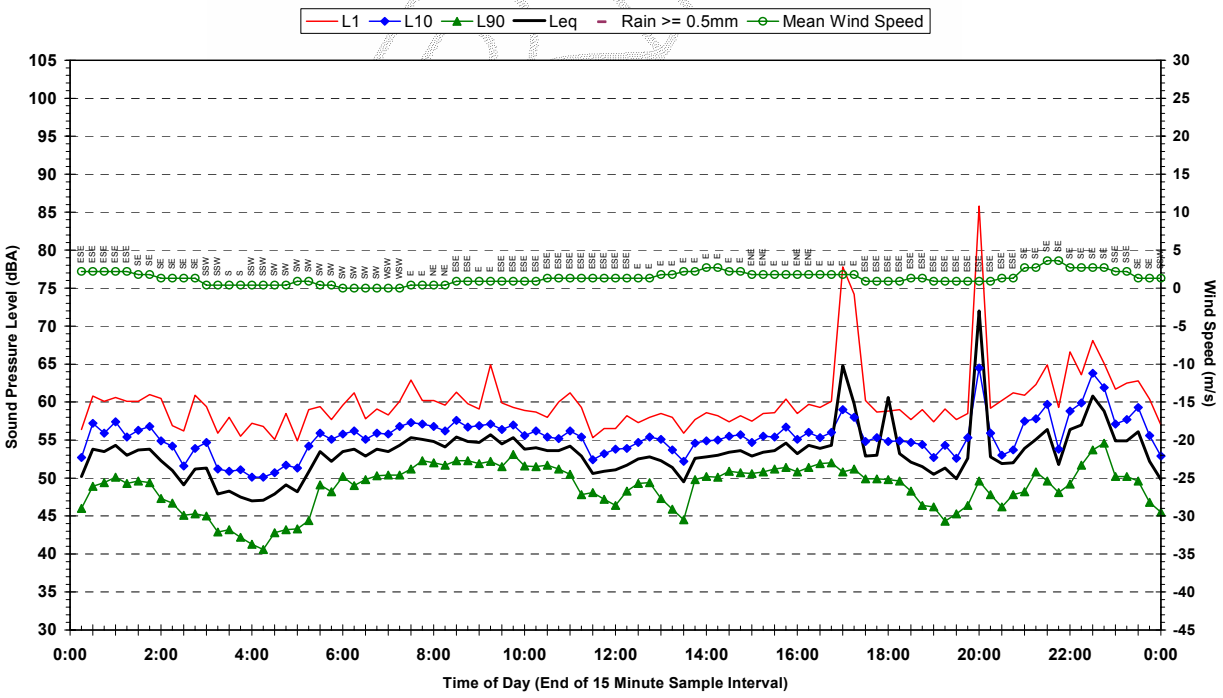
JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – June 2009

Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 5110B	AAA00311
9	LOD004	CATERPILLAR IT28G	CWAC00351
10	LOD044	KOMATSU WA700	10106
11	LOD149	CATERPILLAR 990II	4FR00394
12	RDT026	CATERPILLAR 777A W/CART	84A01034
13	RDT033	CATERPILLAR 740 W/CART	B1P02699
14	RDT100	CATERPILLAR 785	8GB00596
15	RDT107	CATERPILLAR 785	8GB00320
16	RDT140	CATERPILLAR 785	8GB00333
17	RDT143	CATERPILLAR 785	8GB00374
18	RDT155	CATERPILLAR 785	8GB00152
19	RDT162	CATERPILLAR 785	8GB00258
20	RDT163	CATERPILLAR 785	8GB00259
21	RDT182	CATERPILLAR 785	8GB00494
22	GRD004	CATERPILLAR 16H	6ZJ00678
23	GRD036	CATERPILLAR 16G	93U03039
24	CMP059	AIRMAN COMPRESSOR – STR034	
25	CMP061	SULLAIR COMPRESSOR 185CFM	200610160001
26	CMP062	SULLAIR COMPRESSOR 185CFM	206101100049
27	GEN001	KUBOTA GENERATOR – VEH154	
28	WEL057	LINCOLN SAM400 – VEH154	
29	VEH154	ISUZU NPS300 BOILY TRUCK	
30	STR034	VOLVO FL7 SERVICE TRUCK	YV5FAG6JD560318
31	UTE001	NISSAN PATROL SERVICE UTE	
32	UTE002	NISSAN NAVARA TRAYBACK	

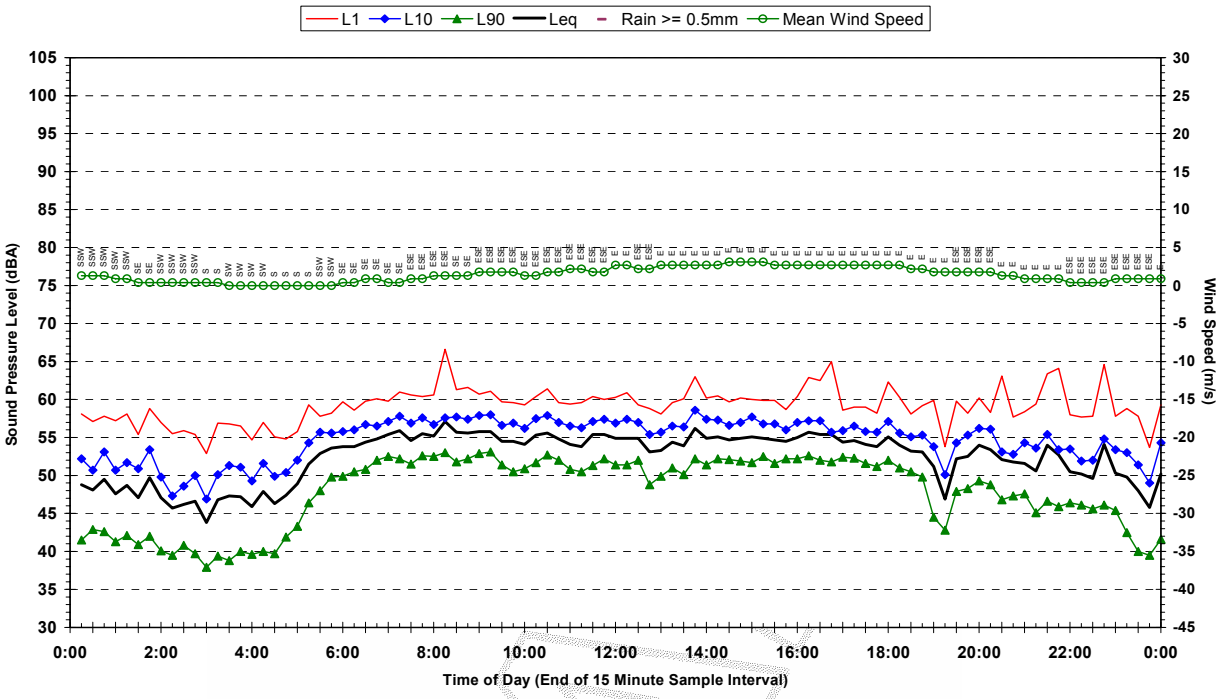
Statistical Ambient Noise Levels
Q36 - 30-1053 Weakleys Drive, Beresfield - Monday 7 December 2009



Statistical Ambient Noise Levels
Q36 - 30-1053 Weakleys Drive, Beresfield - Tuesday 8 December 2009



Statistical Ambient Noise Levels
Q36 - 30-1053 Weakleys Drive, Beresfield - Wednesday 9 December 2009



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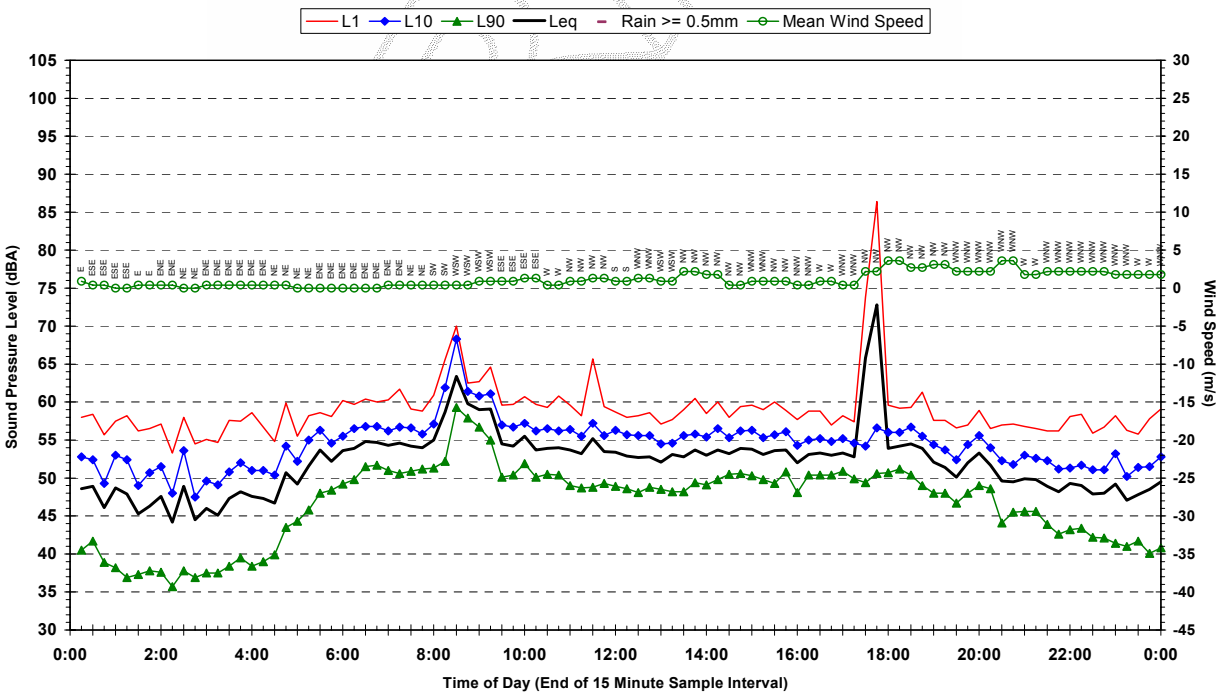
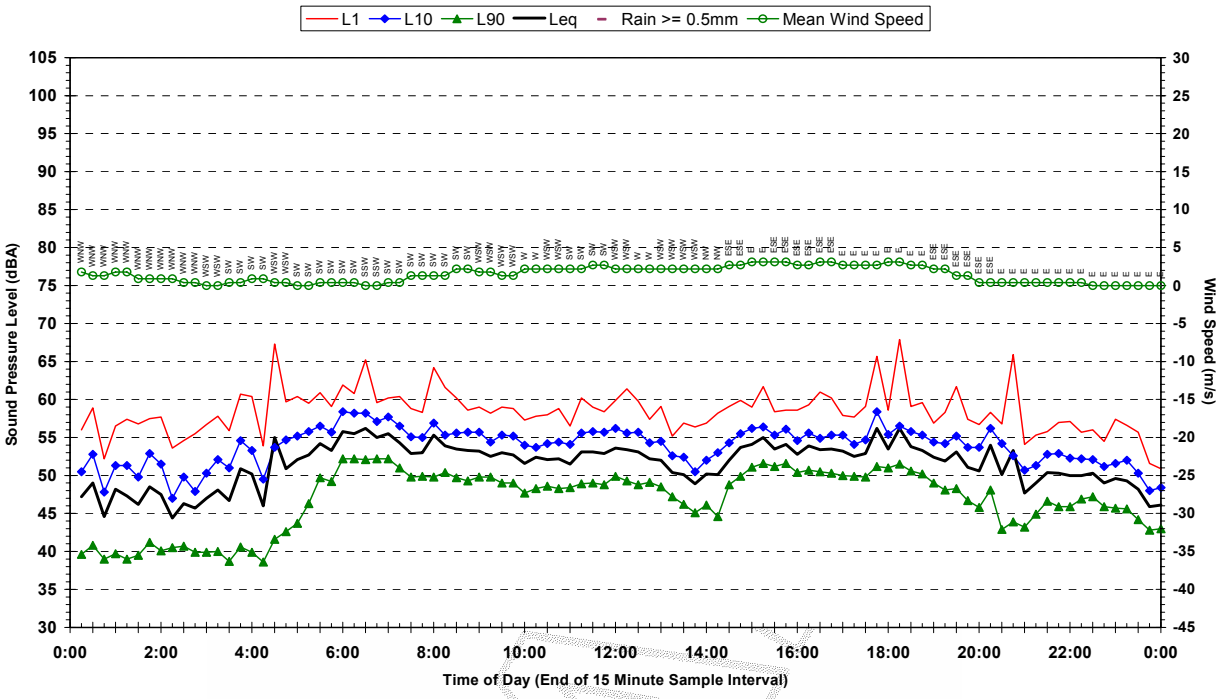
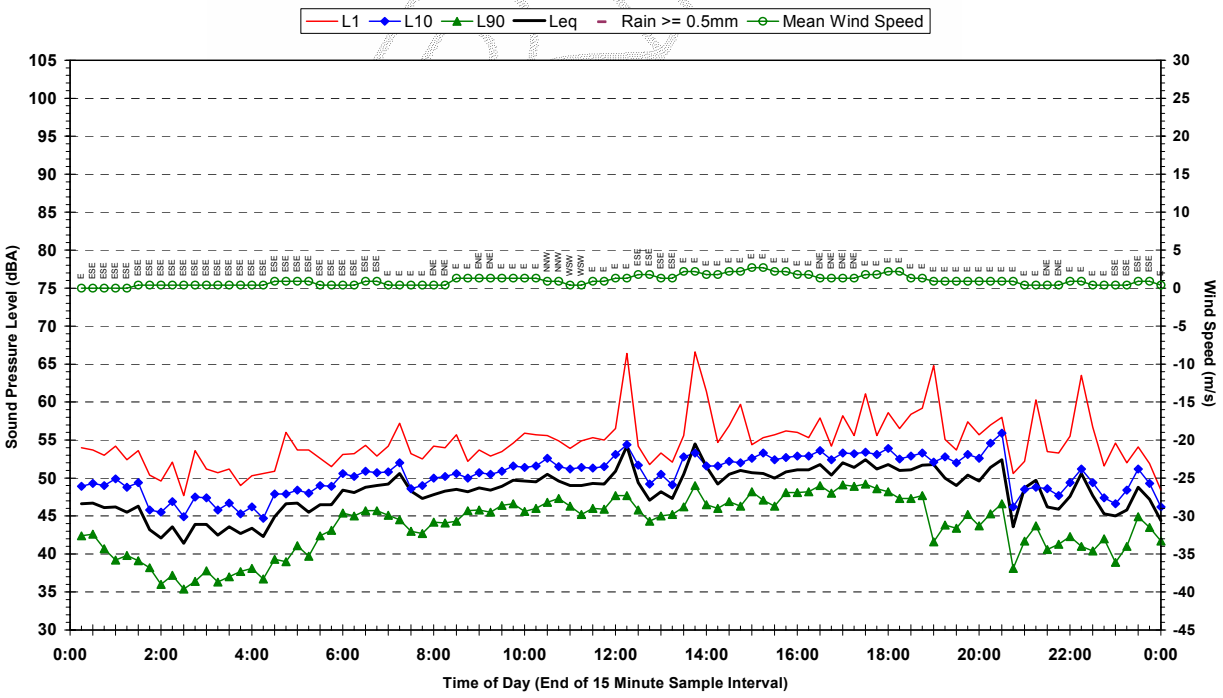
Q36 - 30-1053 Weakleys Drive, Beresfield - Thursday 10 December 2009



Statistical Ambient Noise Levels
Q36 - 30-1053 Weakleys Drive, Beresfield - Friday 11 December 2009



Statistical Ambient Noise Levels
Q36 - 30-1053 Weakleys Drive, Beresfield - Saturday 12 December 2009



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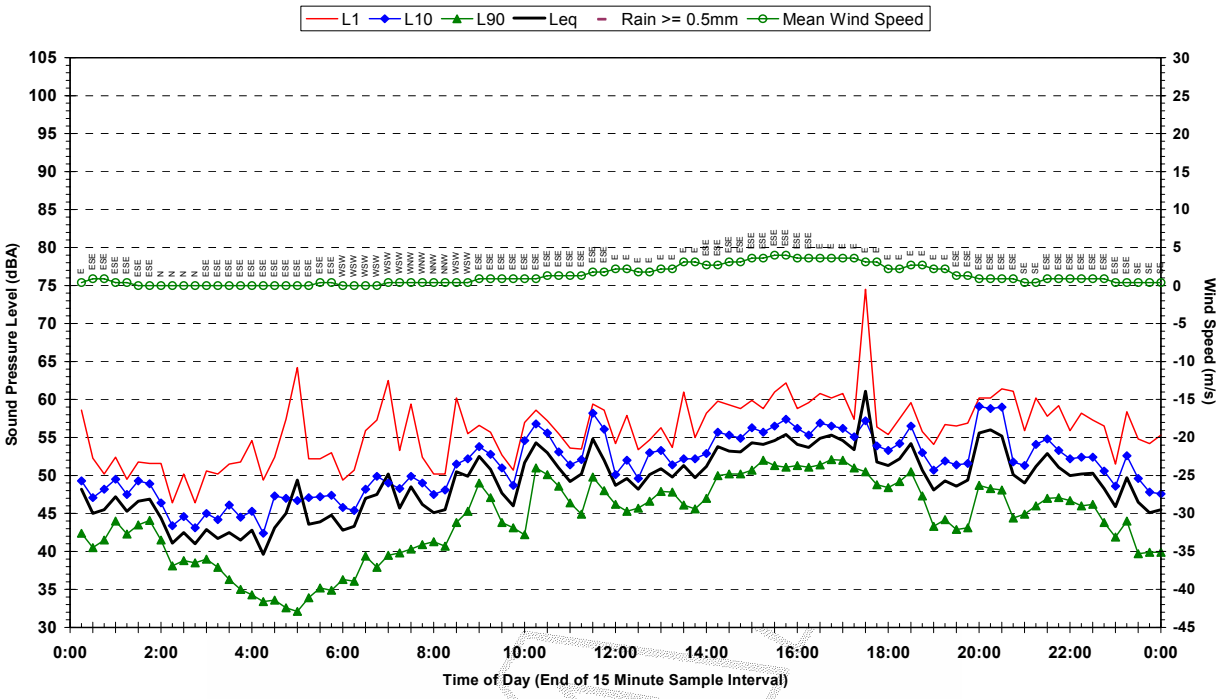

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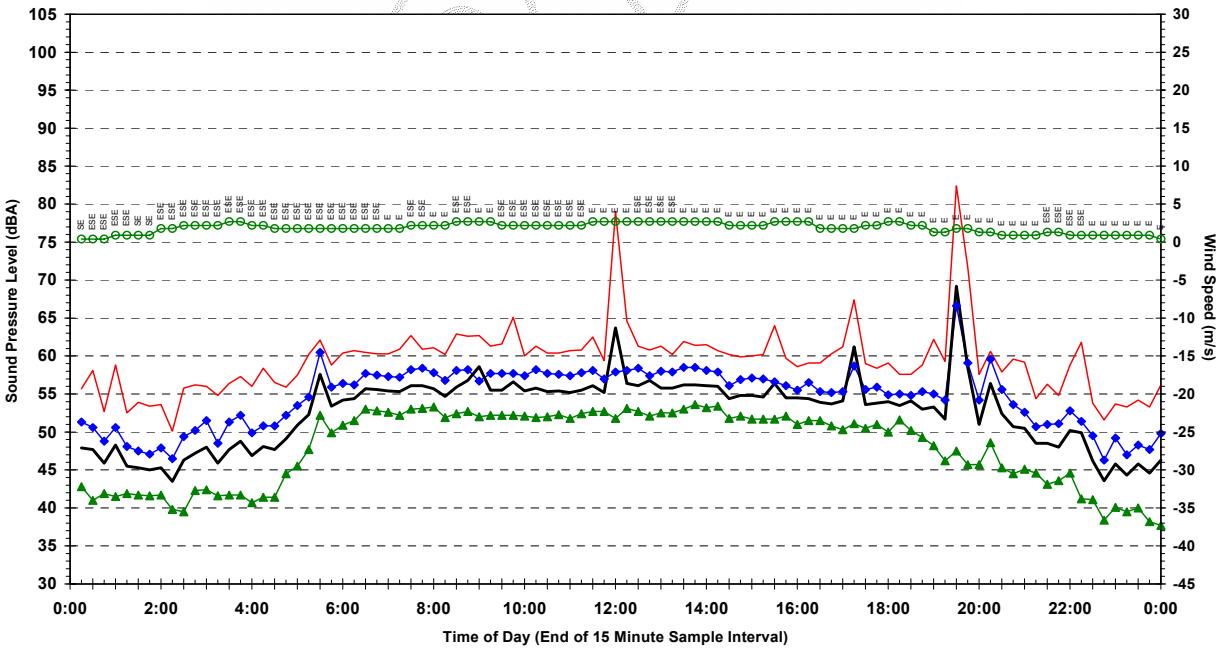
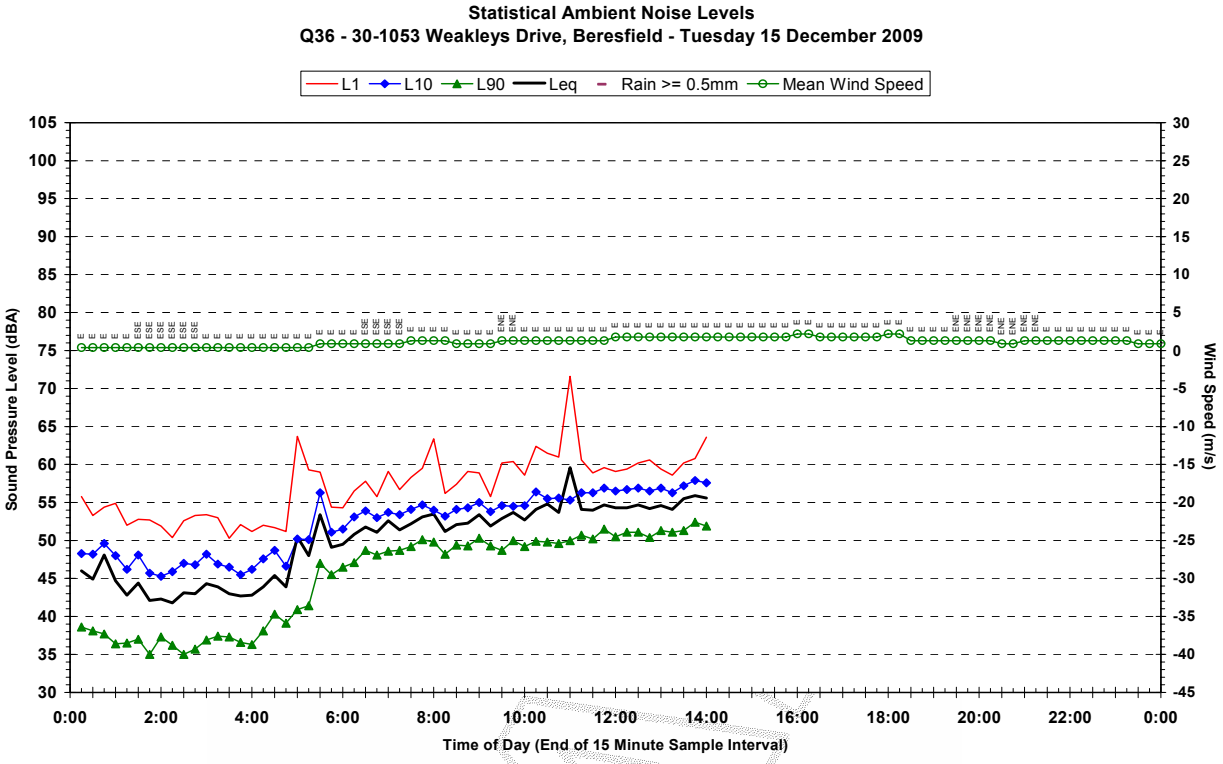
Q36 - 30-1053 Weakleys Drive, Beresfield - Monday 14 December 2009




Statistical Ambient Noise Levels
Q36 - 30-1053 Weakleys Drive, Beresfield - Tuesday 15 December 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
30
25
20
15
10
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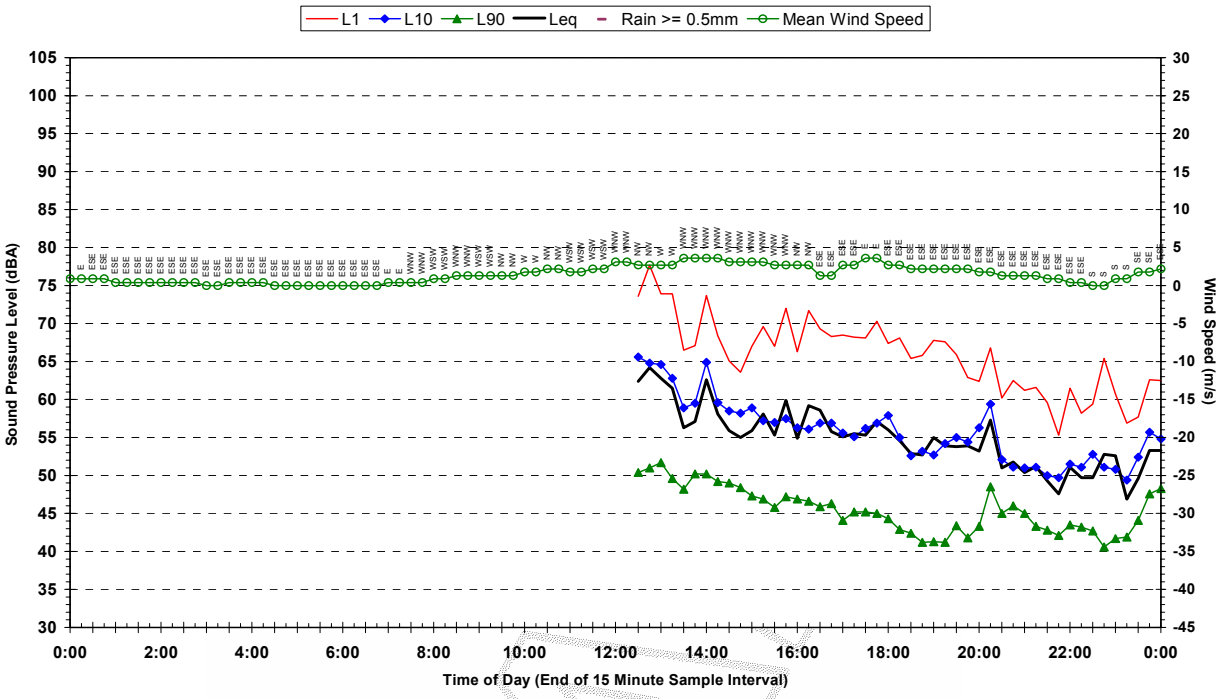
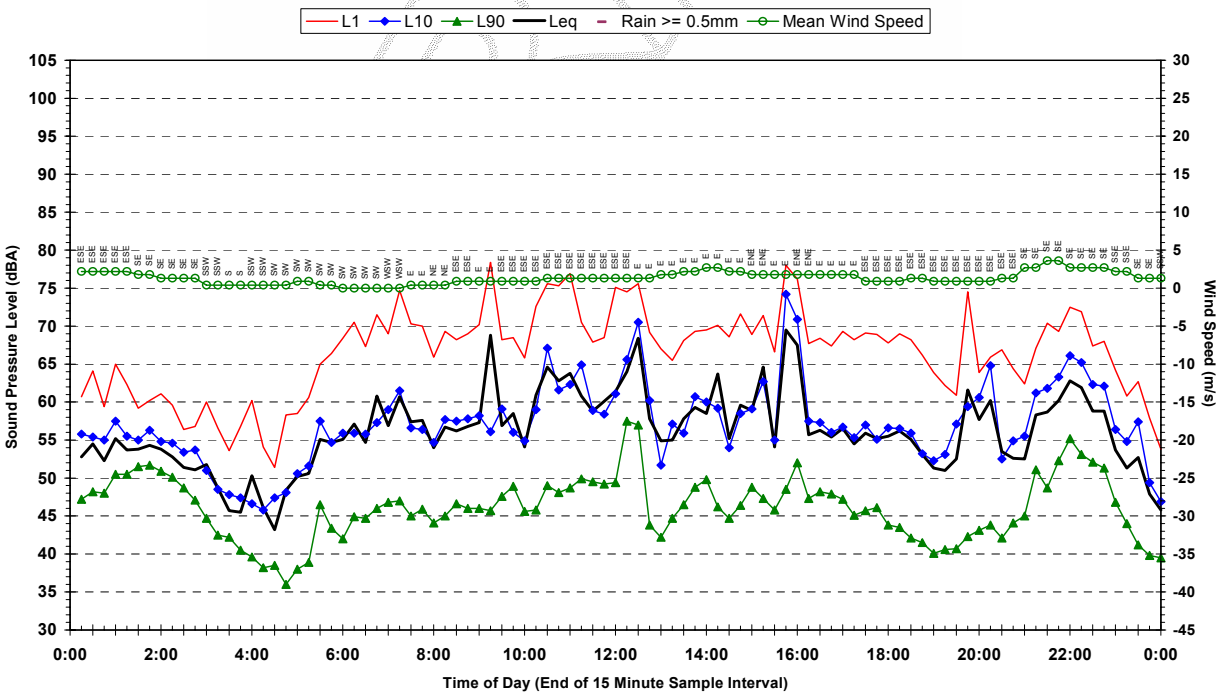
-25
-30
-35
-40
-45
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00
Time of Day (End of 15 Minute Sample Interval)

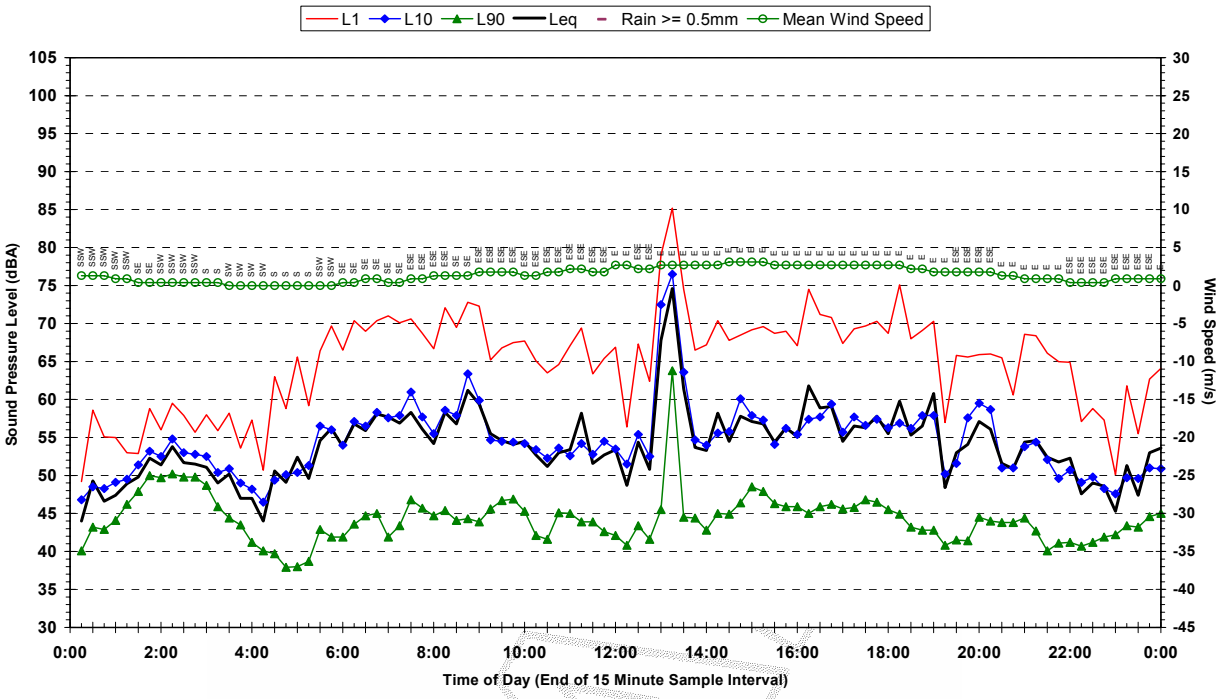
Statistical Ambient Noise Levels
Q36 - 30-1053 Black Hill Road, Black Hill - Monday 7 December 2009



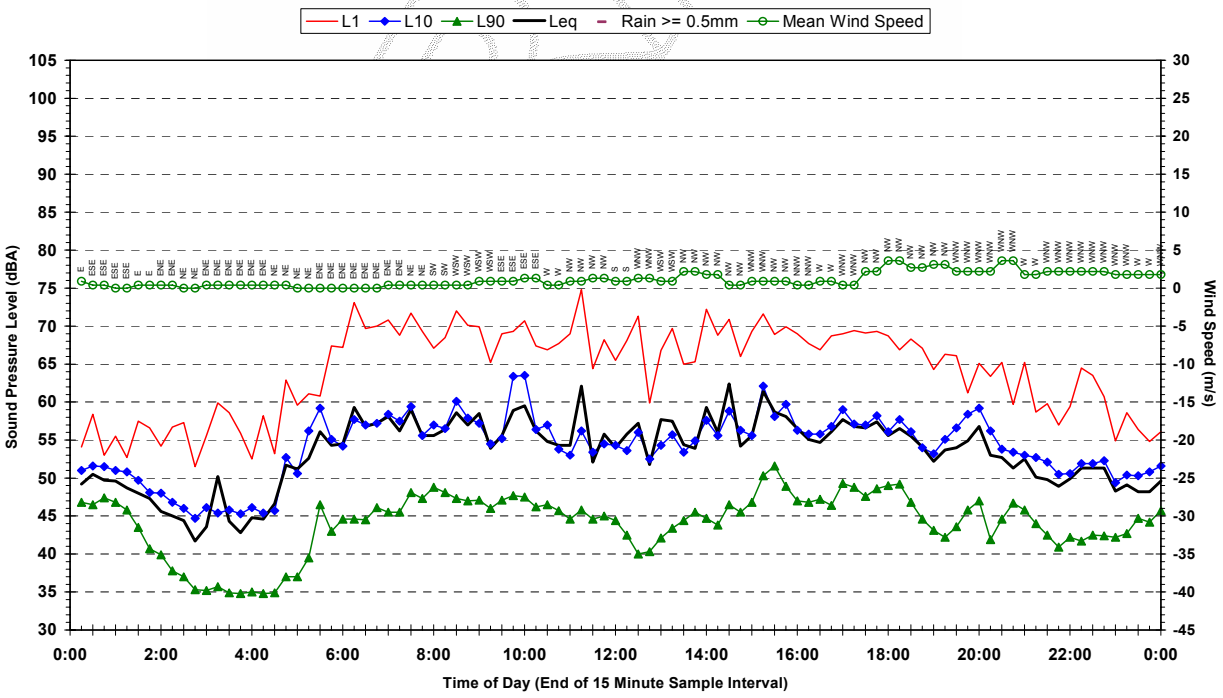
Statistical Ambient Noise Levels
Q36 - 30-1053 Black Hill Road, Black Hill - Tuesday 8 December 2009



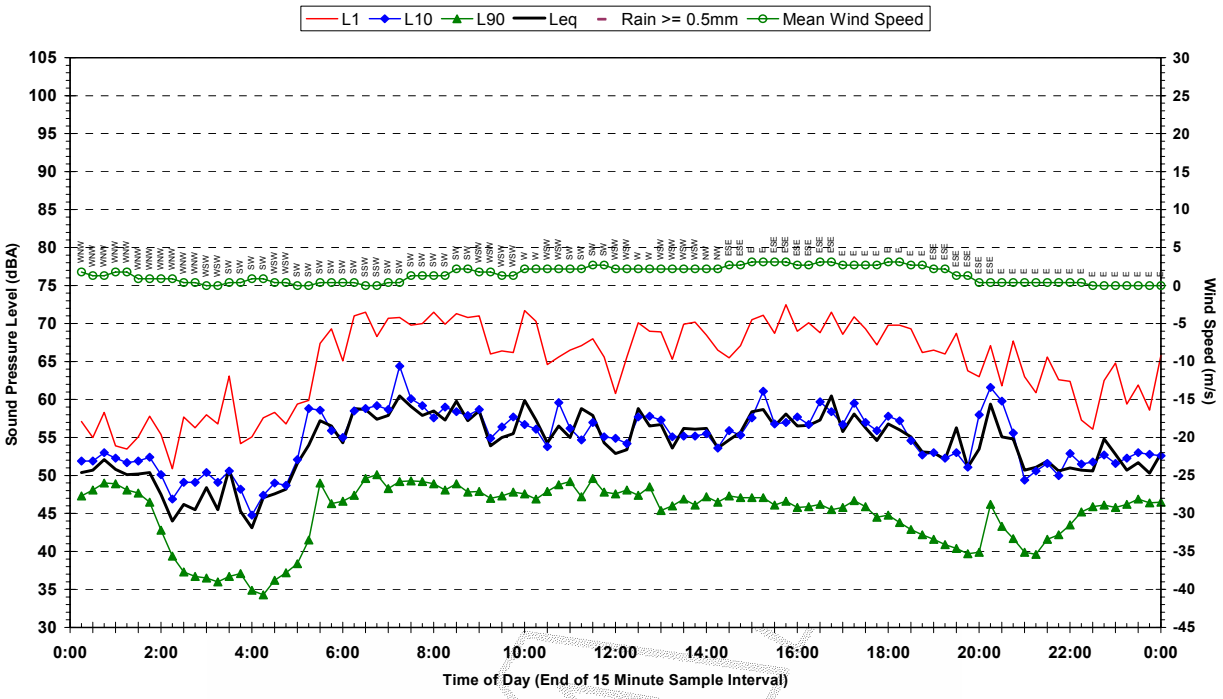
Statistical Ambient Noise Levels
Q36 - 30-1053 Black Hill Road, Black Hill - Wednesday 9 December 2009



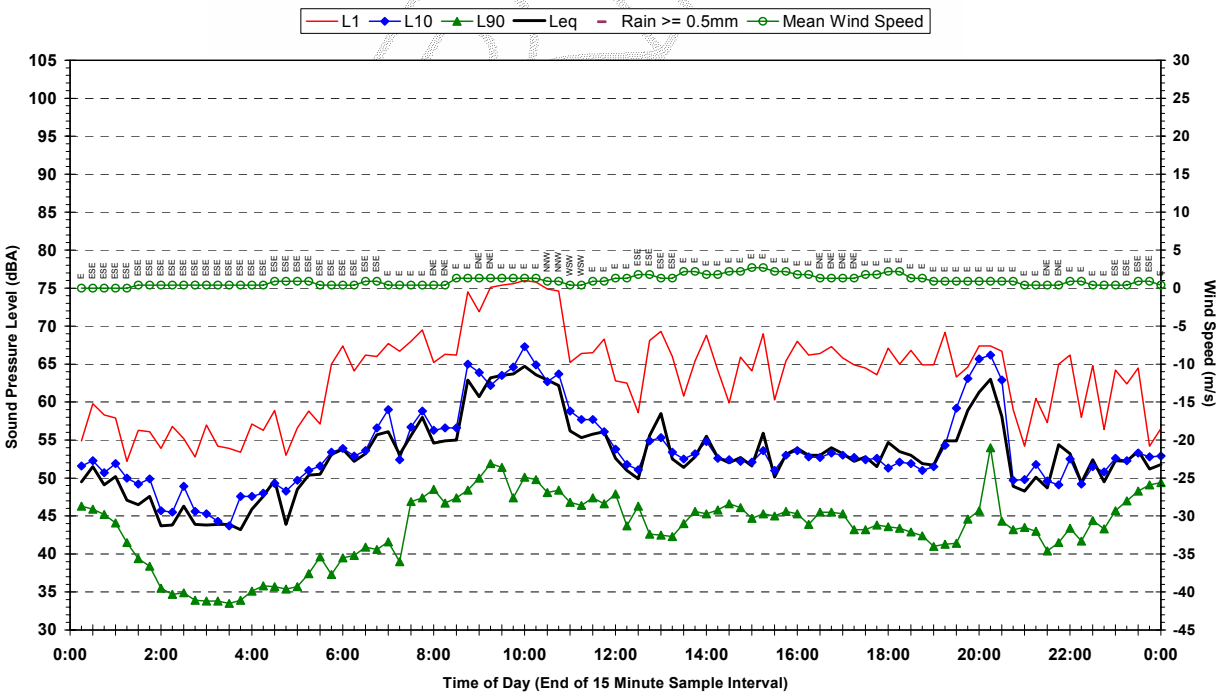
Statistical Ambient Noise Levels
Q36 - 30-1053 Black Hill Road, Black Hill - Thursday 10 December 2009



Statistical Ambient Noise Levels
Q36 - 30-1053 Black Hill Road, Black Hill - Friday 11 December 2009



Statistical Ambient Noise Levels
Q36 - 30-1053 Black Hill Road, Black Hill - Saturday 12 December 2009



Statistical Ambient Noise Levels
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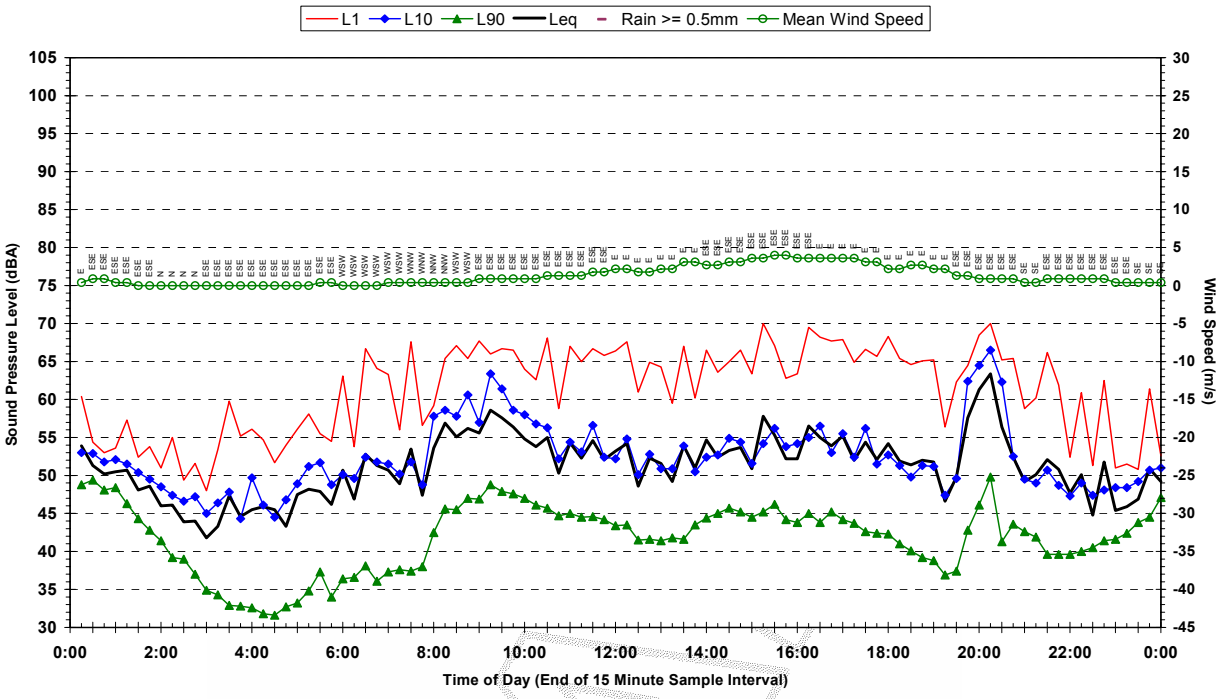

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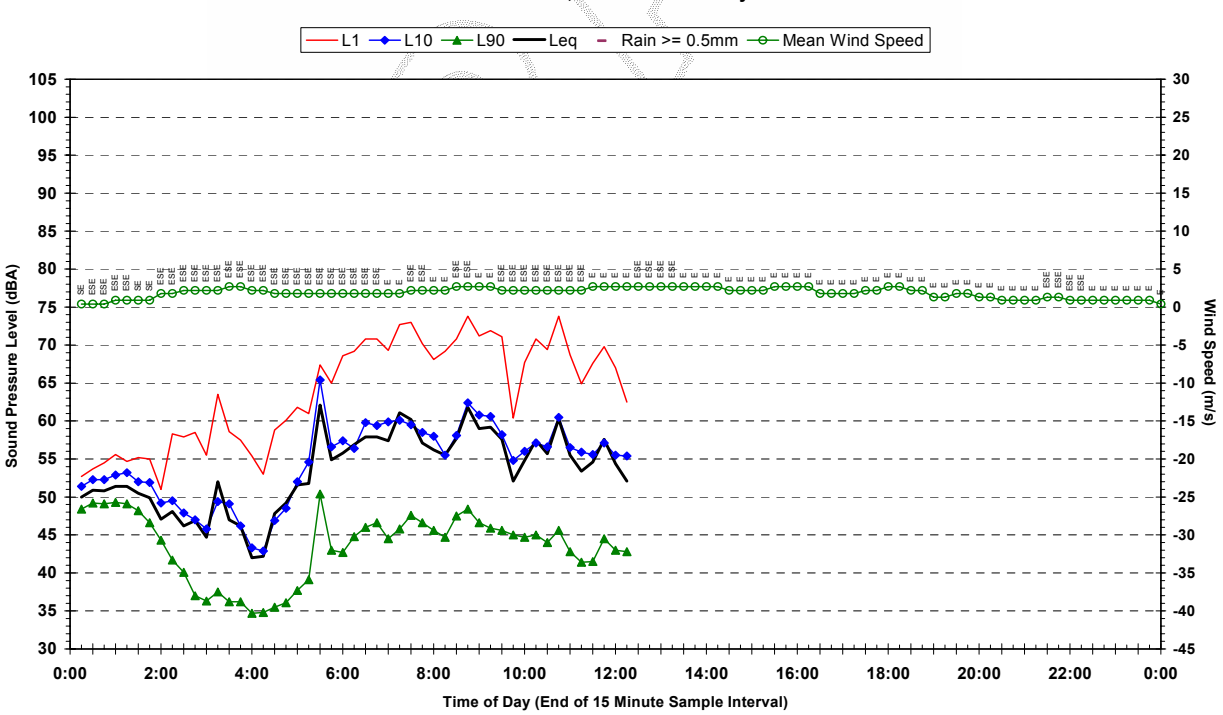

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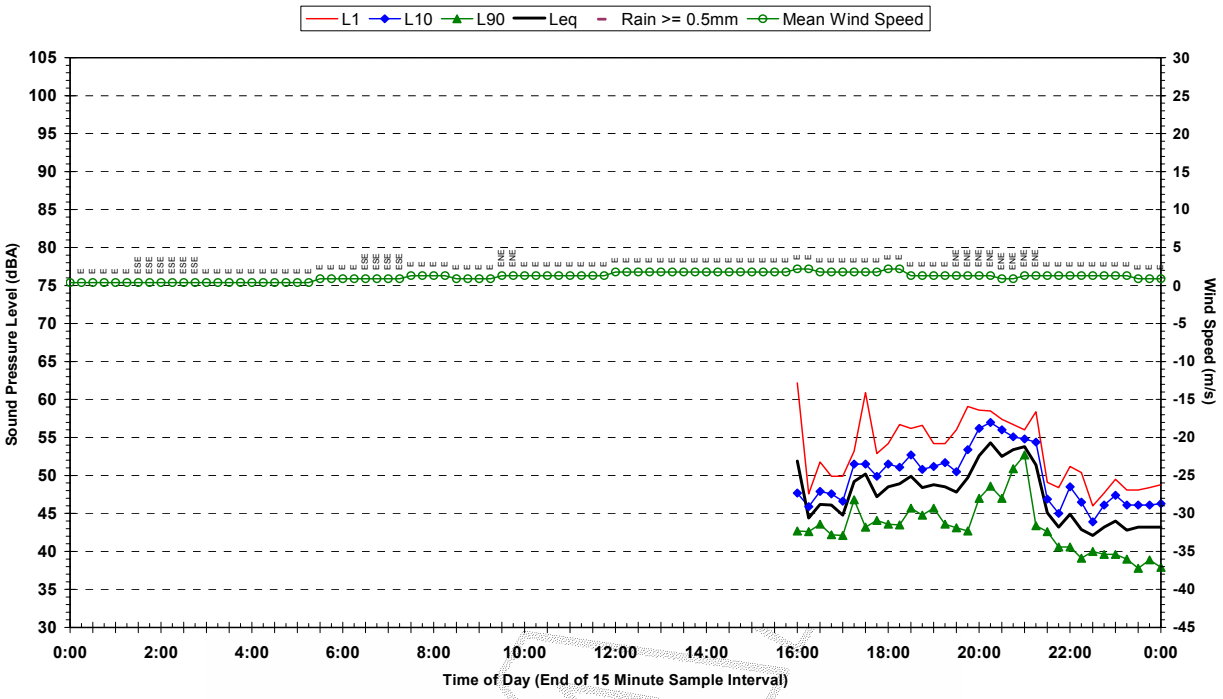

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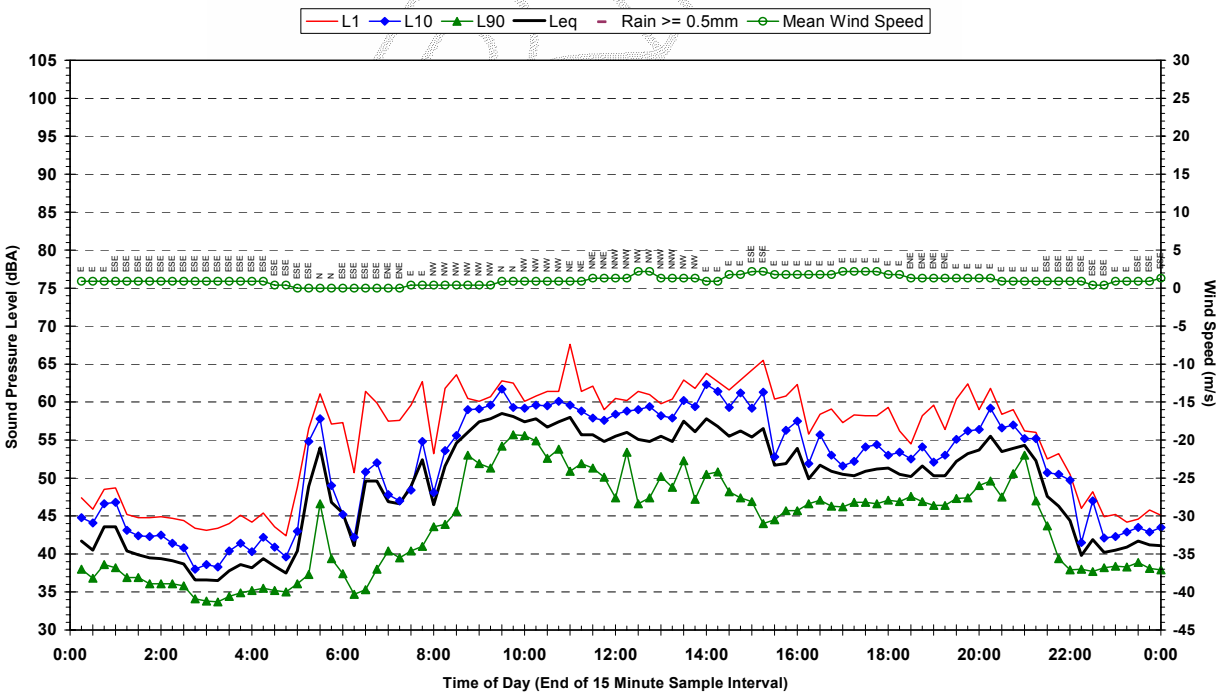

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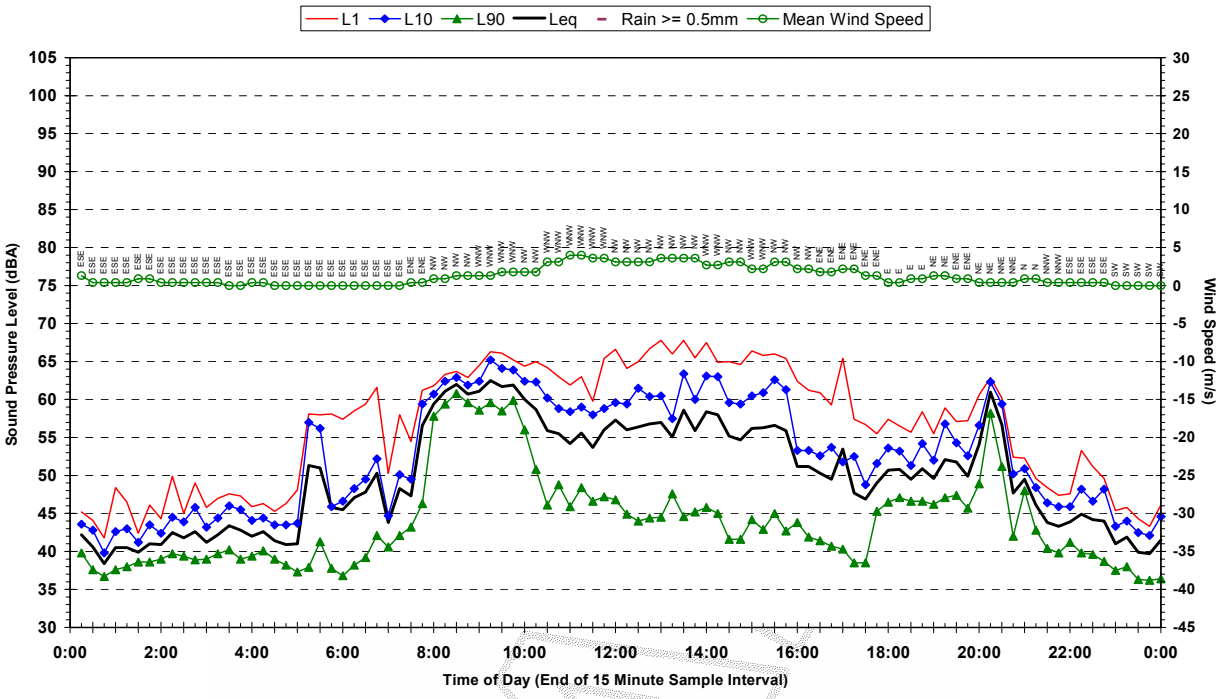

