Appendix 6

Noise Monitoring Reports

(No. of pages including blank pages = 188)

Note: A copy of this Appendix is available on the Project CD

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Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending June 2013

Report Number Q50 630.01053R1

15 July 2013

Donaldson Coal Pty Ltd
PO Box 675
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Version: Draft 1

Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending June 2013

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Reference	Status	Date	Prepared	Checked	Authorised
Q50 630.01053R1	Draft 1	15 July 2013	Nicholas Vandenberg	Nathan Archer	

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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 SLR Consulting Pty Ltd (SLR) 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 than 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

Approved Operations

The following operations are approved under the Abel Colliery Project Approval:

- Extraction of up to 4.5 Mtpa of ROM coal from the Abel Underground Coal Mine by bord and pillar methods.
- Transport coal to the existing Bloomfield CHPP by private haul roads.
- Operate the Bloomfield CHPP to process coal extracted from the Abel Coal Mine and the Bloomfield and Donaldson Coal Mines.
- Transportation of product coal from the Bloomfield site by rail via the Bloomfield rail loading facility.

The PA was modified in June 2010 (05_0136 MOD 1) allowing construction and operation of a downcast ventilation fan. In May 2011 the PA was modified again (05_0136 MOD 2) to allow the construction and operation of an upcast ventilation fan (and associated facilities).

Consent Conditions

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		
LAeq(15 minutes)	LAeq(15 minutes)	LAeq(15 minutes)	LA1(1 minute)	Location and Locality*
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 owners 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 program 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 during the June 2013 Quarter. The details of the monitoring locations are contained within **Table 1**.

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
D	Black Hill School, Black Hill
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield

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 approximately a seven (7) day period between 17 May 2013 and 25 June 2013 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 Noise 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:

- Rehabilitation in the east pit area on day work only.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was a ventilation fan and the Bloomfield Coal Handling and Preparation Plant (CHPP).

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Monitoring

Operator attended noise measurements were conducted during the daytime on Tuesday 18 June 2013 and Wednesday 19 June 2013, during the evening on Tuesday 18 June 2013 and during the night-time on Tuesday 18 June 2013 and Wednesday 19 June 2013. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, integrating sound level meter (s/n: 2679354).

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 (°C) 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 (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
19/06/2013 08:56 W = 1m/s W Temp = 10°C Cloud cover = 5/8	Daytime Ambient	85	78	73	59	70	Traffic ~ 69 to 85 Birds ~ 66
		Donaldson and Abel mines ~ Inaudible					
18/06/2013 19:56 W = 1 m/s S to SE Temp = 12°C Cloud cover = 3/8	Evening Ambient	79	75	67	50	64	Traffic ~ 50 to 79 Insects ~ 54 to 55 Construction ~ 45 to 54
		Donaldson and Abel mines ~ Inaudible					
19/06/2013 00:21 W = 0.5 m/s SE Temp = 9°C Cloud cover = 2/8	Night-time Ambient	81	73	67	50	62	Construction ~ 48 to 54 Traffic ~ 65 to 81 Insects ~ 51 to 53
		Donaldson and Abel mines ~ Inaudible					

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

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
18/06/2013 16:45 W = Calm Temp = 18°C Cloud cover = 1/8	Daytime Ambient	75	71	65	51	61	Local Traffic ~ 55 to 75 JRD Traffic ~ 55 to 67 Birds ~ 45 to 54 Other Industry ~ 43
		Donaldson and Abel mines ~ Inaudible					
18/06/2013 18:11 W = 3 m/s SW Temp = 12°C Cloud cover = 7/8	Evening Ambient	79	67	53	42	55	Trees Rustling ~ 51 Plane ~ 51 to 52 Local Traffic ~ 66 to 79 JRD Traffic ~ 51 to 57 Insects ~ 44 Construction ~ 34 to 38
		Donaldson and Abel mines ~ Inaudible					
18/06/2013 23:49 W = 0.5 m/s SW Temp = 9°C Cloud cover = 2/8	Night-time Ambient	68	62	52	39	50	JRD Traffic ~ 45 to 68 Insects ~ 40 to 42 Cow ~ 48 Car ~ 46 Other Industry ~ 35 to 44
		Donaldson and Abel mines ~ Inaudible					

Table 4 Location G, 156 Buchannan Road, Buchannan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
18/06/2013 17:45 W = calm Temp = 16°C Cloud cover = 5/8	Daytime Ambient	56	46	44	39	42	Traffic ~ 44 to 42 Insects ~ 43 Operator ~ 46 to 56
		Donaldson and Abel mines ~ Inaudible					
18/06/2013 18:03 W = Calm Temp = 11°C Cloud cover = 7/8	Evening Ambient	50	45	43	38	41	Insects ~ 43 Traffic ~ 45 Other Industry ~ 36
		Donaldson and Abel mines ~ Inaudible					

18/06/2013 22:27 W = 0.5 m/s N Temp = 8°C Cloud cover = 1/8	Night-time Ambient	47	38	35	<30	33	Traffic ~ 37 to 42 Operator ~ 42 to 47 Insects ~ <30 to 32
		Donaldson and Abel mines ~ 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	
19/06/2013 09:33 Wind: 1 m/s W Temp = 10°C Cloud cover = 5/8	Daytime Ambient	79	61	48	42	55	Construction ~ 38 Local Traffic ~ 72 to 79 Birds ~ 52 to 57 Resident ~ 47 Abel CHPP/Dozer ~ 40
		Donaldson Mine ~ inaudible Estimated Abel LAeq Contribution ~ 40 dBA					
18/06/2013 21:31 W = 0.5 m/s SW Temp = 10°C Cloud cover = 2/8	Evening Ambient	60	51	46	39	44	Plane ~ 33 to 45 Car ~ 42 to 43 Operator ~ 41 to 43 Dist Traffic ~ 42 Local Traffic ~ 53 to 60 Resident ~ 53 CHPP 38 to 49
		Donaldson Mine ~ inaudible Estimated Abel LAeq Contribution ~ 43 dBA					
18/06/2013 22:00 W = 0.5 m/s SW Temp = 10°C Cloud cover = 1/8	Night-time Ambient	51	48	45	39	43	Distant Traffic ~ 41 Insects ~ 34 Trees rustling ~ 45 CHPP ~ 39 to 51
		Donaldson Mine ~ inaudible Estimated Abel LAeq Contribution ~ 42 dBA Estimated Abel LA1 Contribution ~ 51 dBA					

Table 6 Location D, Black Hill School, 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	
19/06/2013 09:51 W = 1 m/s W Temp = 12°C Cloud cover = 7/8	Daytime Ambient	74	69	56	41	55	Train Horn ~ 46 Trees rustling ~ 45 to 48 Birds ~ 43 to 68 Resident ~ 43 to 45 Local Traffic ~ 69 to 74 Plane ~ 46 School AC ~ 40 School Gate ~ 67
		Donaldson and Abel mines ~ Inaudible					
18/06/2013 19:12 W = 0.5 - 1m/s SE Temp = 11°C Cloud cover = 8/8	Evening Ambient	76	69	54	34	55	Distant Traffic ~ 34 to 42 Car ~ 36 Teachers ~ 35 to 41 Local Traffic ~ 40 to 76 Trees rustling ~ 41
		Donaldson and Abel mines ~ Inaudible					
18/06/2013 23:29 W = 0.5 m/s SW Temp = 8°C Cloud cover = 3/8	Night-time Ambient	56	42	38	34	36	Distant Traffic ~ 33 to 43 Trees rustling ~ 38 to 41 Dogs Barking ~ 38 Operator ~ 51 to 56
		Donaldson and Abel mines ~ 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 "natural" noises such as birds, insects and leaf rustle.

Donaldson operations were not observed to be audible at any location during the monitoring period.

Based on results and observations from operator attended noise surveys, it is likely that the 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 "natural" noises such as birds, insects and leaf rustle.

Abel operations were observed to be audible at location L during the daytime, evening and night-time periods from the Bloomfield CHPP area. Abel project operations were inaudible at all other locations.