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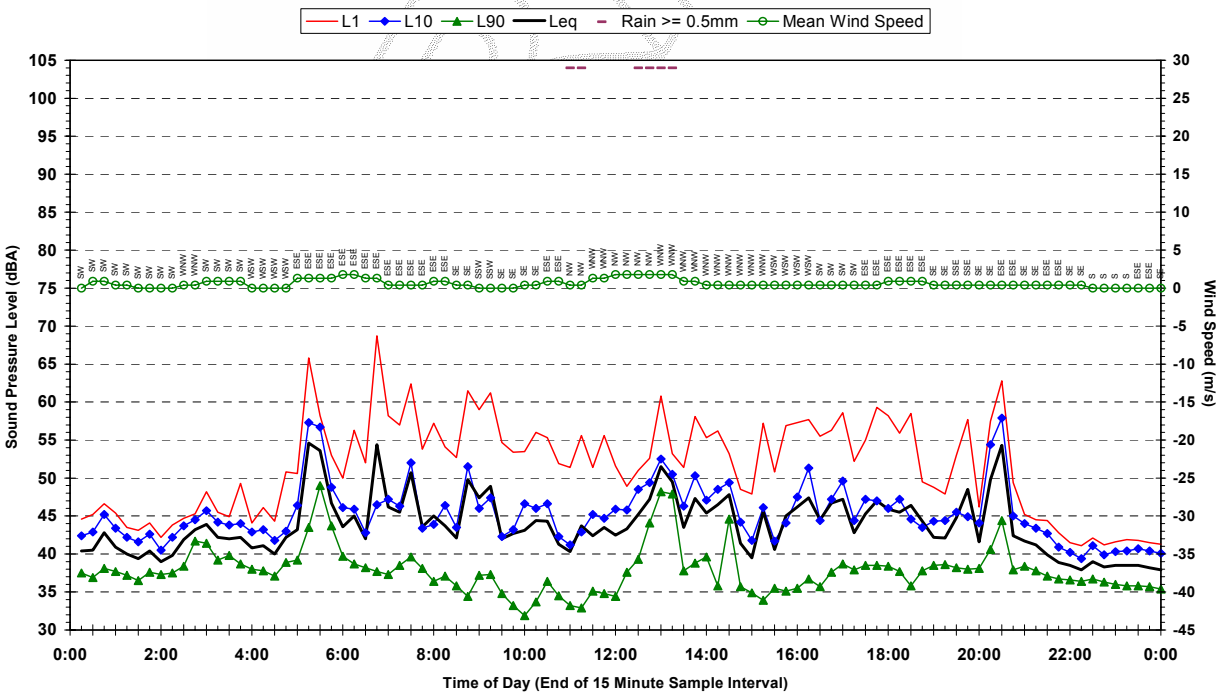

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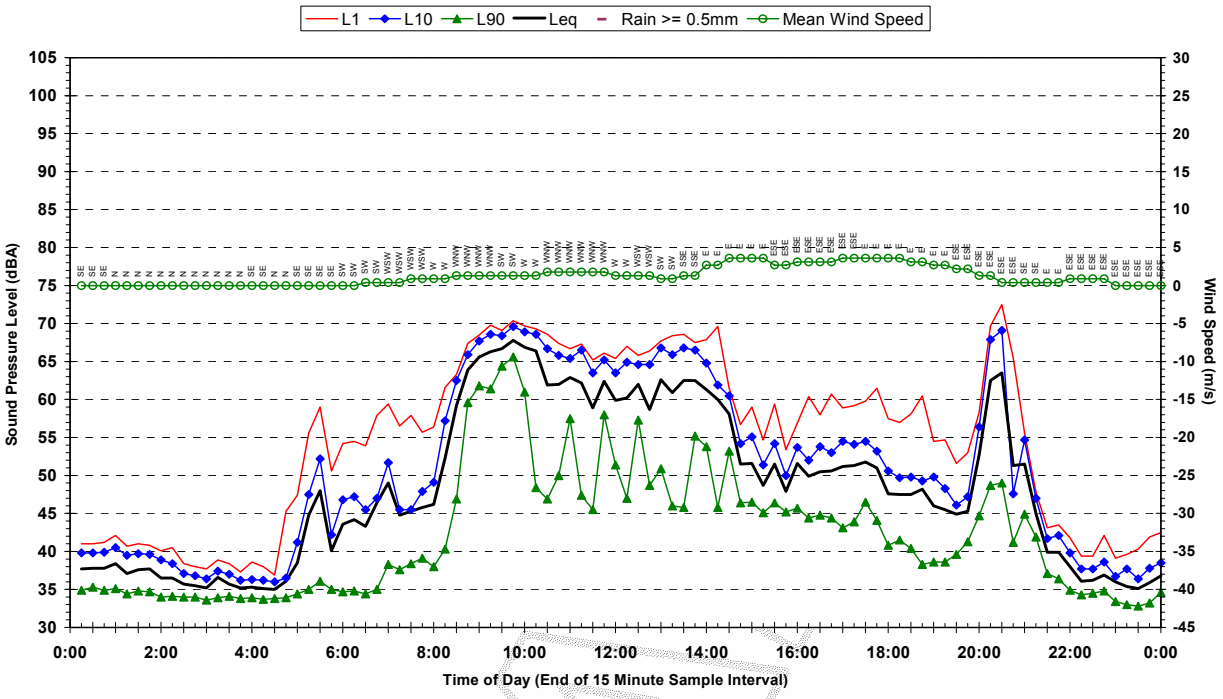

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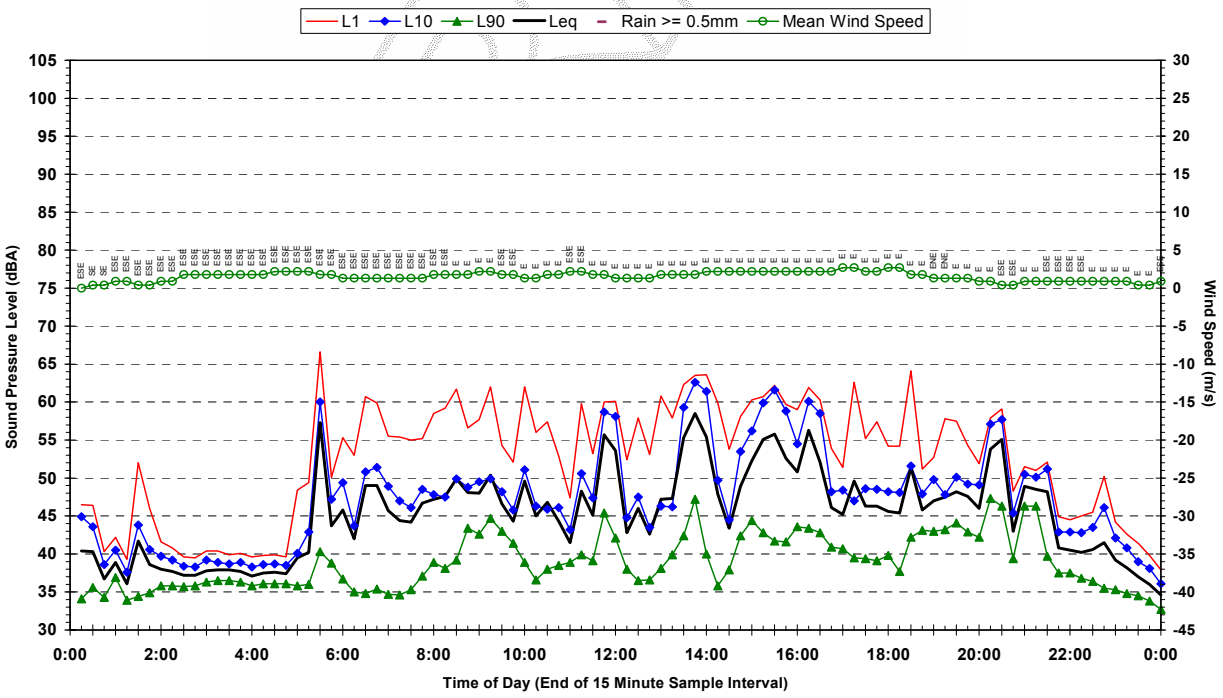

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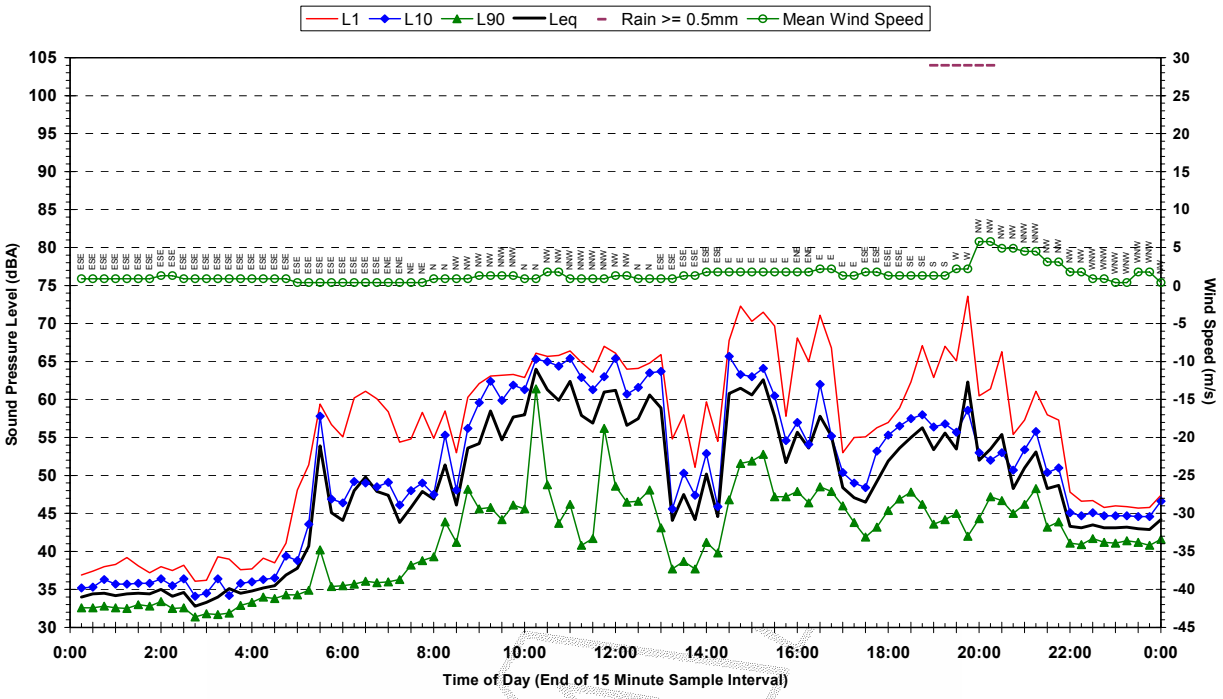

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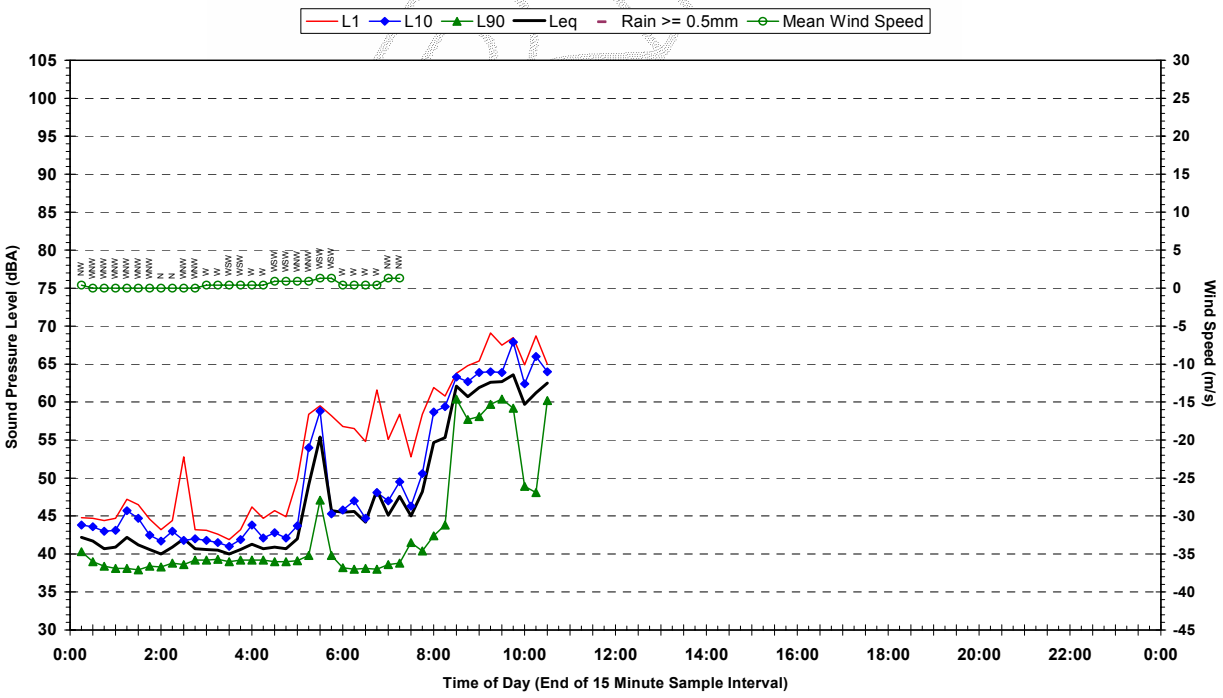

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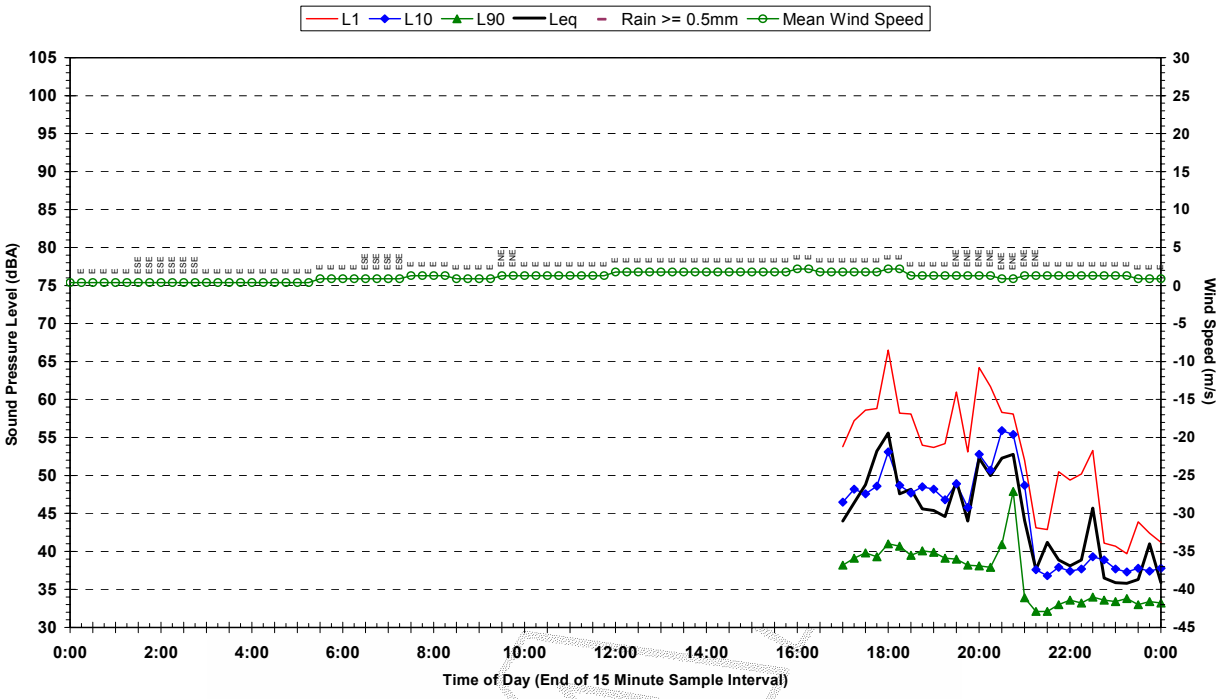

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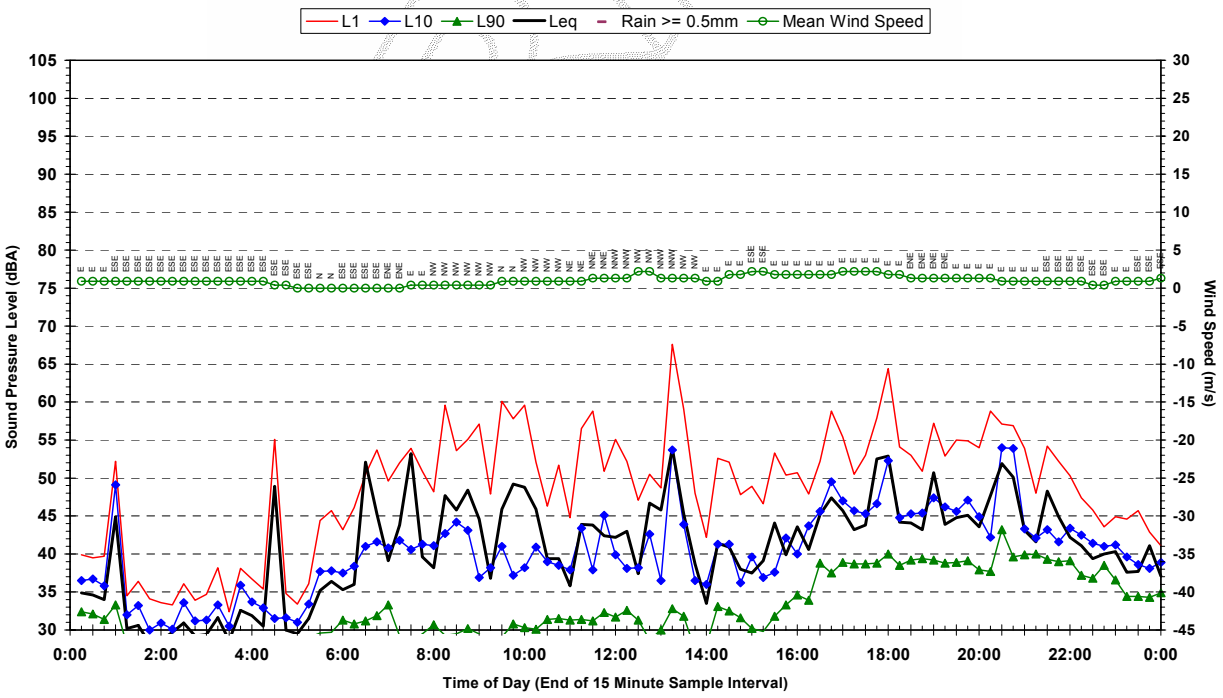

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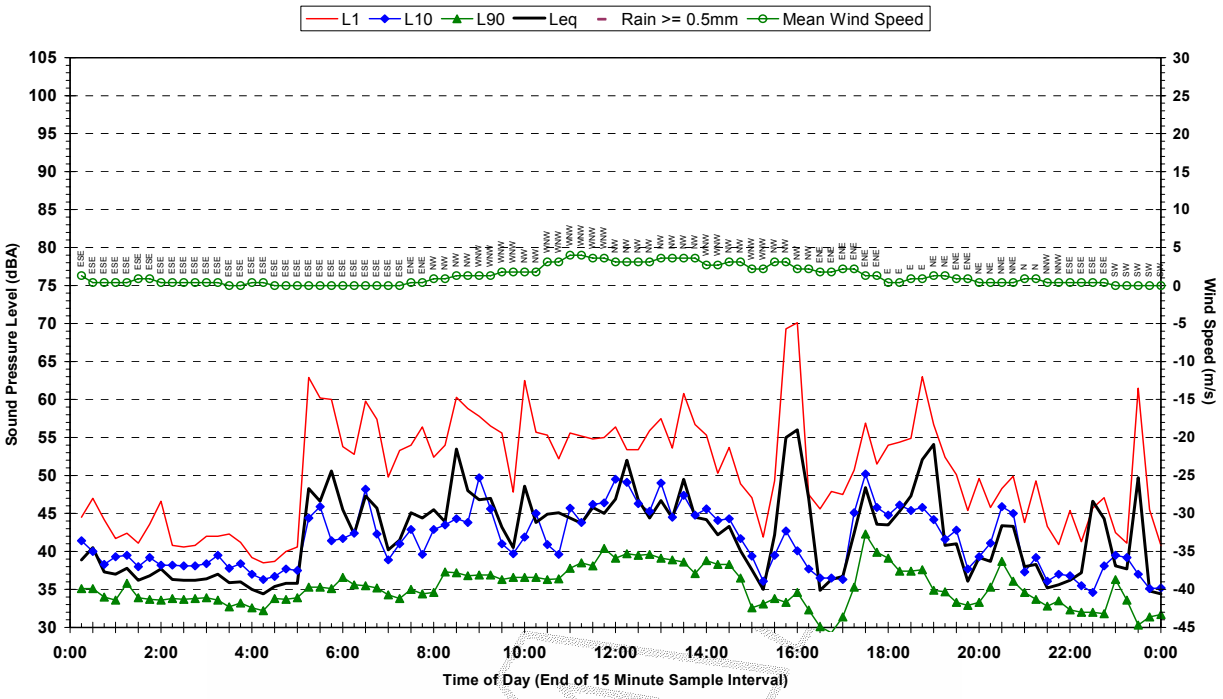

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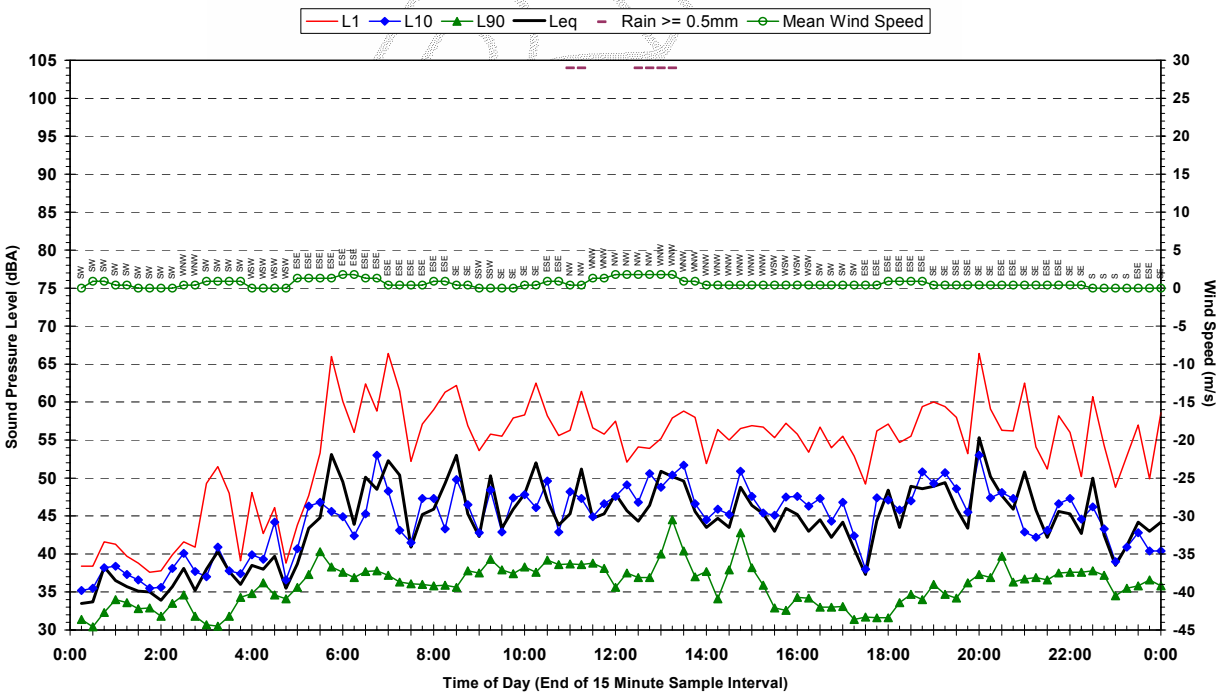

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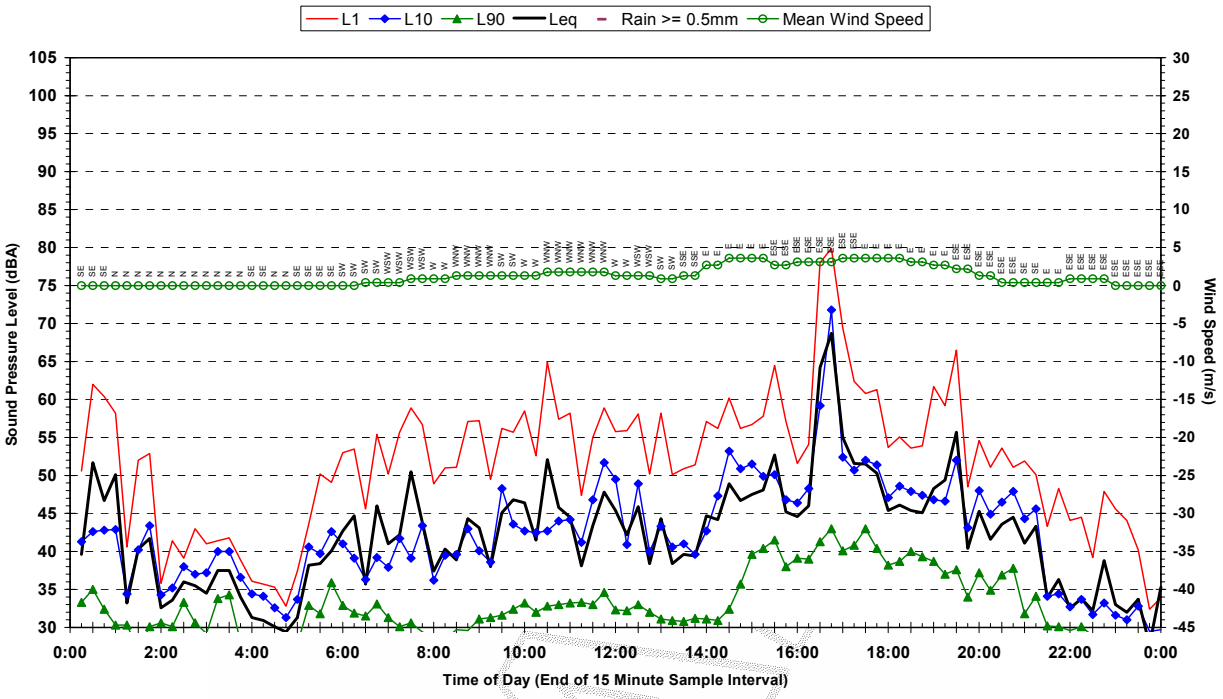
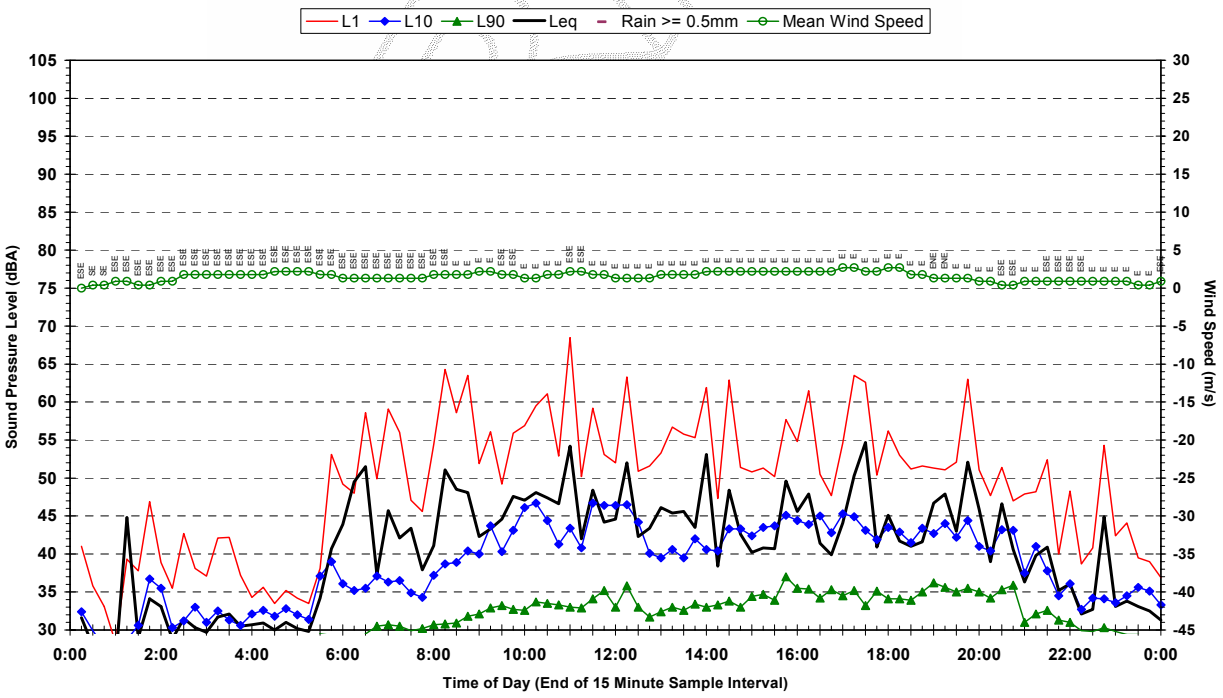


Statistical Ambient Noise Levels
Q36 - 30-1053 Kilshanney Ave, Ashtonfield - Sunday 20 December 2009



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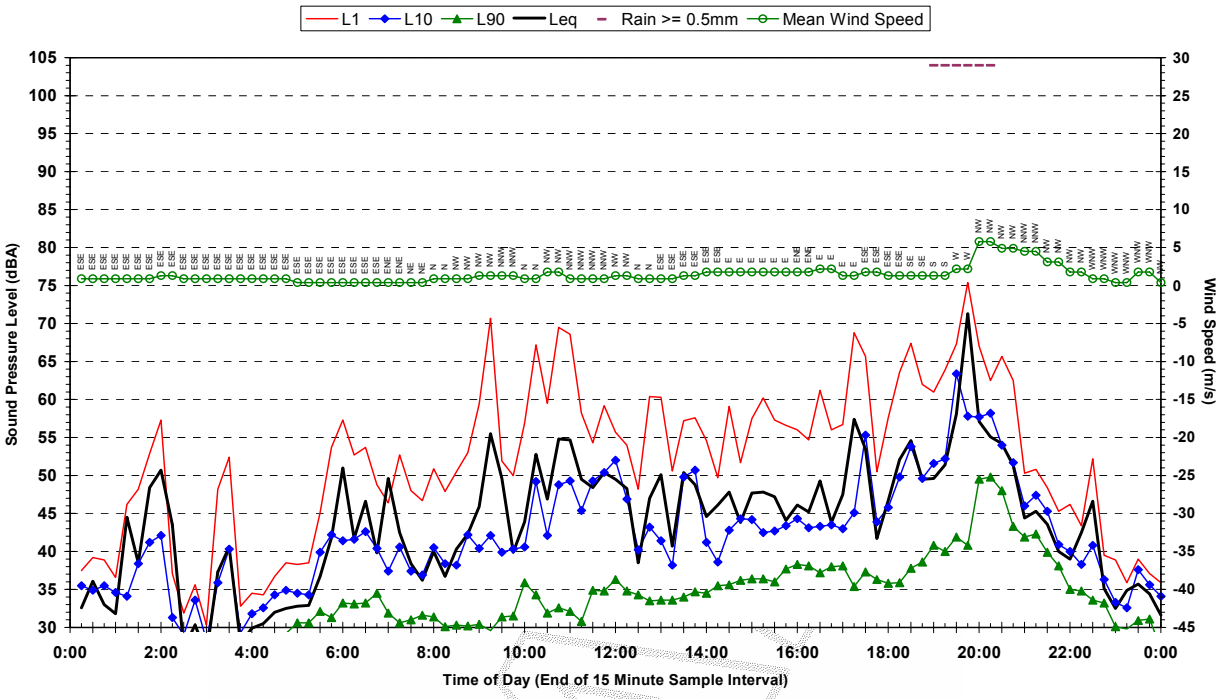

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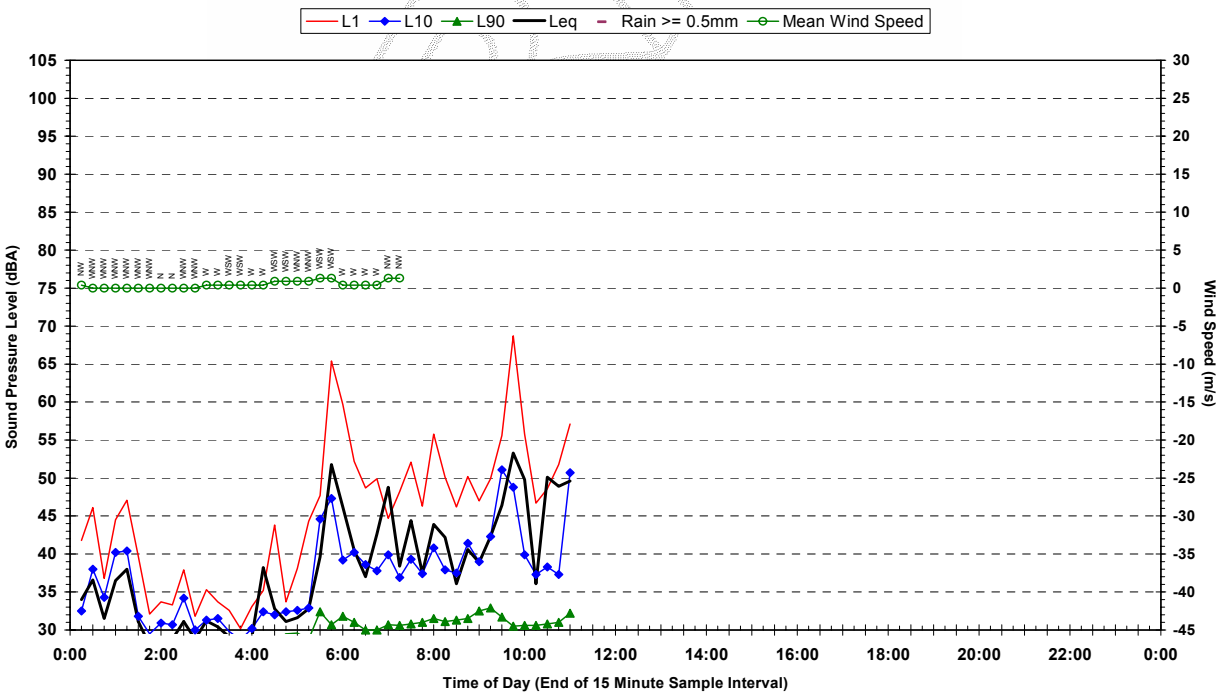
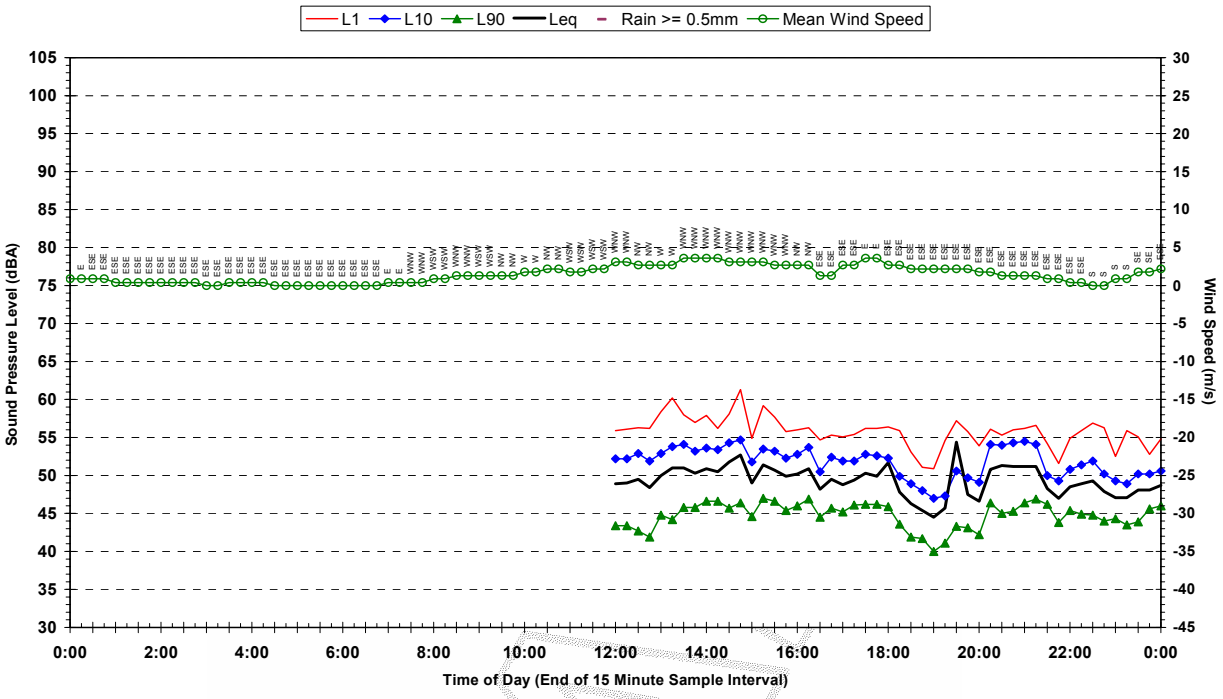


Statistical Ambient Noise Levels
Q36 - 30-1053 Catholic Diocese - Monday 7 December 2009



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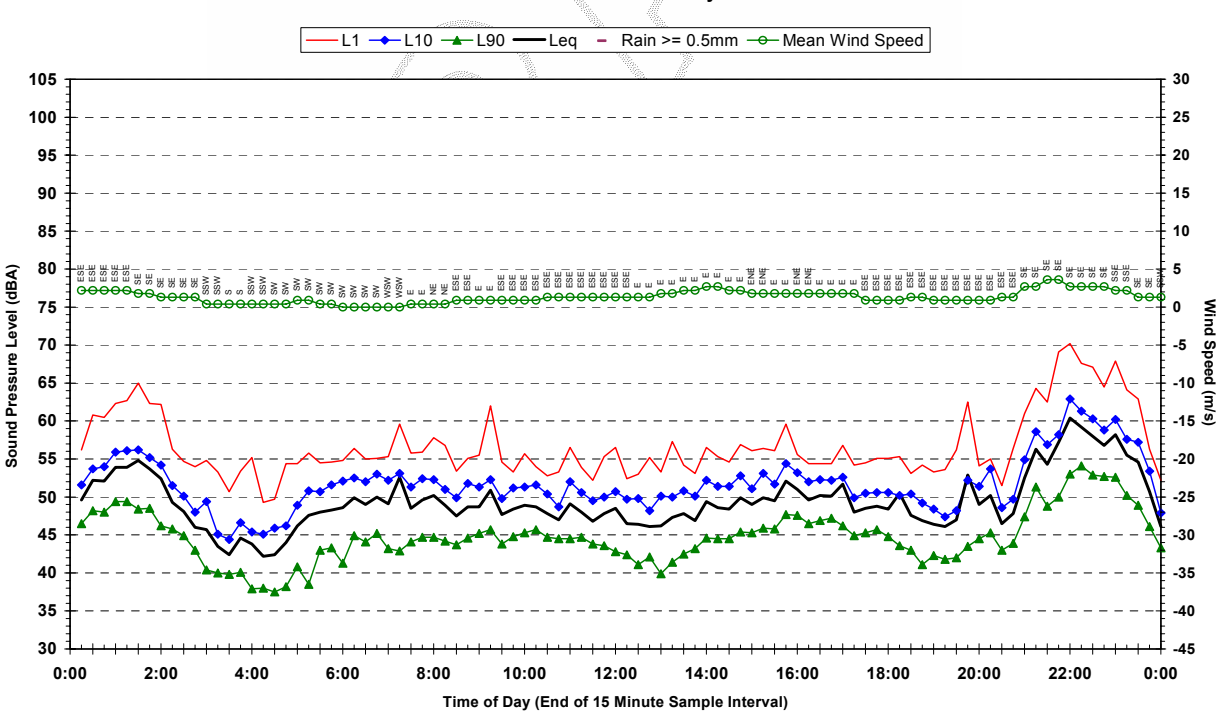
Q36 - 30-1053 Catholic Diocese - Tuesday 8 December 2009



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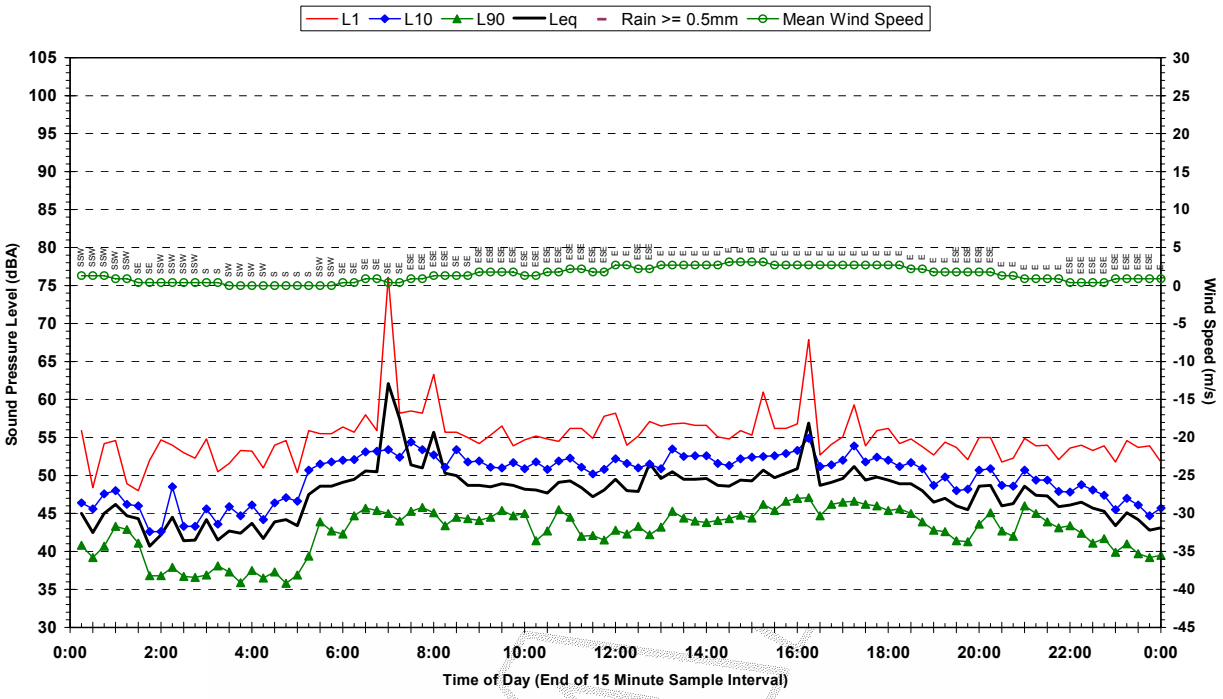

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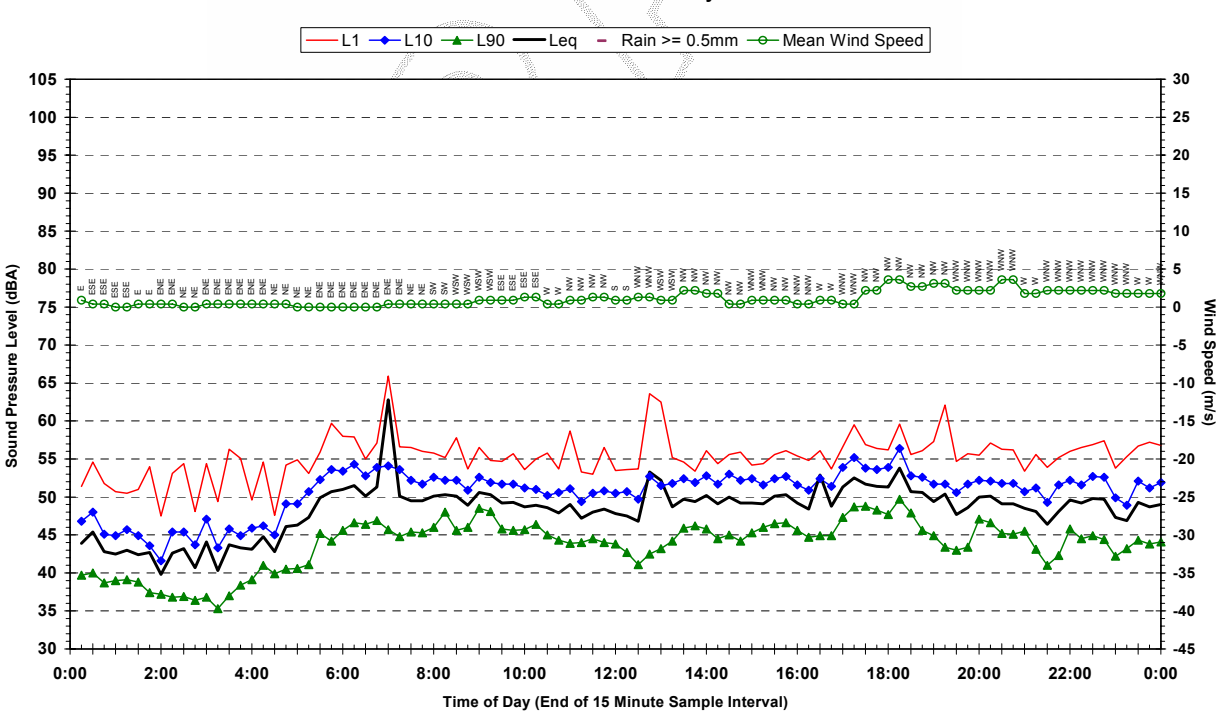
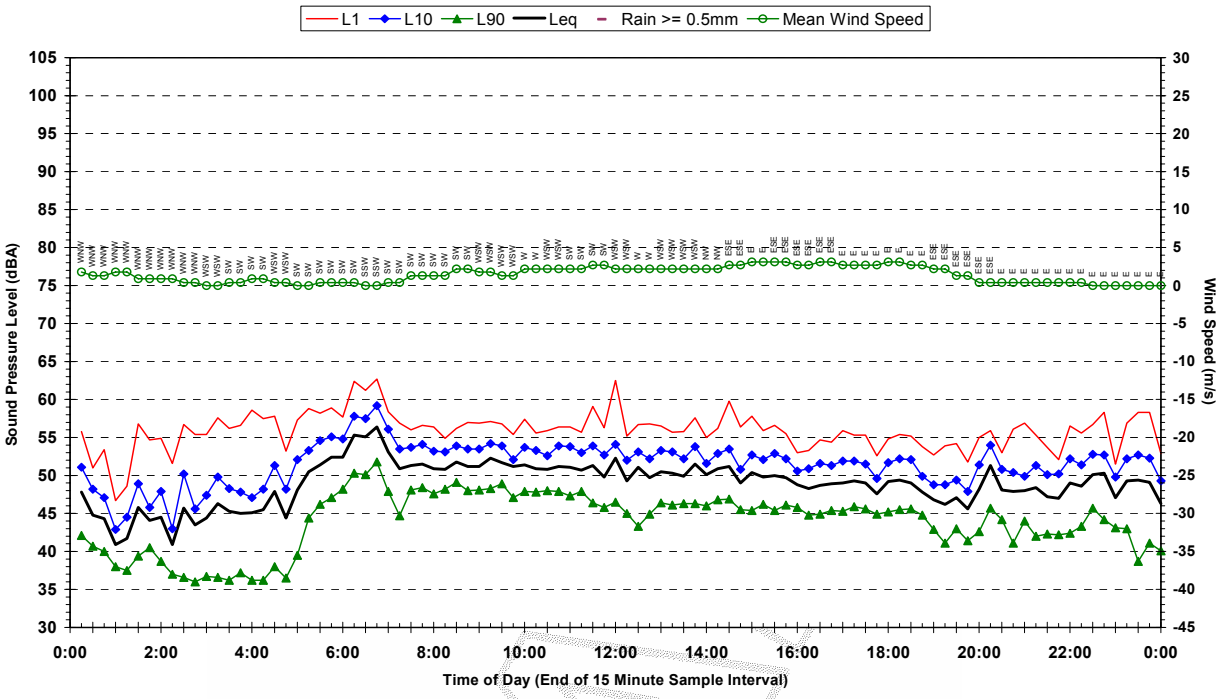
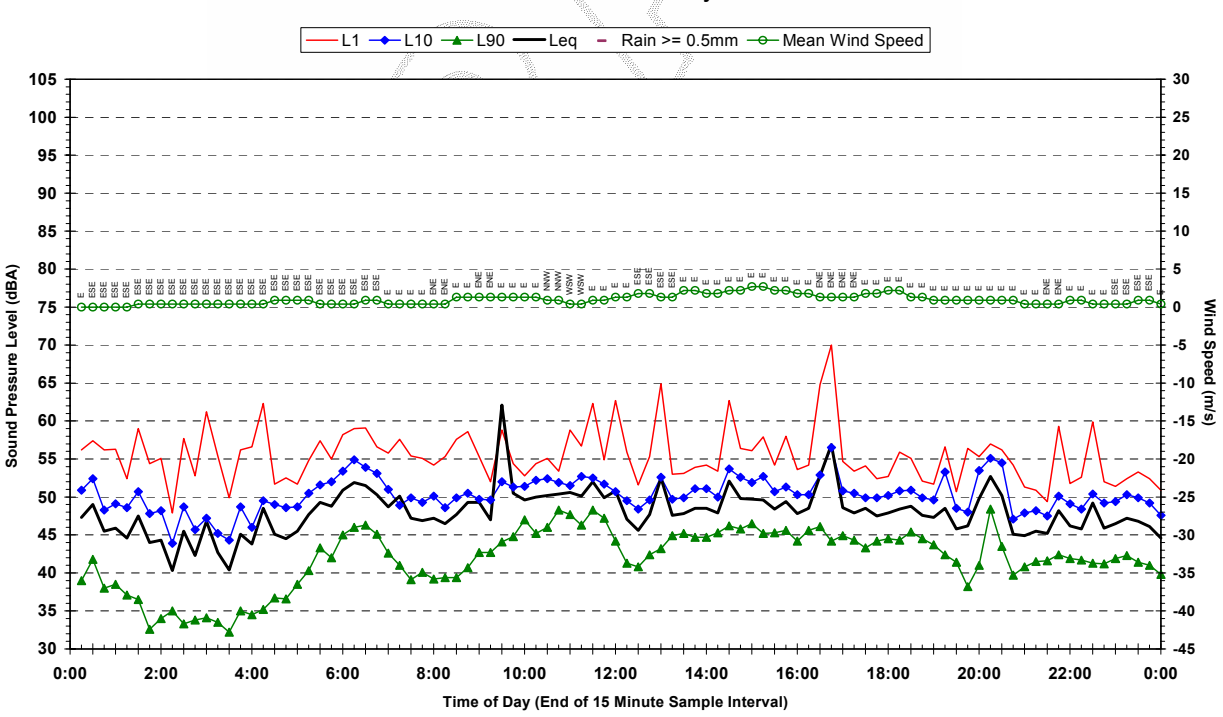
Q36 - 30-1053 Catholic Diocese - Thursday 10 December 2009