The estimated Abel contribution at Location L during the daytime, evening and night-time noise monitoring periods was approximately L_{Aeq} 40 dBA, 43 dBA and 42 dBA respectively. The measured $L_{A1(1minute)}$ contribution of Abel operations at Location L was 51 dBA which is less than the $L_{A1(1minute)}$ criteria of 53 dBA.

Based on results and observations from operator attended noise surveys, an exceedance of 2 dBA was recorded at Location L during the night-time monitoring period.

However, section 11.1.3 of the NSW INP states the following:

> *A development will be deemed to be in compliance with a noise consent or licence if the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or licence condition.*

Therefore, Abel Coal mine operations are deemed to be in compliance if noise emissions are not more than 2 dB above the consent conditions.

5 UNATTENDED CONTINIOUS NOISE MONITORING

5.1 Results of Unattended Continuous Monitoring

Unattended continuous noise monitoring was conducted between 17 May 2013 and 25 June 2013 at each of the five (5) nominated locations given in **Table 1**. ARL Type EL-316, ARL Type EL 215, and SVAN 957 environmental 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	Date of Logging
A – Weakleys Drive, Beresfield	16-103-494	17/05/2013 – 27/05/2013
F – Black Hill Road, Black Hill	16-203-531	27/05/2013-03/06/2013
G – Buchanan Road, Buchanan	194663	18/06/2013-25/06/2013
L – Kilshanny Ave, Kilshanny	23816	05/06/2013-12/06/2013
D – Black Hill School, Black Hill	16-103-494	27/05/2013 – 28/05/2013
	194525	28/05/2013 – 03/06/2013

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 (INP). 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	Primary Noise Descriptor (dBA re 20 µPa)			
		LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	59	55	47	55
	Evening	59	55	46	53
	ENCM Daytime	59	55	47	54
	Night	55	50	39	49
F Lot 684 Black Hill Road, Black Hill	Daytime	65	57	41	55
	Evening	59	52	41	50
	ENCM Daytime	62	54	38	53
	Night	56	49	41	49
G 156 Buchanan Road, Buchanan	Daytime	49	42	32	43
	Evening	50	46	33	43
	ENCM Daytime	50	44	32	43
	Night	48	40	30	42
L 17 Kilshanny Ave, Ashtonfield	Daytime	57	46	33	49
	Evening	53	41	33	44
	ENCM Daytime	55	44	33	47
	Night	43	38	<30	39
D Black Hill School, Black Hill	Daytime	59	53	37	53
	Evening	56	47	39	58
	ENCM Daytime	58	50	38	57
	Night	51	45	37	47

Note: 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 Long term Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

5.2.1 Ambient LA90 Noise Levels

Figure 1 Long term Daytime LA90 Noise Levels

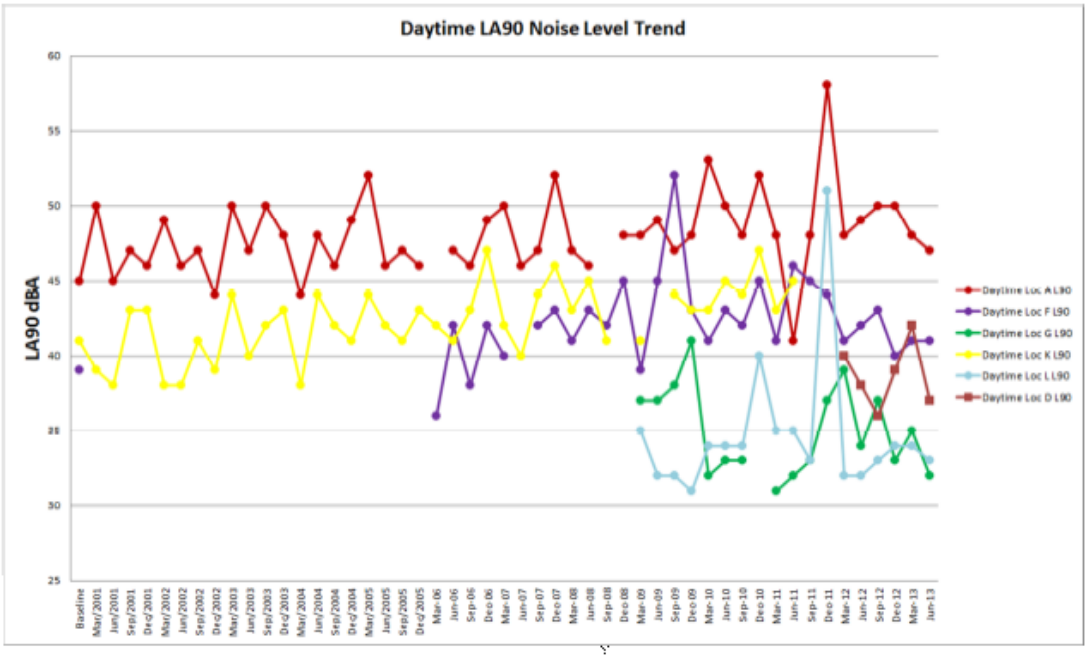


Figure 2 Long term Evening LA90 Noise Levels

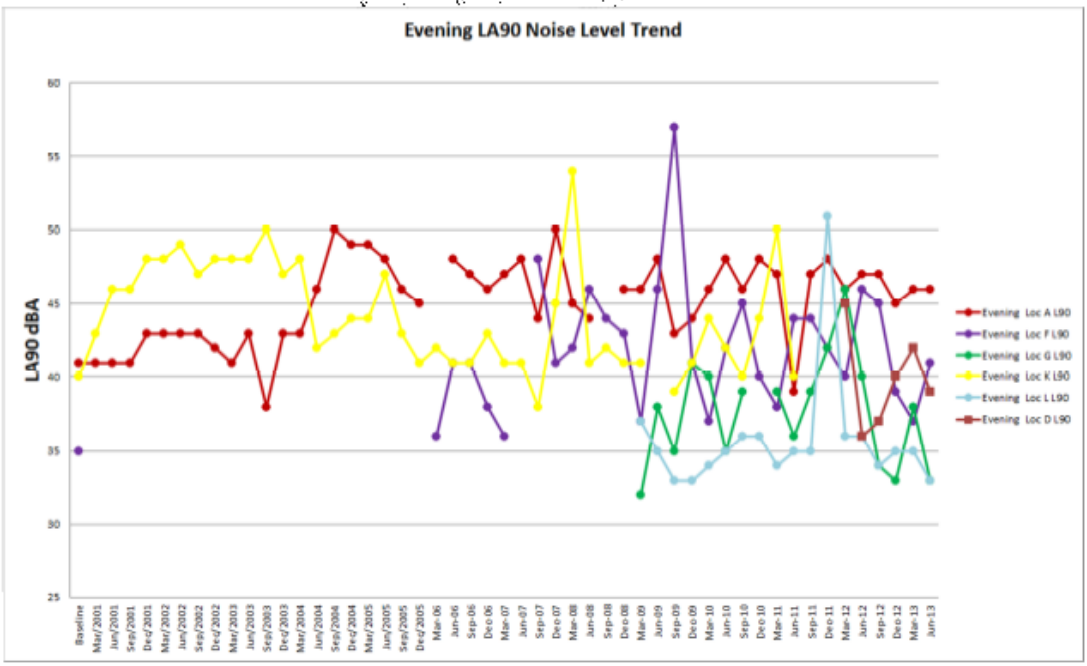
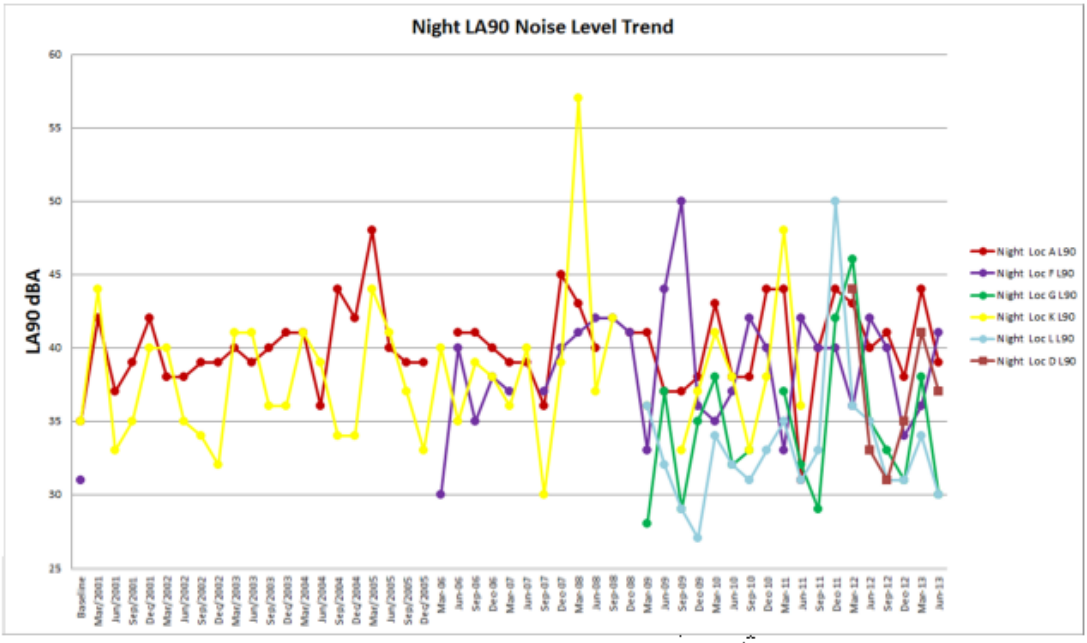