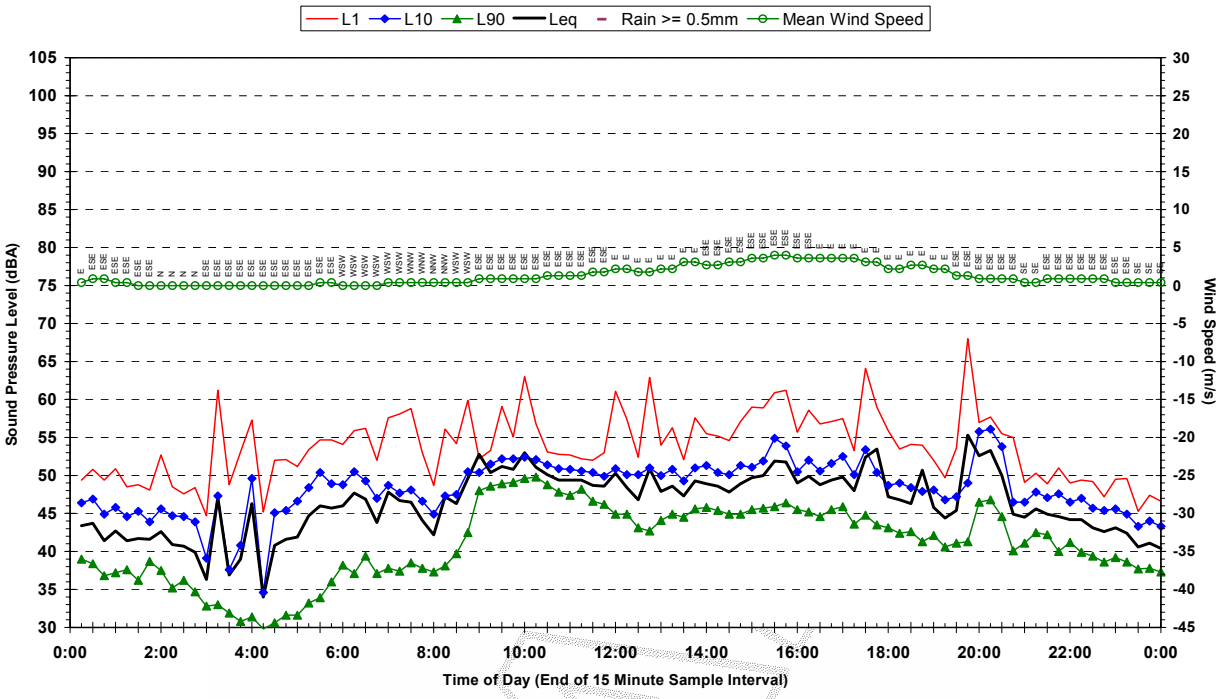
Statistical Ambient Noise Levels
Q36 - 30-1053 Catholic Diocese - Friday 11 December 2009



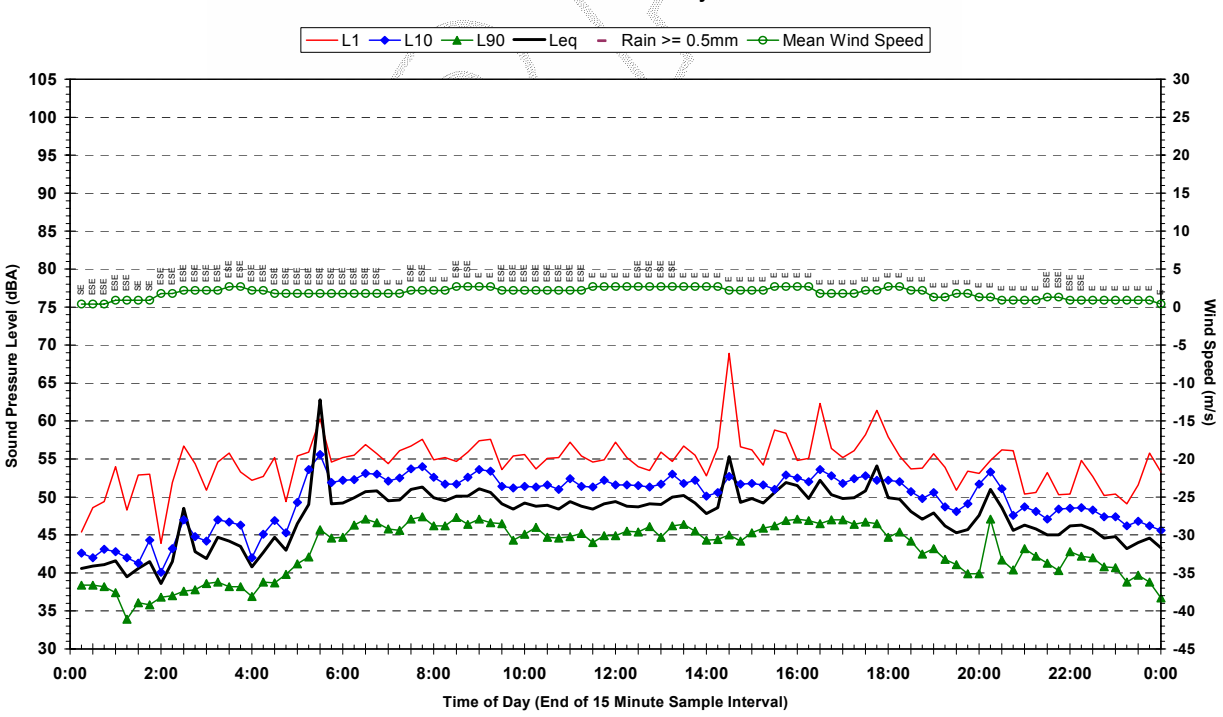
Statistical Ambient Noise Levels
Q36 - 30-1053 Catholic Diocese - Saturday 12 December 2009

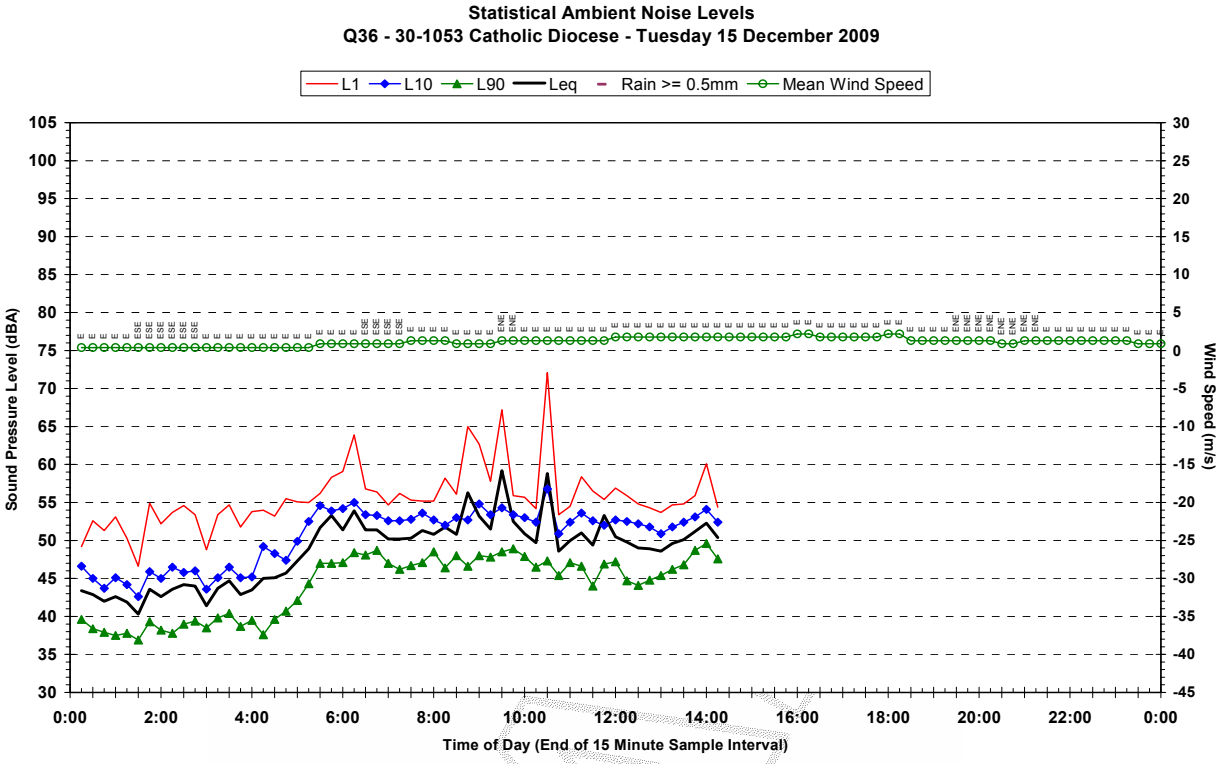


Statistical Ambient Noise Levels
Q36 - 30-1053 Catholic Diocese - Sunday 13 December 2009



Statistical Ambient Noise Levels
Q36 - 30-1053 Catholic Diocese - Monday 14 December 2009




Statistical Ambient Noise Levels
Q36 - 30-1053 Catholic Diocese - Tuesday 15 December 2009
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
105
100
95
90
85
80
75
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14:00
16:00
18:00
20:00
22:00
0:00
Time of Day (End of 15 Minute Sample Interval)

HEGGIES

REPORT Q37 30-1053-R1

Draft 1

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending March 2010

PREPARED FOR

Donaldson Coal Pty Ltd
PO Box 675
Green Hills NSW 2320

3 MAY 2010

HEGGIES PTY LTD
ABN 29 001 584 612

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending March 2010

PREPARED BY:

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
Q37 30-1053-R1	Draft 1	3 May 2010	Nathan Archer	Katie Teyhan	

TABLE OF CONTENTS

1 INTRODUCTION

Development consent was obtained by Donaldson Coal Pty Ltd for the Donaldson Mine in October 1999 following a Commission of Inquiry. Development Consent number N97/00147 was issued by the Minister for Urban Affairs pursuant to Section 101 of the Environmental Planning and Assessment Act 1979.

Project Approval (Application No. 05_0136) granted by the Minister of Planning was obtained by Donaldson Coal Pty Ltd for Abel Coal Mine in 2008.

Donaldson Coal Pty Ltd has commissioned Heggies Pty Ltd (Heggies) to conduct quarterly noise monitoring surveys for the Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Mine Project Noise Monitoring Program, dated 27 May 2008.

The objectives of the noise monitoring survey for this operating quarter were as follows:

- Measure the ambient noise levels at five (5) focus receptor locations (potentially worst affected) surrounding Donaldson Coal Mine and Abel Coal Mine.
- Qualify all sources of noise within each of the attended surveys, including estimated contribution or maximum level of individual noise sources.
- Assess the noise emissions of Donaldson Coal Mine and Abel Coal Mine with respect to the limits contained in the Development Consent.

2 DEVELOPMENT CONSENT AND PROJECT APPROVAL

2.1 Donaldson Coal Mine Development Consent Conditions

The Development Consent nominates hours of operation and mine noise emission goals in the Sections entitled "*Operation of Development, Condition No. 3(1) and 3(2)"*, and *"Noise and Vibrational Noise Limits: Condition No. 15*" as follows:

"3.(1) Subject to (2) the approved hours of operation are as follows:

Works	*Period*	*Hours*
Construction, including construction of any bunds	*Monday to Friday* *Saturday*	*7 am to 6 pm* *8 am to 1 pm*
Mining operations, including mining, haulage of waste to dumps and coal processing	*Monday to Friday* *Saturday, Sunday*	*24 hours per day* *7 am to 6 pm*
Road Transportation and stockpiling of coal	*7 days per week*	*24 hours per day*
Rail loading of coal	*7 days per week*	*7 am to 10 pm*
Maintenance of mobile and fixed plant	*7 days per week*	*24 hours per day*
Blasting, not involving closure of John Renshaw Drive	*Monday to Saturday*	*7 am to 5 pm*
Blasting, involving closure of John Renshaw Drive	*Monday to Saturday*	*10 am to 2 pm*

Notes: Restrictions on Public Holidays are the same as Sundays

(2) The Applicant shall submit a report to the Director-General's satisfaction demonstrating the noise limits in Condition 15 can be met while rail loading of coal is occurring during the period from 6 pm to 10 pm. If that report does not demonstrate that the noise limits can be met to the Director-General's satisfaction, then the hours of operation for rail loading of coal shall be restricted to 7 am to 6 pm."

15. Unless subject to a negotiated agreement in accordance with Condition 23, the Applicant shall ensure that the noise emission from construction or mining operations, when measured or computed at the boundary of any dwelling not owned by the applicant (or within 30 metres of the dwelling, if the boundary is more that 30 metres from the dwelling), shall not exceed the following noise limits:

Location	***LA10(15minute) Noise Limits (dBA)***	
	Daytime	***Night-time***
Beresfield area (residential)	*45*	*35*
Steggles Poultry Farm	*50*	*40*
Ebenezer Park Area	*46*	*41*
Black Hill Area	*40*	*38*
Buchanan and Louth Park Area	*38*	*36*
Ashtonfield Area	*41*	*35*
Thornton Area	*48*	*40*

Note: Daytime is 7 am to 10 pm Monday-Saturday, and 8 am to 10 pm Sundays and Public Holidays. Night-time is 10 pm to 7 am Monday-Saturday, and 10 pm to 8 am Sundays and Public Holidays.

The noise limits apply for prevailing meteorological conditions (winds up to 3 m/s), except under conditions of temperature inversions."

Other Conditions of Consent relevant to noise are as follows:

"18. The applicant shall survey and investigate noise reduction measures from plant and equipment and set targets for noise reduction in each Annual Environmental Management Report (AEMR), taking into consideration valid noise complaints received in the previous year. The Report shall also include remedial measures.

19. The Applicant shall revise the Noise Management Plan as necessary and provide an updated Plan five years after commencement of mining to the Director-General, the independent noise expert (Condition 48), EPA, Councils and the Community Consultative Committee."

2.2 Abel Coal Mine – Project Approval

The relevant conditions relating to noise from the Abel Coal Mine approval are reproduced below.

Schedule 4

NOISE

Note: These conditions should be read in conjunction with section 3 of the Statement of Commitments.

Noise Limits

23 The Proponent shall ensure that the noise generated by the Project does not exceed at any privately-owned residence the levels set out in the following table for the monitoring location nearest that residence.

Table 1: Noise limits dB(A)

Day	Evening	Night		Location and Locality*
LAeq(15 minutes)	LAeq(15 minutes)	LAeq(15 minutes)	LA1(1 minute)	
50	48	41	51	**A** Weakleys Dr, Beresfield
50	48	41	51	**B** Yarrum Rd, Beresfield
43	44	38	50	**C** Phoenix Rd, Black Hill
41	40	36	46	**D** Black Hill School
41	40	36	46	**E** Brown Rd, Black Hill
41	40	36	46	**F** Black Hill Rd, Black Hill
43	41	36	46	**G** Buchanan Rd, Buchanan
43	41	36	46	**H** Mt Vincent Rd, Louth Park
44	46	38	48	**I** Lord Howe Dr, Ashtonfield
49	47	40	50	**J** Kilarney St, Avalon Estate
41	40	37	46	**K** Catholic Diocese (Former Bartter) K1, K2, K3
46	46	40	53	**L** Kilshanny Ave, Ashtonfield

Notes:

- To determine compliance with the LAeq(15 minute) limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the LA1(1 minute) limit, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.
- These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

* Revised to list alphabetically

Noise Monitoring

24. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:

(a) be submitted to the Director-General for approval within 6 months of this approval;

(b) be prepared in consultation with the DECC; and

(c) use a combination of attended and unattended monitoring measures to monitor the performance of the project.

2.2.1 Statement of Commitments

3.3 Monitoring

Within 6 months of this approval being granted a Noise Monitoring Program shall be prepared and implemented for the Abel Underground Mine and the Bloomfield CHPP, to the satisfaction of the Director-General. The Noise Monitoring Program shall include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise environmental assessment. This plan will be integrated with the monitoring plans for the Tasman, Donaldson and Bloomfield Mines to provide a single integrated Noise Monitoring Program for all 4 mines.

3 PROCEDURES AND METHODOLOGY

3.1 General Requirements

The operational noise monitoring programme was conducted with reference to Development Consent N97/00147 (Donaldson Coal Mine), Project Approval 05_0136 (Abel Coal Mine), and in accordance with Heggies Report 30-1409-R2 dated 27 May 2008 (*Abel Mine Project Noise Monitoring Program)* and AS 1055-1997 "*Acoustics - Description and Measurement of Environmental Noise*".

3.2 Monitoring Locations

Baseline and preceding operational quarterly surveys have been conducted at 11 locations surrounding the Donaldson Mine and Abel Coal Mine sites. With the experience of these previous surveys, it was decided to concentrate noise monitoring at five (5) focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1.**

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield
K	Catholic Diocese of Maitland (formerly Bartter Enterprises)

A map giving the approximate location of the noise monitoring sites is contained within **Appendix A**.

3.3 Unattended Continuous Noise Monitoring

Environmental noise loggers were deployed for a seven (7) day period between 3 March 2010 and 29 March 2010 at each of the five (5) nominated locations given in **Table 1**. All unattended monitoring equipment was programmed to continuously record statistical noise level indices in 15 minute intervals including the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{A99}, L_{Amin} and L_{Aeq}. The statistical noise exceedance levels (L_{AN}) are the levels exceeded for N% of the 15 minute interval. The L_{A90} represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The L_{A10} is the level exceeded for 10% of the time and is usually referred to as the average maximum noise level. The L_{Aeq} is the equivalent continuous sound pressure level and represents the steady sound level which is equal in energy to the fluctuating level over the interval period. The L_{Amax} is the maximum noise level recorded over the interval. Instrument calibration was conducted before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

3.4 Operator Attended Monitoring

Operator attended surveys were conducted at each of the five (5) monitoring locations during daytime, evening and night-time periods, to verify the unattended logging results and to determine the character and contribution of ambient noise sources.

3.5 Equipment Operation

The mobile equipment operating on the Donaldson Mine site during the survey period are contained in **Appendix B**.

During the survey period the following operations were being undertaken:

- Coal mining operations were ongoing during the monitoring period, operating 7.00 am to 12.30 am Monday to Friday and day shift Saturday and Sunday.
- Overburden material and coal were being removed from strips CP09 – CP16 between 6.00 am and midnight Monday – Friday and day shift on Saturday and Sunday. The waste was generally being placed in Strips CP01 – CP07. The grader and water cart were operating on both day and afternoon shift where needed.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was a ventilation fan.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Monitoring

Operator attended noise measurements were conducted during the daytime on Wednesday 3 March 2010 and Monday 30 March 2010; during the evening on Monday 30 March 2010; and during the night-time on Monday 30 March 2010 and Tuesday 31 March 2010. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, 1/3 octave band, integrating sound level meter (s/n: 2449940).

The results of the operator attended noise measurements are given in **Table 2** to **Table 6**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations.

The tables provide the following information:

- Monitoring location.
- Date & start time.
- Wind velocity (m/s) and Temperature (ºC) at the measurement location.
- Typical maximum (L_{Amax}) and contributed noise levels.

Mine contributions listed in the tables are from Donaldson Mine and Abel Coal Mine and are stated only when a contribution could be quantified.

Table 2 Location A Weakleys Drive, Beresfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
3/3/2010 11:46 W = < 2m/s S Temp = 25ºC Cloud cover = 6/8	Daytime Ambient	69	68	66	55	62	Traffic noise dominant (Weakleys Drive) ~ up to 69, Birds/insects ~ 57, Banging from warehouse ~ 55-57, Donaldson mine inaudible Abel mine inaudible
29/3/2010 19:00 W = <1 m/s SE Temp = 25ºC Cloud cover = 8/8	Evening Ambient	82	76	70	50	66	Traffic noise dominant (Weakleys Drive) ~ up to 82, Birds/Insects ~ up to 61, Dog bark~ 52. Donaldson mine inaudible Abel mine inaudible
29/3/2010 22:00 W = Calm Temp = 25ºC Cloud cover = 8/8	Night-time Ambient	76	74	64	43	61	Traffic noise dominant (Weakleys Drive) ~ up to 76, Insects – 42, Distant train– up to 50. Donaldson mine inaudible Abel mine inaudible

Table 3 Location F Lot 684 Black Hill Road, Black Hill

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
7/12/2009 12:10 W = 1-2 m/s SW Temp = 36ºC Cloud cover = 1/8	Daytime Ambient	78	69	55	45	56	Traffic (John Renshaw Dr) ~ up to 58, Traffic (Black Hill Rd) ~ up to 78, Leaf rustle ~ 46, Birds ~ 45-51. Road works on John Renshaw Dr: Truck idling on road ~ 52, Roller ~ 46-52, Reverse beepers ~ 49. Donaldson mine inaudible Abel mine inaudible
29/3/2010 20:43 W = 1m/s Calm Temp = 25ºC Cloud cover = 8/8 Light drizzle	Evening Ambient	79	70	52	38	56	Traffic (John Renshaw Dr) ~ up to 61, Traffic (Black Hill Road) ~ 79, Crickets/insects/frogs ~ up to 40, John Renshaw Drive Construction ~ 40-43, Bloomfields dozer track slap and haul trucks occasionally audible in lulls ~ up to 42. Donaldson mine inaudible Abel mine inaudible
30/3/2010 00:08 W = Calm Temp = 24ºC Cloud cover = 8/8	Night-time Ambient	55	46	40	33	37	Traffic (John Renshaw Dr) ~ up to 55, Crickets/insects/frogs ~ 38-42, Dripping water ~ 36. Bloomfield colliery inaudible, Abel Mine inaudible. Donaldson mine; haul trucks just audible ~ 33. Donaldson L_{A10} Contribution ~ 30 dBA.

Table 4 Location G 156 Buchanan Road, Buchanan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
3/3/2010 14:10 W = 1-2 m/s SE Temp = 23ºC Cloud cover = 7/8	Daytime Ambient	66	47	44	36	42	Distant Traffic (Buchannan Rd) ~ 44-48, Birds/insects ~ up to 66. Wind/leaves ~ 51. Aircraft ~ 43. Bloomfields mine haul trucks occasionally just audible in lulls ~ 38. Donaldson mine inaudible Abel mine inaudible
29/3/2010 18:00 W = <1 m/s E Temp = 25ºC Cloud cover = 8/8	Evening Ambient	73	44	39	35	42	Traffic (Buchannan Rd) ~ up to 42, Insects/birds ~ 35-36, Leaf rustle/wind ~ 38, Operator noise ~ 73, Donaldson mine inaudible Abel mine inaudible
29/3/2010 22:56 W = Calm Temp = 24ºC Cloud cover = 8/8	Night-time Ambient	68	46	39	35	38	Traffic (Buchannan Rd) ~up to 42. Birds/Insects ~ 36-44, Operator noise ~ 68, Bloomfields haul trucks occasionally audible at up to 37, dozer track slap occasionally just audible at 38-40. Donaldson mine inaudible Abel mine inaudible

Table 5 Location L 17 Kilshanny Ave, Ashtonfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels
		LAmax	LA1	LA10	LA90	LAeq	LAmax – dBA
3/3/2010 14:03 W = 1-2 m/s SE Temp = 23ºC Cloud cover = 8/8	Daytime Ambient	83	66	57	41	57	Birds/insects ~ up to 70, Local traffic ~ 83, Leaf rustle ~ 40, Wind ~ 56, Aircraft ~ 50, Residential noise ~ 80. Donaldson mine inaudible Abel mine inaudible
29/3/2010 18:35 W = <2 m/s SE Temp = 27ºC Cloud cover = 8/8	Evening Ambient	75	63	51	39	51	Kids on street ~ 48-59, Local traffic ~ up to 68, Distant Traffic ~ up to 42, Insects/birds ~ 39-40, Residential~ 72, Dogs barking ~ 55-62, Donaldson mine inaudible. Abel mine inaudible.
29/3/2010 22:24 W = Calm Temp = 25ºC Cloud cover = 8/8	Night-time Ambient	57	46	44	37	41	Birds/insects ~ 39-41, Distant road traffic up to 44, Dog barks ~ 57, Train ~ 45-46, Residential noise ~ 52-57. Very faint trackslap ~ <35, 41 Falling rocks ~ 44. Donaldson L_{A10} Contribution ~ 30 dBA. Abel mine inaudible.

Table 6 Location K Catholic Diocese of Maitland (formerly Bartter Enterprises)

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels
		LAmax	LA1	LA10	LA90	LAeq	LAmax – dBA
3/3/2010 12:45 Wind = Calm Temp = 25ºC Cloud cover = 7/8	Daytime Ambient	66	53	49	42	47	Traffic (John Renshaw Dr) ~ up to 55, Birds/insects ~ 43, Operator noise ~ 66, Donaldson mine inaudible. Abel mine inaudible.
29/3/2010 19:26 W = Calm Temp = 23ºC Cloud cover = 8/8	Evening Ambient	92	84	74	43	72	Traffic (John Renshaw Dr) ~ up to 92, Birds/insects ~ 43, Donaldson haul trucks occasionally very faintly audible ~ 36. Donaldson L_{A10} Contribution ~ 33 dBA. Abel mine inaudible.
30/3/2010 00:30 W = Calm Temp = 24ºC Cloud cover = 8/8	Night-time Ambient	90	79	63	37	66	Traffic (John Renshaw Dr) ~ up to 90, Birds/insects ~ 42-46, John Renshaw Drive Construction and reverse beepers ~ up to 54, Frogs, insects and birds ~ 52, Donaldson Mine inaudible. Abel mine inaudible.

4.2 Operator Attended Monitoring Summary

4.2.1 Donaldson Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements. Construction activities on John Renshaw Drive were also a significant contributor at Location F and Location K.

Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the evening, Location F Black Hill Rd during the night-time and at Location L Kilshanny Avenue during the night-time.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, Heggies understand the dwellings on the Catholic Diocese site are currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Catholic Diocese site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution at these residential locations was less than 30 dBA during the evening which is in compliance with Donaldson Mine consent.

The operator attended surveys determined that the Donaldson mine contributions at Location F and Location L were approximately L_{A10} 30 dBA during the night-time which is in compliance with the Donaldson Mine consent.

Based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine comply with noise emission goals for all periods.

4.2.2 Abel Coal Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements.

Abel Project operations were inaudible at all residential locations during all operator attended noise surveys. As such, it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Monitoring

Unattended continuous noise monitoring was conducted between Wednesday 3 March 2010 and Monday 29 March 2010 at each of the five (5) nominated locations given in **Table 1**. ARL Type EL-316 noise loggers were used to monitor the ambient noise levels at each location. Details of the noise loggers used for the unattended continuous noise monitoring are given in Table 7.

Table 7 Noise Loggers and Noise Monitoring Locations

Location	Monitoring Date	Noise Logger Serial Number
A – Weakleys Drive, Beresfield	3/3/2010 – 11/3/2010	16-203-531
F – Black Hill Road, Black Hill	11/3/2010 – 19/3/2010	16-306-039
G – Buchanan Road, Buchanan	19/3/2009 – 29/3/2010	16-301-472
L – Kilshanny Ave, Kilshanny	19/3/2009 – 29/3/2010	16-306-039
K – Catholic Diocese of Maitland (formerly Bartter Enterprises)	3/3/2010 – 11/3/2010	16-301-472

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices C1** to **C5**. A summary of the results of the unattended continuous noise monitoring is given in **Table 8**. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

The measured ambient noise levels were divided into three periods representing day, evening and night as designated in the NSW Industrial Noise Policy. The day, evening and night periods replace the day and night periods defined under the Environmental Noise Control Manual (ENCM). However, as the Donaldson conditions of consent are under the ENCM, these periods have also been reported.

Precautions can be taken to minimise influences from extraneous noise sources (eg optimum placement of the loggers away from creeks, trees, houses, etc), however not all these sources or their effects can be eliminated. This is particularly the case during the warmer times of year when noise from insects, frogs, birds and other animals can become quite prevalent.

Weather data for the subject area during the noise monitoring period was provided by Donaldson Coal. Noise data during periods of any rainfall and/or wind speeds in excess of 5 m/s (approximately 9 knots) were discarded in accordance with INP weather affected data exclusion methodology.

Table 8 Unattended Continuous Monitoring Ambient Noise Levels (dBa Re 20 µPa)

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	65	62	53	62
	Evening	59	55	46	57
	ENCM Daytime	64	62	48	62
	Night	59	55	43	56
F Lot 684 Black Hill Road, Black Hill	Daytime	70	58	41	59
	Evening	64	51	37	54
	ENCM Daytime	69	57	39	58
	Night	57	48	35	52
G 156 Buchannan Road, Buchannan	Daytime	50	44	32	45
	Evening	50	48	40	49
	ENCM Daytime	50	46	33	46
	Night	45	44	38	44
L 17 Kilshanny Ave, Ashtonfield	Daytime	61	47	34	55
	Evening	54	43	34	53
	ENCM Daytime	59	46	34	55
	Night	44	41	34	46
K Catholic Diocese of Maitland	Daytime	58	53	43	52
	Evening	57	53	44	51
	ENCM Daytime	58	53	43	52
	Night	58	53	41	56

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

5.2 Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

5.2.1 Ambient L_{A90} Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient L_{A90} noise levels recorded for the quarter ending March 2010 were higher than levels recorded during the baseline monitoring process at Location A in the day and night-time by 8 dBA and 4 dBA respectively. A slight decrease of 2 dBA was recorded during the evening. Increases of 2 dBA, 2 dBA and 4 dBA were recorded respectively in the daytime, evening and night-time periods at Location F. Noise levels at Location K showed an increase from baseline of 2 dBA, 4 dBA and 6 dBA respectively in the daytime, evening and night-time periods.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

Previous Quarter (December 2009)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were generally lower during the daytime, evening and night-time periods at locations F and G. Increases of 5 dBA, 2 dBA and 5 dBA were recorded respectively in the daytime, evening and night-time periods at Location A. At Location L there were increases in noise levels of 3 dBA, 1 dBA and 7 dBA respectively in the daytime, evening and night-time periods. A slight increase in evening and night-time noise levels was recorded at Location K of 3 dBA and 4 dBA respectively.

Coinciding Period Last Year (March 2009)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A90} noise levels were generally higher than those recorded in 2008 at Locations A, F, G and K. Noise levels at Location L were lower than the coinciding monitoring period last year.

5.2.2 Ambient L_{A10} Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient L_{A10} noise levels recorded for the quarter ending March 2010 were greater than levels recorded during the baseline monitoring process at Locations A, F and K by 2 dBA to 8 dBA during all periods with the exception of Location A in the evening where L_{A10} noise levels at Location A were 2 dBA lower.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

Previous Quarter (December 2009)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at Location F were similar (within 1 dBA) or lower than levels recorded during the December 2009 quarterly monitoring. Noise levels at Locations A, L and K were generally higher during the daytime evening and night-time periods. Noise levels at Location G were up to 15 dBA and 4 dBA lower during the daytime and evening respectively and the same during the night-time.

Coinciding Period Last Year (March 2009)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels recorded at Locations A, F and K were higher than last year with a maximum increase of 6 dBA being recorded during the daytime at Location A. Noise levels at Locations G and L were generally lower during all periods with the exception of Location G during the night-time where an increase of 4 dBA was recorded.

6 SUMMARY OF RESULTS AND FINDINGS

Heggies were engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2008.

The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 6**.

Donaldson Mine operations were observed to be audible at Location F Black Hill Road and Location L Kilshanny Avenue during the night-time and Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the evening.

Donaldson Mine contributions were found to comply with the relevant consent conditions at all locations.

Abel Mine operations were inaudible at all residential locations during all periods and as such it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (March 2010), the baseline monitoring period, the last monitoring period (December 2009), and the coinciding monitoring period from last year (March 2009) has been conducted.

In summary, where noise levels have risen, the ambient noise environment has been identified to generally contain traffic and natural noise sources and not noise from Donaldson Mine or Abel Coal Mine activity.

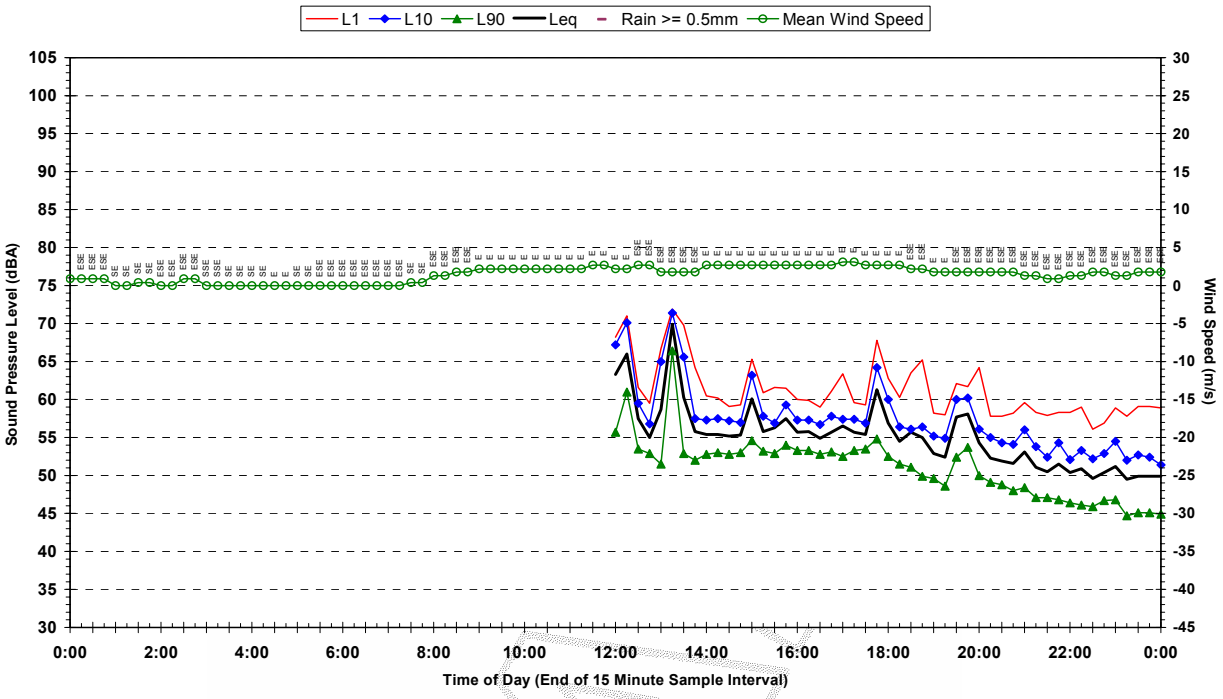
APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

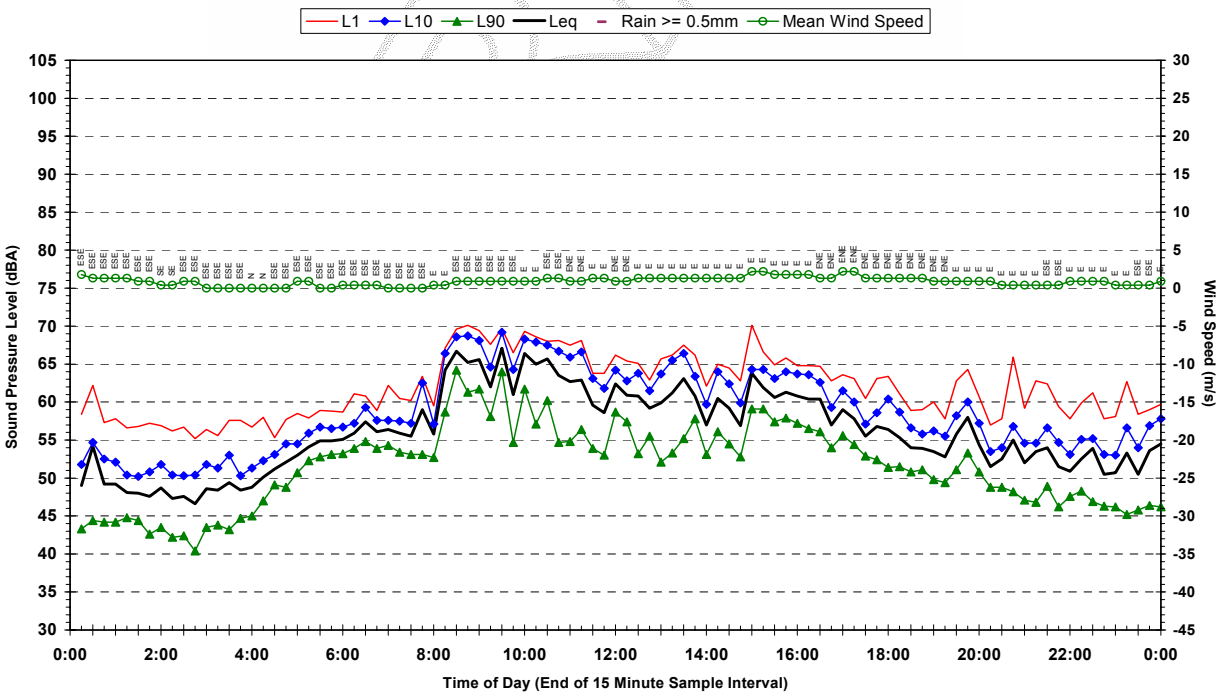
JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – March 2010

Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 5110B	AAA00311
9	LOD004	CATERPILLAR IT28G	CWAC00351
10	LOD044	KOMATSU WA700	10106
11	LOD149	CATERPILLAR 990II	4FR00394
12	RDT026	CATERPILLAR 777A W/CART	84A01034
13	RDT033	CATERPILLAR 740 W/CART	B1P02699
14	RDT100	CATERPILLAR 785	8GB00596
15	RDT107	CATERPILLAR 785	8GB00320
16	RDT140	CATERPILLAR 785	8GB00333
17	RDT143	CATERPILLAR 785	8GB00374
18	RDT155	CATERPILLAR 785	8GB00152
19	RDT162	CATERPILLAR 785	8GB00258
20	RDT163	CATERPILLAR 785	8GB00259
21	RDT182	CATERPILLAR 785	8GB00494
22	GRD004	CATERPILLAR 16H	6ZJ00678
23	GRD036	CATERPILLAR 16G	93U03039
24	CMP059	AIRMAN COMPRESSOR – STR034	
25	CMP061	SULLAIR COMPRESSOR 185CFM	200610160001
26	CMP062	SULLAIR COMPRESSOR 185CFM	206101100049
27	GEN001	KUBOTA GENERATOR – VEH154	
28	WEL057	LINCOLN SAM400 – VEH154	
29	VEH154	ISUZU NPS300 BOILY TRUCK	
30	STR034	VOLVO FL7 SERVICE TRUCK	YV5FAG6JD560318
31	UTE001	NISSAN PATROL SERVICE UTE	
32	UTE002	NISSAN NAVARA TRAYBACK	

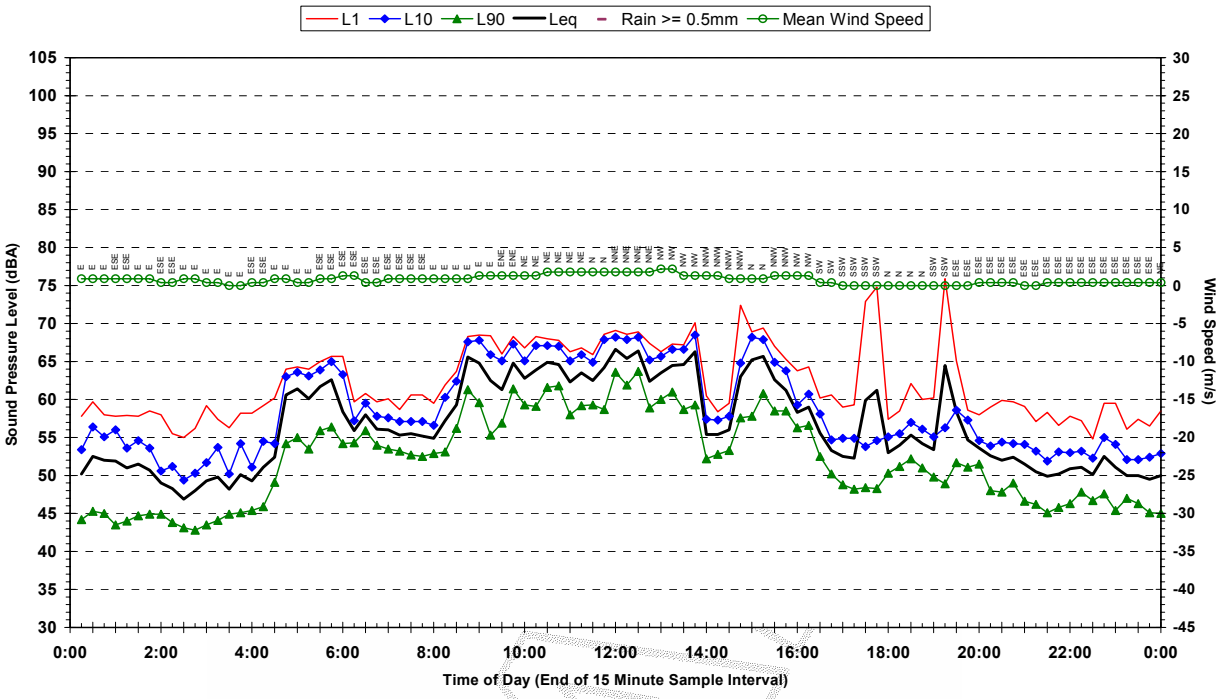
Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Wednesday 3 March 2010



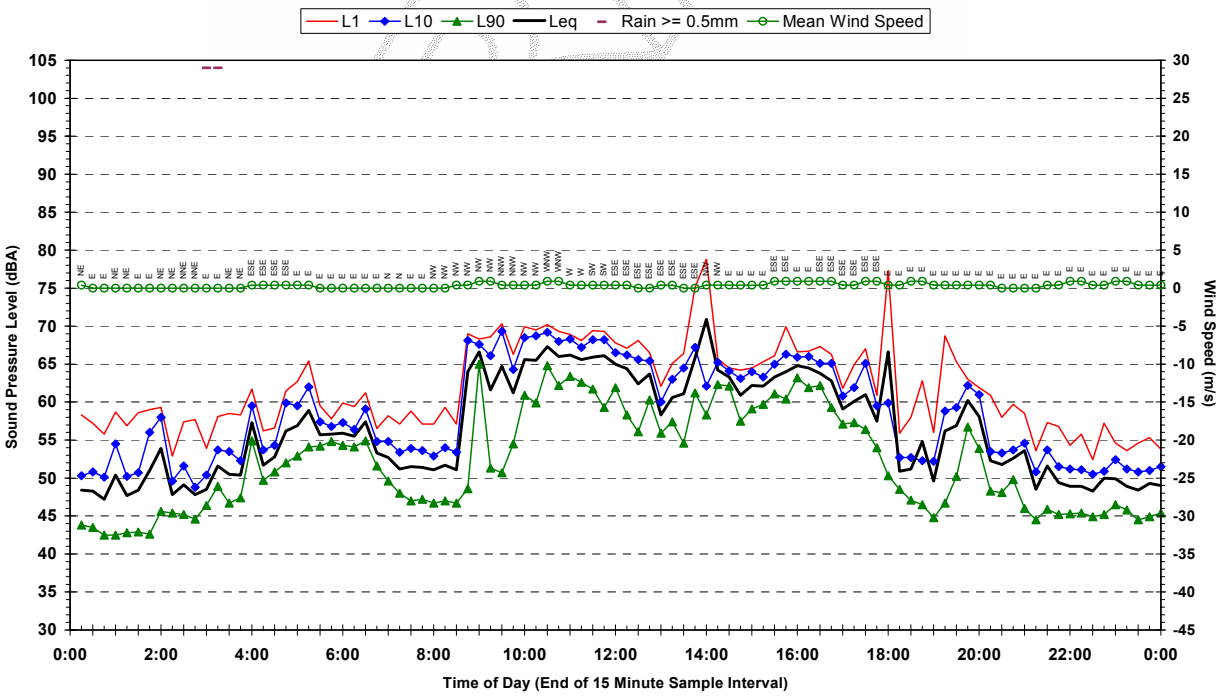
Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Thursday 4 March 2010



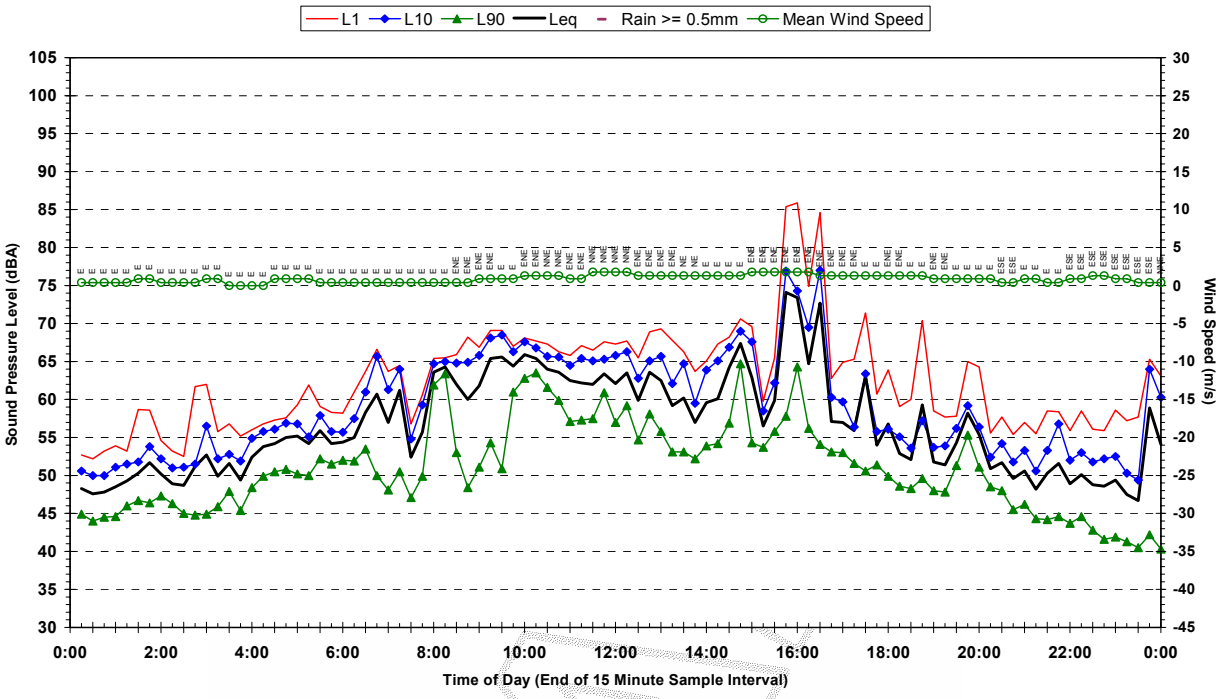
Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Friday 5 March 2010



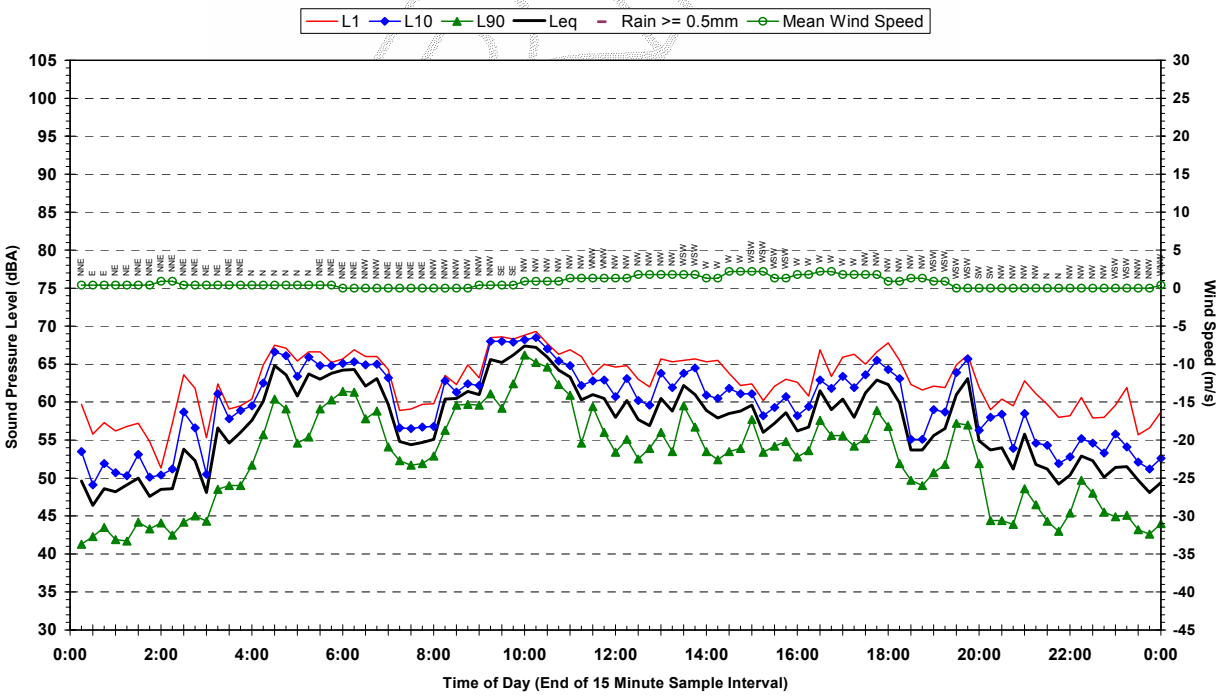
Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Saturday 6 March 2010



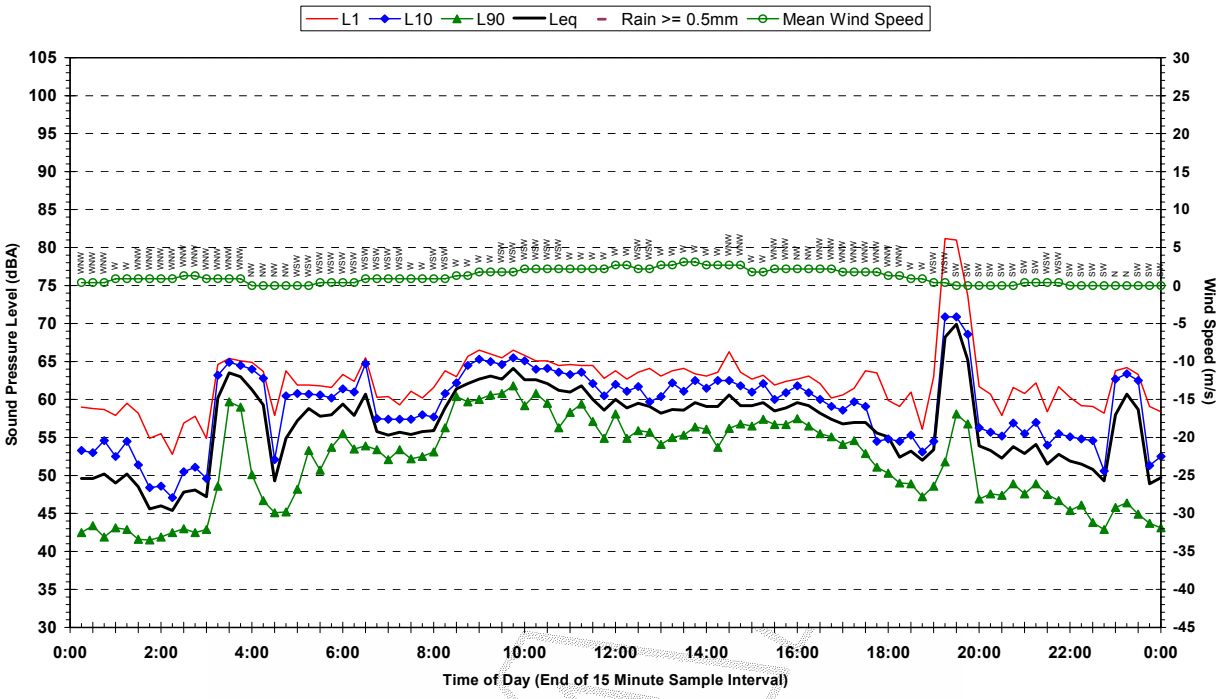
Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Sunday 7 March 2010



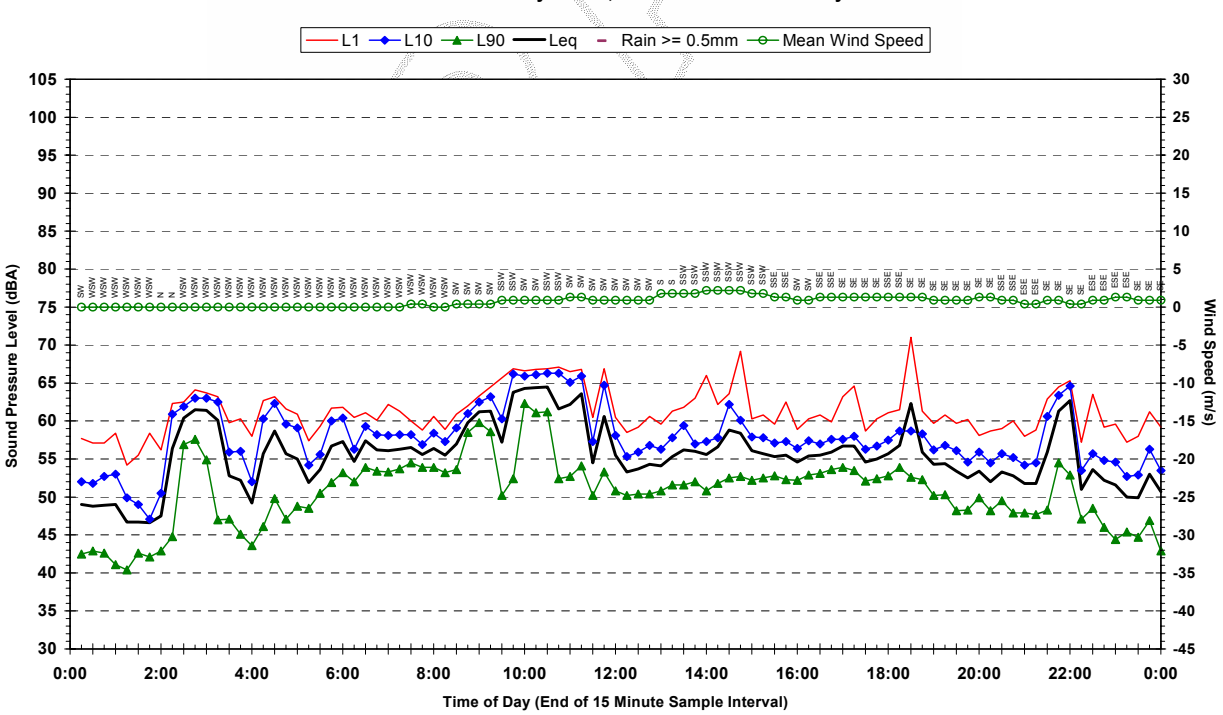
Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Monday 8 March 2010

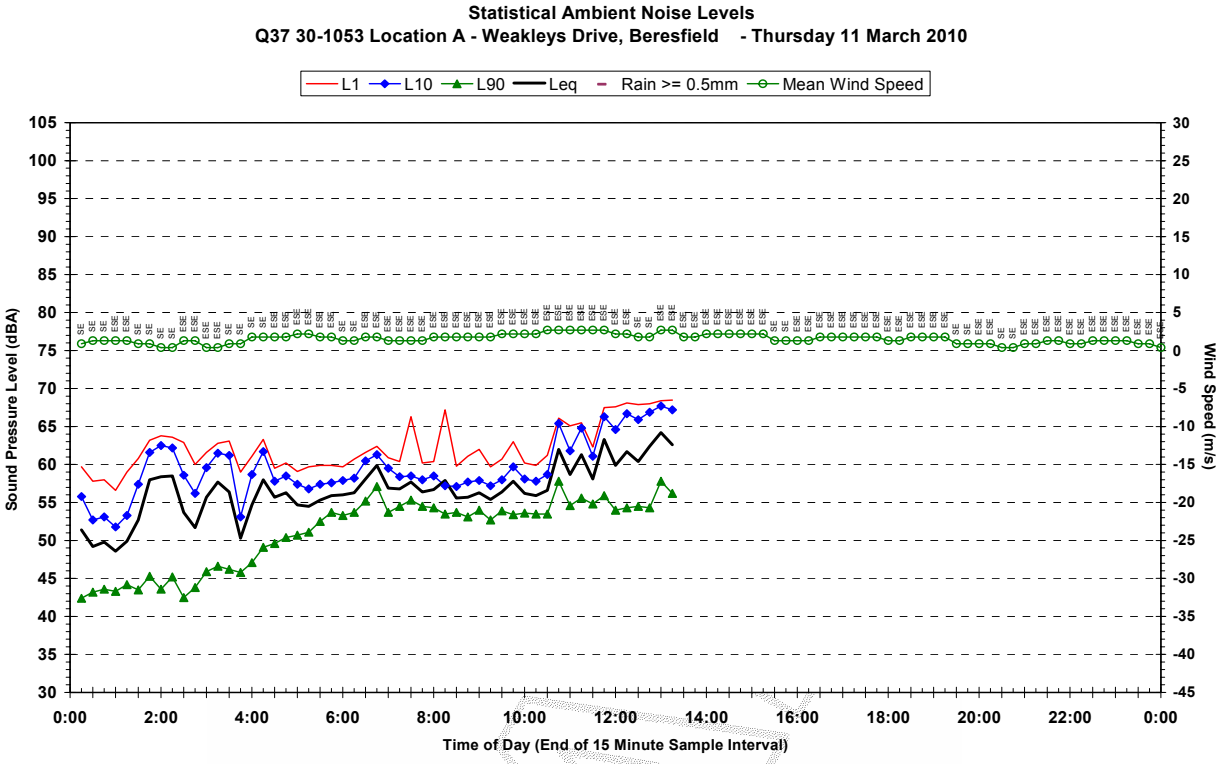


Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Tuesday 9 March 2010

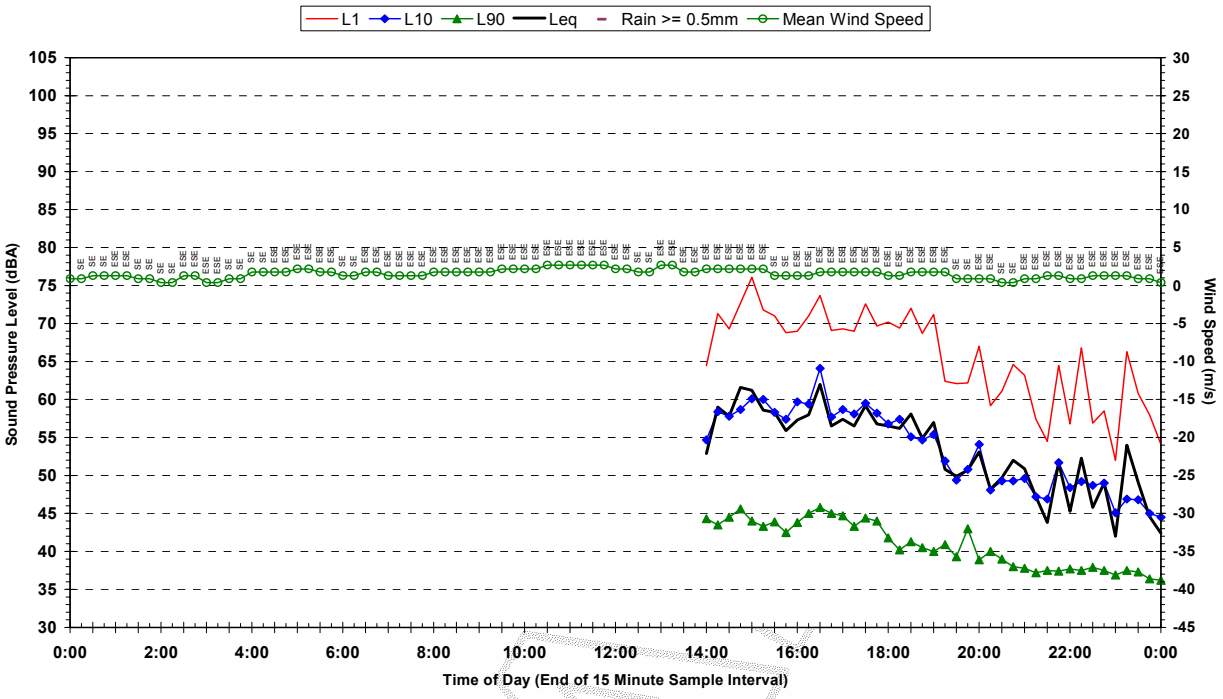


Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Wednesday 10 March 2010

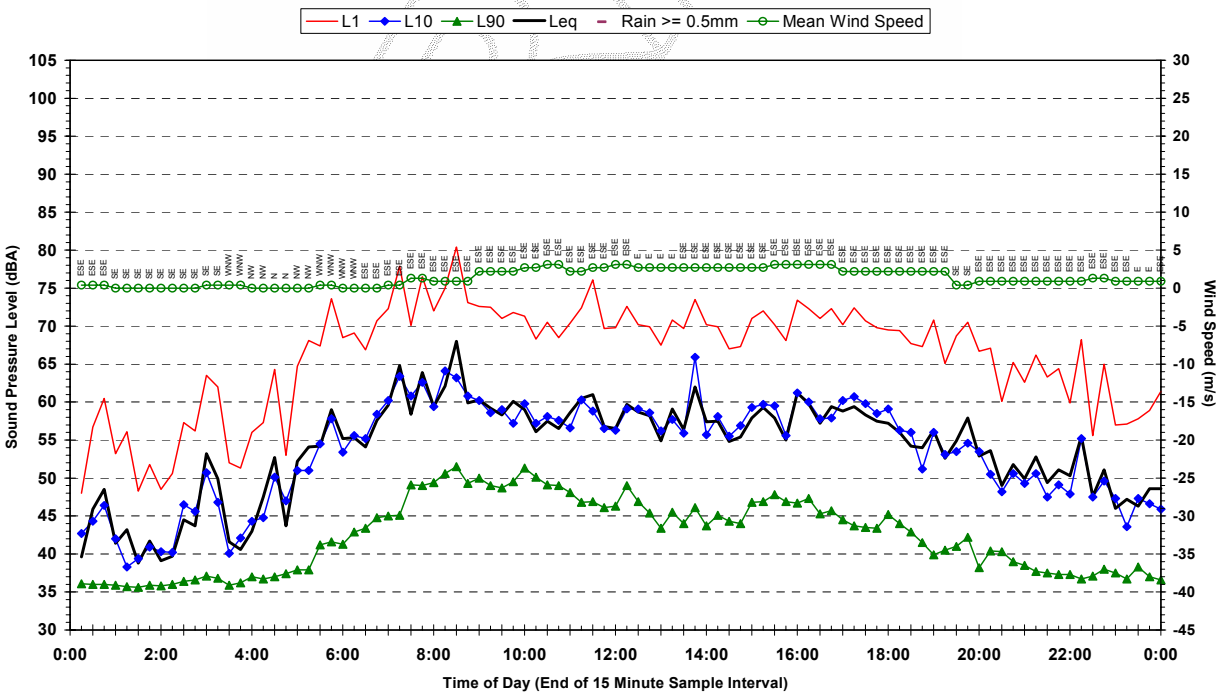



Statistical Ambient Noise Levels
Q37 30-1053 Location A - Weakleys Drive, Beresfield - Thursday 11 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00
Time of Day (End of 15 Minute Sample Interval)

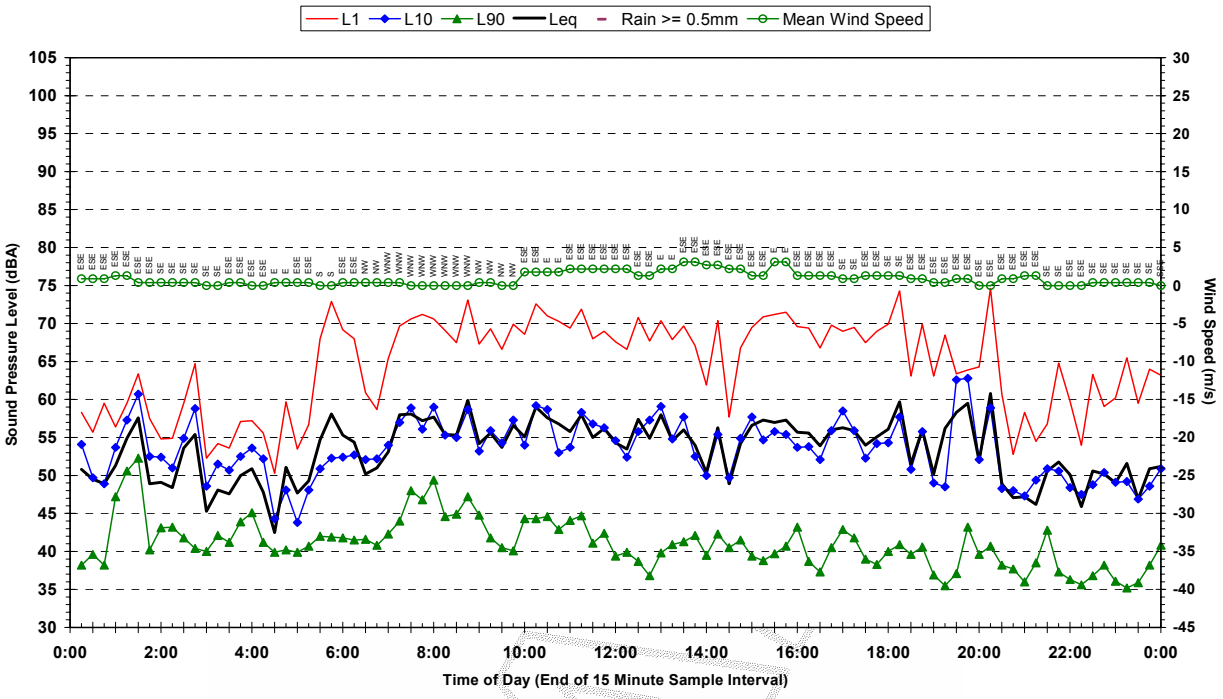
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Thursday 11 March 2010



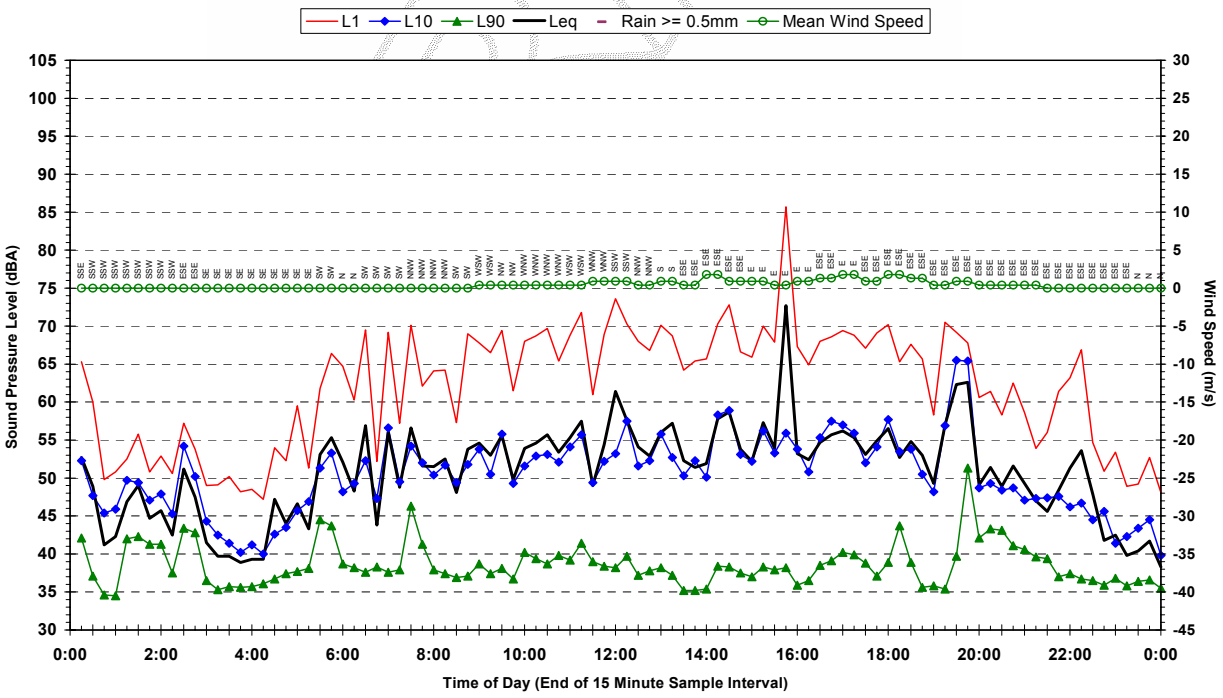
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Friday 12 March 2010



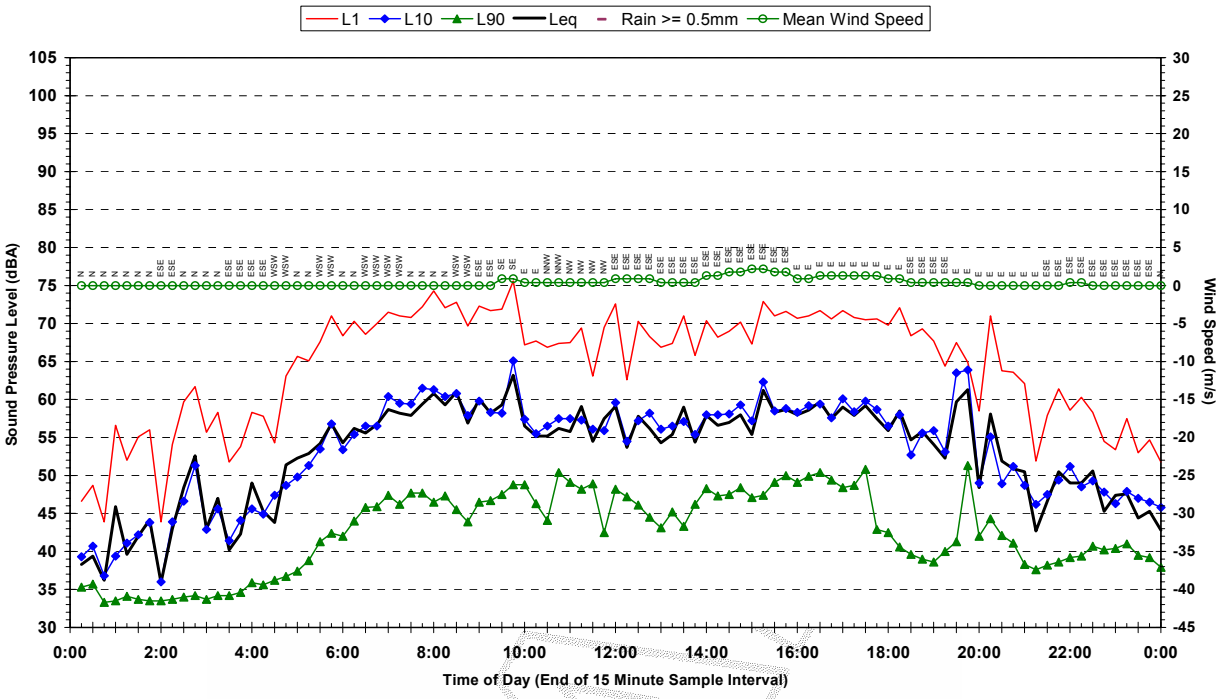
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Saturday 13 March 2010



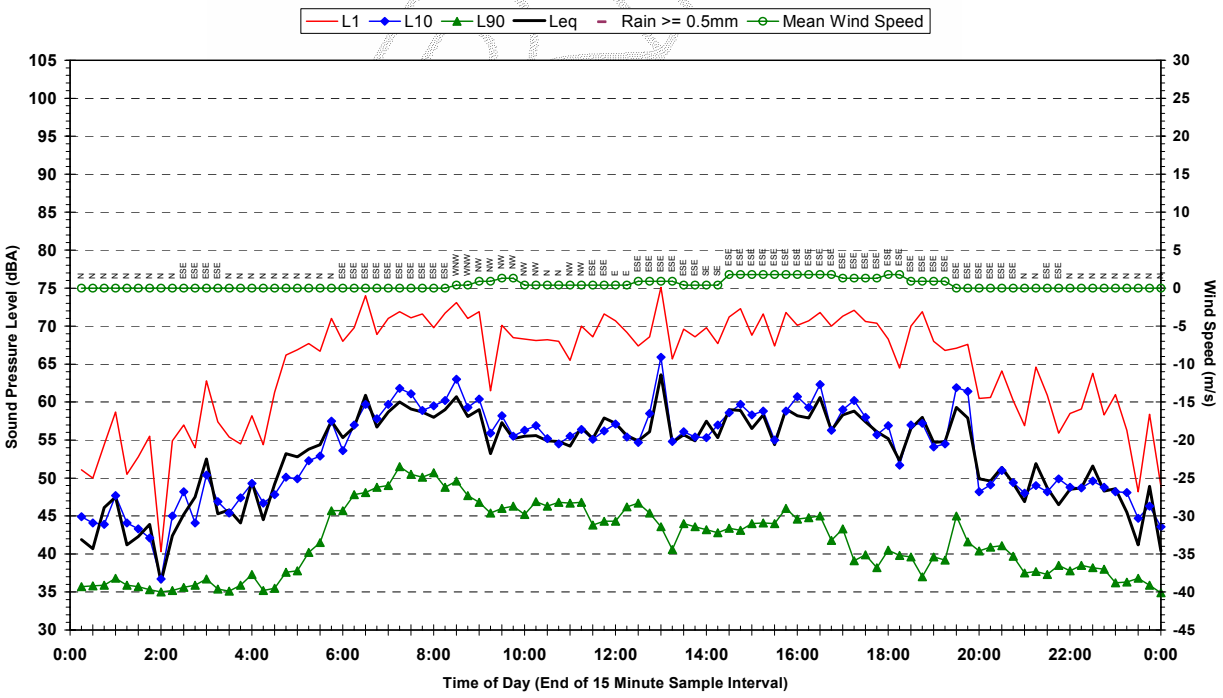
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Sunday 14 March 2010



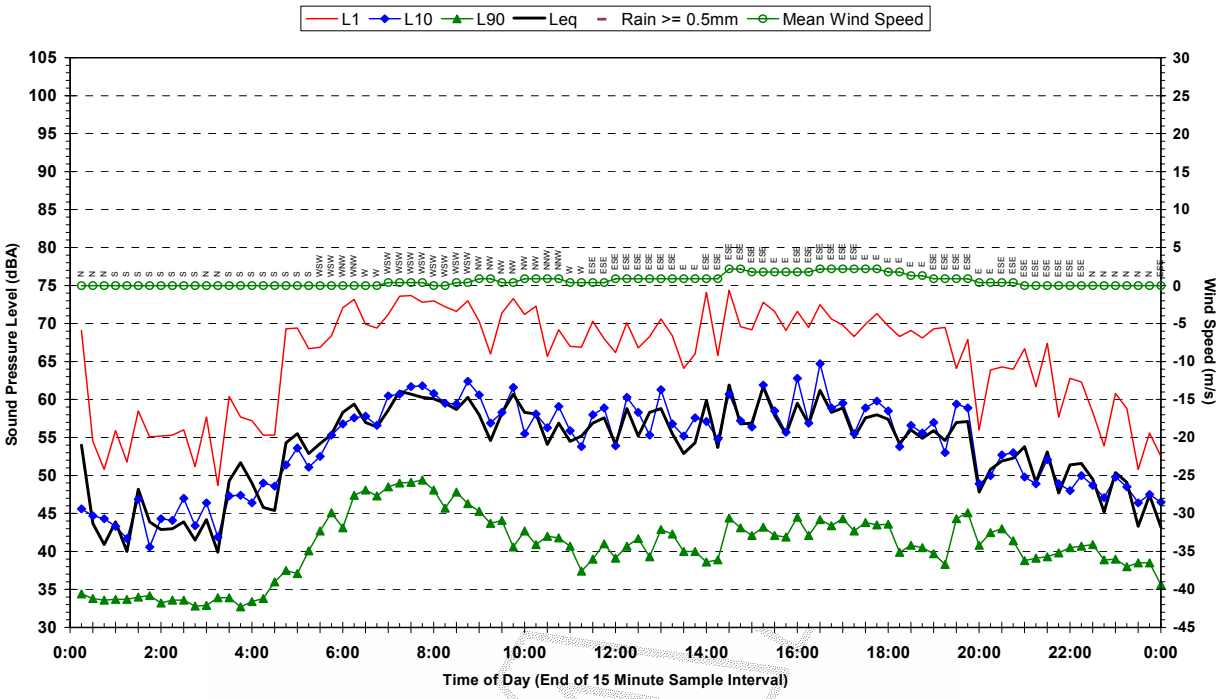
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Monday 15 March 2010



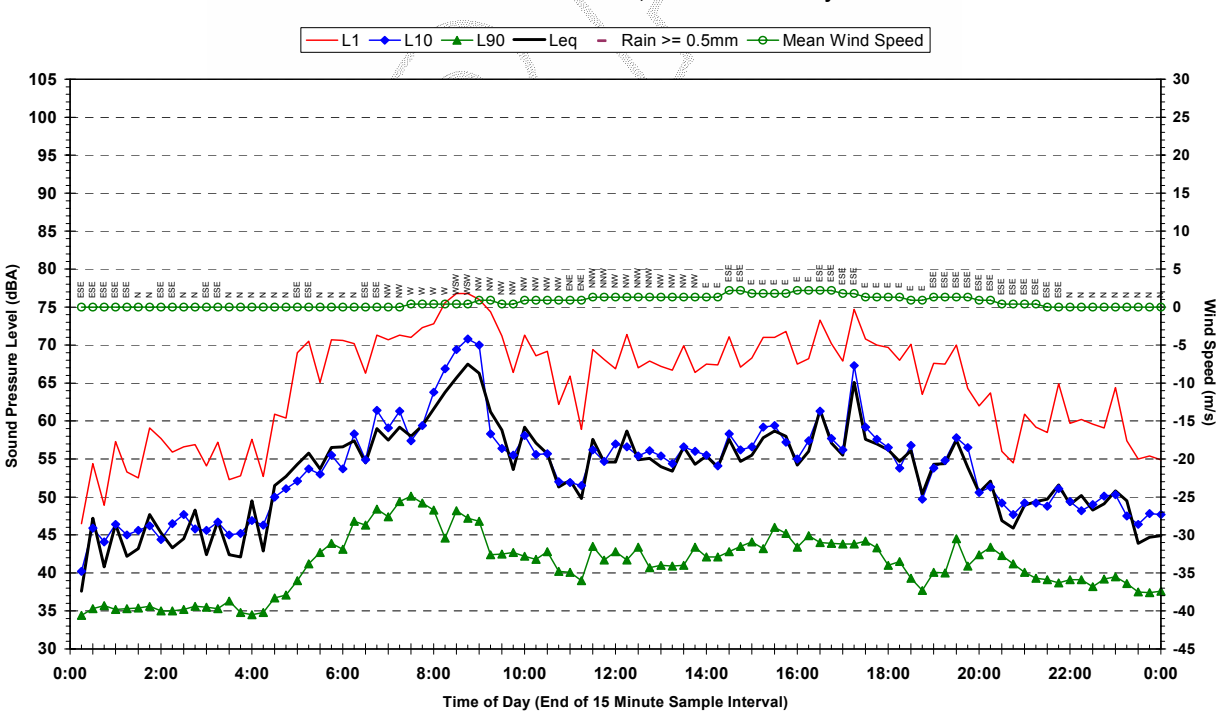
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Tuesday 16 March 2010

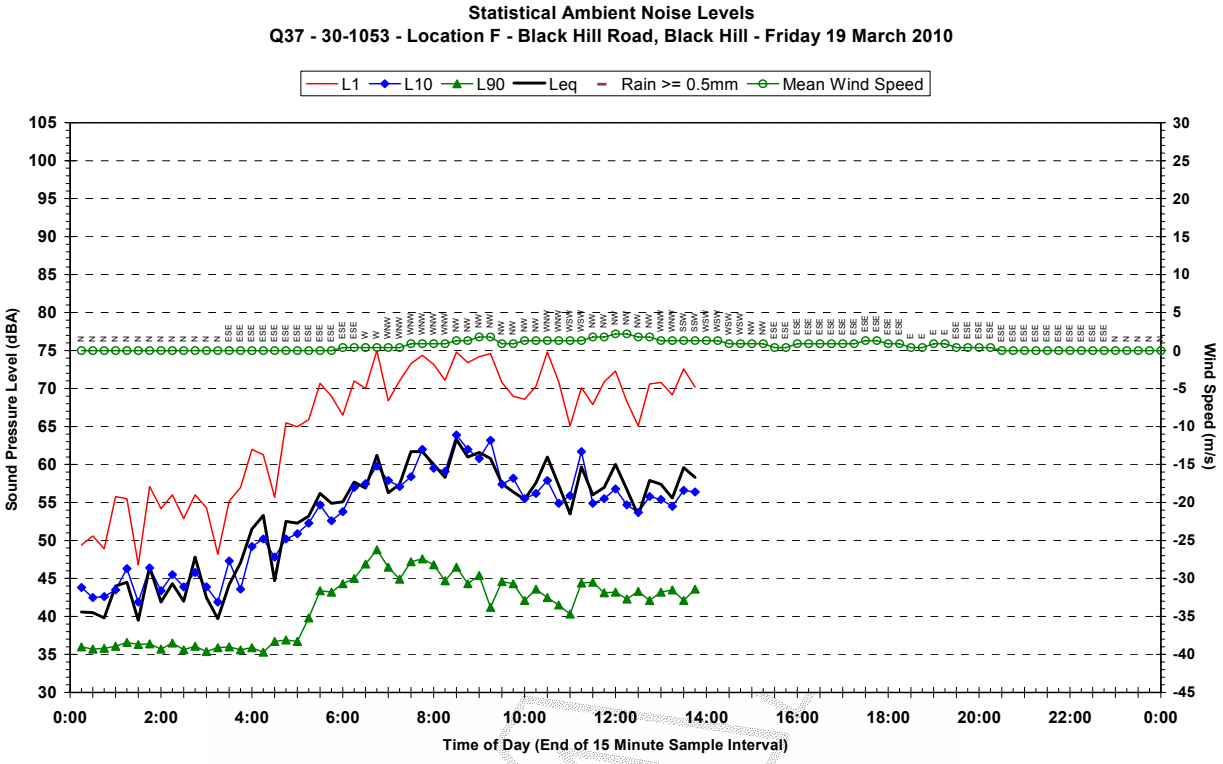


Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Wednesday 17 March 2010

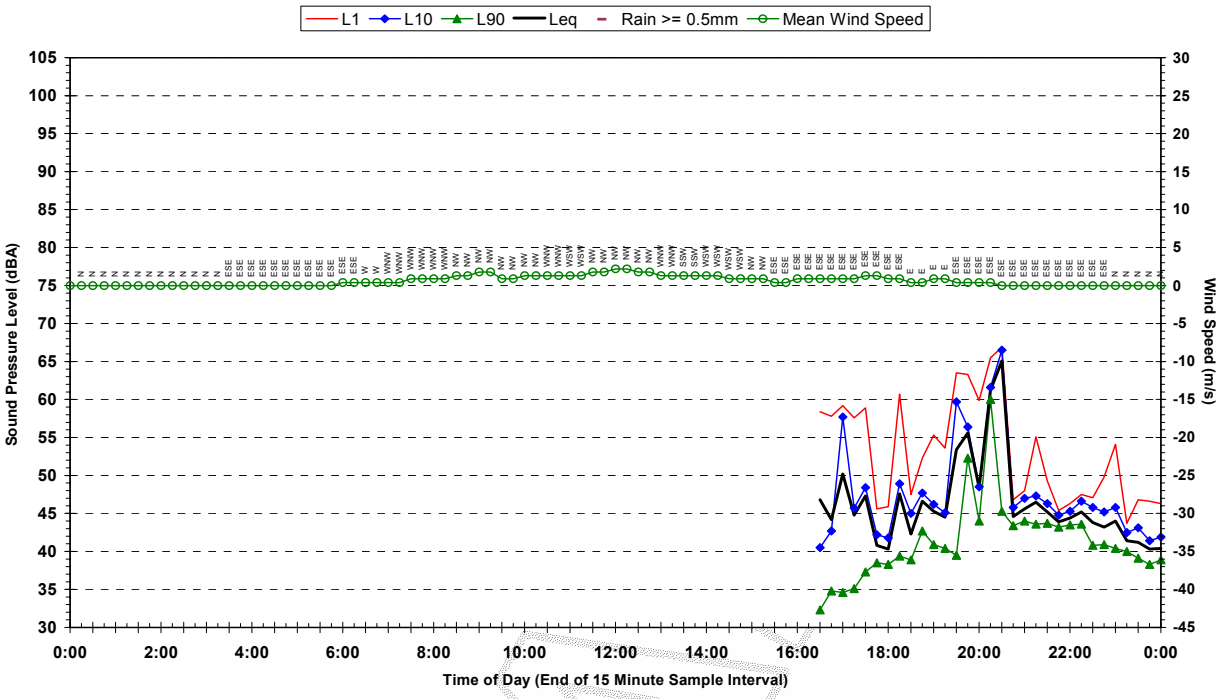


Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Thursday 18 March 2010

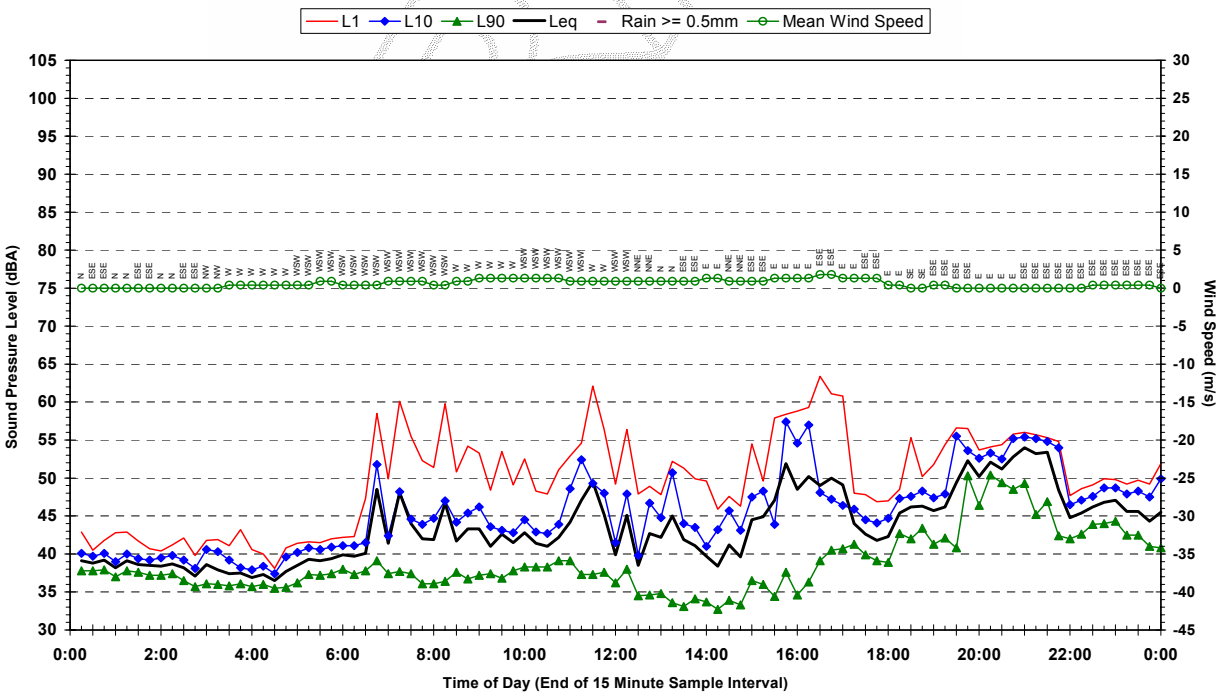


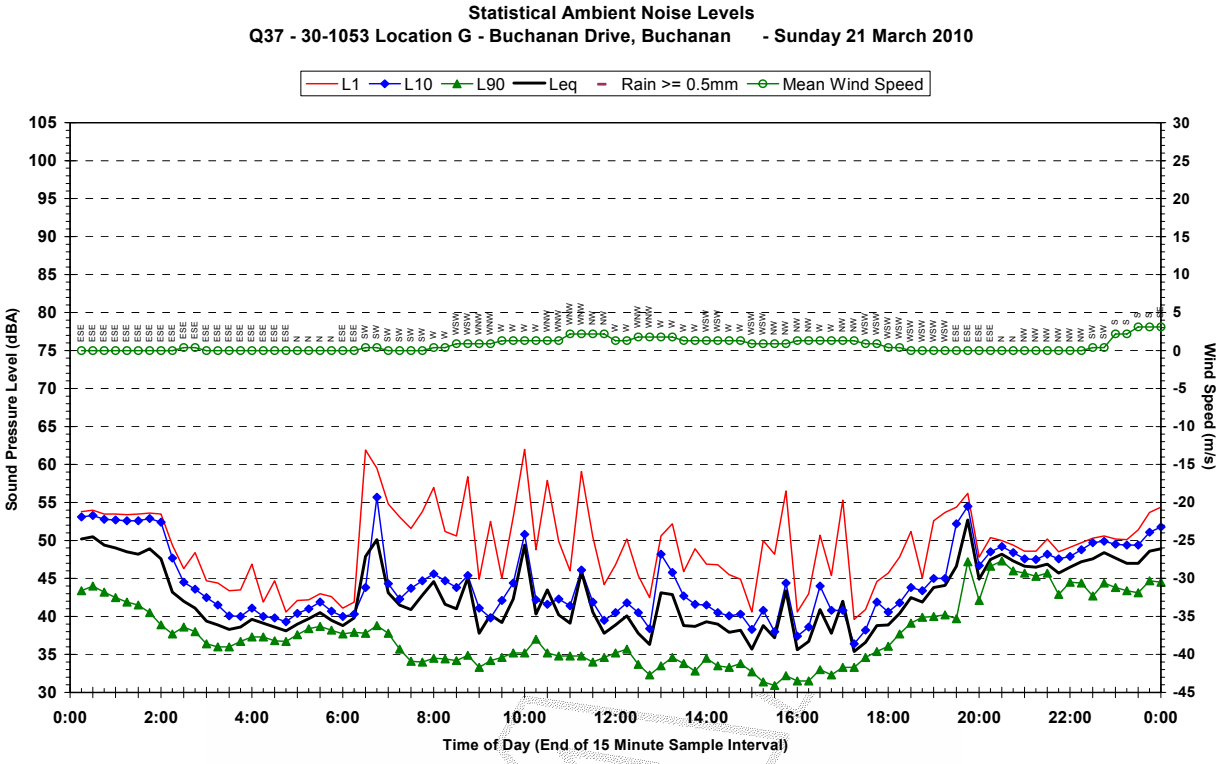

Statistical Ambient Noise Levels
Q37 - 30-1053 - Location F - Black Hill Road, Black Hill - Friday 19 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

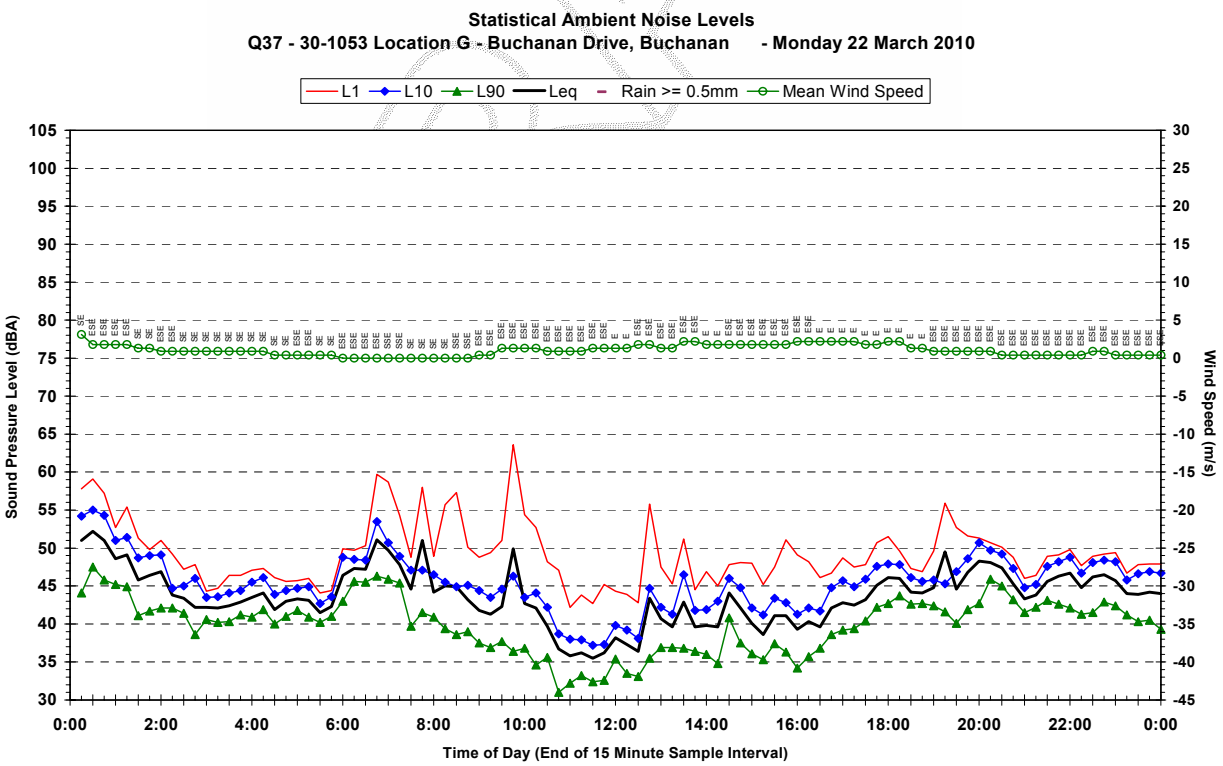
Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Friday 19 March 2010



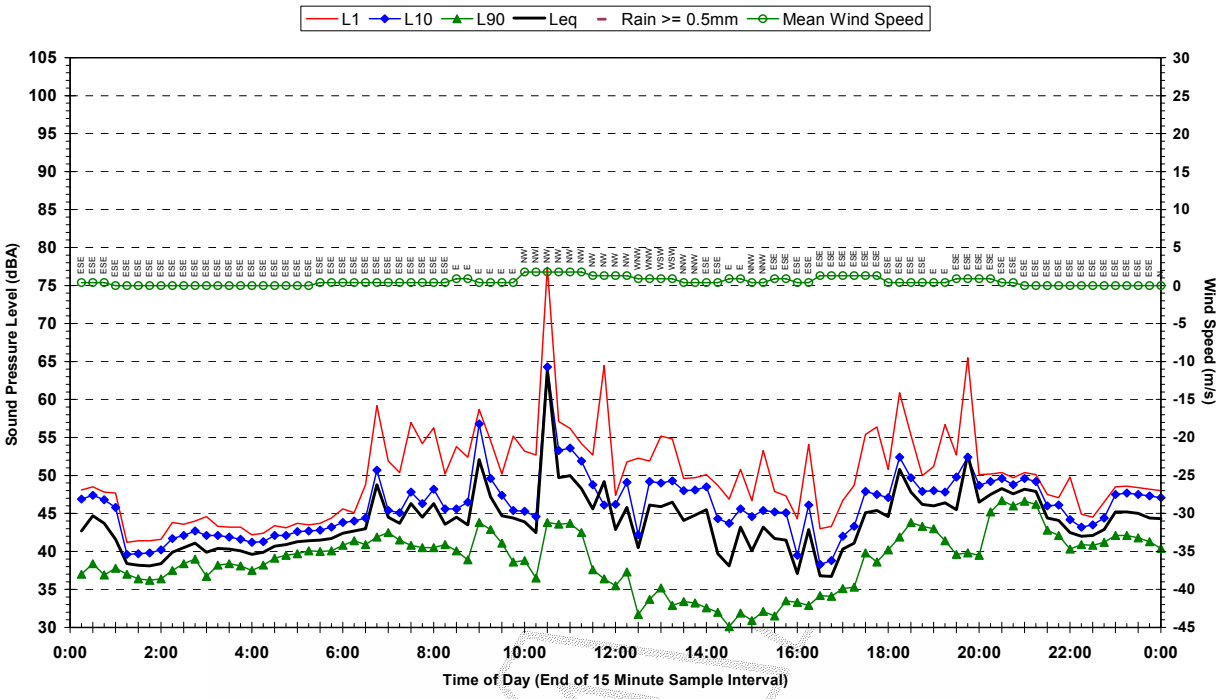
Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Saturday 20 March 2010



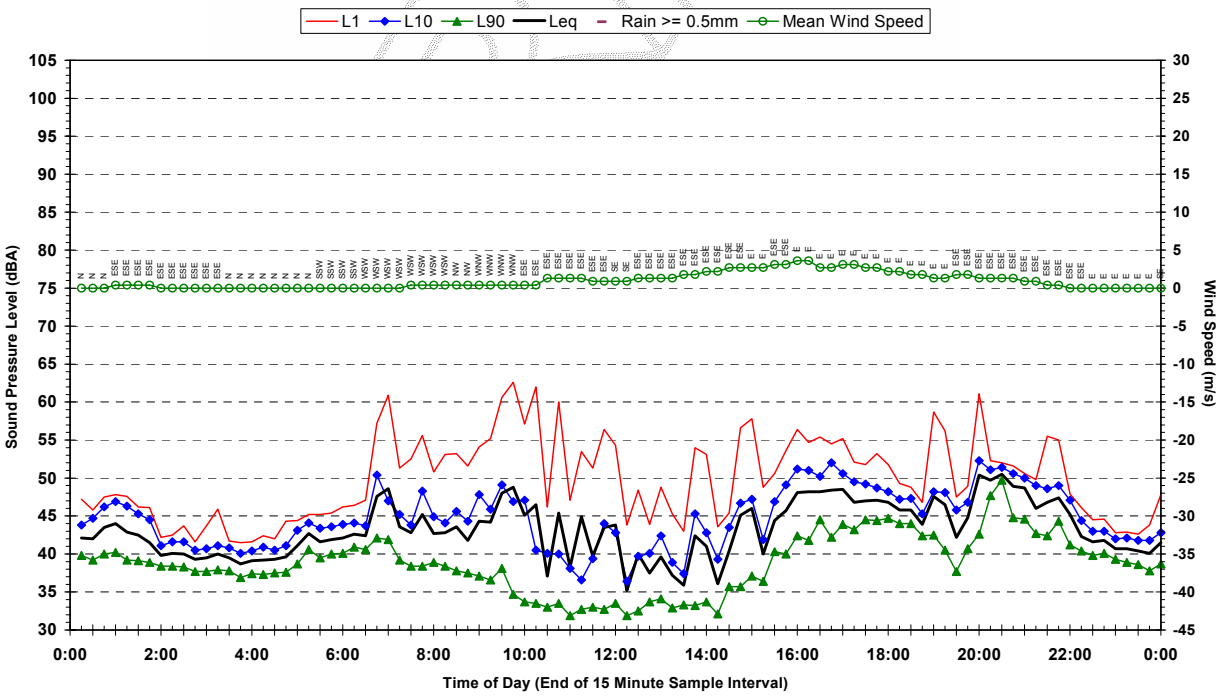

Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Sunday 21 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

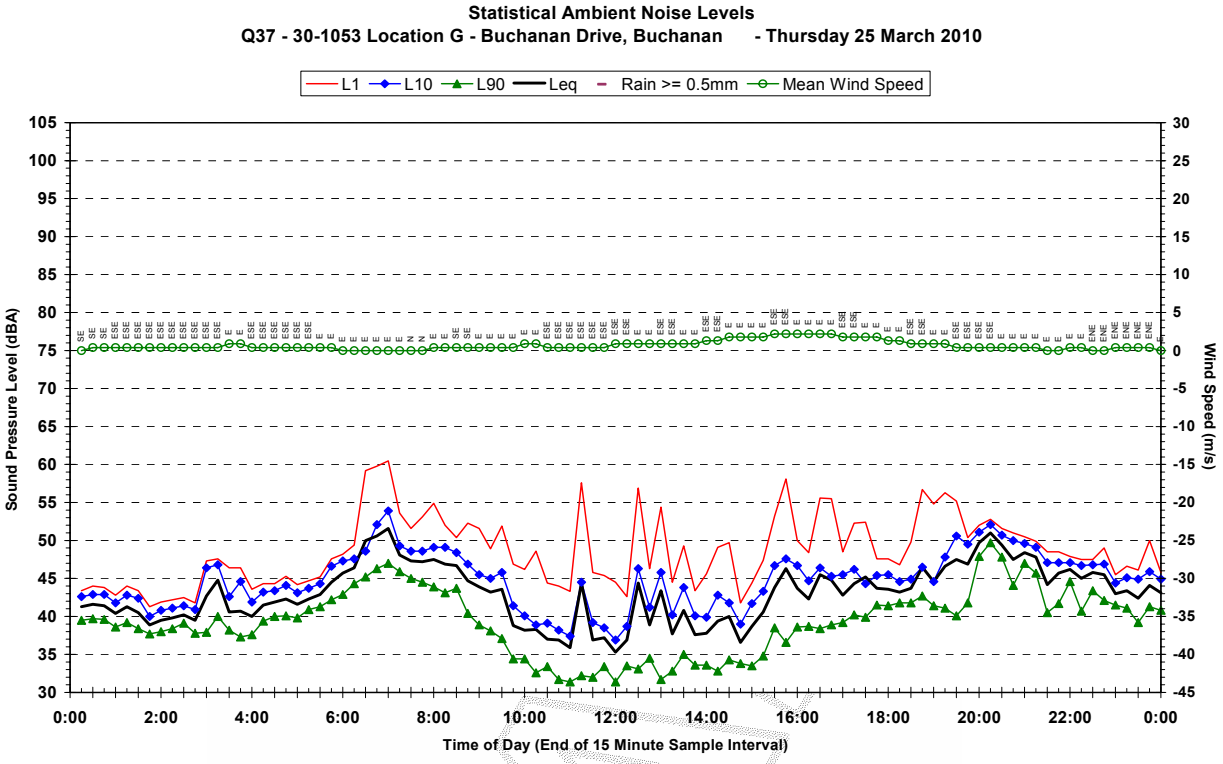

Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Monday 22 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

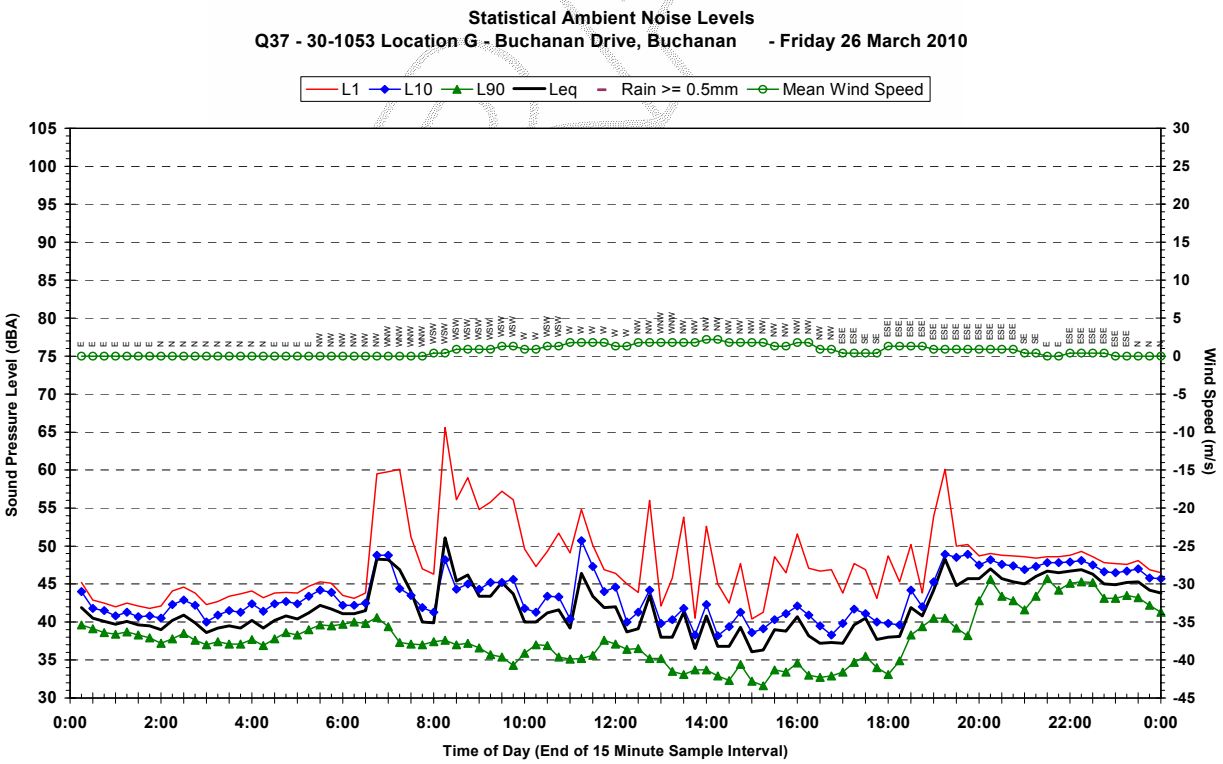
Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Tuesday 23 March 2010



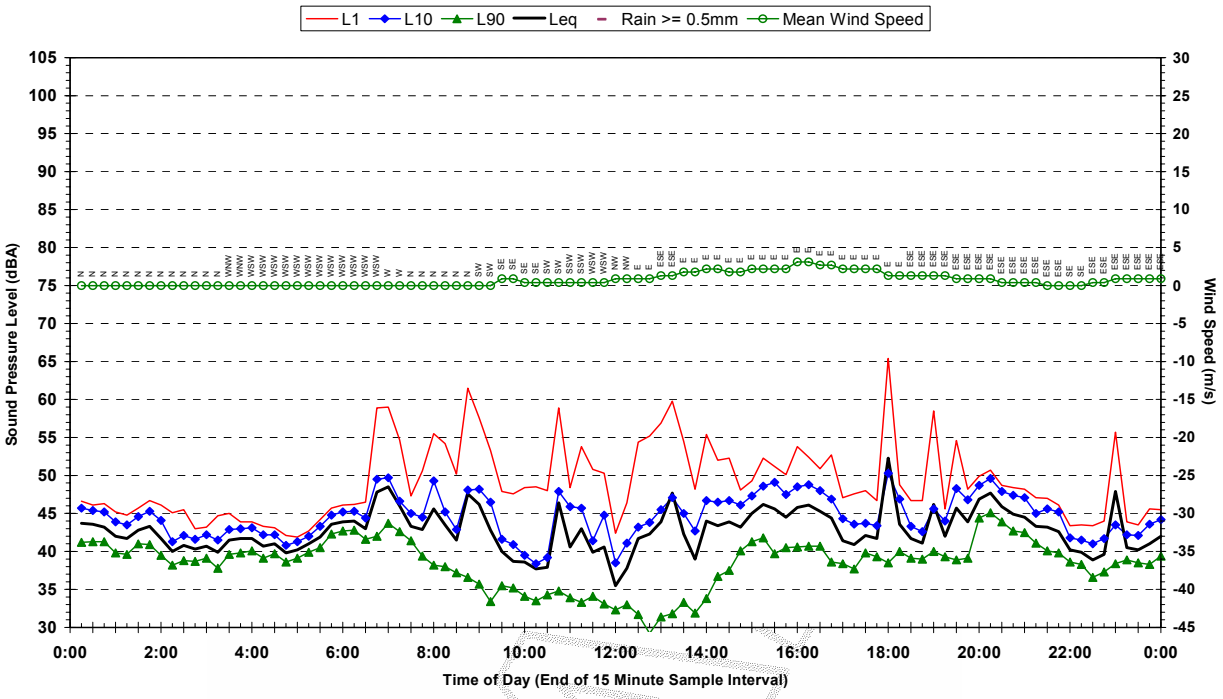
Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Wednesday 24 March 2010