Figure 3 Long term Night-time L_{A90} Noise Levels



Baseline

The summary of results in **Table 8** and **Figure 1**, **Figure 2** and **Figure 3** show that ambient L_{A90} noise levels recorded for the quarter ending June 2013 compared to the levels recorded during the baseline monitoring process at Location A were 2 dBA during the daytime and 2 dBA lower during the evening and the same during the night-time noise survey. Increases of 2 dBA, 6 dBA and 10 dBA were recorded in the daytime, evening and night-time periods at respectively at Location F.

Given that no data was available at Locations D, G and L during baseline measurements and no monitoring was conducted at Location K during the June 2013 quarter no comparisons can be made.

Previous Quarter (March 2013)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were generally similar (within 3 dBA) or lower than those recorded during March 2013 at Location A, Location G, Location L and Location D. Increases of 4 dBA and 5 dBA at Location F were recorded respectively during the evening and night-time monitoring periods and remained the same during the daytime.

Decreases of up to 8 dBA in the L_{A90} were recorded at Location G. The dramatic decreases recorded are considered likely to be due to high insect and frog activity during the March 2013 quarter.

Coinciding Period Last Year (June 2012)

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 June 2012 at locations A, F, G, L with slight increases (less than 1 dBA) at location L during the day-time period. L_{A90} noise levels at location D decreased by 1 dBA during the daytime, and increased by 3 dBA and 4 dBA during the evening and night-time.

Decreases of up to 7 dBA in the L_{A90} were recorded at Location G. The dramatic decreases recorded are considered likely to be due to high insect and frog activity during the June 2012 quarter.

5.2.2 Ambient L_{A10} Noise Comparison

The long term ambient L_{A10} noise levels collected from each monitoring location are presented graphically in **Figure 4**, **Figure 5** and **Figure 6** for the daytime, evening and night-time periods respectively.