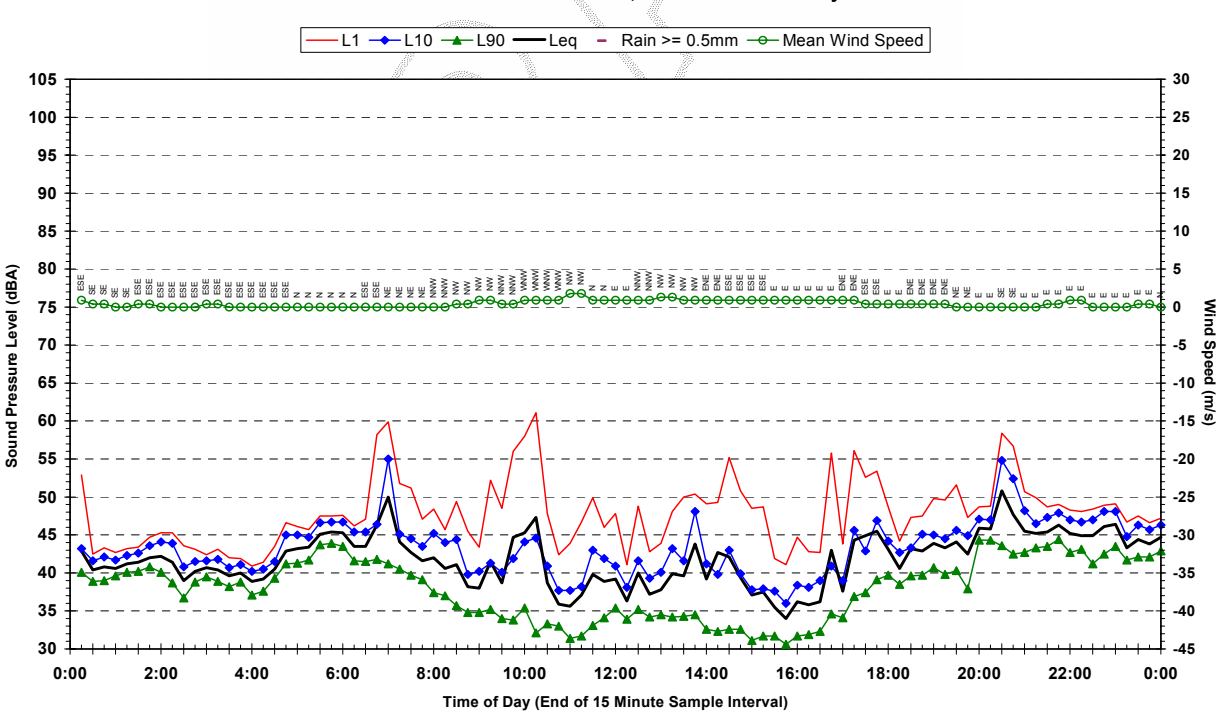

Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Thursday 25 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

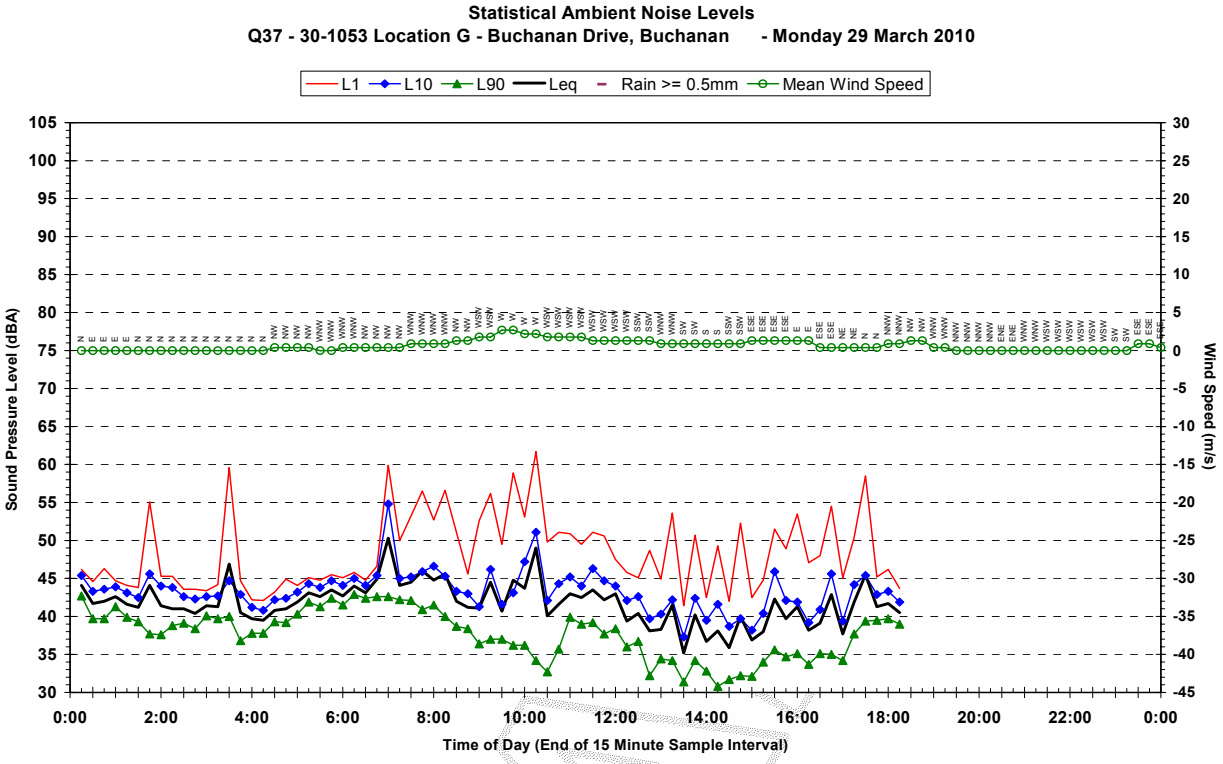

Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Friday 26 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)

Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Saturday 27 March 2010

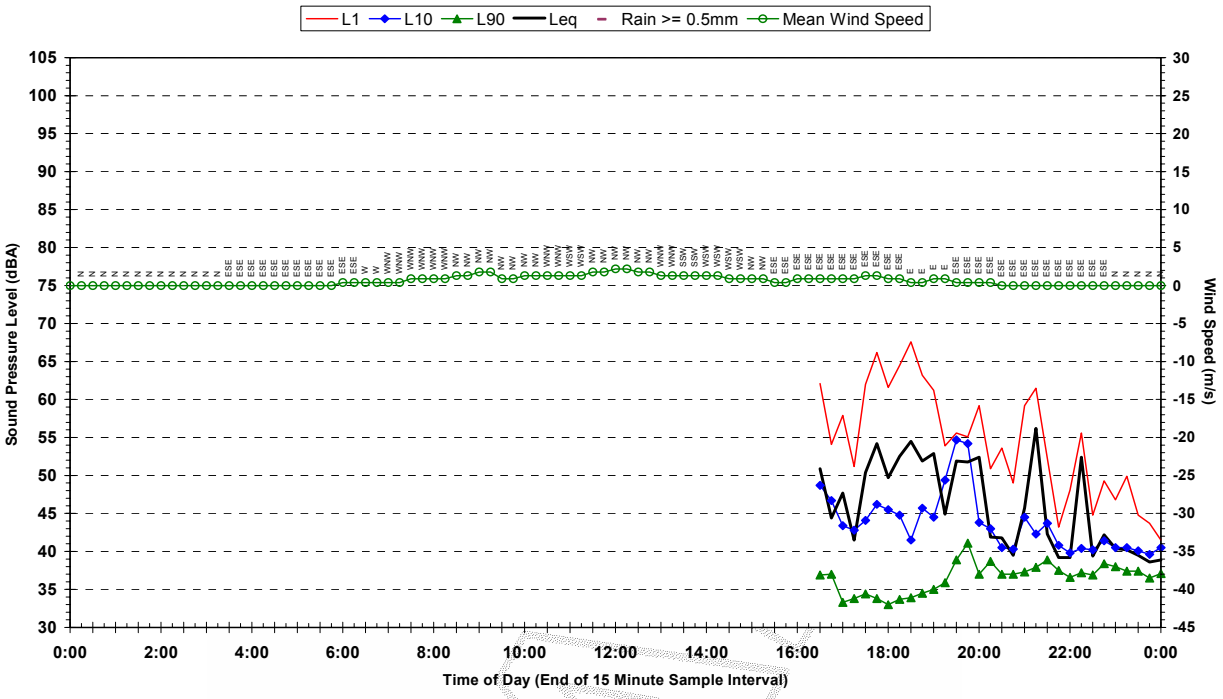


Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Sunday 28 March 2010

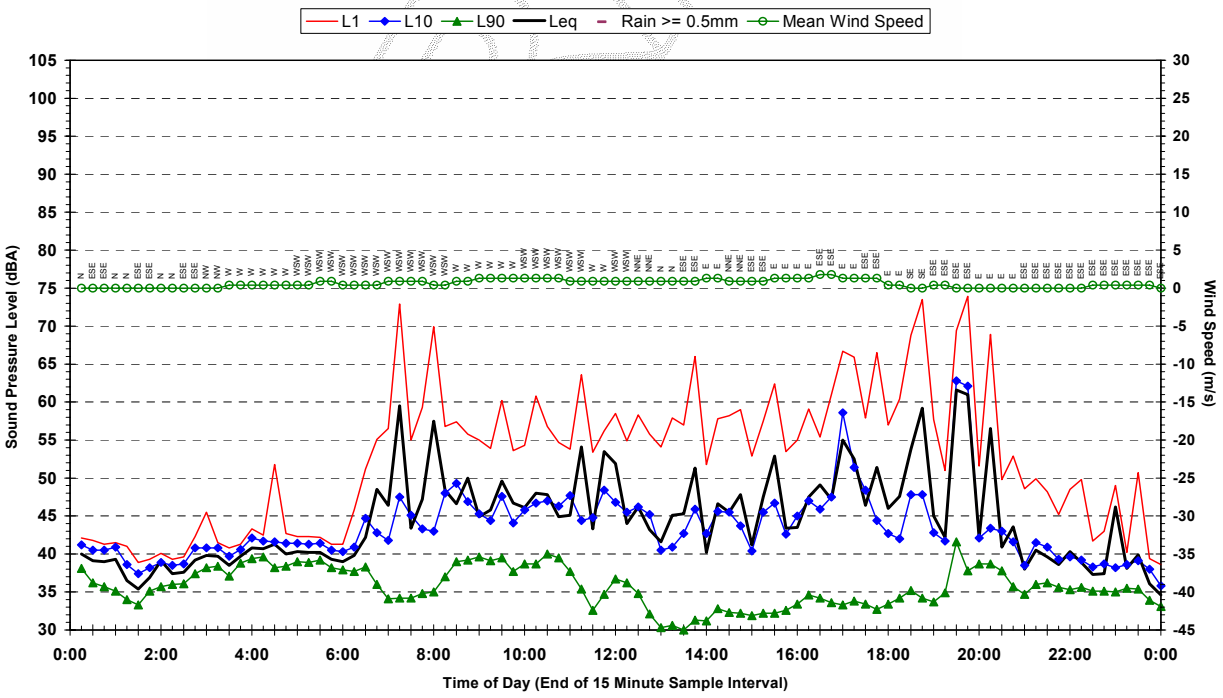



Statistical Ambient Noise Levels
Q37 - 30-1053 Location G - Buchanan Drive, Buchanan - Monday 29 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

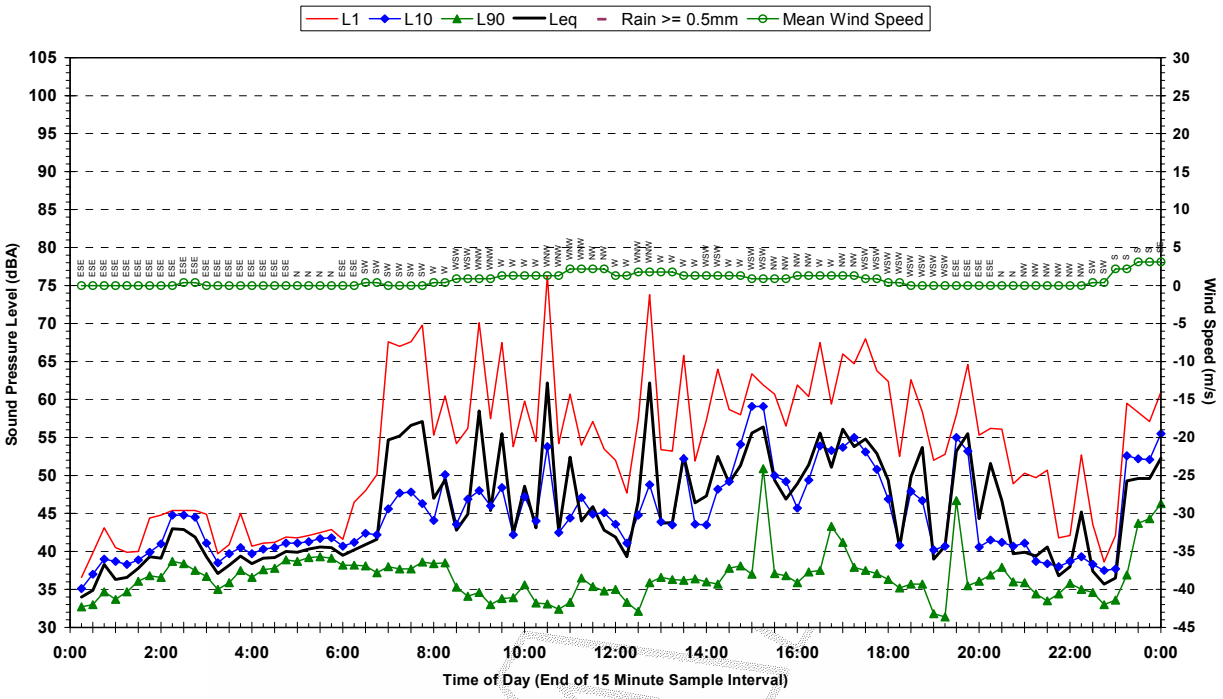
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Friday 19 March 2010



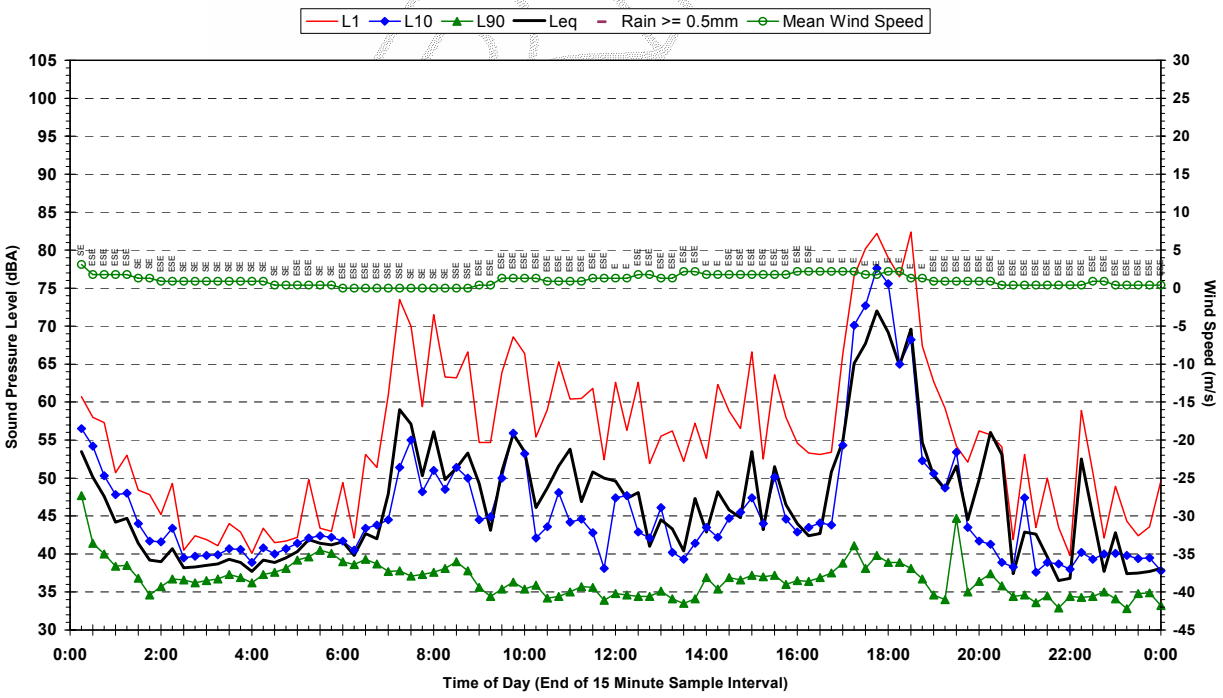
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Saturday 20 March 2010



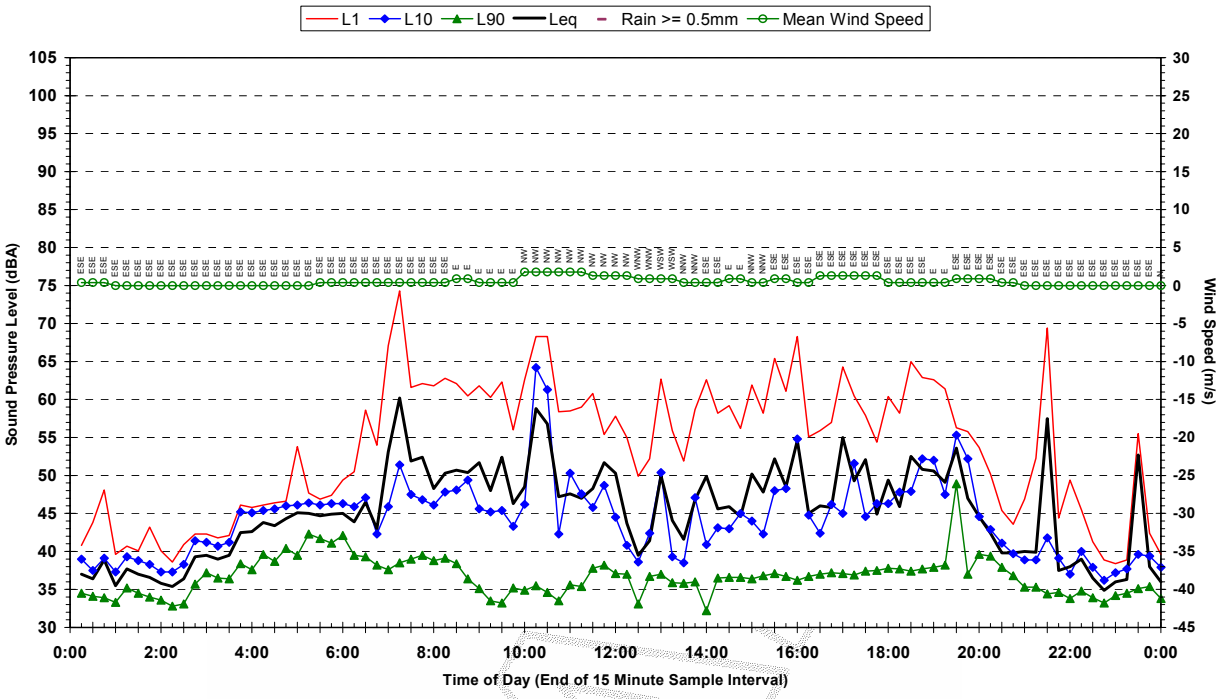
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Sunday 21 March 2010



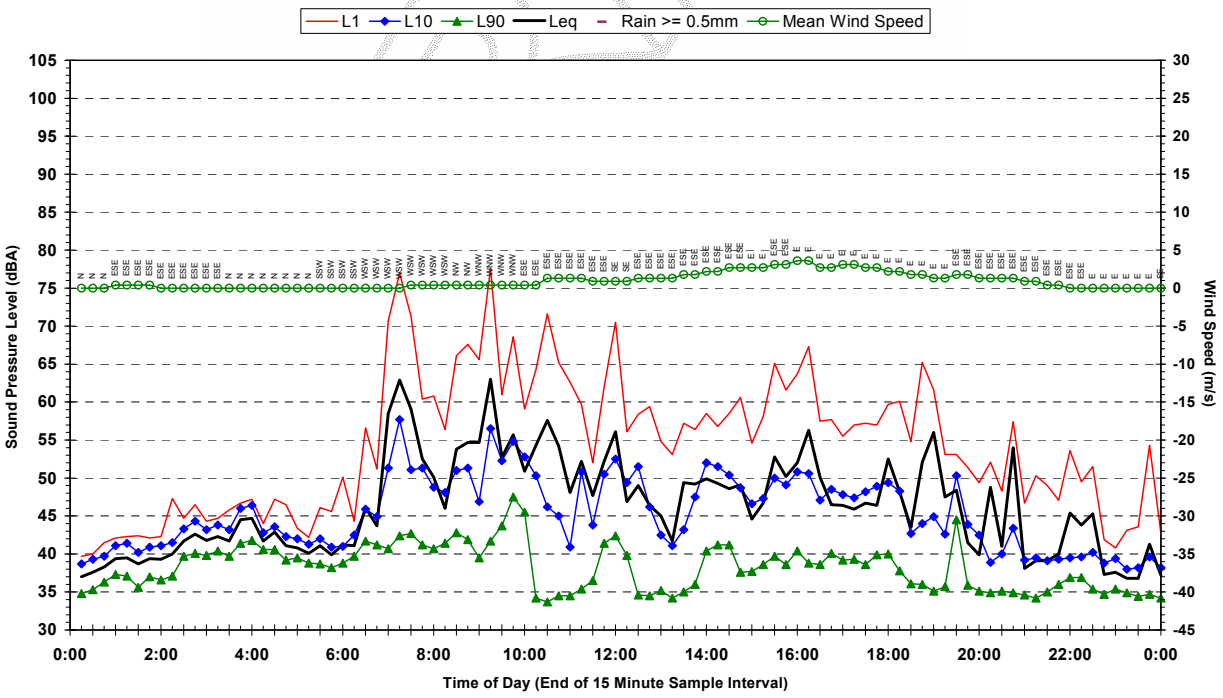
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Monday 22 March 2010



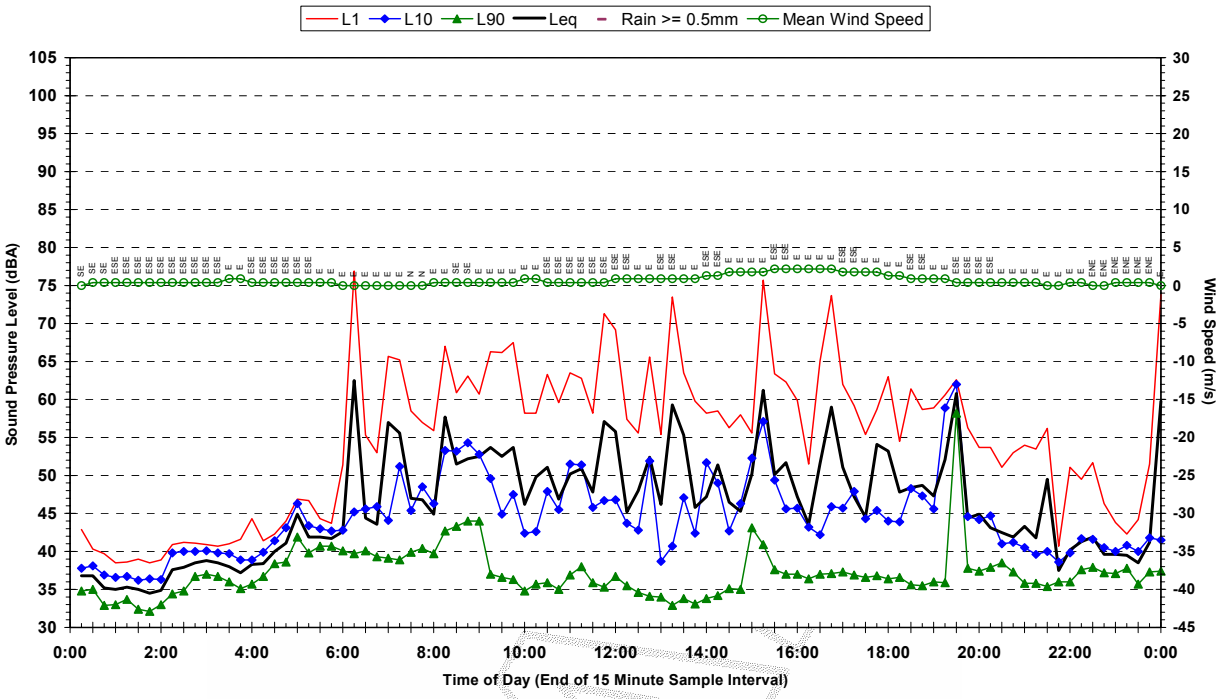
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Tuesday 23 March 2010



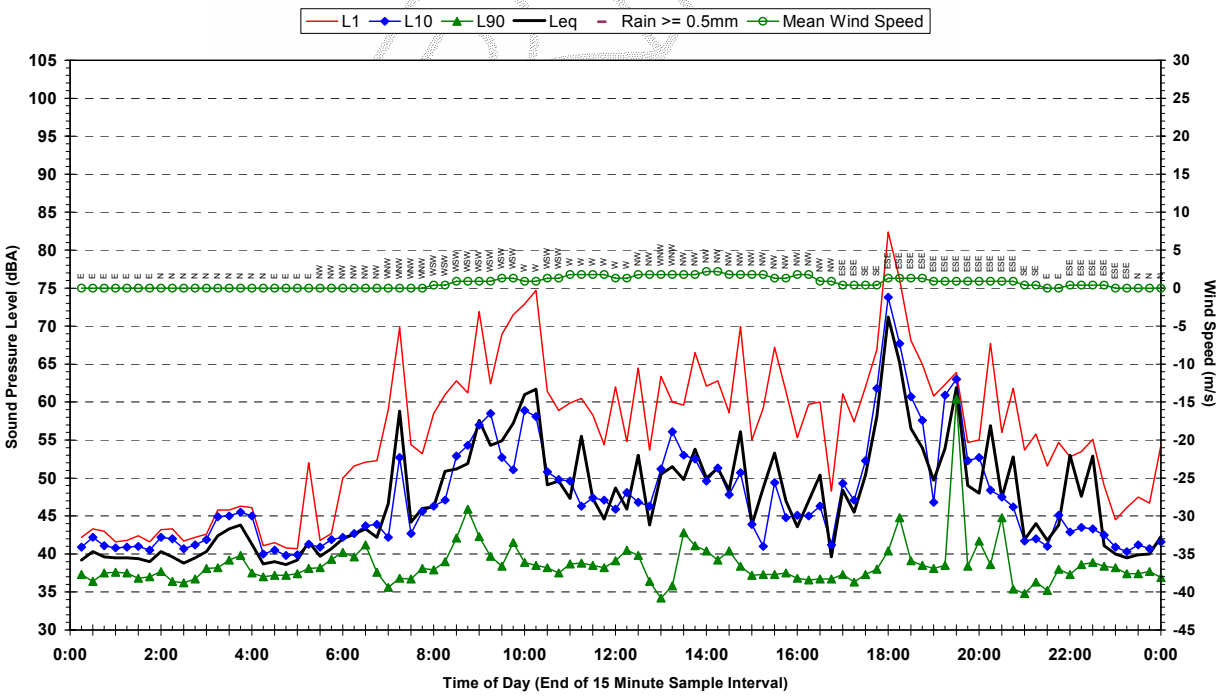
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Wednesday 24 March 2010



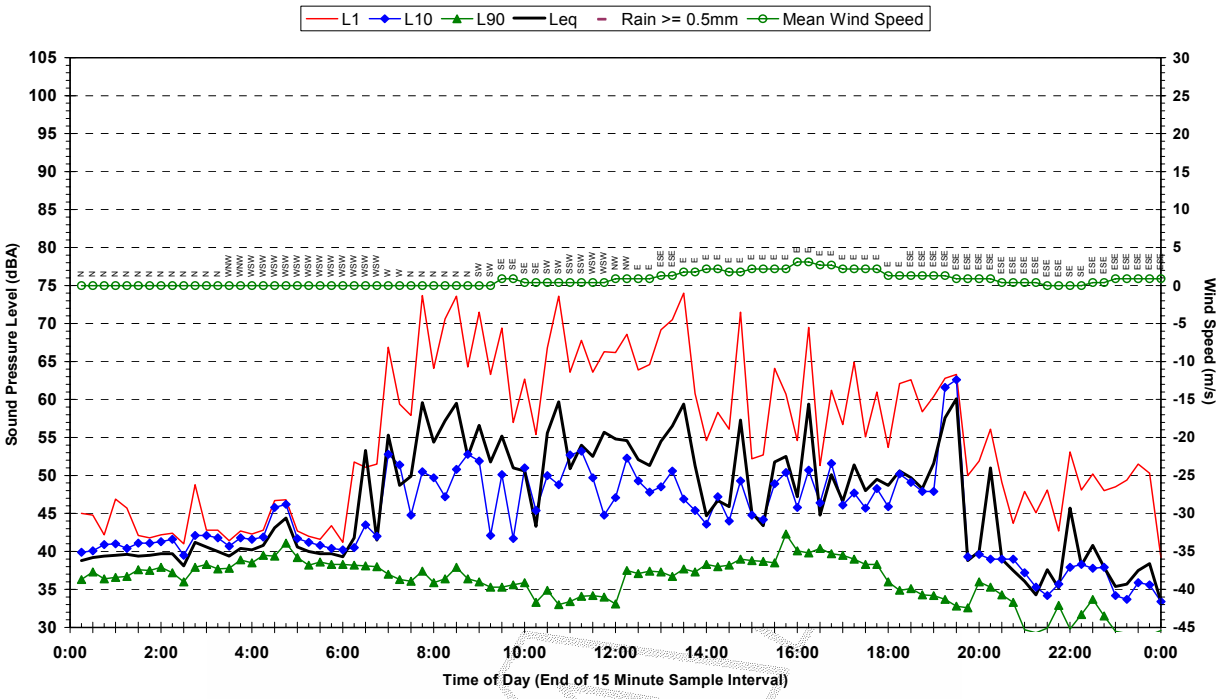
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Thursday 25 March 2010



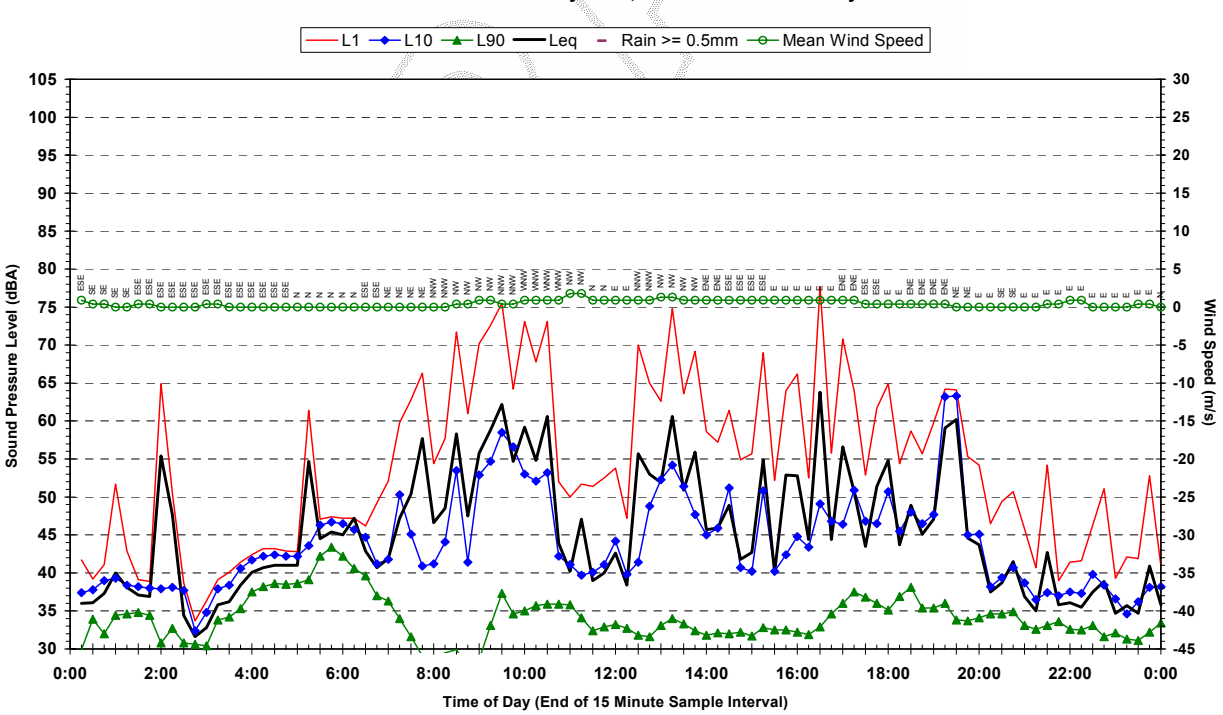
Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Friday 26 March 2010

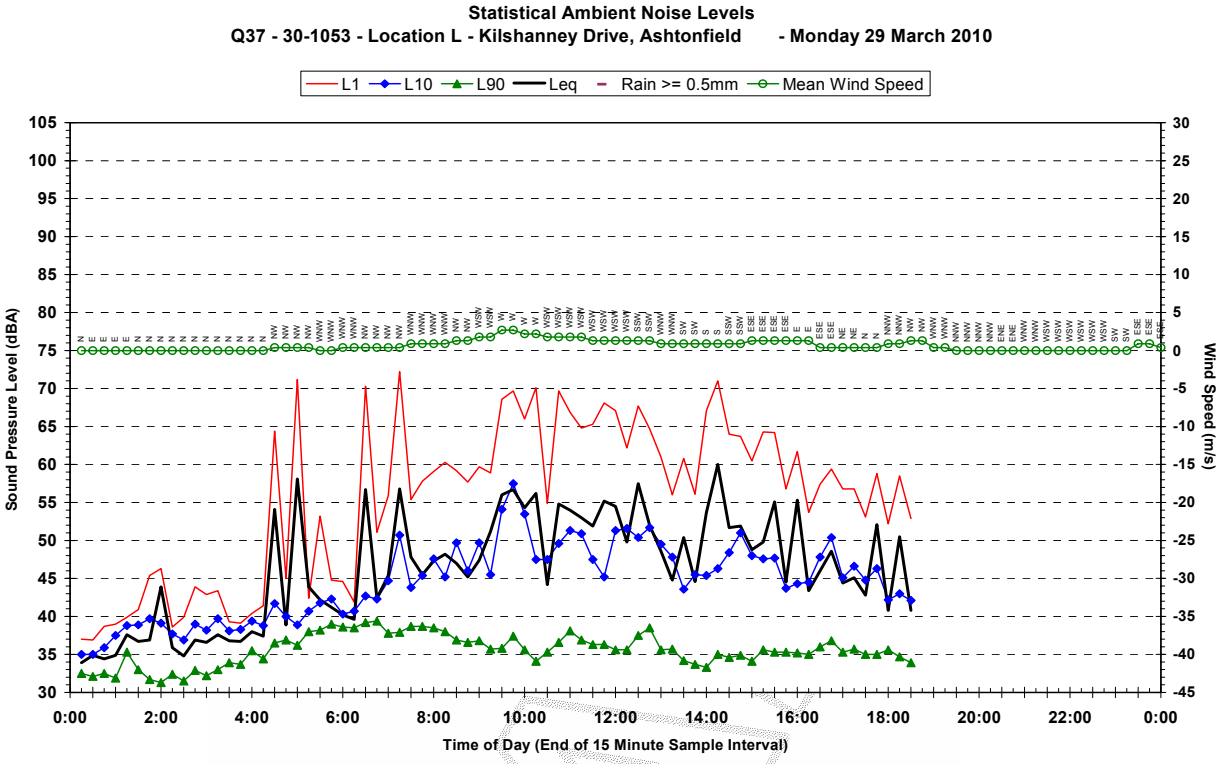


Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Saturday 27 March 2010

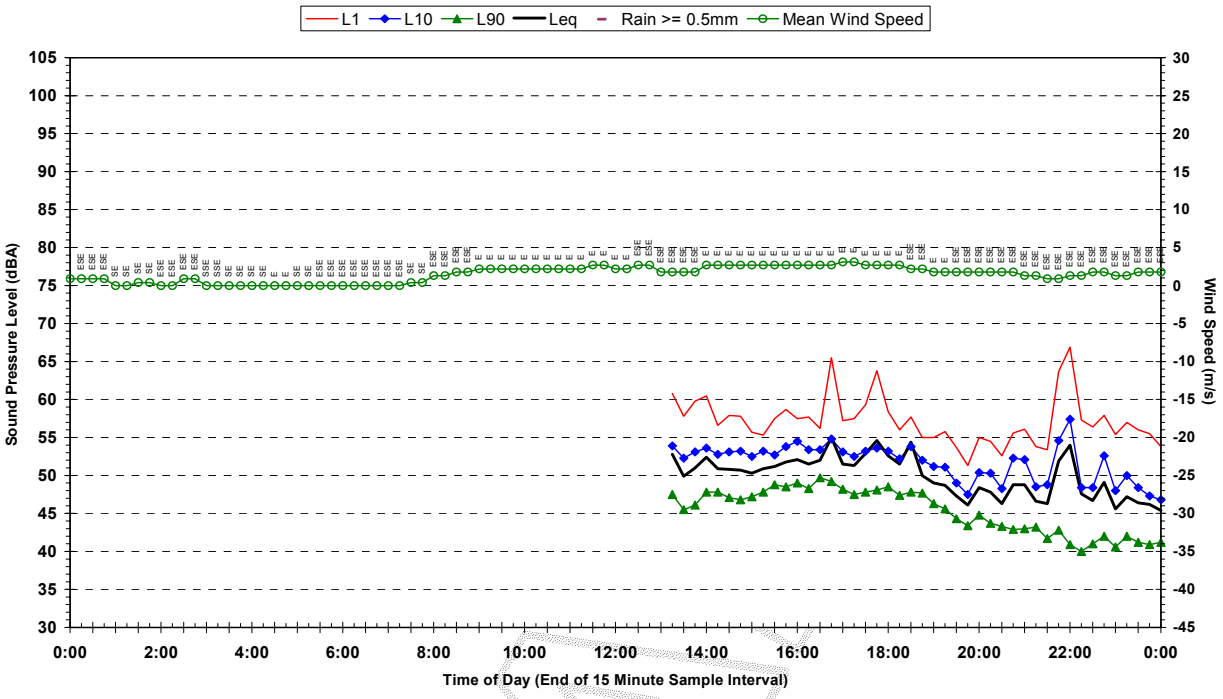


Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Sunday 28 March 2010

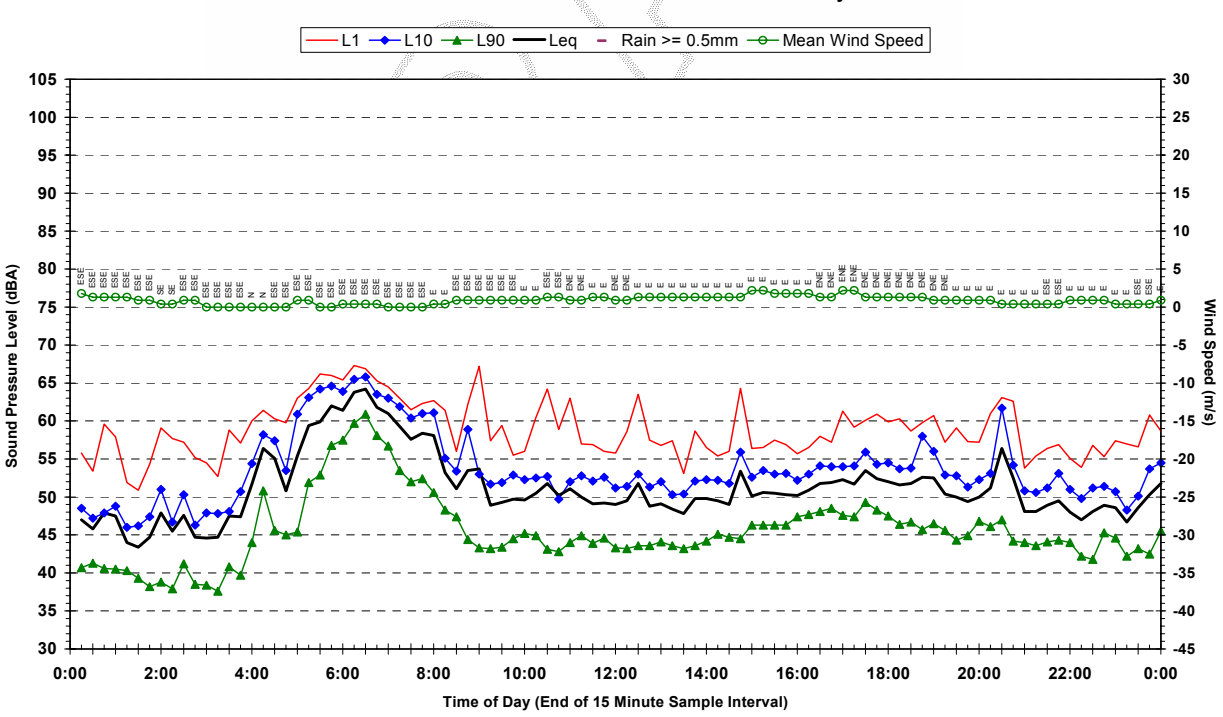



Statistical Ambient Noise Levels
Q37 - 30-1053 - Location L - Kilshanney Drive, Ashtonfield - Monday 29 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

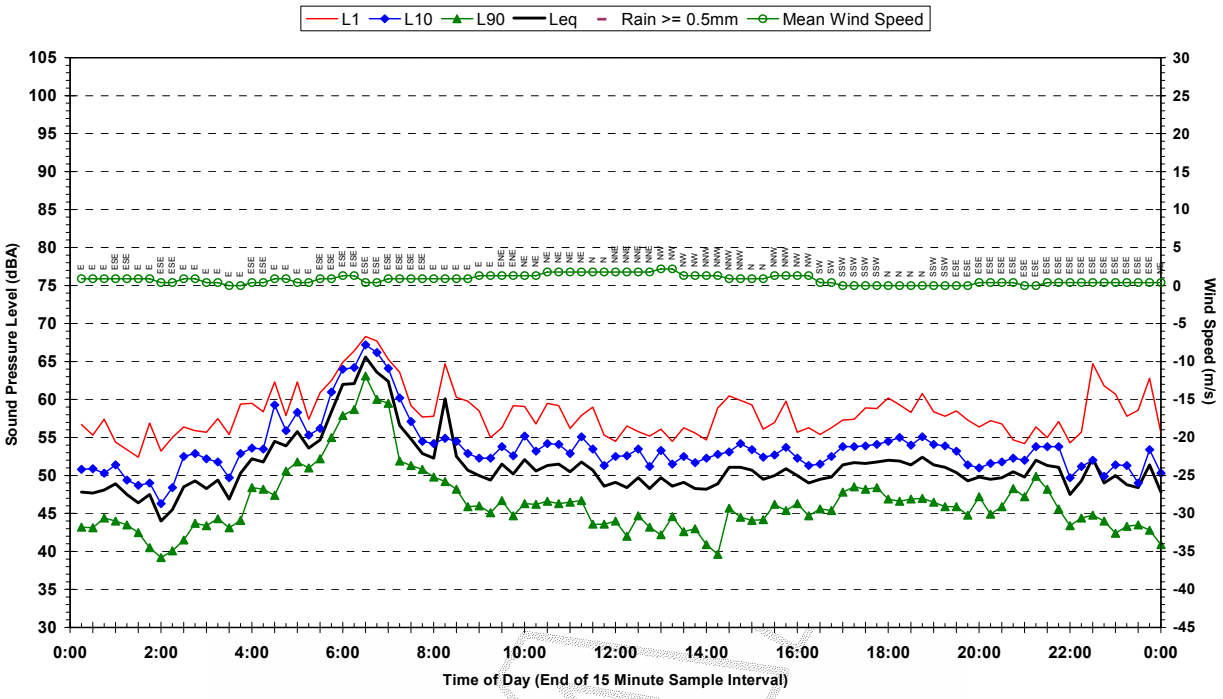
Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Wednesday 3 March 2010



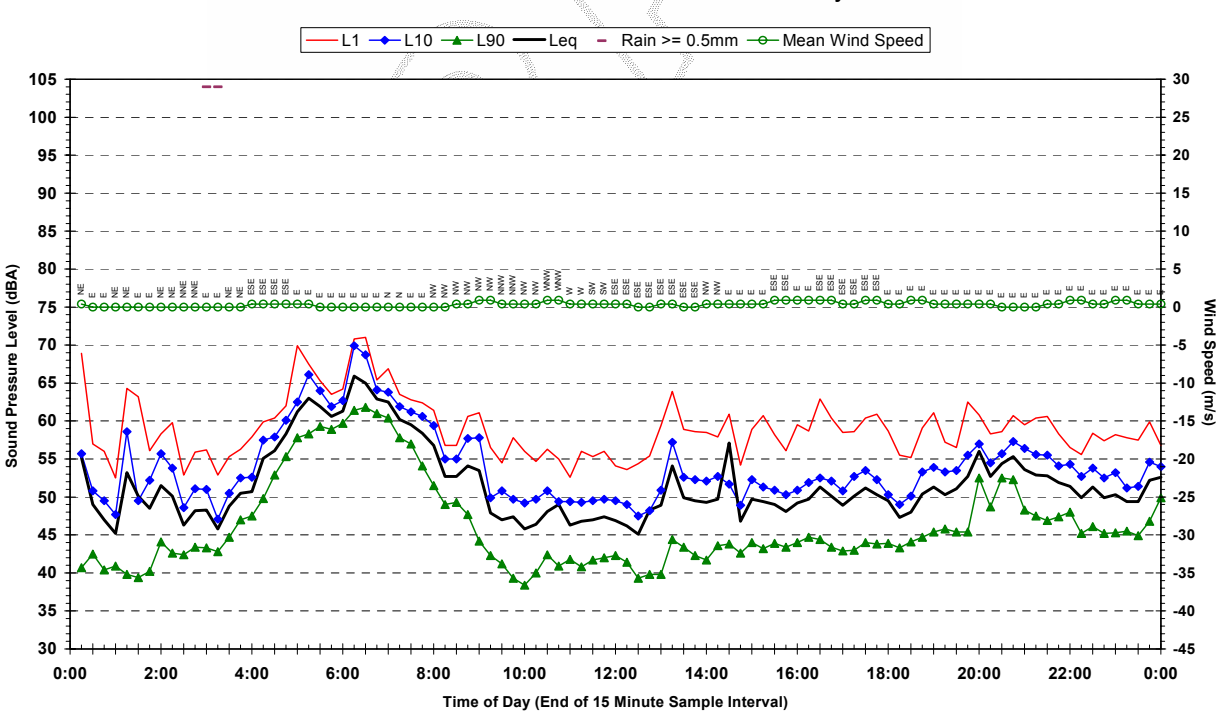
Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Thursday 4 March 2010



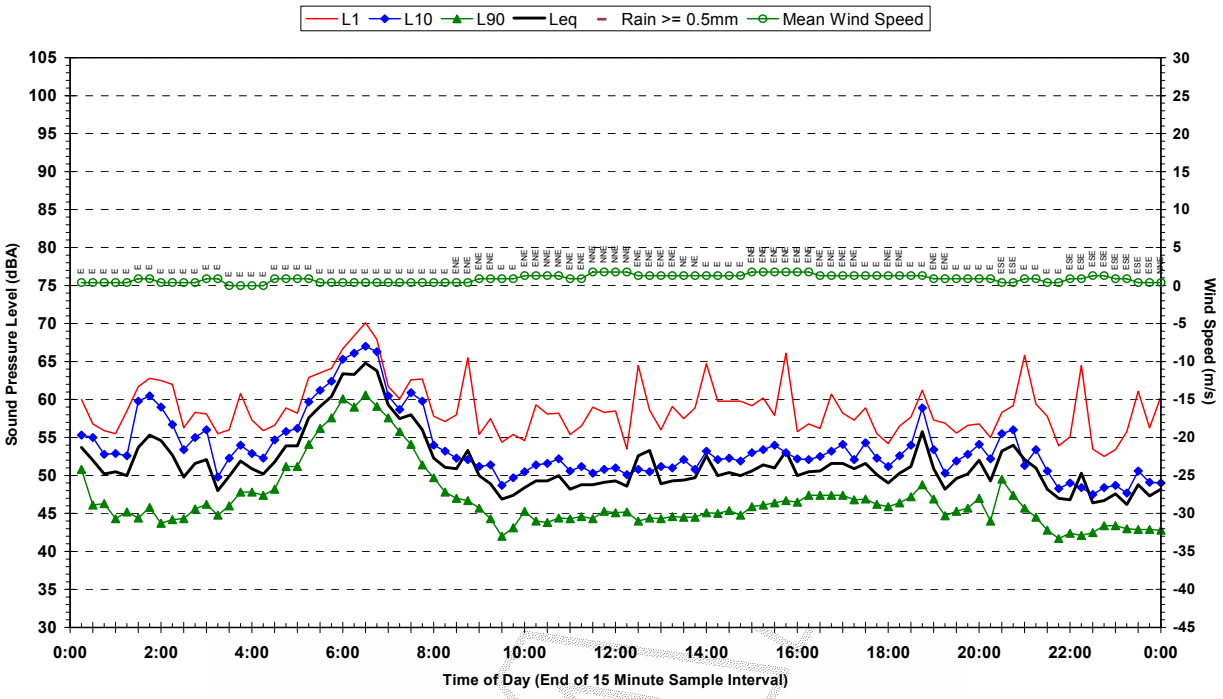
Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Friday 5 March 2010



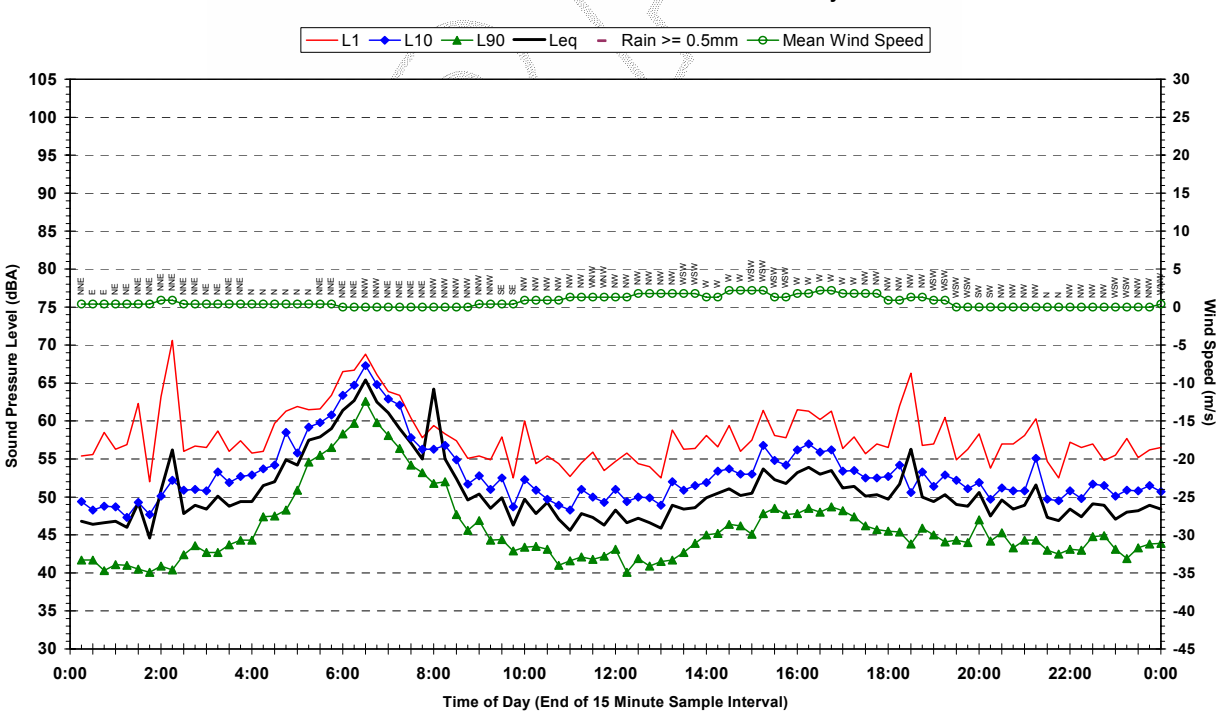
Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Saturday 6 March 2010



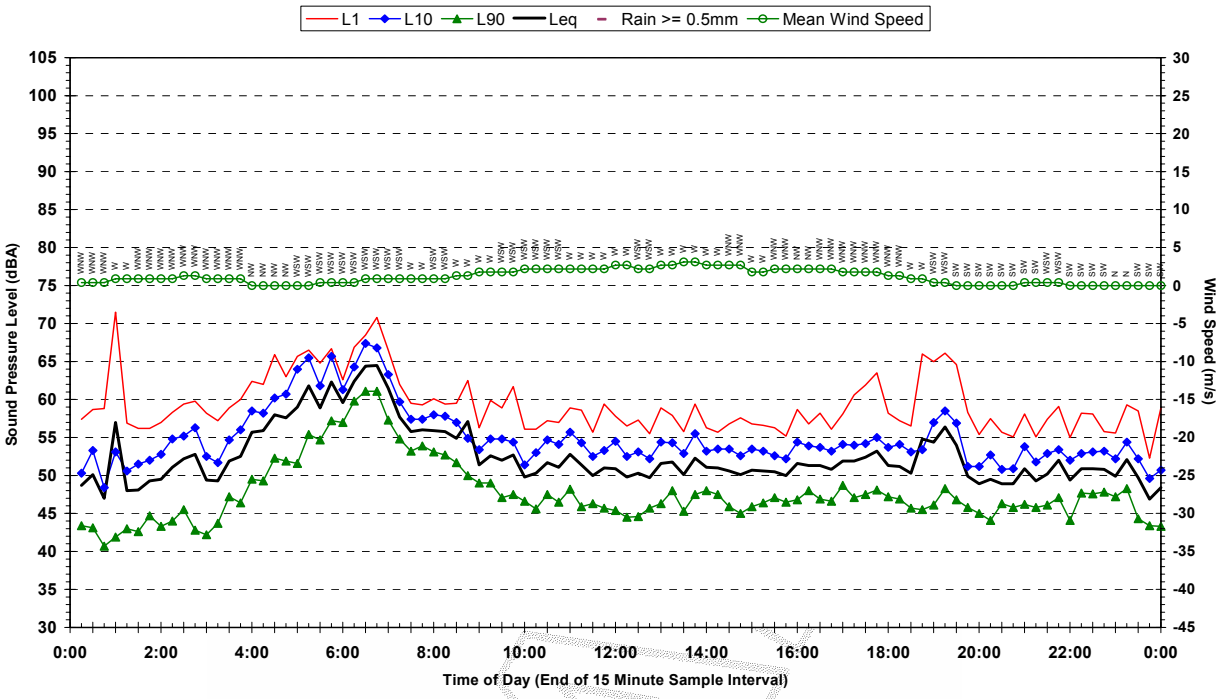
Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Sunday 7 March 2010



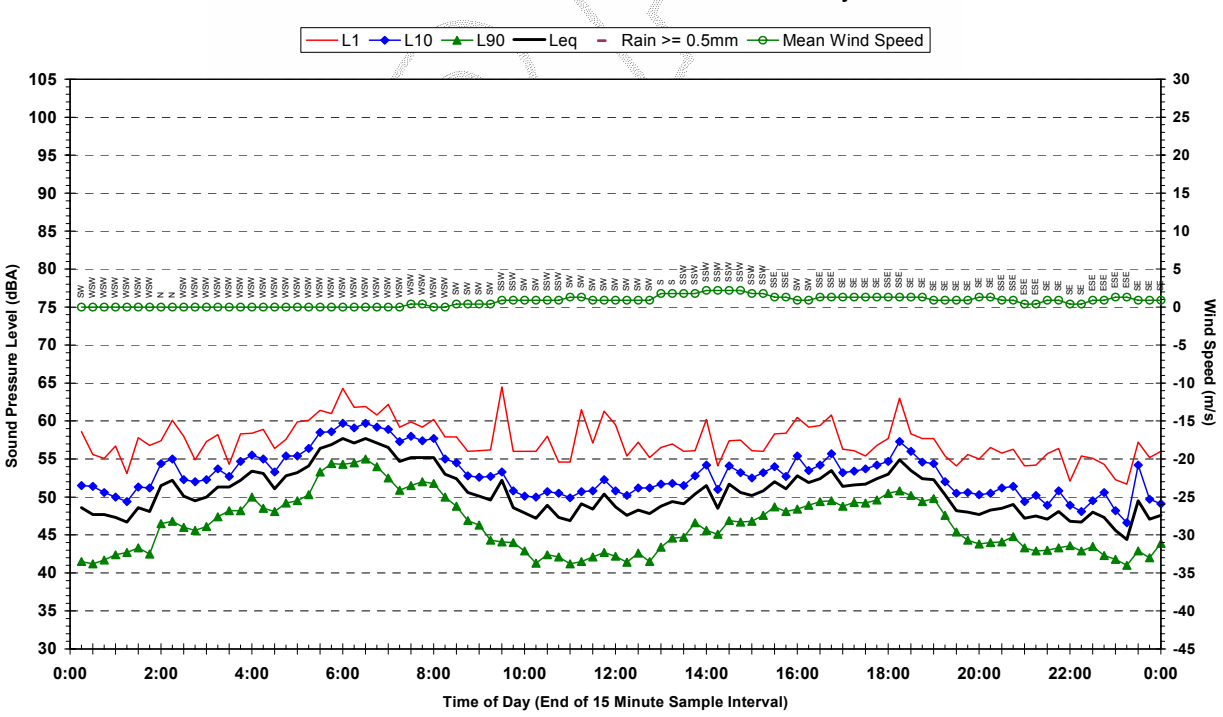
Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Monday 8 March 2010

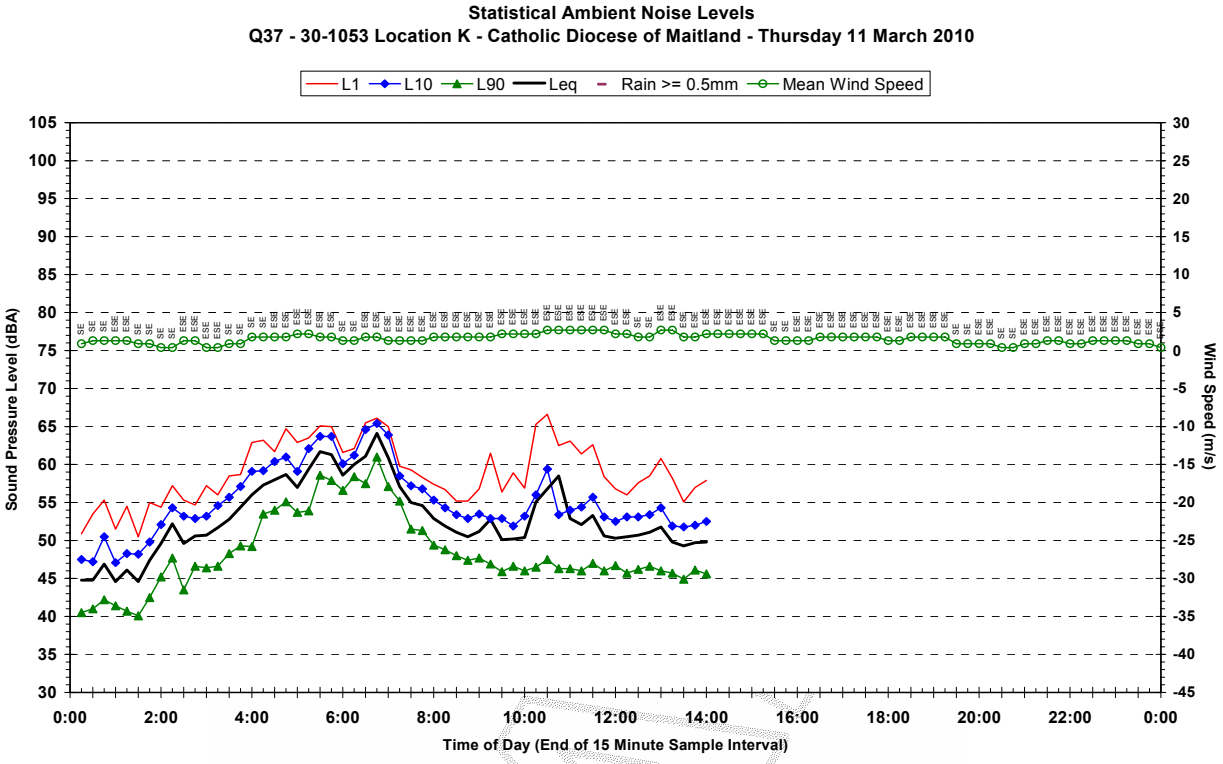


Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Tuesday 9 March 2010



Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Wednesday 10 March 2010




Statistical Ambient Noise Levels
Q37 - 30-1053 Location K - Catholic Diocese of Maitland - Thursday 11 March 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00
Time of Day (End of 15 Minute Sample Interval)

HEGGIES

REPORT Q38 30-1053-R1

Revision 0

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending June 2010

PREPARED FOR

Donaldson Coal Pty Ltd
PO Box 675
Green Hills NSW 2320

2 AUGUST 2010

HEGGIES PTY LTD
ABN 29 001 584 612

Donaldson and Abel Coal Mines
Quarterly Noise Monitoring
Quarter Ending June 2010

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
Q38 30-1053-R1	Revision 0	2 August 2010			

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1 INTRODUCTION

Development consent was obtained by Donaldson Coal Pty Ltd for the Donaldson Mine in October 1999 following a Commission of Inquiry. Development Consent number N97/00147 was issued by the Minister for Urban Affairs pursuant to Section 101 of the Environmental Planning and Assessment Act 1979.

Project Approval (Application No. 05_0136) granted by the Minister of Planning was obtained by Donaldson Coal Pty Ltd for Abel Coal Mine in 2008.

Donaldson Coal Pty Ltd has commissioned Heggies Pty Ltd (Heggies) to conduct quarterly noise monitoring surveys for the Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Mine Project Noise Monitoring Program, dated 27 May 2008.

The objectives of the noise monitoring survey for this operating quarter were as follows:

- Measure the ambient noise levels at five (5) focus receptor locations (potentially worst affected) surrounding Donaldson Coal Mine and Abel Coal Mine.
- Qualify all sources of noise within each of the attended surveys, including estimated contribution or maximum level of individual noise sources.
- Assess the noise emissions of Donaldson Coal Mine and Abel Coal Mine with respect to the limits contained in the Development Consent.

2 DEVELOPMENT CONSENT AND PROJECT APPROVAL

2.1 Donaldson Coal Mine Development Consent Conditions

The Development Consent nominates hours of operation and mine noise emission goals in the Sections entitled "*Operation of Development, Condition No. 3(1) and 3(2)"*, and *"Noise and Vibrational Noise Limits: Condition No. 15*" as follows:

"3.(1) Subject to (2) the approved hours of operation are as follows:

Works	*Period*	*Hours*
Construction, including construction of any bunds	*Monday to Friday* *Saturday*	*7 am to 6 pm* *8 am to 1 pm*
Mining operations, including mining, haulage of waste to dumps and coal processing	*Monday to Friday* *Saturday, Sunday*	*24 hours per day* *7 am to 6 pm*
Road Transportation and stockpiling of coal	*7 days per week*	*24 hours per day*
Rail loading of coal	*7 days per week*	*7 am to 10 pm*
Maintenance of mobile and fixed plant	*7 days per week*	*24 hours per day*
Blasting, not involving closure of John Renshaw Drive	*Monday to Saturday*	*7 am to 5 pm*
Blasting, involving closure of John Renshaw Drive	*Monday to Saturday*	*10 am to 2 pm*

Notes: Restrictions on Public Holidays are the same as Sundays

(2) The Applicant shall submit a report to the Director-General's satisfaction demonstrating the noise limits in Condition 15 can be met while rail loading of coal is occurring during the period from 6 pm to 10 pm. If that report does not demonstrate that the noise limits can be met to the Director-General's satisfaction, then the hours of operation for rail loading of coal shall be restricted to 7 am to 6 pm."

15. Unless subject to a negotiated agreement in accordance with Condition 23, the Applicant shall ensure that the noise emission from construction or mining operations, when measured or computed at the boundary of any dwelling not owned by the applicant (or within 30 metres of the dwelling, if the boundary is more that 30 metres from the dwelling), shall not exceed the following noise limits:

Location	***LA10(15minute) Noise Limits (dBA)***	
	Daytime	***Night-time***
Beresfield area (residential)	*45*	*35*
Steggles Poultry Farm	*50*	*40*
Ebenezer Park Area	*46*	*41*
Black Hill Area	*40*	*38*
Buchanan and Louth Park Area	*38*	*36*
Ashtonfield Area	*41*	*35*
Thornton Area	*48*	*40*

Note: Daytime is 7 am to 10 pm Monday-Saturday, and 8 am to 10 pm Sundays and Public Holidays. Night-time is 10 pm to 7 am Monday-Saturday, and 10 pm to 8 am Sundays and Public Holidays.

The noise limits apply for prevailing meteorological conditions (winds up to 3 m/s), except under conditions of temperature inversions."

Other Conditions of Consent relevant to noise are as follows:

"18. The applicant shall survey and investigate noise reduction measures from plant and equipment and set targets for noise reduction in each Annual Environmental Management Report (AEMR), taking into consideration valid noise complaints received in the previous year. The Report shall also include remedial measures.

19. The Applicant shall revise the Noise Management Plan as necessary and provide an updated Plan five years after commencement of mining to the Director-General, the independent noise expert (Condition 48), EPA, Councils and the Community Consultative Committee."

2.2 Abel Coal Mine – Project Approval

The relevant conditions relating to noise from the Abel Coal Mine approval are reproduced below.

Schedule 4

NOISE

Note: These conditions should be read in conjunction with section 3 of the Statement of Commitments.

Noise Limits

23 The Proponent shall ensure that the noise generated by the Project does not exceed at any privately-owned residence the levels set out in the following table for the monitoring location nearest that residence.

Table 1: Noise limits dB(A)

Day	***Evening***	***Night***		***Location and Locality****
LAeq(15 minutes)	***LAeq(15 minutes)***	***LAeq(15 minutes)***	***LA1(1 minute)***	
50	*48*	*41*	*51*	***A** Weakleys Dr, Beresfield*
50	*48*	*41*	*51*	***B** Yarrum Rd, Beresfield*
43	*44*	*38*	*50*	***C** Phoenix Rd, Black Hill*
41	*40*	*36*	*46*	***D** Black Hill School*
41	*40*	*36*	*46*	***E** Brown Rd, Black Hill*
41	*40*	*36*	*46*	***F** Black Hill Rd, Black Hill*
43	*41*	*36*	*46*	***G** Buchanan Rd, Buchanan*
43	*41*	*36*	*46*	***H** Mt Vincent Rd, Louth Park*
44	*46*	*38*	*48*	***I** Lord Howe Dr, Ashtonfield*
49	*47*	*40*	*50*	***J** Kilarney St, Avalon Estate*
41	*40*	*37*	*46*	***K** Catholic Diocese (Former Bartter) K1, K2, K3*
46	*46*	*40*	*53*	***L** Kilshanny Ave, Ashtonfield*

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *To determine compliance with the $L_{A1(1\ minute)}$ limit, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

** Revised to list alphabetically*

Noise Monitoring

24. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:

(a) be submitted to the Director-General for approval within 6 months of this approval;

(b) be prepared in consultation with the DECC; and

(c) use a combination of attended and unattended monitoring measures to monitor the performance of the project.

2.2.1 Statement of Commitments

3.3 Monitoring

Within 6 months of this approval being granted a Noise Monitoring Program shall be prepared and implemented for the Abel Underground Mine and the Bloomfield CHPP, to the satisfaction of the Director-General. The Noise Monitoring Program shall include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise environmental assessment. This plan will be integrated with the monitoring plans for the Tasman, Donaldson and Bloomfield Mines to provide a single integrated Noise Monitoring Program for all 4 mines.

3 PROCEDURES AND METHODOLOGY

3.1 General Requirements

The operational noise monitoring programme was conducted with reference to Development Consent N97/00147 (Donaldson Coal Mine), Project Approval 05_0136 (Abel Coal Mine), and in accordance with Heggies Report 30-1409-R2 dated 27 May 2008 (*Abel Mine Project Noise Monitoring Program)* and AS 1055-1997 "*Acoustics - Description and Measurement of Environmental Noise*".

3.2 Monitoring Locations

Baseline and preceding operational quarterly surveys have been conducted at 11 locations surrounding the Donaldson Mine and Abel Coal Mine sites. With the experience of these previous surveys, it was decided to concentrate noise monitoring at five (5) focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1**.

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield
K	Catholic Diocese of Maitland (formerly Bartter Enterprises)

A map giving the approximate location of the noise monitoring sites is contained within **Appendix A**.

3.3 Unattended Continuous Noise Monitoring

Environmental noise loggers were deployed for a seven (7) day period between 22 June 2010 and 1 July 2010 at each of the five (5) nominated locations given in **Table 1**. All unattended monitoring equipment was programmed to continuously record statistical noise level indices in 15 minute intervals including the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{A99}, L_{Amin} and L_{Aeq}. The statistical noise exceedance levels (L_{AN}) are the levels exceeded for N% of the 15 minute interval. The L_{A90} represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The L_{A10} is the level exceeded for 10% of the time and is usually referred to as the average maximum noise level. The L_{Aeq} is the equivalent continuous sound pressure level and represents the steady sound level which is equal in energy to the fluctuating level over the interval period. The L_{Amax} is the maximum noise level recorded over the interval. Instrument calibration was conducted before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

3.4 Operator Attended Monitoring

Operator attended surveys were conducted at each of the five (5) monitoring locations during daytime, evening and night-time periods, to verify the unattended logging results and to determine the character and contribution of ambient noise sources.

3.5 Equipment Operation

The mobile equipment operating on the Donaldson Mine site during the survey period are contained in **Appendix B**.

During the survey period the following operations were being undertaken:

- Coal mining operations were ongoing during the monitoring period, operating 7.00 am to 12.30 am Monday to Friday and day shift Saturday and Sunday.
- Overburden material and coal were being removed from strips CP09 – CP16 between 6.00 am and midnight Monday – Friday and day shift on Saturday and Sunday. The waste was generally being placed in Strips CP01 – CP07. The grader and water cart were operating on both day and afternoon shift where needed.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was a ventilation fan.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Monitoring

Operator attended noise measurements were conducted during the daytime on Tuesday 29 June 2010; during the evening on Tuesday 29 June 2010; and during the night-time on Tuesday 29 June 2010 and Wednesday 30 June 2010. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, 1/3 octave band, integrating sound level meter (s/n: 2449940).

The results of the operator attended noise measurements are given in **Table 2** to **Table 6**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations.

The tables provide the following information:

- Monitoring location.
- Date & start time.
- Wind velocity (m/s) and Temperature (ºC) at the measurement location.
- Typical maximum (L_{Amax}) and contributed noise levels.

Mine contributions listed in the tables are from Donaldson Mine and Abel Coal Mine and are stated only when a contribution could be quantified.

Table 2 Location A Weakleys Drive, Beresfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
29/6/2010 9:30 W = < 2m/s W Temp = 10ºC Cloud cover = 60/8	Daytime Ambient	76	70	66	56	63	Traffic noise dominant (Weakleys Drive) ~ up to 76, Birds/insects ~ 57, Donaldson mine inaudible Abel mine inaudible
29/6/2010 19:27 W = Calm Temp = 8ºC Cloud cover = 0/8	Evening Ambient	76	73	70	58	67	Traffic noise dominant (Weakleys Drive) ~ up to 76, Donaldson mine inaudible Abel mine inaudible
29/6/2010 22:01 W = Calm Temp = 3ºC Cloud cover = 0/8	Night-time Ambient	77	73	67	47	63	Traffic noise dominant (Weakleys Drive) ~ up to 77, Insects – 43. Donaldson mine inaudible Abel mine inaudible

Table 3 Location F Lot 684 Black Hill Road, Black Hill

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
29/6/2010 12:10 W = 3-4 m/s NW Temp = 12°C Cloud cover = 0/8	Daytime Ambient	81	72	57	49	58	Traffic (John Renshaw Dr) ~ up to 61, Traffic (Black Hill Rd) ~ up to 81, Leaf rustle and wind gusts ~ 50-53, Aircraft ~ 49. Bloomfield mine ~ occasionally clunking, otherwise inaudible. Donaldson mine inaudible Abel mine inaudible
29/6/2010 28:53 W = Calm Temp = 6°C Cloud cover = 0/8	Evening Ambient	64	57	50	43	48	Traffic (John Renshaw Dr) ~ up to 64, Crickets/insects/frogs ~ up to 44, Bird ~ 40. Bloomfield ~ Just audible (but not measureable over background) Donaldson mine inaudible Abel mine inaudible
29/6/2010 22:45 W = Calm Temp = 3°C Cloud cover = 0/8	Night-time Ambient	84	66	50	41	56	Traffic (John Renshaw Dr) ~ up to 70, Traffic (Black Hill Rd) ~ up to 84, Crickets/insects/frogs ~ 42-44, Bloomfield ~ (22:53:20pm) ~ 50 clatter. Otherwise inaudible, Donaldson inaudible, Abel Mine inaudible.

Table 4 Location G 156 Buchanan Road, Buchanan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
29/6/2010 12:37 W = 1-3 m/s NW Temp = 14°C Cloud cover = 0/8	Daytime Ambient	75	47	45	40	44	Pump station for house ~ 39-40 constant occasionally 42-44 Gardener ~ 40 footsteps 45 Distant Traffic (Buchannan Rd) ~ 41-43, Birds ~ 47 Wind gusts ~ 45. House compressor ~ 45 (Operator noise ~ 64, 75) Donaldson inaudible, Abel Mine inaudible.
29/6/2010 20:03 W = <1 m/s Temp = 4°C Cloud cover = 0/8	Evening Ambient	53	48	44	40	42	Pump station for house ~ 41-44 Frogs/Insects ~ 40 combined Distant Traffic ~ 37 Distant Traffic (Buchannan Rd) ~ up to 50 Other house pumps ~ up to 48 Donaldson inaudible, Abel Mine inaudible.
29/6/2010 23:53 W = Calm Temp = 2°C Cloud cover = 0/8	Night-time Ambient	48.0	41.0	36.7	32.2	34.7	Distant Road Traffic ~ 33,34 Traffic (Buchannan Rd) ~ up to 40. Frogs/Insects ~ 35 Bloomfield ~ up to 35. Donaldson inaudible, Abel Mine inaudible.

Table 5 Location L 17 Kilshanny Ave, Ashtonfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels
		LAmax	LA1	LA10	LA90	LAeq	LAmax – dBA
29/6/2010 13:20 W = 1-2 m/s W Temp = 14ºC Cloud cover = 0/8	Daytime Ambient	83	69	51	38	57	Birds/insects ~ up to 57, Local traffic ~ 83, Jogger ~ 68, Wind up to 45, Aircraft ~ 51-58, Building works at Tipperary Drive ~ 47-48. Occasional Bloomfield engine noise ~ 37-40. Donaldson mine inaudible Abel mine inaudible
29/6/2010 20:34 W = Calm Temp = 4ºC Cloud cover = 0/8	Evening Ambient	73	61	39	35	47	Local traffic ~ up to 43, Distant Traffic ~ up to 37, Insects/frogs ~ 37, Dogs barking ~ up to 73, Bloomfield occasionally just audible ~ 36 (including reverse beeps). Donaldson mine inaudible. Abel mine inaudible.
30/6/2010 00:23 W = Calm Temp = 2ºC Cloud cover = 0/8	Night-time Ambient	45	37	35	31	33	Distant road traffic up to 38, Rustling paper in abandoned building ~ 32-34. Operator noise ~ 45. Bloomfield engine noise ~ 31-32. Donaldson mine inaudible. Abel mine inaudible.

Table 6 Location K Catholic Diocese of Maitland (formerly Bartter Enterprises)

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels
		LAmax	LA1	LA10	LA90	LAeq	LAmax – dBA
29/6/2010 10:16 Wind = 2 m/s W Temp = 11°C Cloud cover = 0/8	Daytime Ambient	84	80	72	54	69	Traffic (John Renshaw Dr) ~ up to 84, Helicopter ~ 58-65. Donaldson mine inaudible. Abel mine inaudible.
29/6/2010 18:32 W = Calm Temp = 10°C Cloud cover = 0/8	Evening Ambient	86	78	71	50	67	Traffic (John Renshaw Dr) ~ up to 86, Aircraft ~ 55., Donaldson mostly inaudible trackslap audible at 18:46 ~ 48. Abel mine inaudible.
		Donaldson LA10 Contribution <40 dBA.					
29/6/2010 22:22 W = Calm Temp = 6°C Cloud cover = 0/8	Night-time Ambient	88	79	69	51	67	Traffic (John Renshaw Dr) ~ up to 88, Donaldson operation visible at near end of pit trackslap audible ~ 50-52. Abel mine inaudible.
		Donaldson LA10 Contribution <46 dBA.					

4.2 Operator Attended Monitoring Summary

4.2.1 Donaldson Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations.

Donaldson Mine operations were only observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the evening and night-time periods. At all other locations Donaldson operations were inaudible.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, Heggies understand the dwellings on the Catholic Diocese site are currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Catholic Diocese site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution at these residential locations was less than 30 dBA during the evening and approximately 33 dBA during the night-time which is in compliance with Donaldson Mine consent.

Based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine comply with noise emission goals for all periods.

4.2.2 Abel Coal Mine

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations.

Abel Project operations were inaudible at all residential locations during all operator attended noise surveys. As such, it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Monitoring

Unattended continuous noise monitoring was conducted between Tuesday 22 June 2010 and Thursday 1 July 2010 at each of the five (5) nominated locations given in **Table 1**. ARL Type EL-215 noise loggers were used to monitor the ambient noise levels at each location. Details of the noise loggers used for the unattended continuous noise monitoring are given in **Table 7**.

Table 7 Noise Loggers and Noise Monitoring Locations

Location	Monitoring Date	Noise Logger Serial Number
A – Weakleys Drive, Beresfield	3/3/2010 – 11/3/2010	16-203-531
F – Black Hill Road, Black Hill	11/3/2010 – 19/3/2010	16-306-039
G – Buchanan Road, Buchanan	19/3/2009 – 29/3/2010	16-301-472
L – Kilshanny Ave, Kilshanny	19/3/2009 – 29/3/2010	16-306-039
K – Catholic Diocese of Maitland (formerly Bartter Enterprises)	3/3/2010 – 11/3/2010	16-301-472

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices C1** to **C5**. A summary of the results of the unattended continuous noise monitoring is given in **Table 8**. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

The measured ambient noise levels were divided into three periods representing day, evening and night as designated in the NSW Industrial Noise Policy. The day, evening and night periods replace the day and night periods defined under the Environmental Noise Control Manual (ENCM). However, as the Donaldson conditions of consent are under the ENCM, these periods have also been reported.

Precautions can be taken to minimise influences from extraneous noise sources (eg optimum placement of the loggers away from creeks, trees, houses, etc), however not all these sources or their effects can be eliminated. This is particularly the case during the warmer times of year when noise from insects, frogs, birds and other animals can become quite prevalent.

Weather data for the subject area during the noise monitoring period was provided by Donaldson Coal. Noise data during periods of any rainfall and/or wind speeds in excess of 5 m/s (approximately 9 knots) were discarded in accordance with INP weather affected data exclusion methodology.

Table 8 Unattended Continuous Monitoring Ambient Noise Levels (dBa Re 20 µPa)

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	63	57	50	56
	Evening	60	56	48	54
	ENCM Daytime	62	57	48	55
	Night	59	53	38	51
F Lot 684 Black Hill Road, Black Hill	Daytime	71	58	43	58
	Evening	67	52	42	54
	ENCM Daytime	70	57	42	57
	Night	59	51	37	53
G 156 Buchannan Road, Buchannan	Daytime	54	43	33	59
	Evening	48	43	35	46
	ENCM Daytime	53	43	32	58
	Night	42	37	32	45
L 17 Kilshanny Ave, Ashtonfield	Daytime	58	48	34	51
	Evening	49	41	35	46
	ENCM Daytime	57	46	32	50
	Night	43	39	32	45
K Catholic Diocese of Maitland	Daytime	59	55	45	53
	Evening	59	54	42	52
	ENCM Daytime	59	55	44	53
	Night	57	51	38	50

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

5.2 Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

5.2.1 Ambient L_{A90} Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient L_{A90} noise levels recorded for the quarter ending June 2010 were higher than levels recorded during the baseline monitoring process at Location A in the day by 5 dBA. A slight decrease of 1 dBA was recorded during the night-time. Increases of 4 dBA, 7 dBA and 6 dBA were recorded respectively in the daytime, evening and night-time periods at Location F. Noise levels at Location K showed an increase from baseline of 4 dBA, 2 dBA and 3 dBA respectively in the daytime, evening and night-time periods.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

Previous Quarter (March 2010)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were generally similar (within 2 dBA) or lower during the daytime, evening and night-time periods at locations A, G, L and K. Increases of 2 dBA, 5 dBA and 2 dBA were recorded respectively in the daytime, evening and night-time periods at Location F.

Coinciding Period Last Year (June 2009)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A90} noise levels were generally lower than those recorded in 2009 at Locations F, G and L. Noise levels at Location A were slightly higher (1 dBA) than the coinciding monitoring period last year during the daytime and night-time.

Given that no data was available at Locations K during June 2009 due to a logger failure, no comparisons can be made.

5.2.2 Ambient L_{A10} Noise Level Comparison

Baseline

The summary of results in **Table 8** show that ambient L_{A10} noise levels recorded for the quarter ending June 2010 were greater than levels recorded during the baseline monitoring process at Locations F and K by 2 dBA to 7 dBA during all periods. At Location A L_{A10} noise levels were similar (within 1 dBA) to those recorded during the baseline monitoring period.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

Previous Quarter (March 2010)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at Location F were slightly higher (up to 3 dBA) than levels recorded during the March 2010 quarterly monitoring during the evening and night-time periods. Noise levels at Locations A, G, L and K were generally similar (within 2 dBA) or lower during the daytime evening and night-time periods.

Coinciding Period Last Year (June 2009)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels recorded at Locations A, F and L were similar or slightly lower than those recorded last year. Noise levels at Locations G were significantly lower than those recorded last year, this is due to the movement of the logger location further from Buchanan Road.

Given that no data was available at Locations K during June 2009 due to a logger failure, no comparisons can be made.

6 SUMMARY OF RESULTS AND FINDINGS

Heggies were engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2008.

The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 6**.

Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the evening and night-time periods.

Donaldson Mine contributions were found to comply with the relevant consent conditions at all locations.

Abel Mine operations were inaudible at all residential locations during all periods and as such it is likely that contributed noise levels from Abel Project did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Project *Project Approval*.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (June 2010), the baseline monitoring period, the last monitoring period (March 2010), and the coinciding monitoring period from last year (June 2009) has been conducted.

In summary, where noise levels have risen, the ambient noise environment has been identified to generally contain traffic and natural noise sources and not noise from Donaldson Mine or Abel Coal Mine activity.

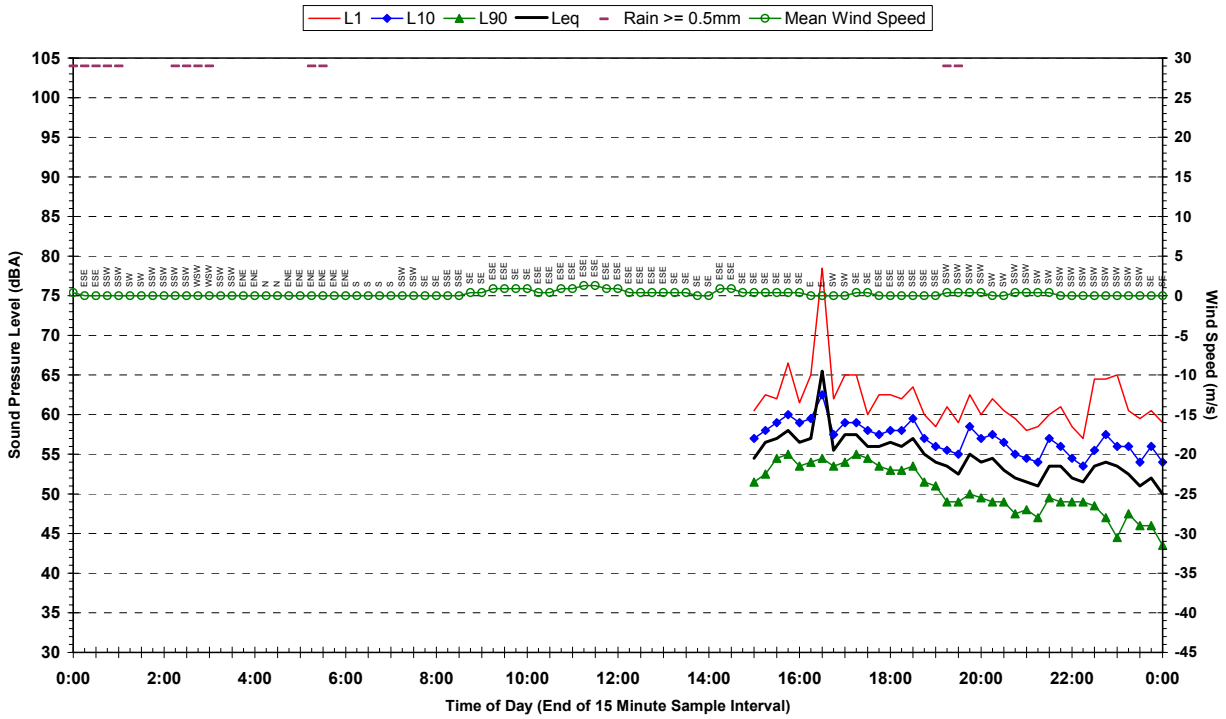
APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

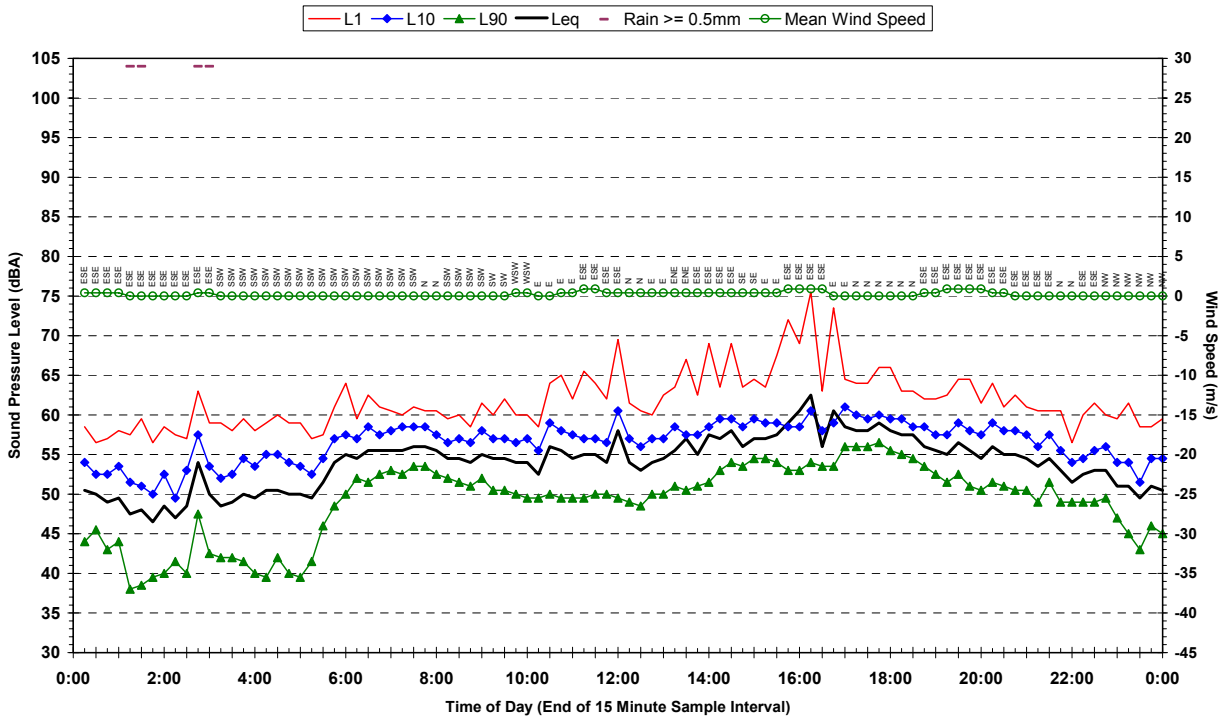
JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – March 2010

Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 5110B	AAA00311
9	LOD004	CATERPILLAR IT28G	CWAC00351
10	LOD044	KOMATSU WA700	10106
11	LOD149	CATERPILLAR 990II	4FR00394
12	RDT026	CATERPILLAR 777A W/CART	84A01034
13	RDT033	CATERPILLAR 740 W/CART	B1P02699
14	RDT100	CATERPILLAR 785	8GB00596
15	RDT107	CATERPILLAR 785	8GB00320
16	RDT140	CATERPILLAR 785	8GB00333
17	RDT143	CATERPILLAR 785	8GB00374
18	RDT155	CATERPILLAR 785	8GB00152
19	RDT162	CATERPILLAR 785	8GB00258
20	RDT163	CATERPILLAR 785	8GB00259
21	RDT182	CATERPILLAR 785	8GB00494
22	GRD004	CATERPILLAR 16H	6ZJ00678
23	GRD036	CATERPILLAR 16G	93U03039
24	CMP059	AIRMAN COMPRESSOR – STR034	
25	CMP061	SULLAIR COMPRESSOR 185CFM	200610160001
26	CMP062	SULLAIR COMPRESSOR 185CFM	206101100049
27	GEN001	KUBOTA GENERATOR – VEH154	
28	WEL057	LINCOLN SAM400 – VEH154	
29	VEH154	ISUZU NPS300 BOILY TRUCK	
30	STR034	VOLVO FL7 SERVICE TRUCK	YV5FAG6JD560318
31	UTE001	NISSAN PATROL SERVICE UTE	
32	UTE002	NISSAN NAVARA TRAYBACK	

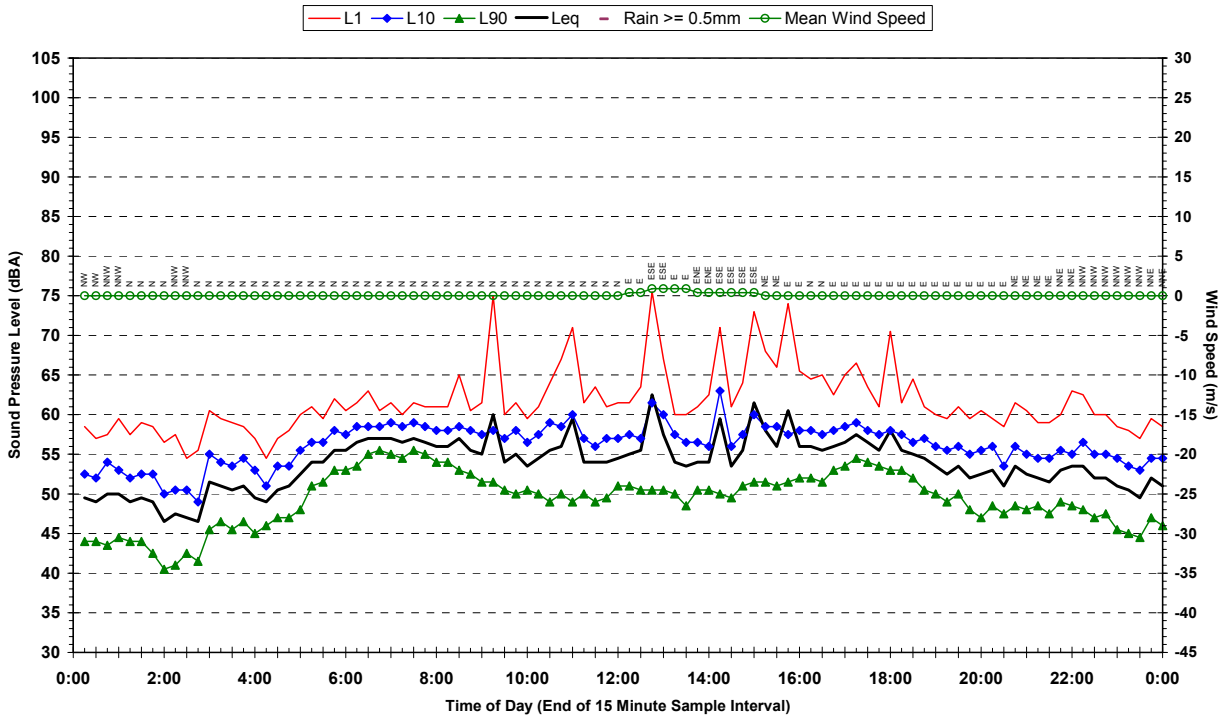
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Tuesday 22 June 2010



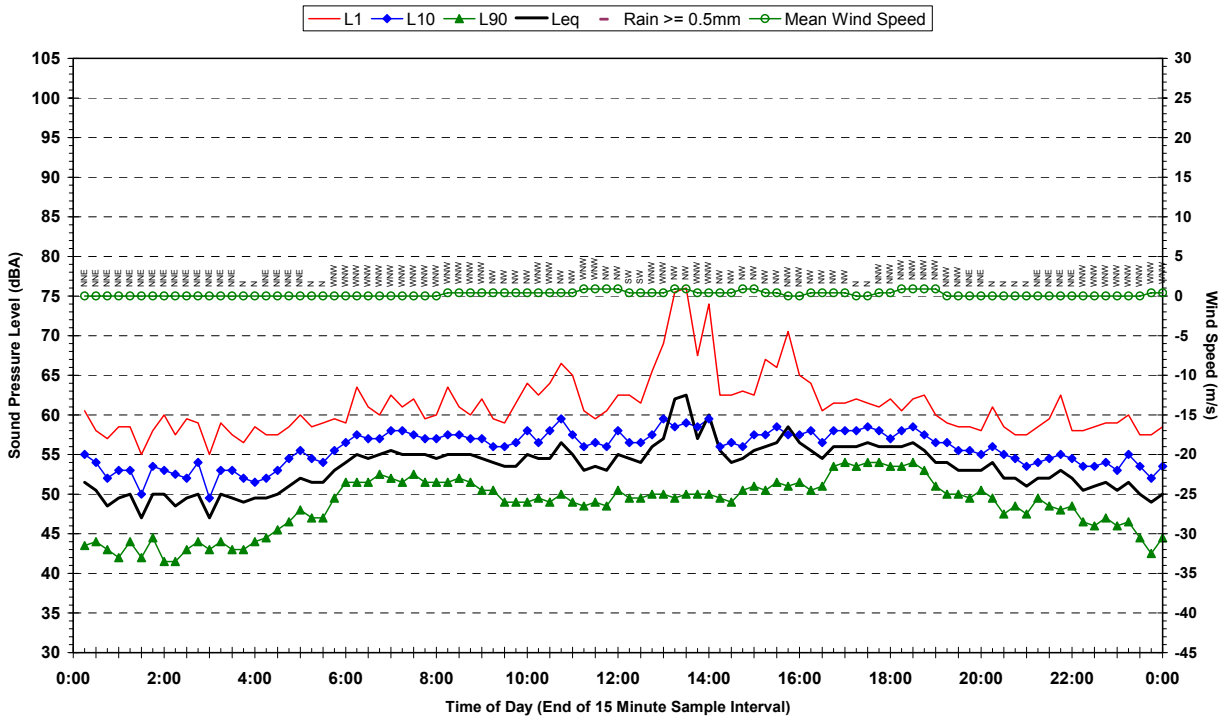
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Wednesday 23 June 2010



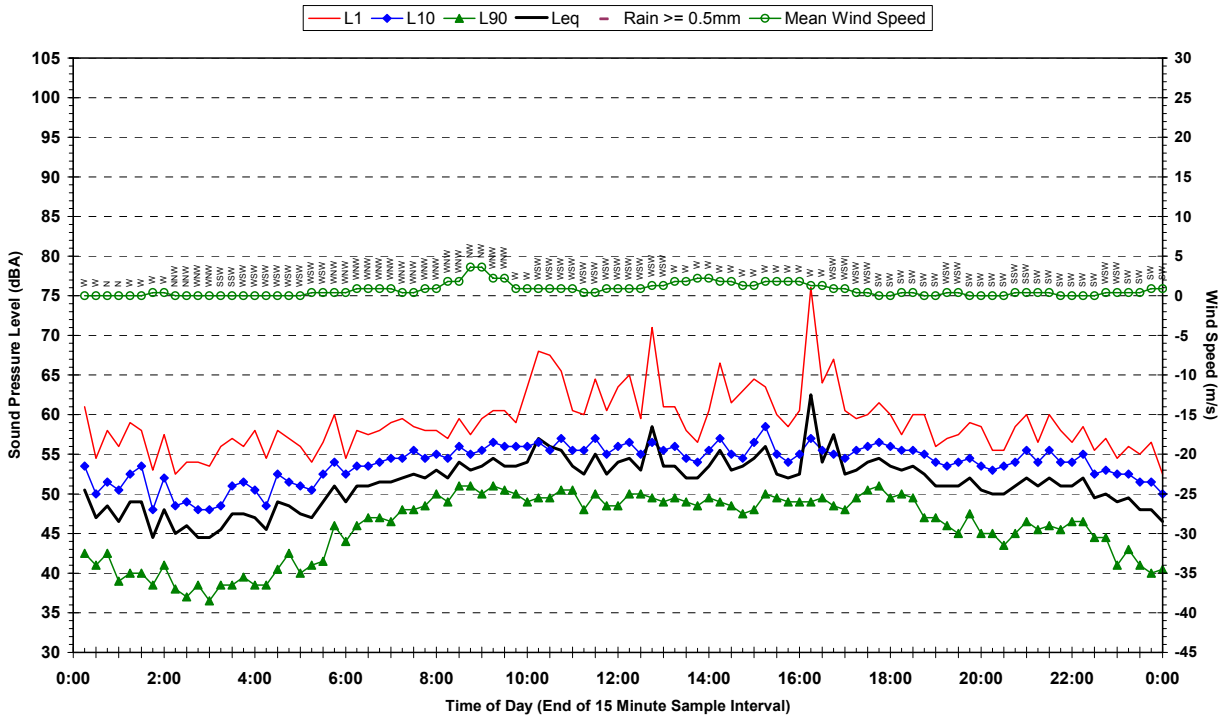
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Thursday 24 June 2010



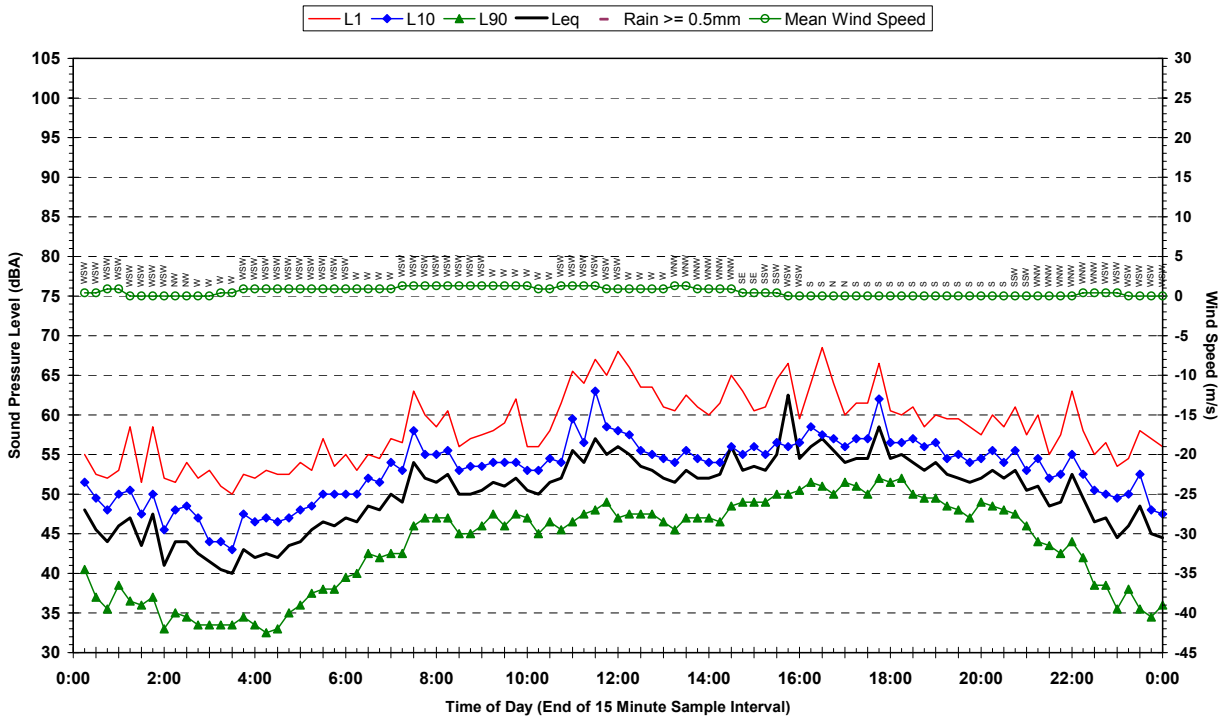
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Friday 25 June 2010



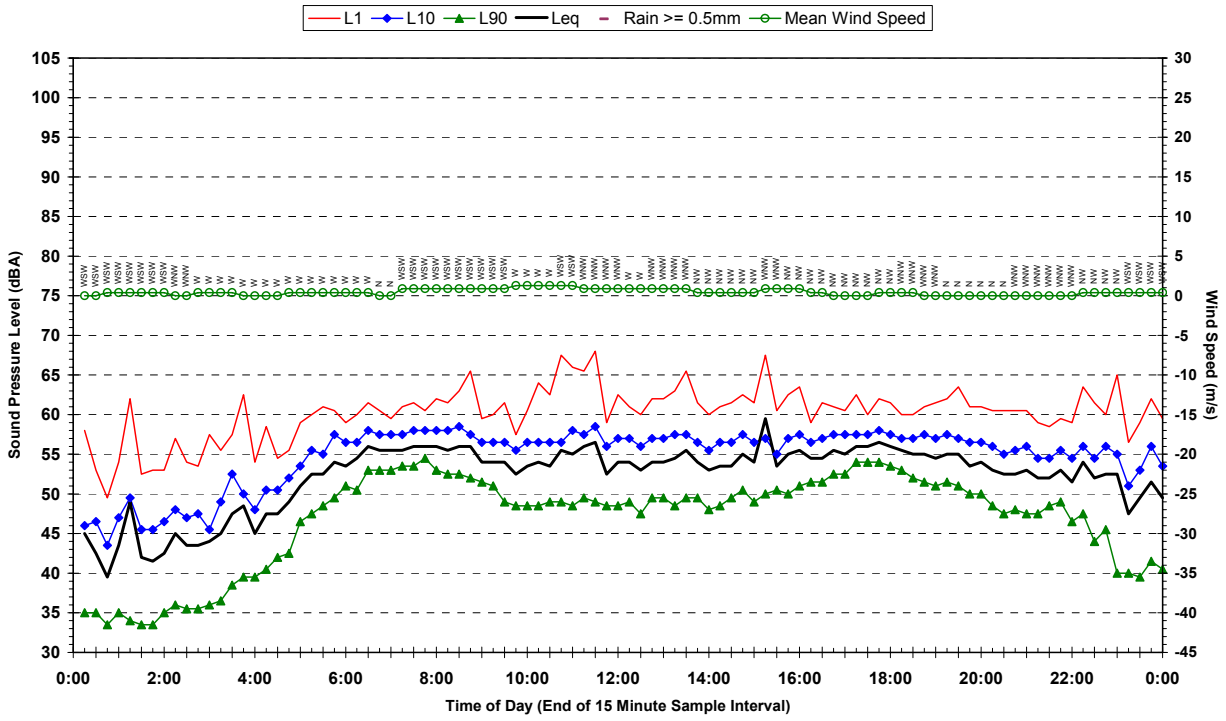
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Saturday 26 June 2010



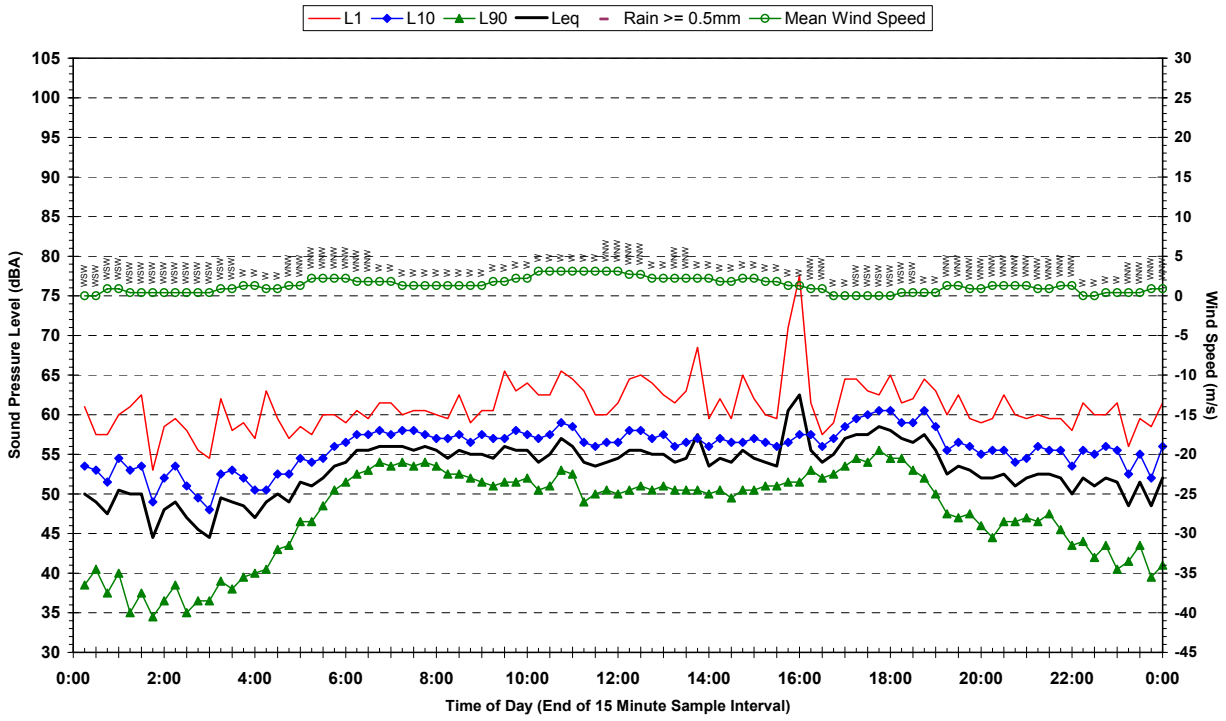
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Sunday 27 June 2010



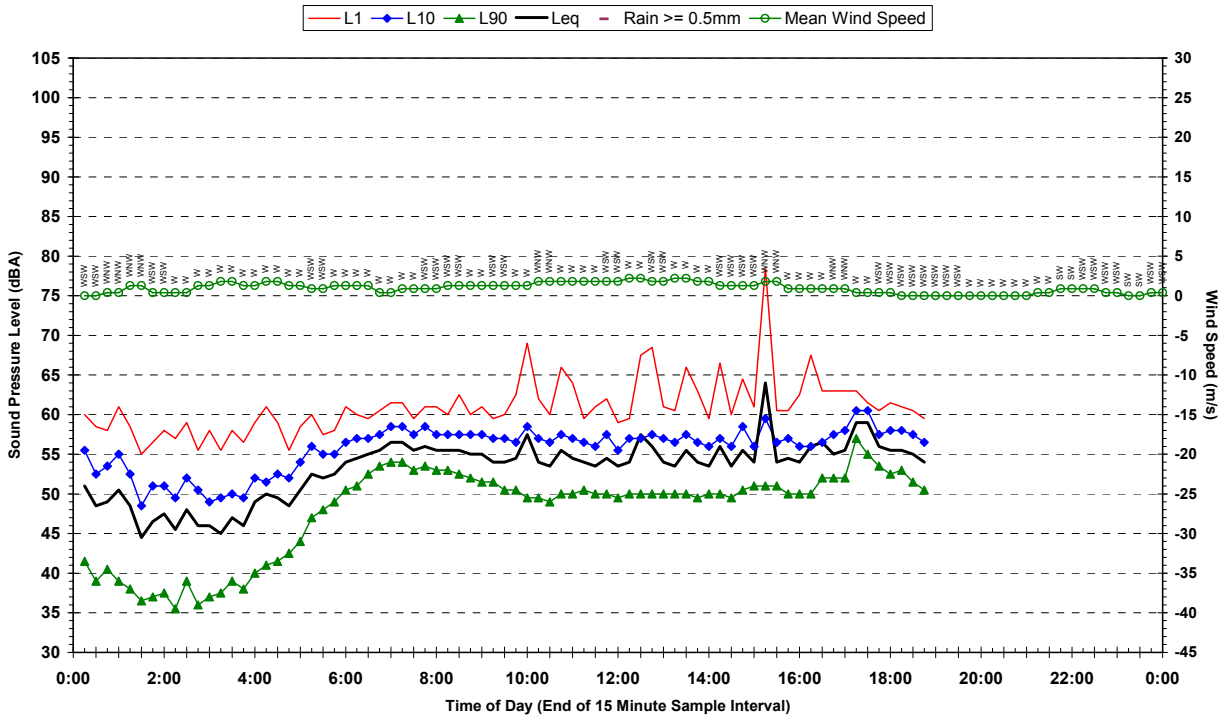
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Monday 28 June 2010



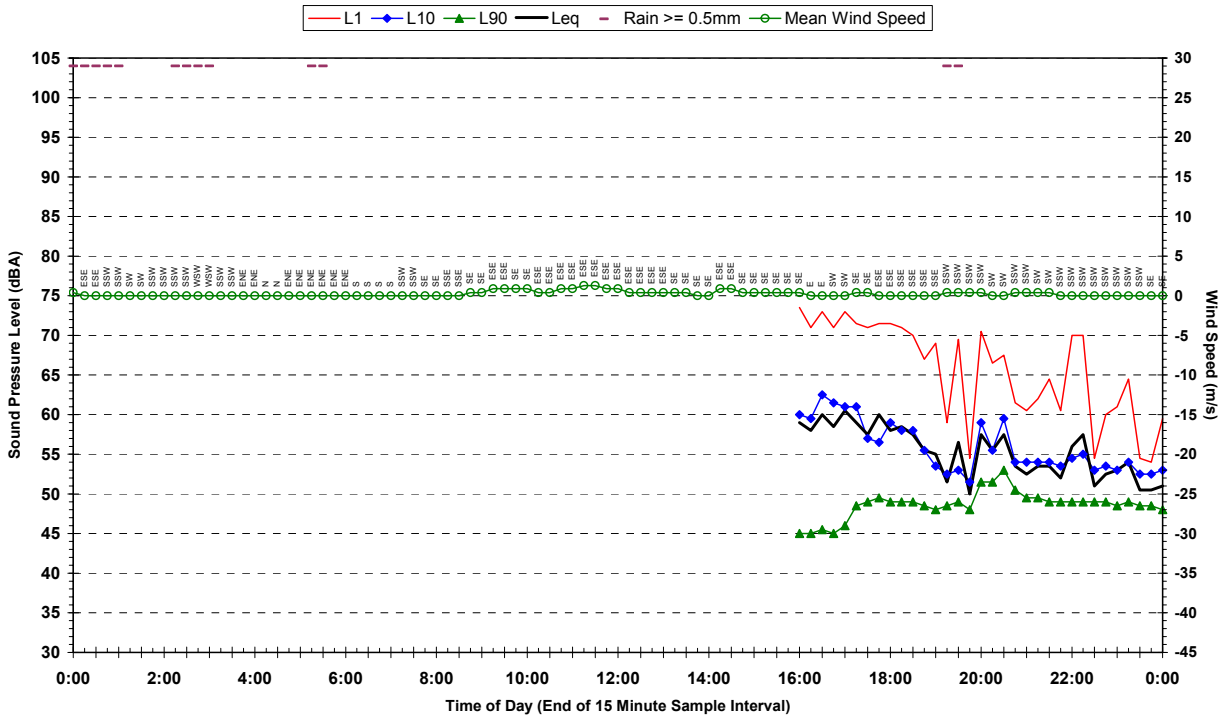
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Tuesday 29 June 2010



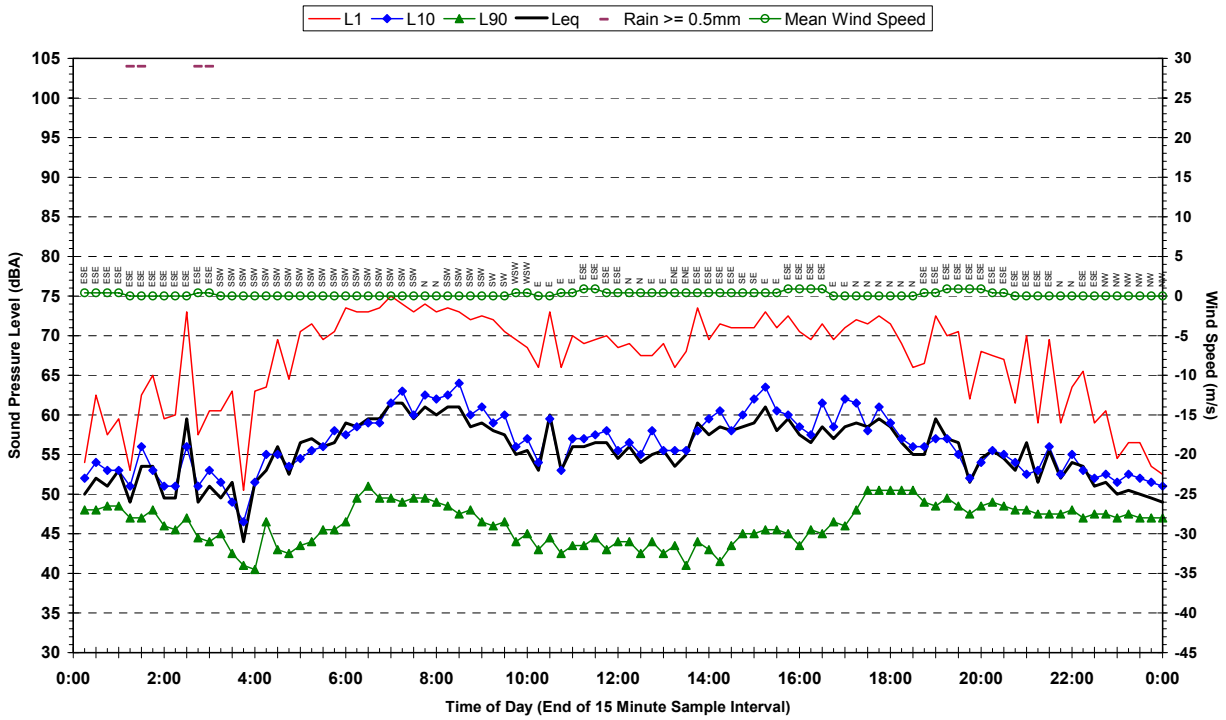
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location A - Weakley's Drive, Beresfield - Wednesday 30 June 2010



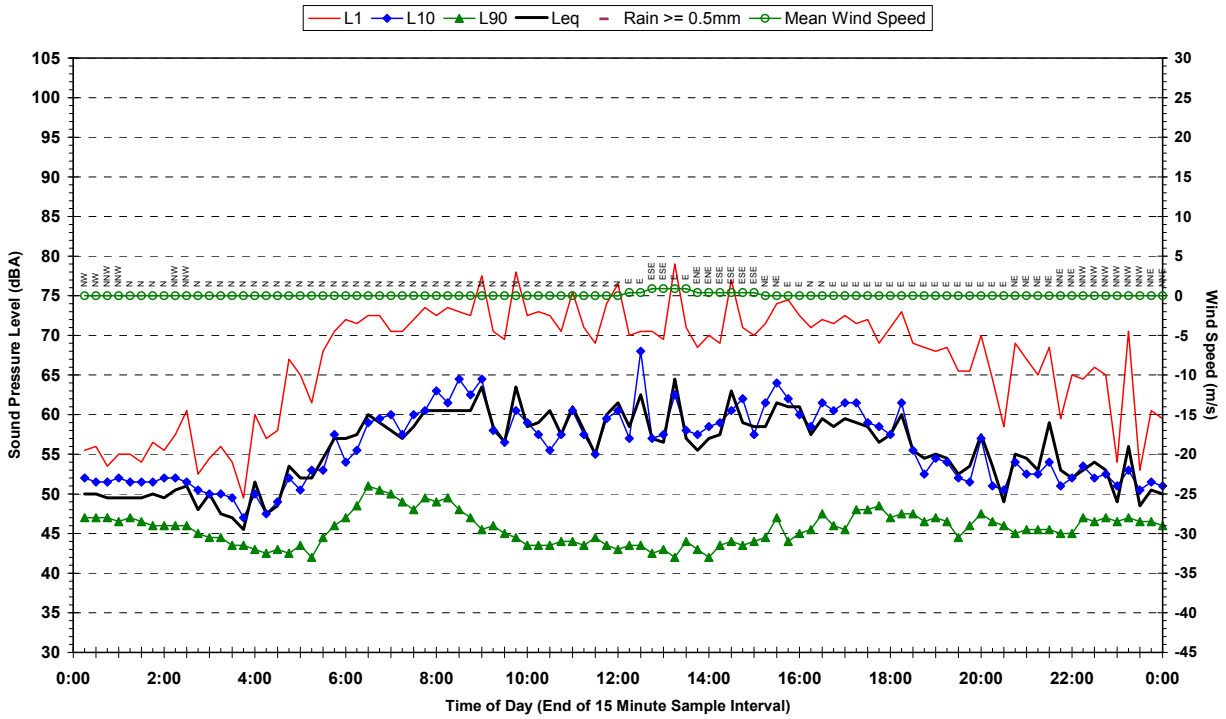
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Tuesday 22 June 2010



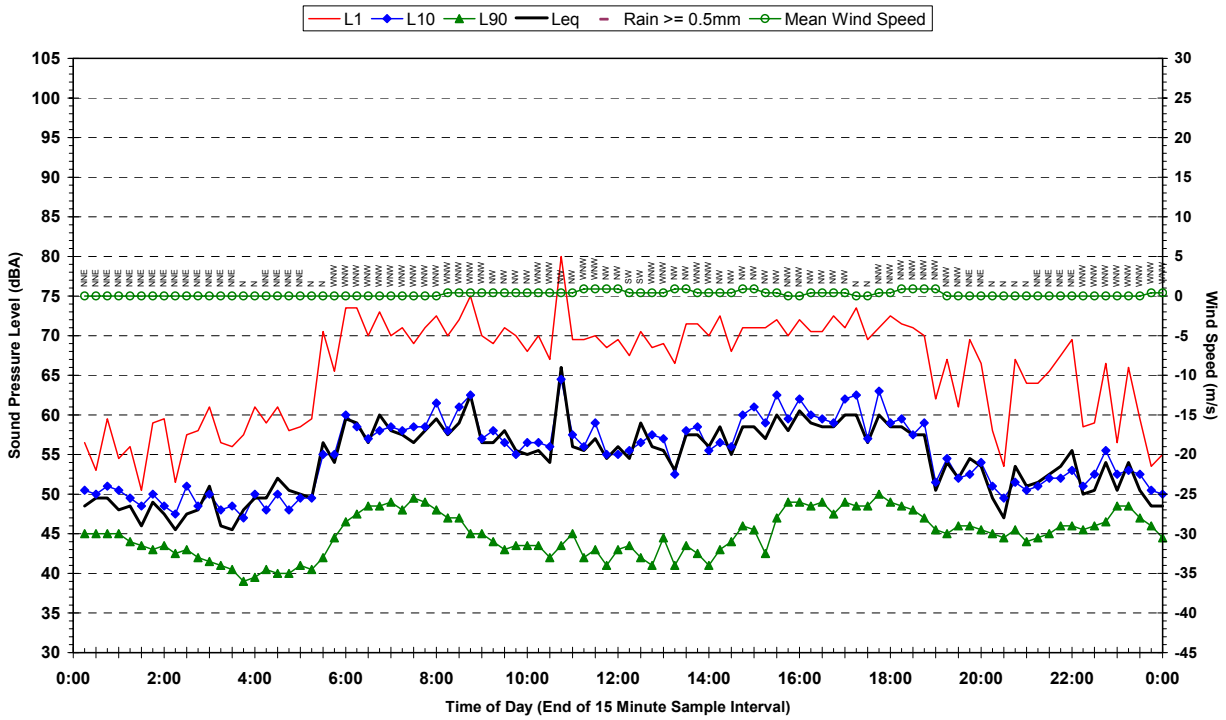
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Wednesday 23 June 2010



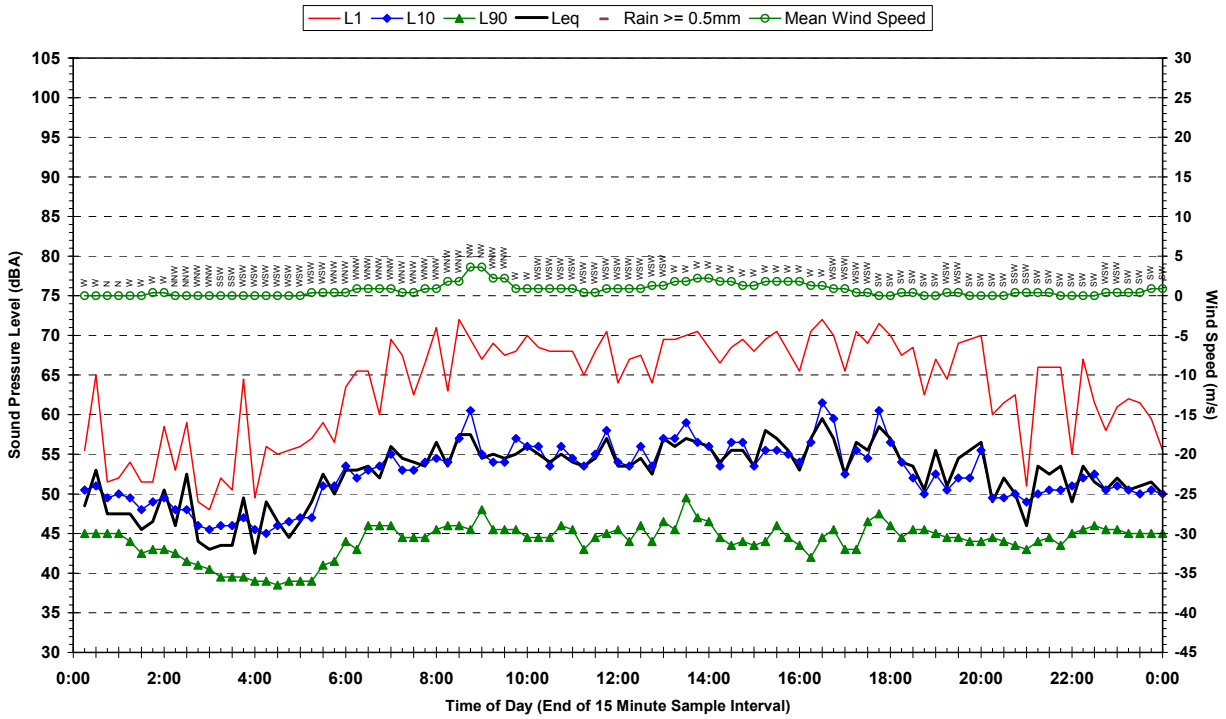
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Thursday 24 June 2010



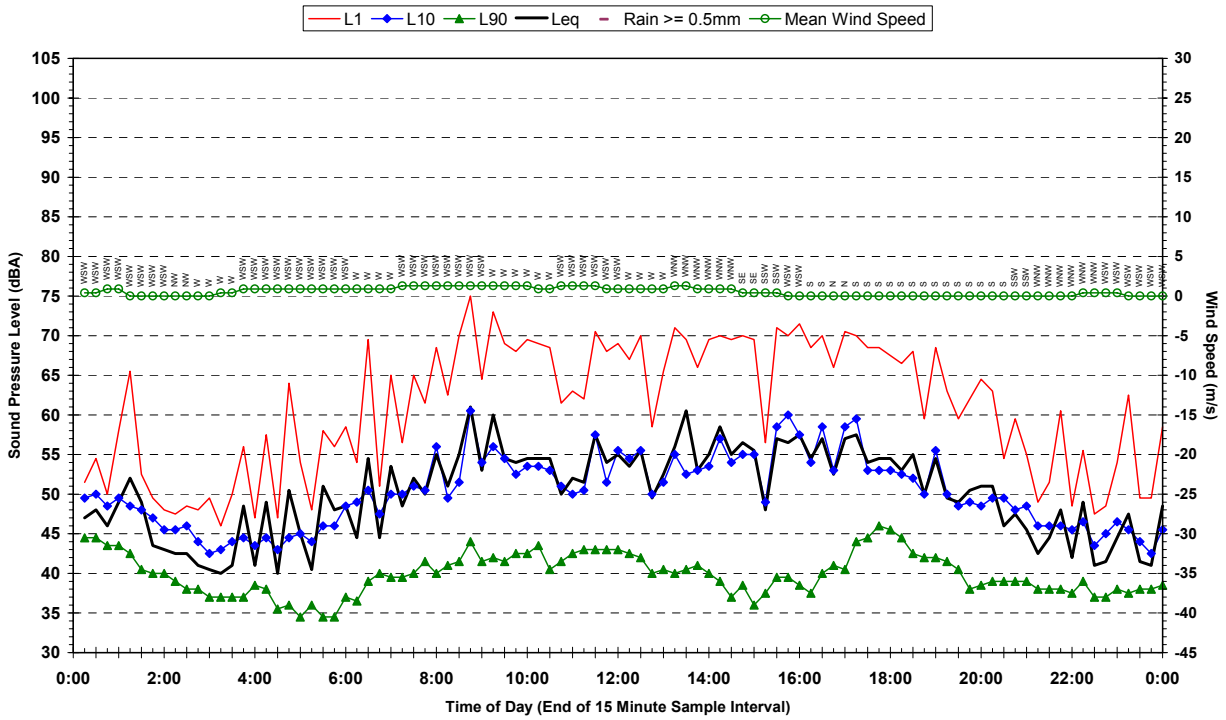
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Friday 25 June 2010



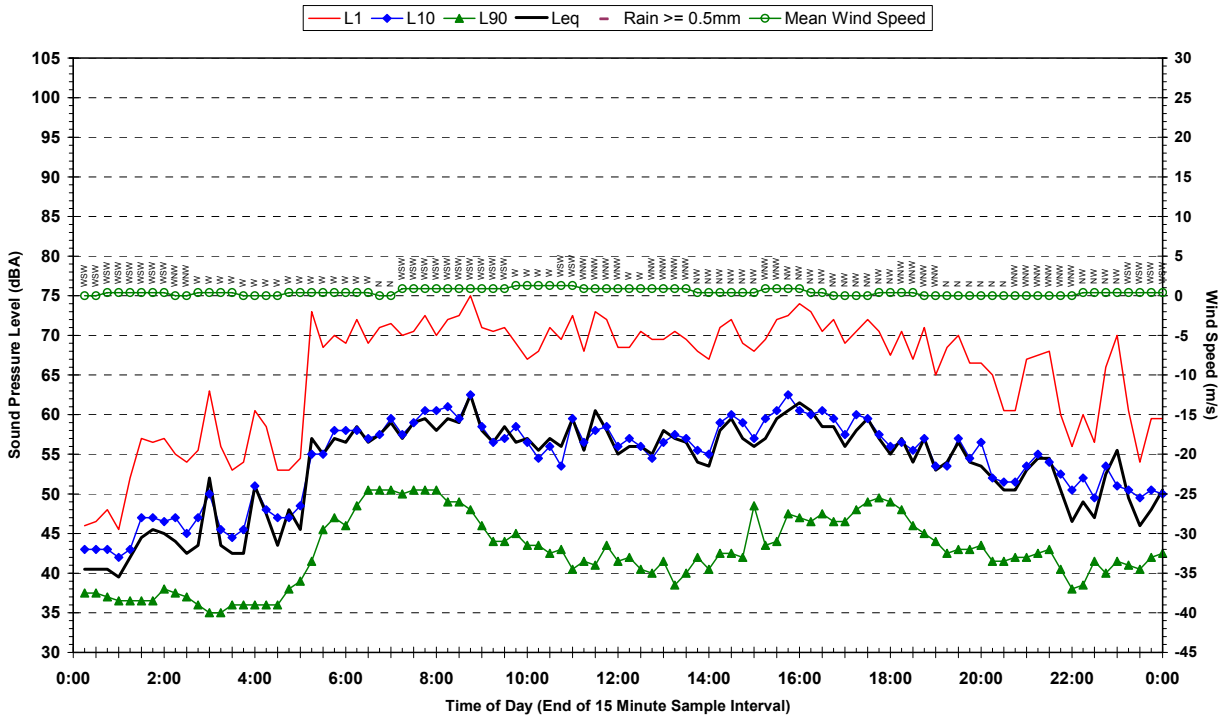
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Saturday 26 June 2010



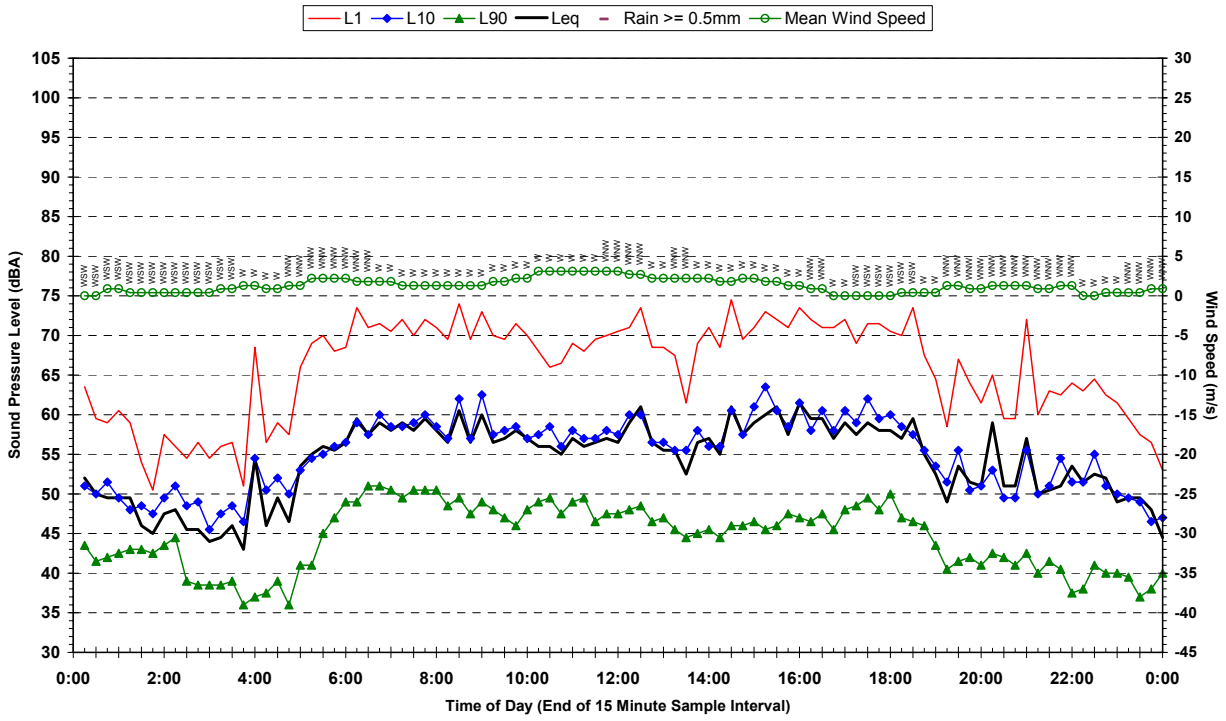
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Sunday 27 June 2010

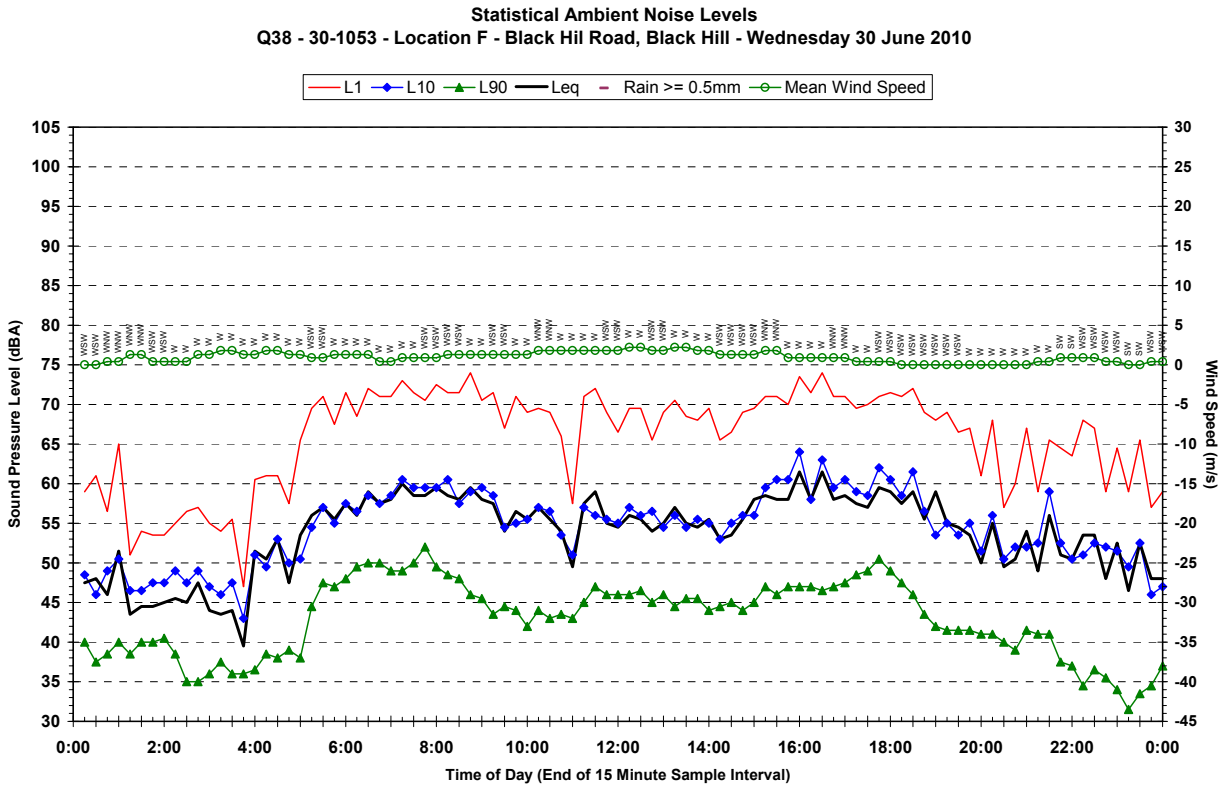


Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Monday 28 June 2010



Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Tuesday 29 June 2010




Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Wednesday 30 June 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
30
25
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15
10
5
0
-5
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-25
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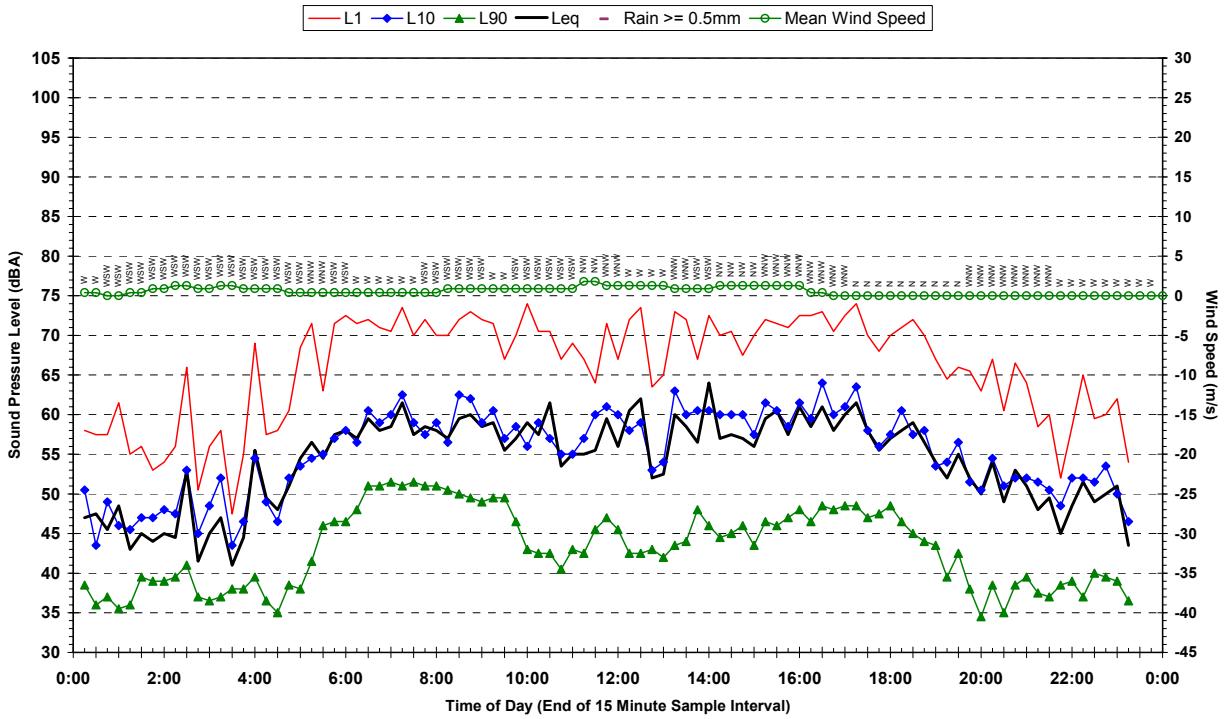
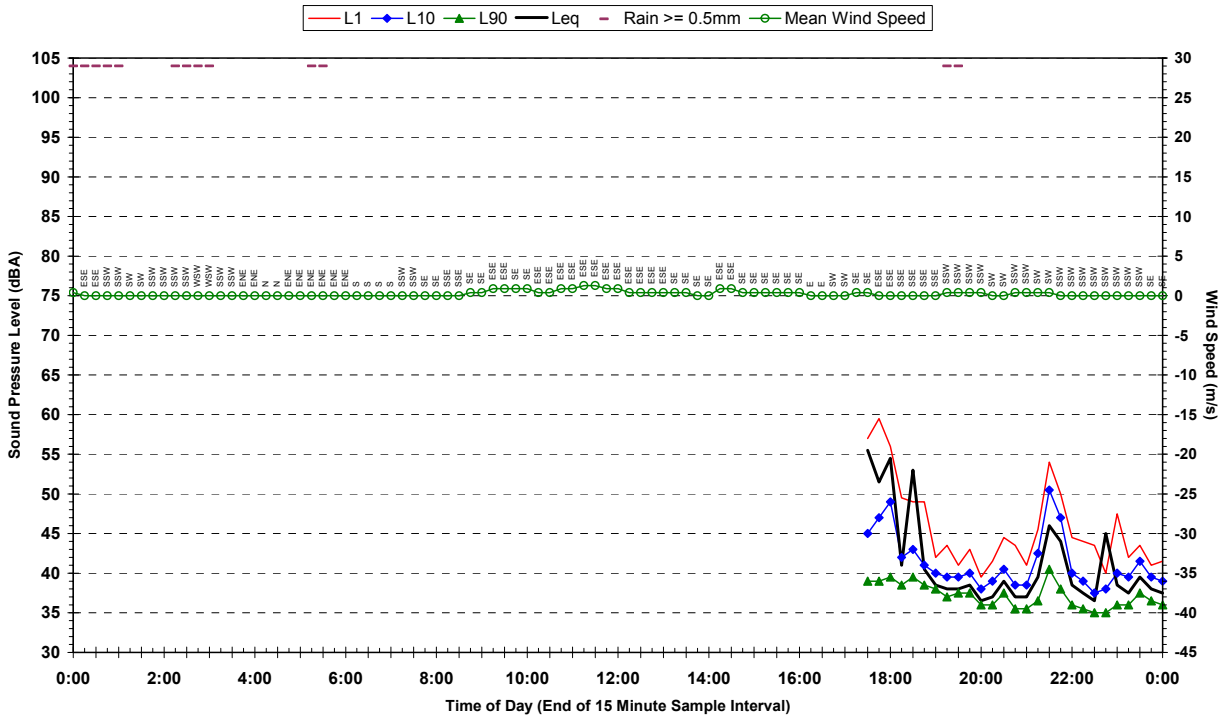
20:00
22:00
0:00

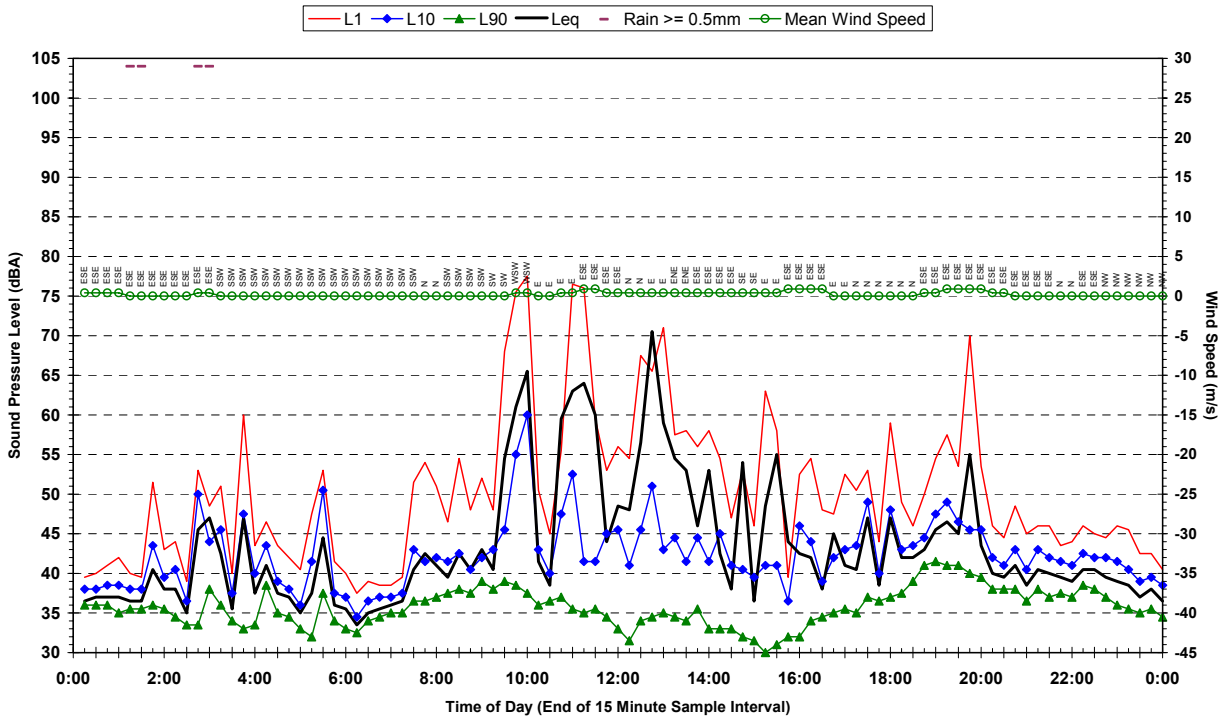
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location F - Black Hil Road, Black Hill - Thursday 1 July 2010



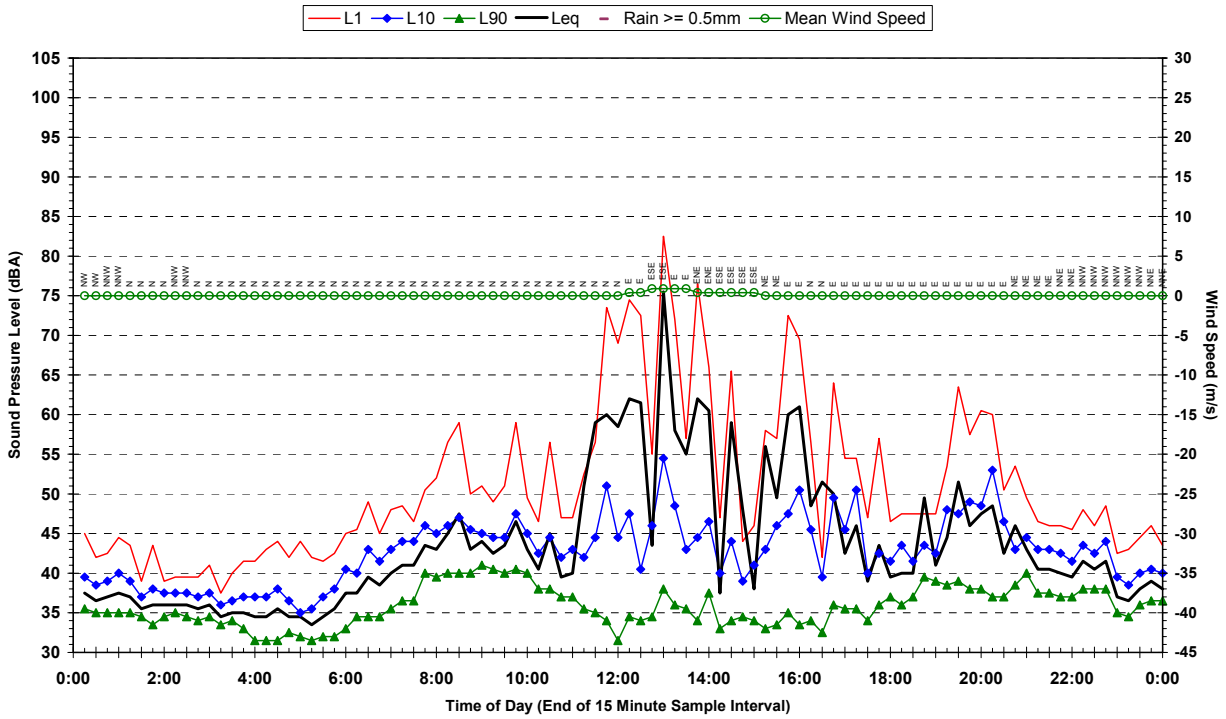
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Tuesday 22 June 2010



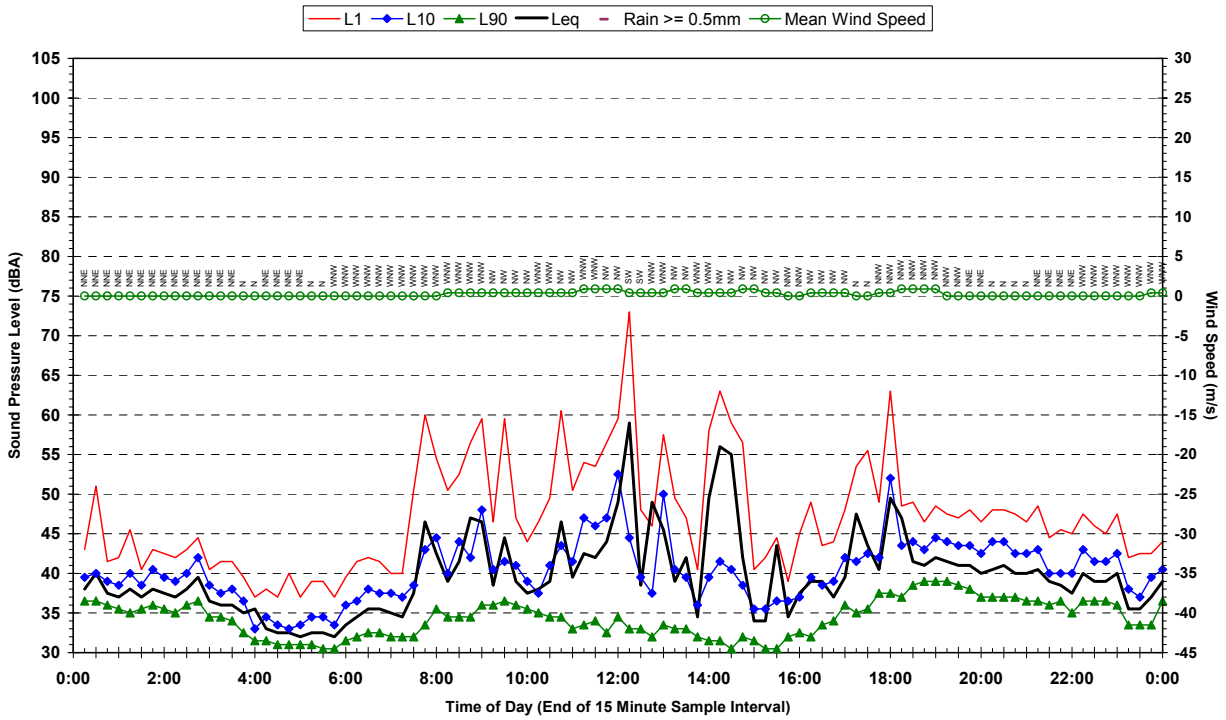
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Wednesday 23 June 2010



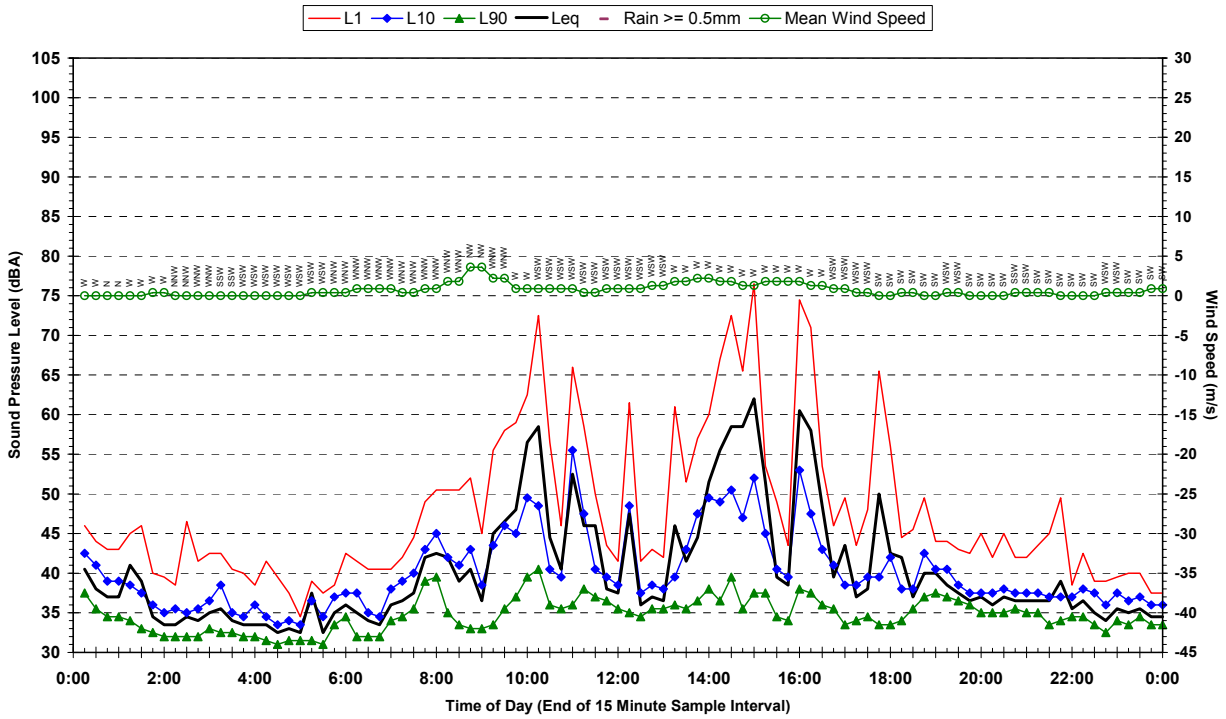
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Thursday 24 June 2010



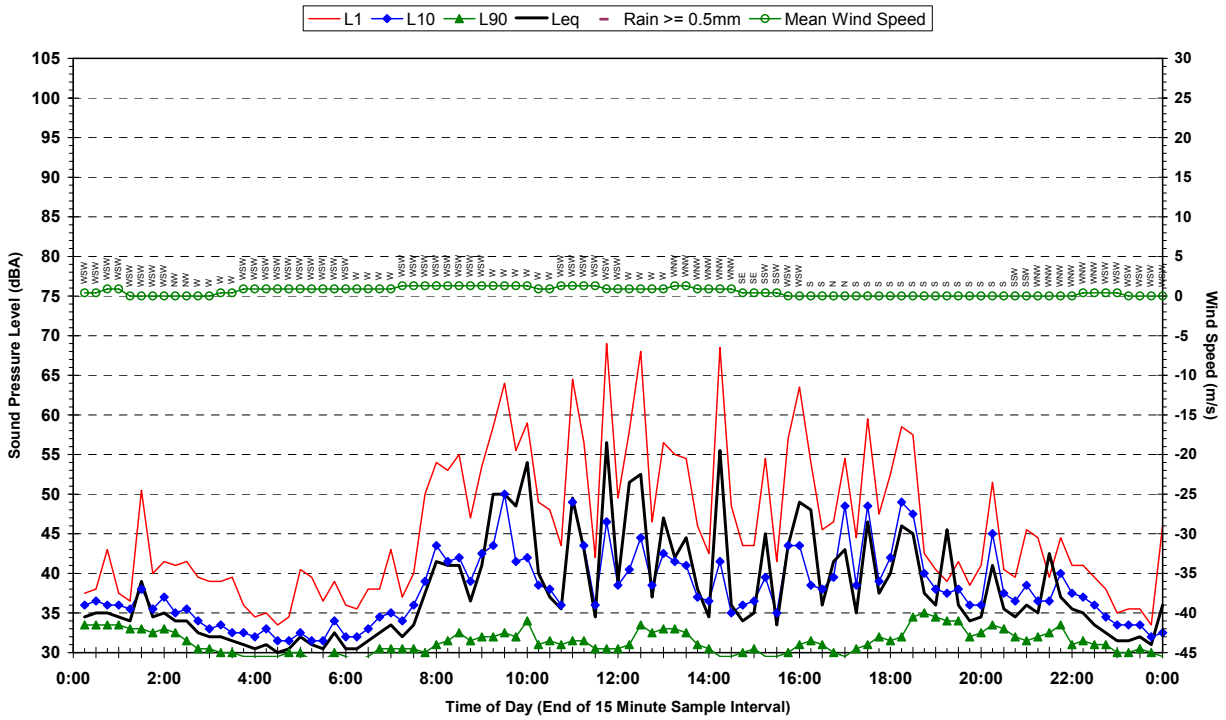
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Friday 25 June 2010



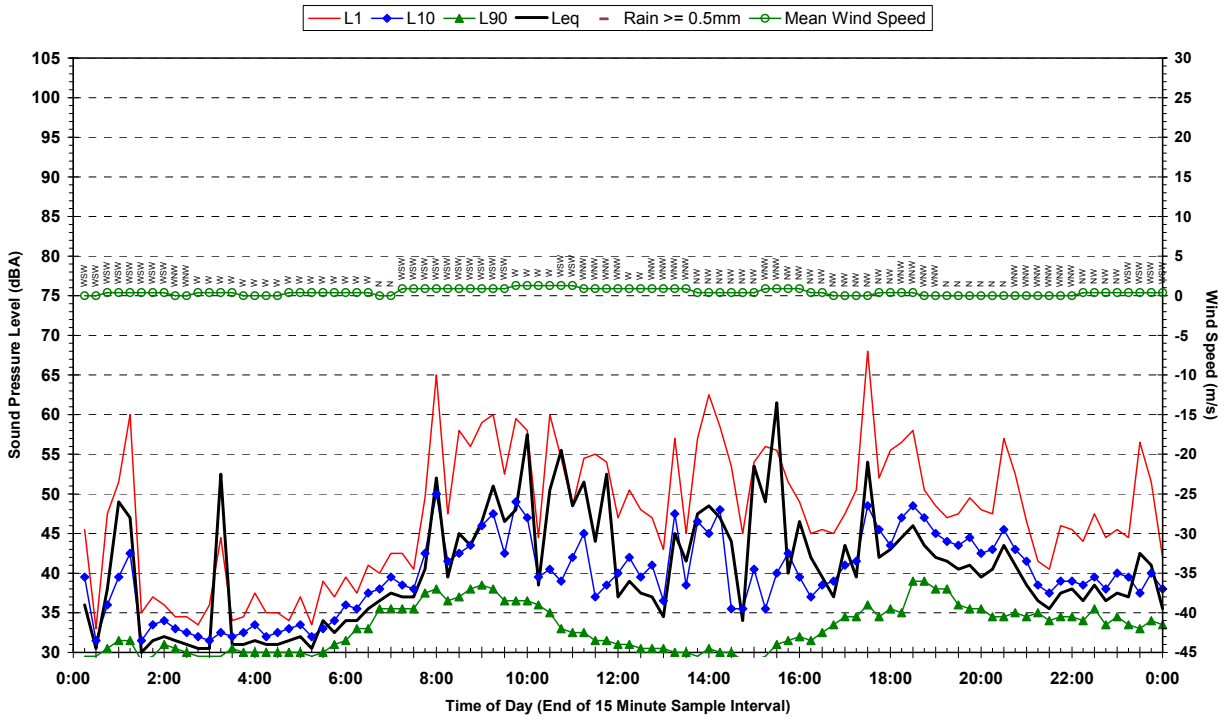
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Saturday 26 June 2010



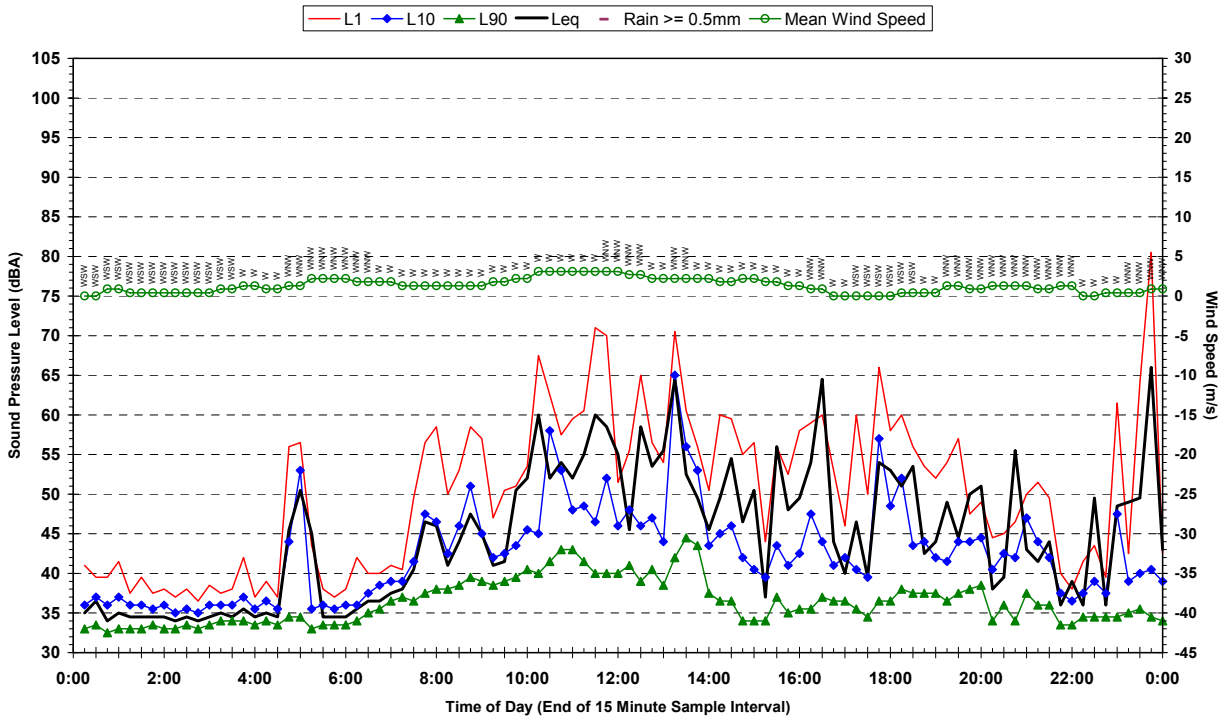
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Sunday 27 June 2010



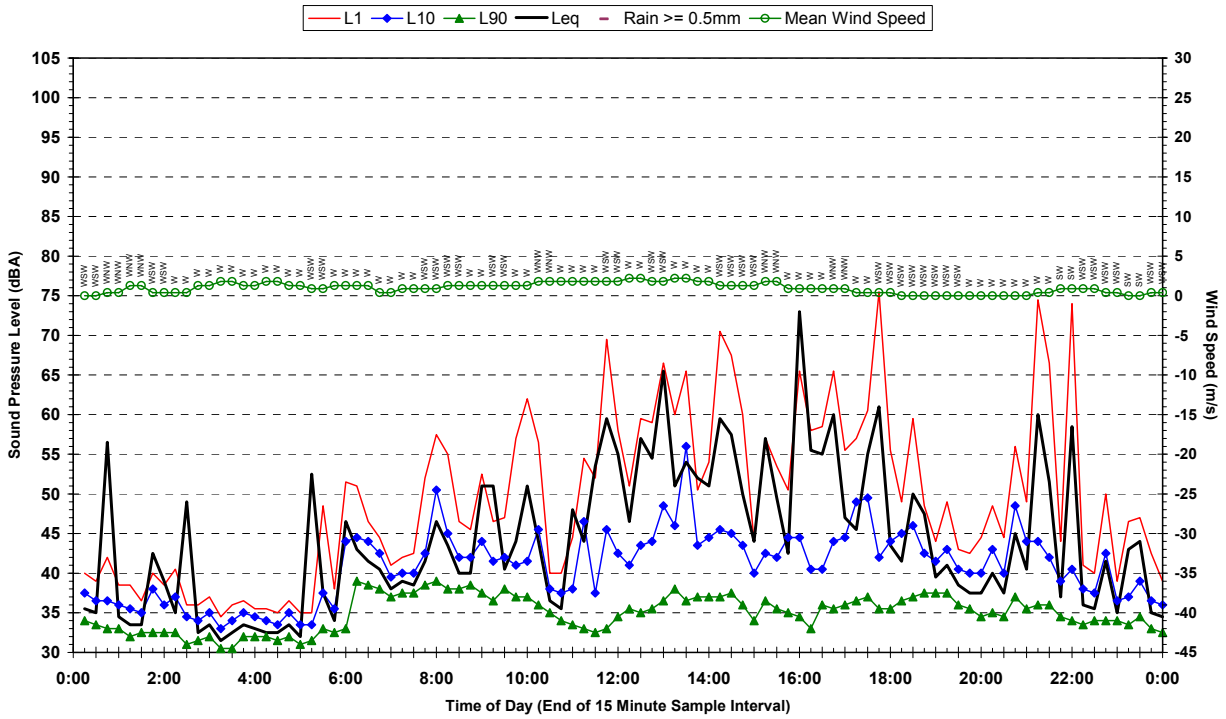
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Monday 28 June 2010



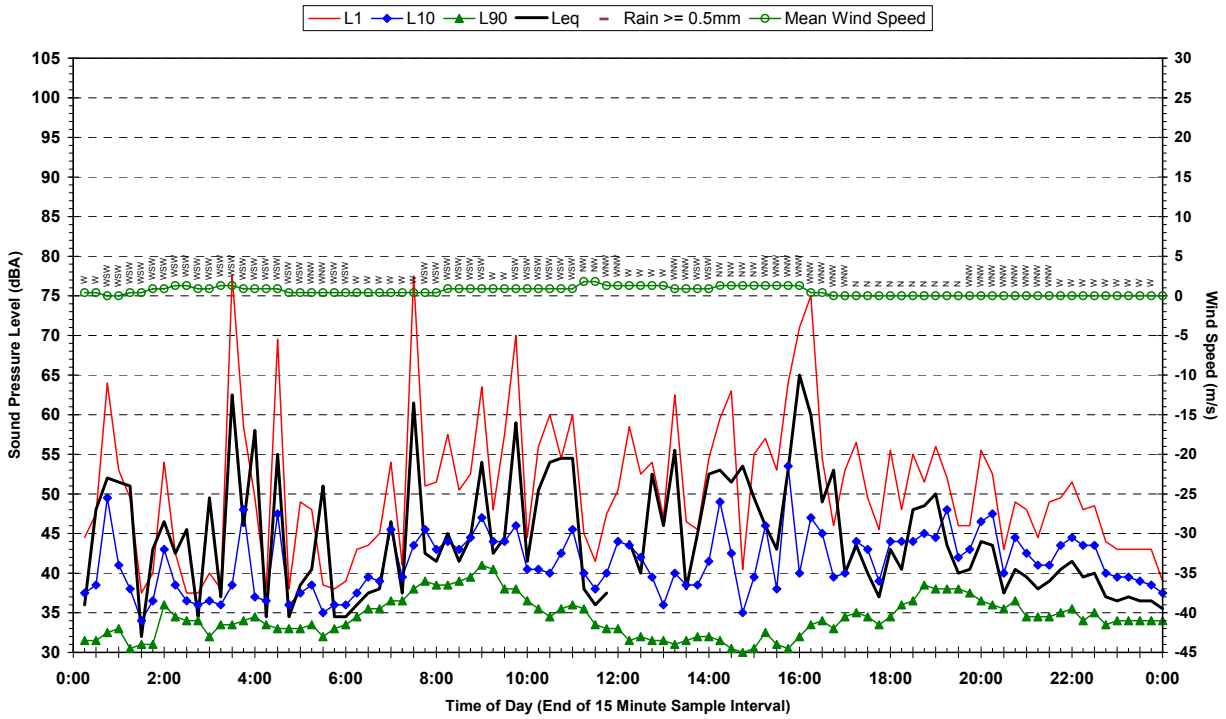
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Tuesday 29 June 2010



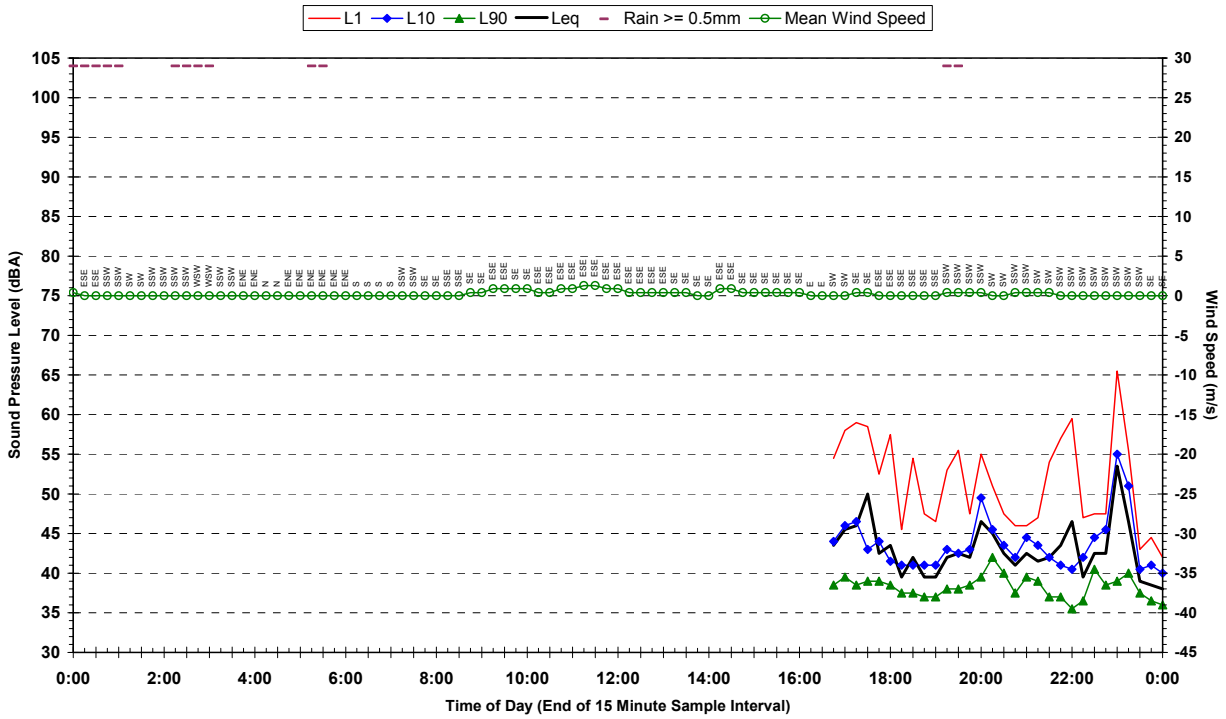
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Wednesday 30 June 2010



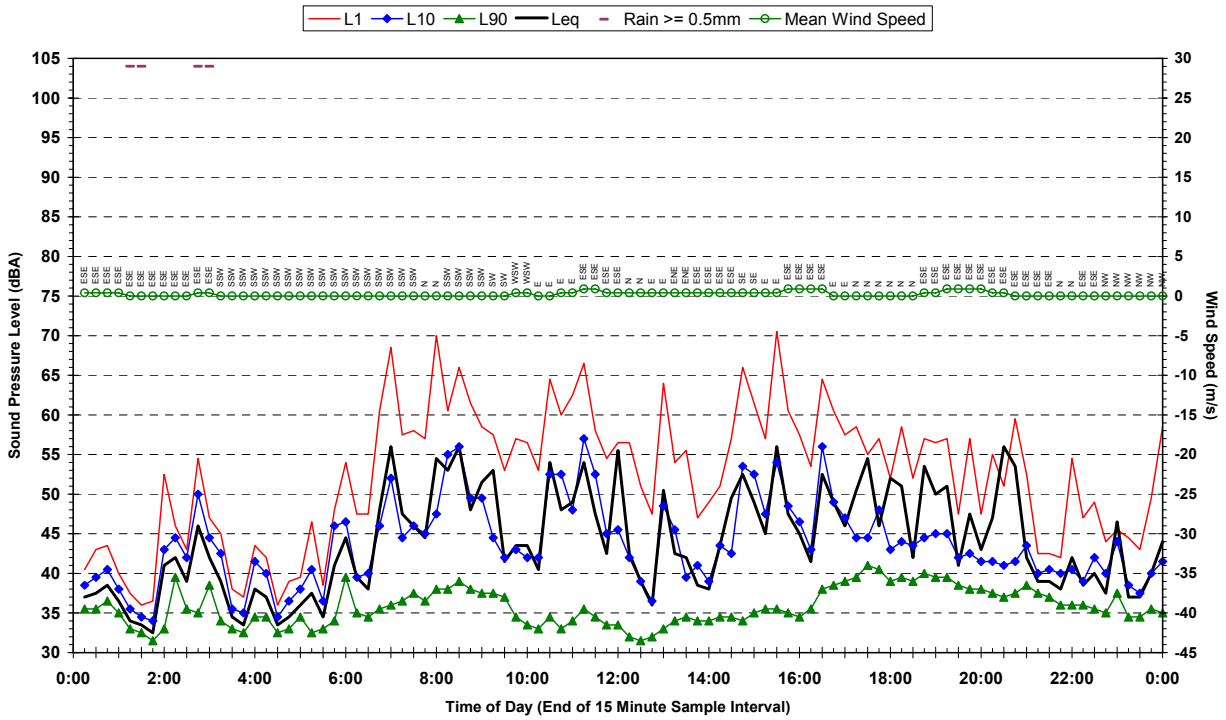
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location G - Buchanan Road, Buchanan - Thursday 1 July 2010



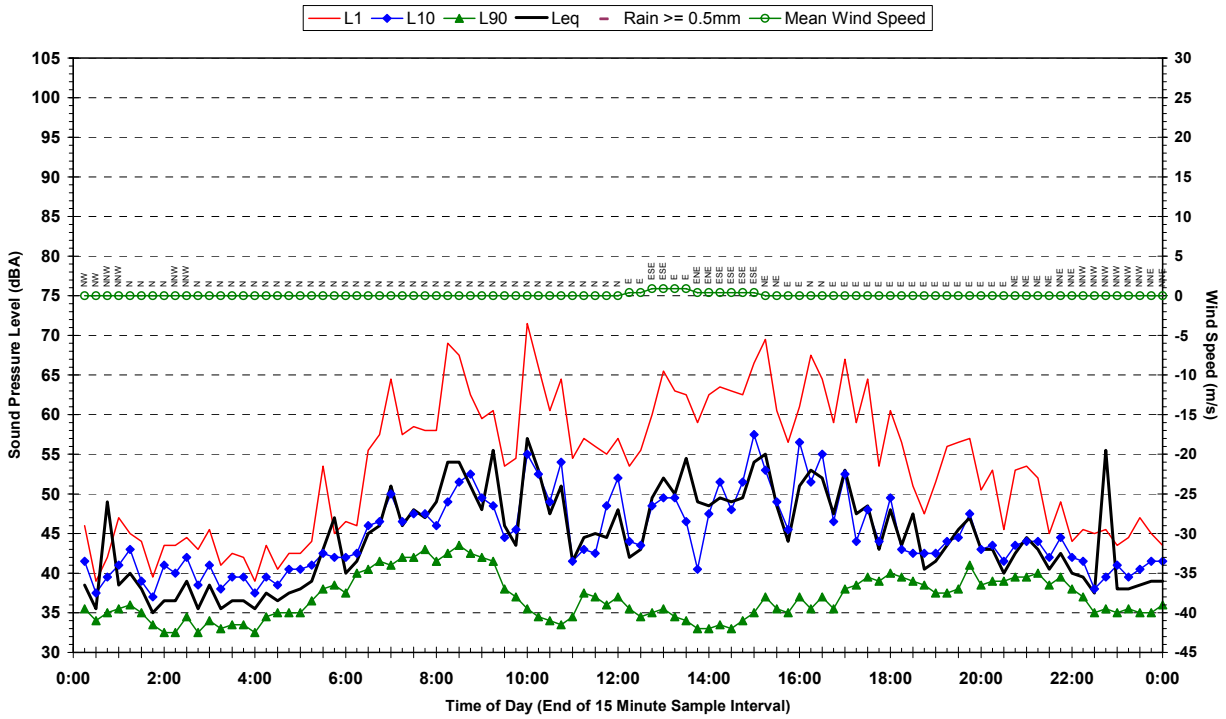
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location L - Killshanney Ave, Ashtonfield - Tuesday 22 June 2010



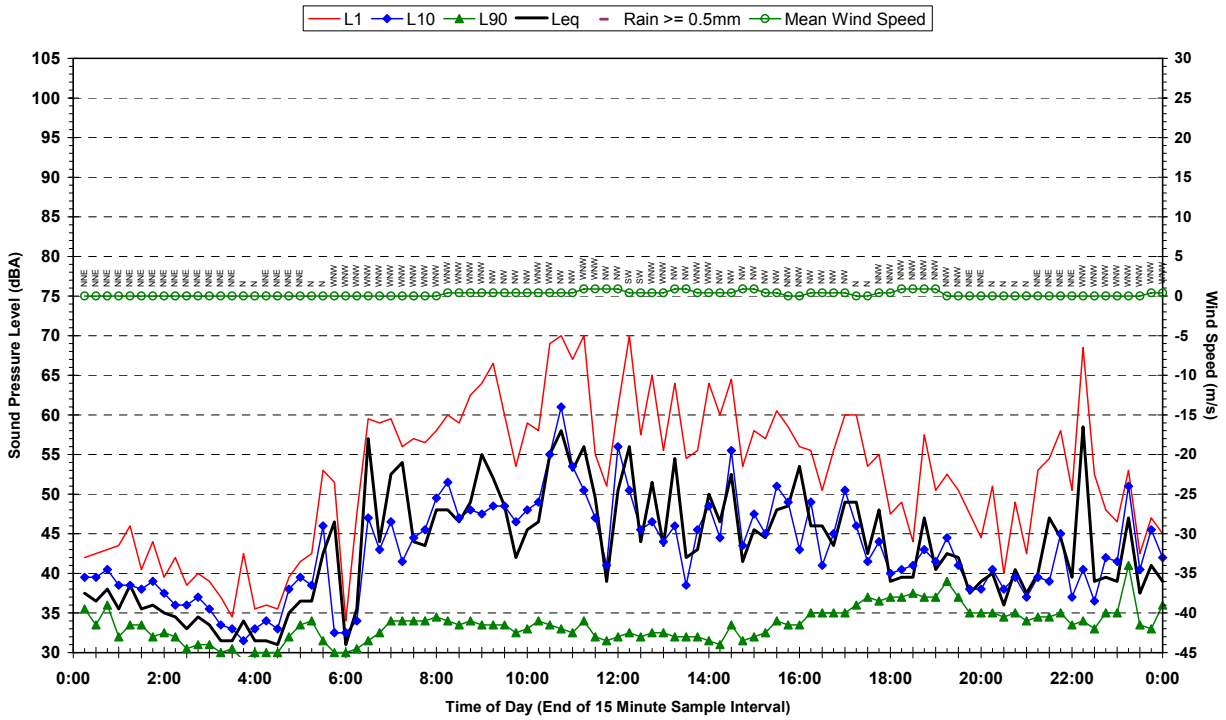
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location L - Killshanney Ave, Ashtonfield - Wednesday 23 June 2010



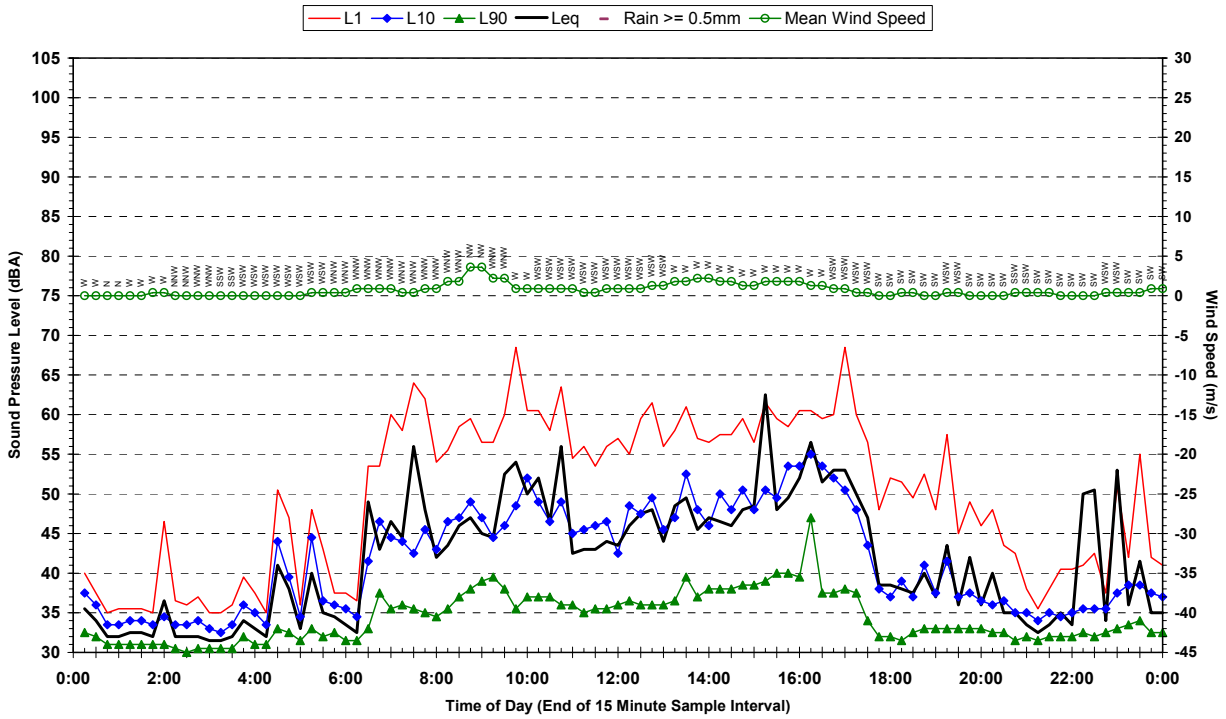
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location L - Killshanney Ave, Ashtonfield - Thursday 24 June 2010



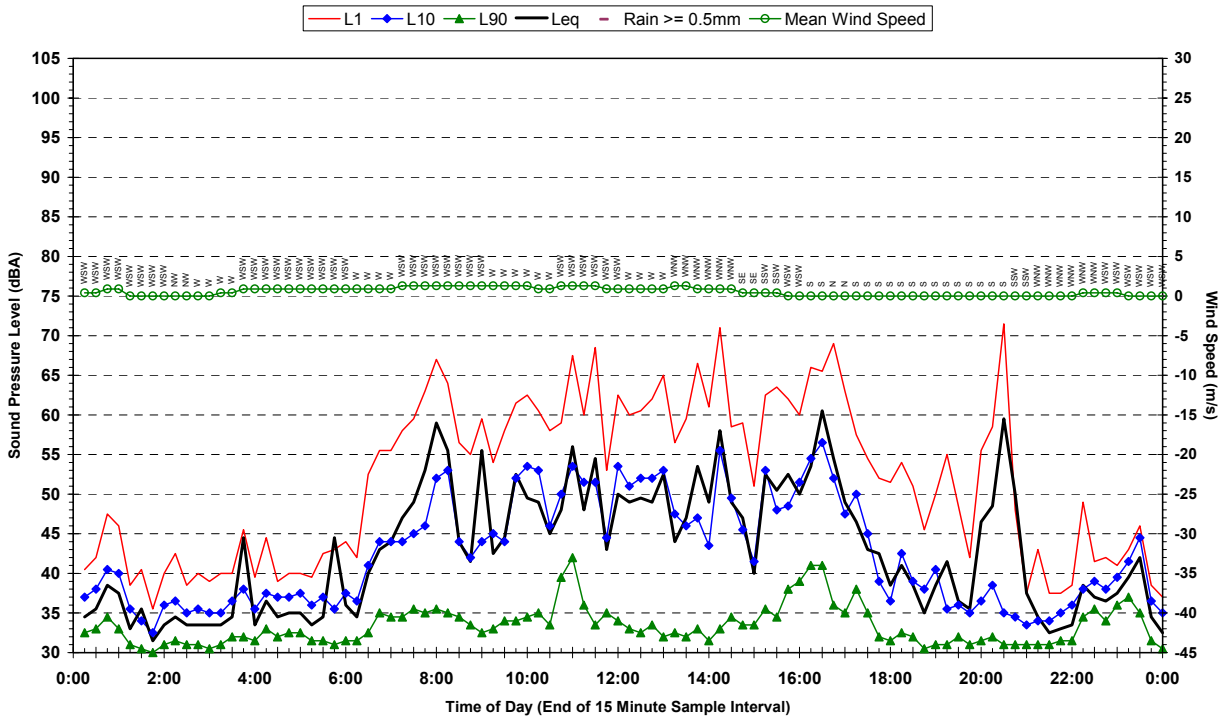
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location L - Killshanney Ave, Ashtonfield - Friday 25 June 2010

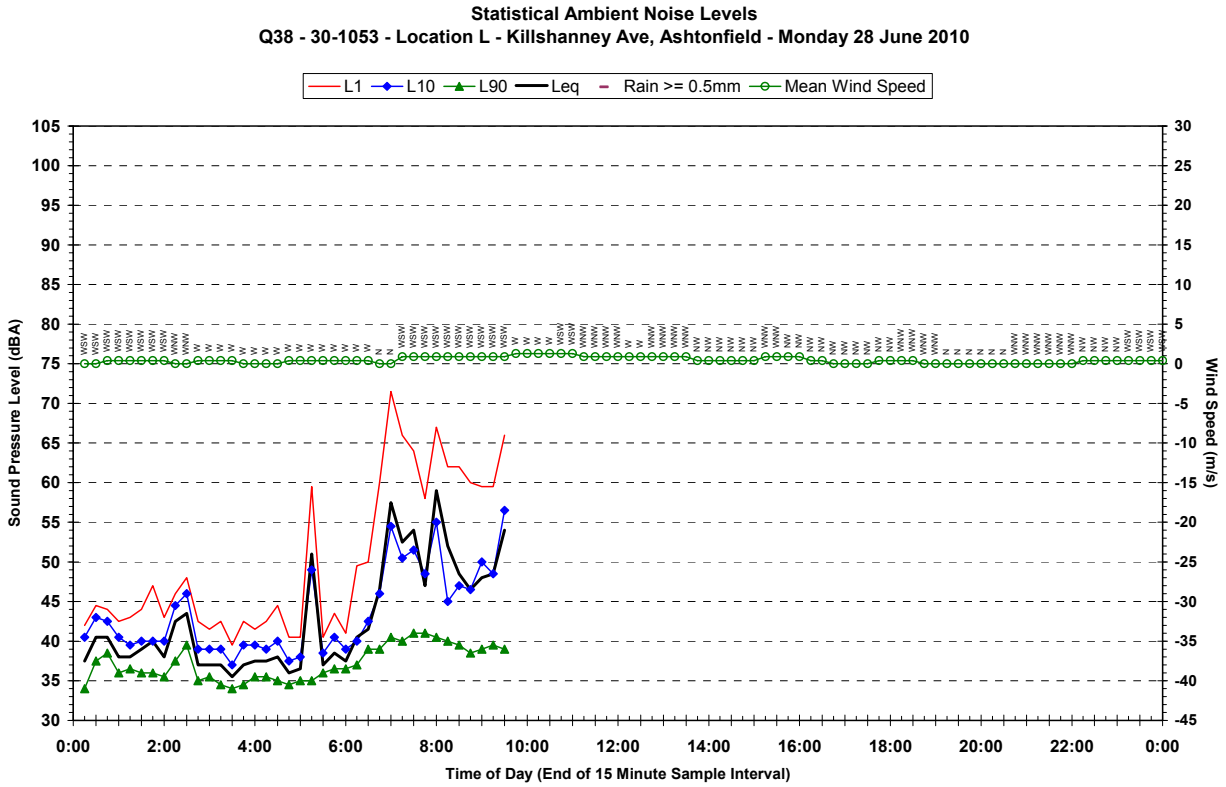


Statistical Ambient Noise Levels
Q38 - 30-1053 - Location L - Killshanney Ave, Ashtonfield - Saturday 26 June 2010



Statistical Ambient Noise Levels
Q38 - 30-1053 - Location L - Killshanney Ave, Ashtonfield - Sunday 27 June 2010




Statistical Ambient Noise Levels
Q38 - 30-1053 - Location L - Killshanney Ave, Ashtonfield - Monday 28 June 2010
L1
L10
L90
Leq
Rain >= 0.5mm
Mean Wind Speed
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of 15 Minute Sample Interval)
105
100
95
90
85
80
75
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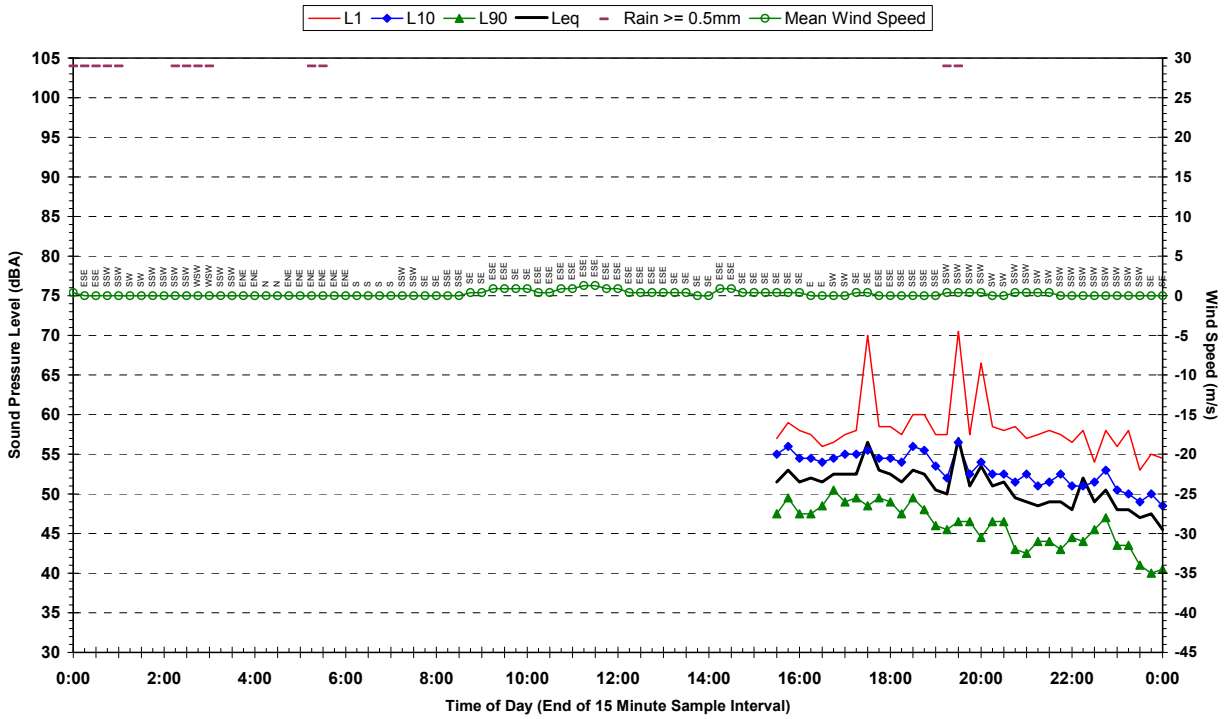
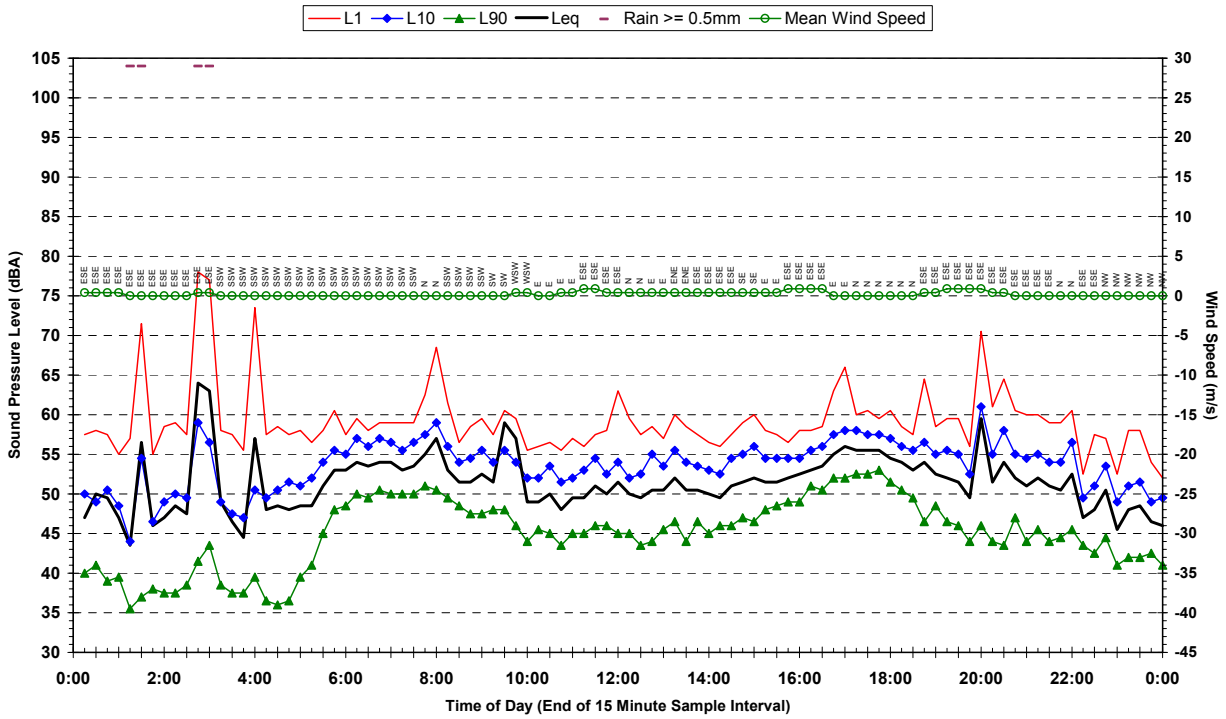
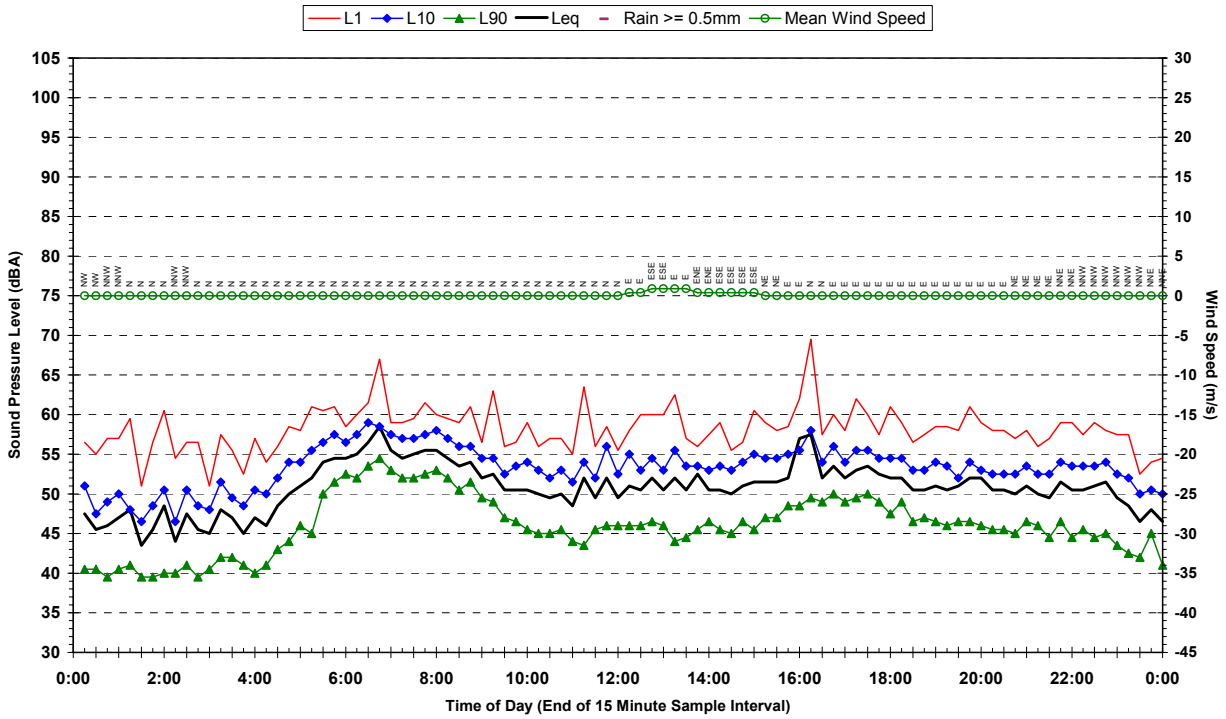
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Tuesday 22 June 2010



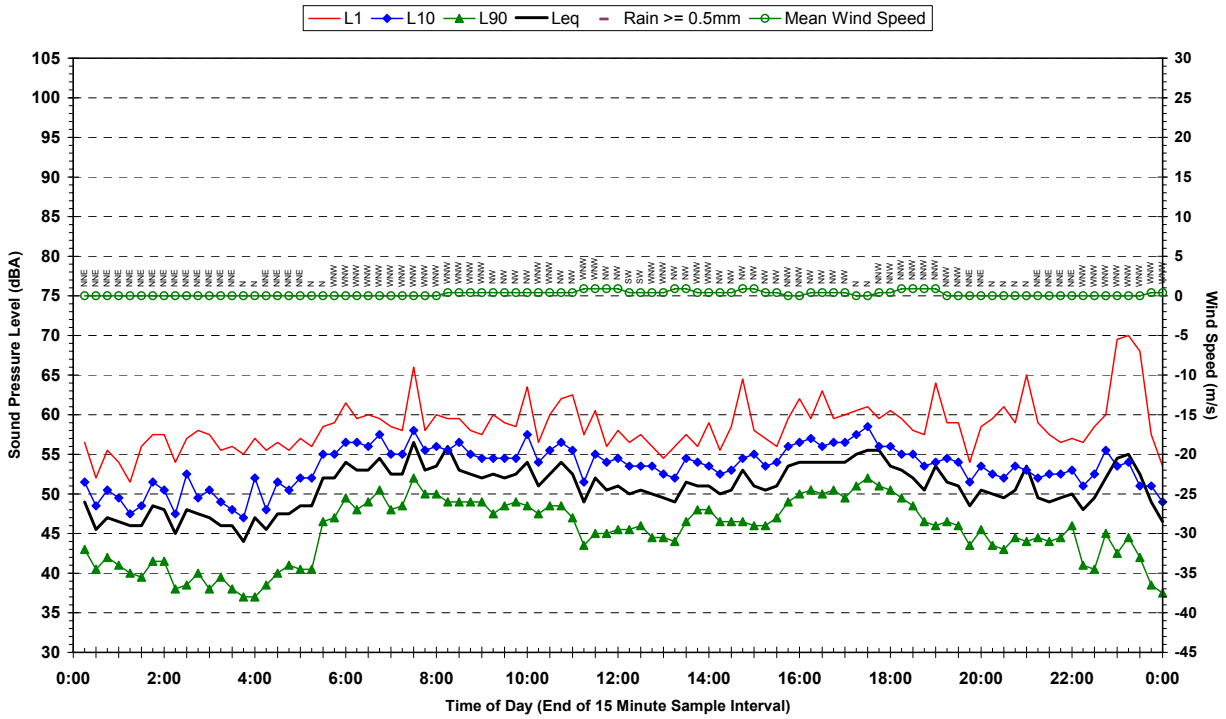
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Wednesday 23 June 2010



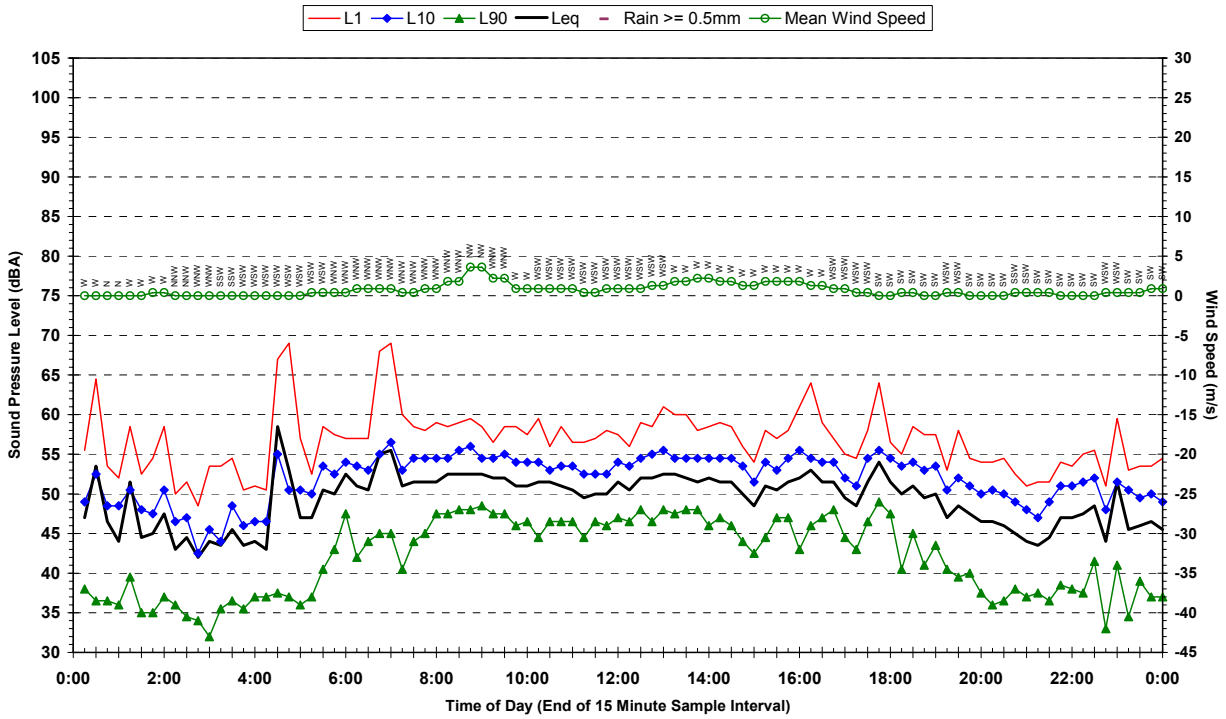
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Thursday 24 June 2010



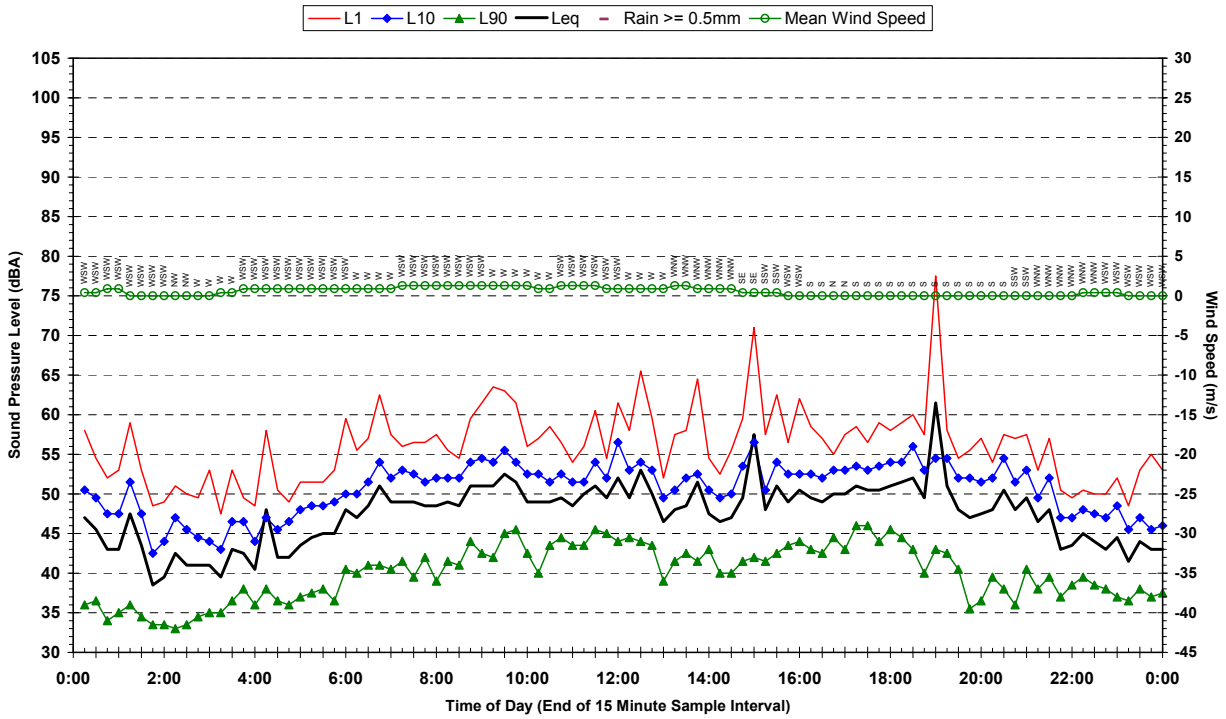
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Friday 25 June 2010



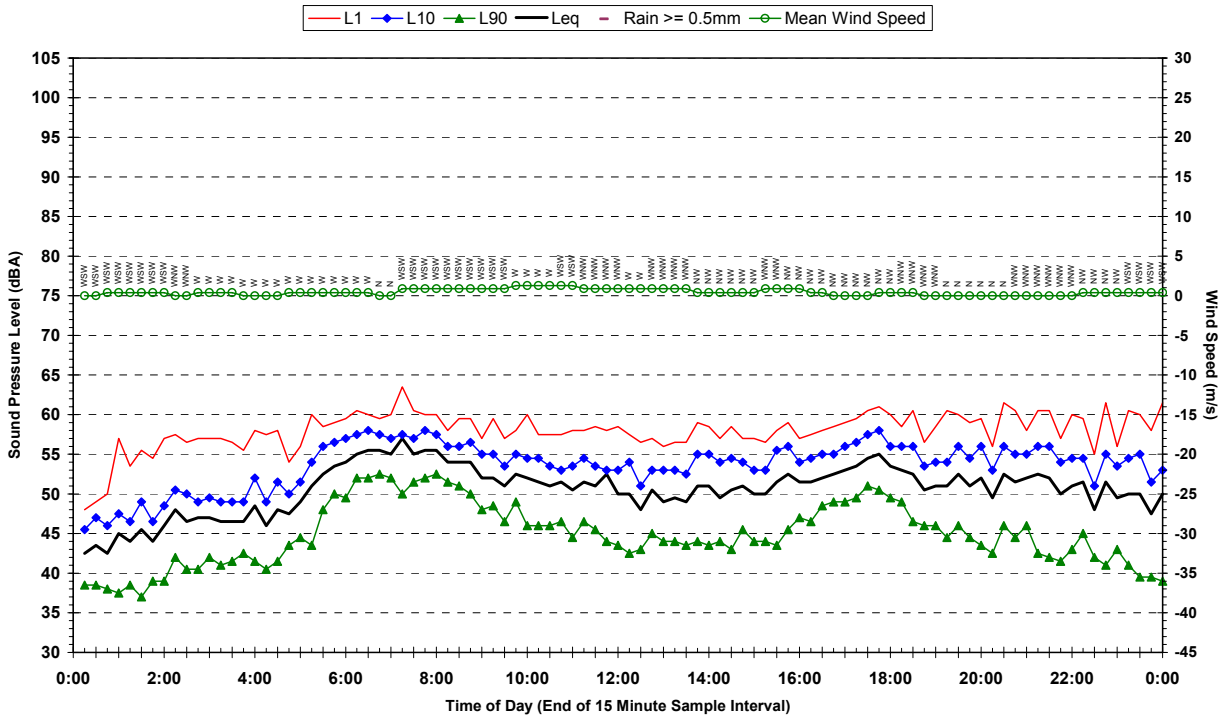
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Saturday 26 June 2010



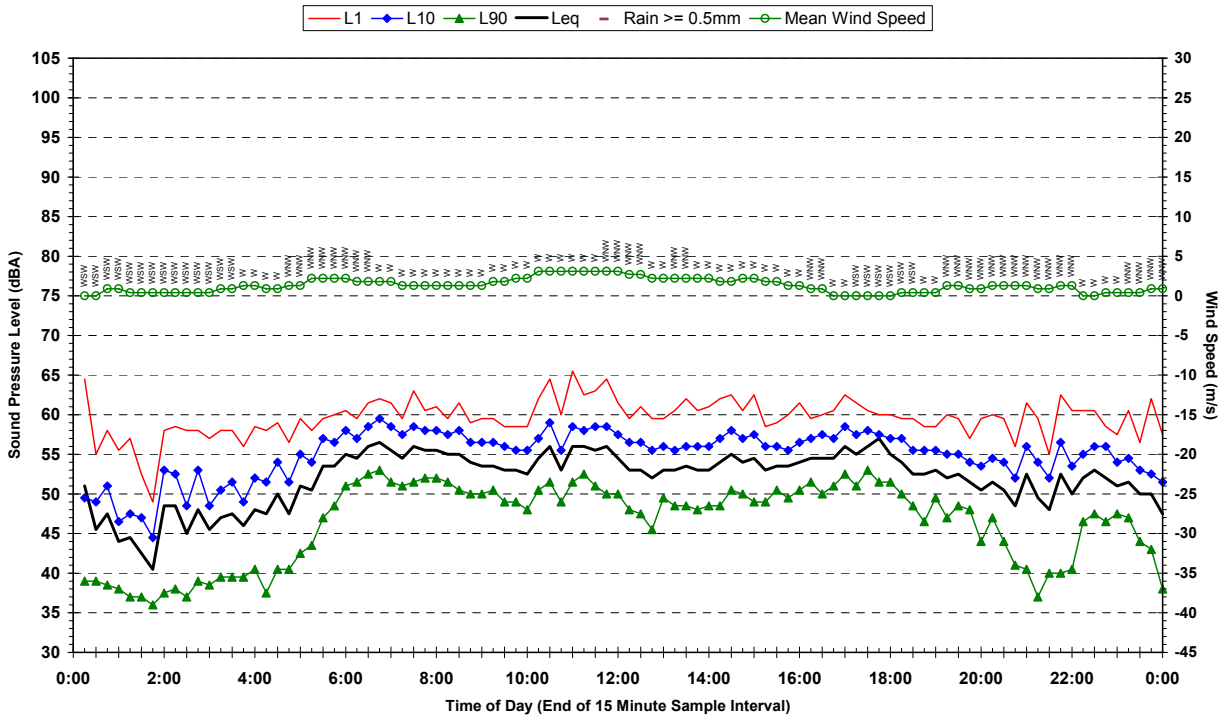
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Sunday 27 June 2010



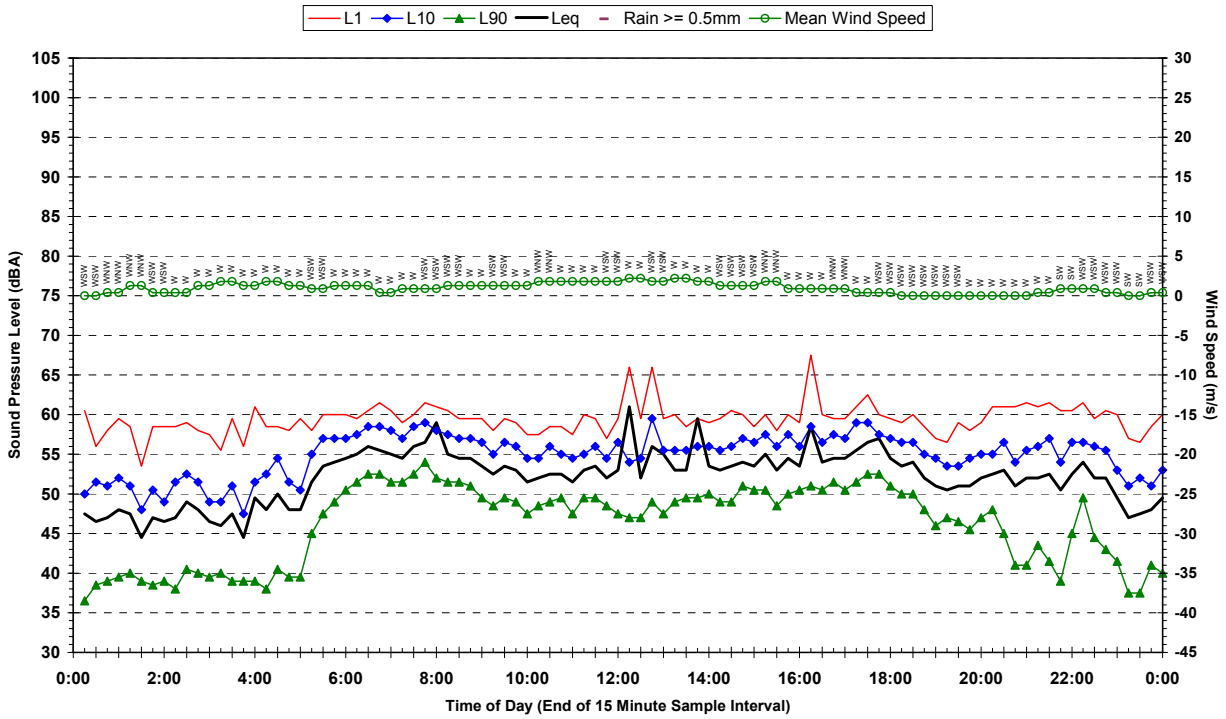
Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Monday 28 June 2010



Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Tuesday 29 June 2010



Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Wednesday 30 June 2010



Statistical Ambient Noise Levels
Q38 - 30-1053 - Location K - Catholic Diocese of Maitland - Thursday 1 July 2010