Figure 4 Long term Daytime L_{A10} Noise Levels

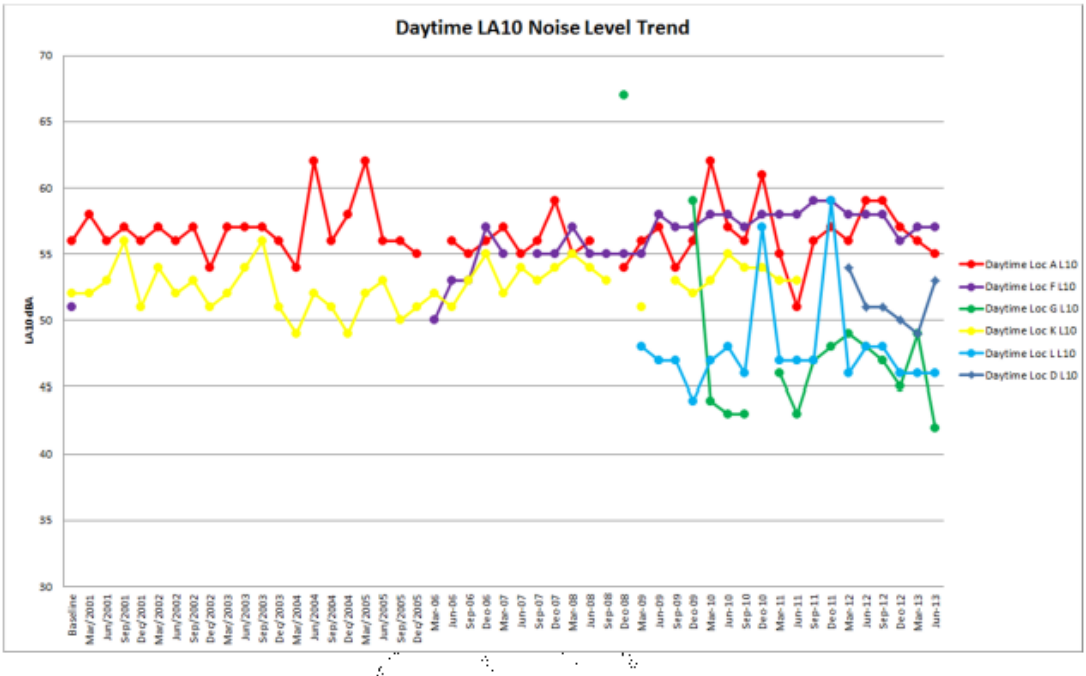


Figure 5 Long term Evening L_{A10} Noise Levels

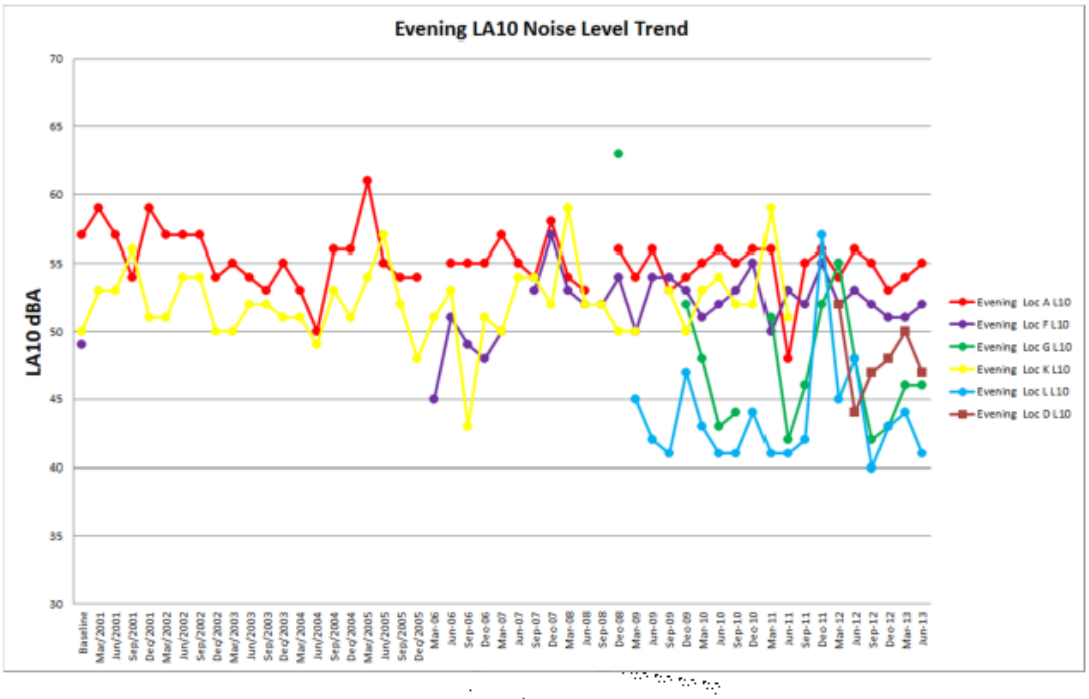
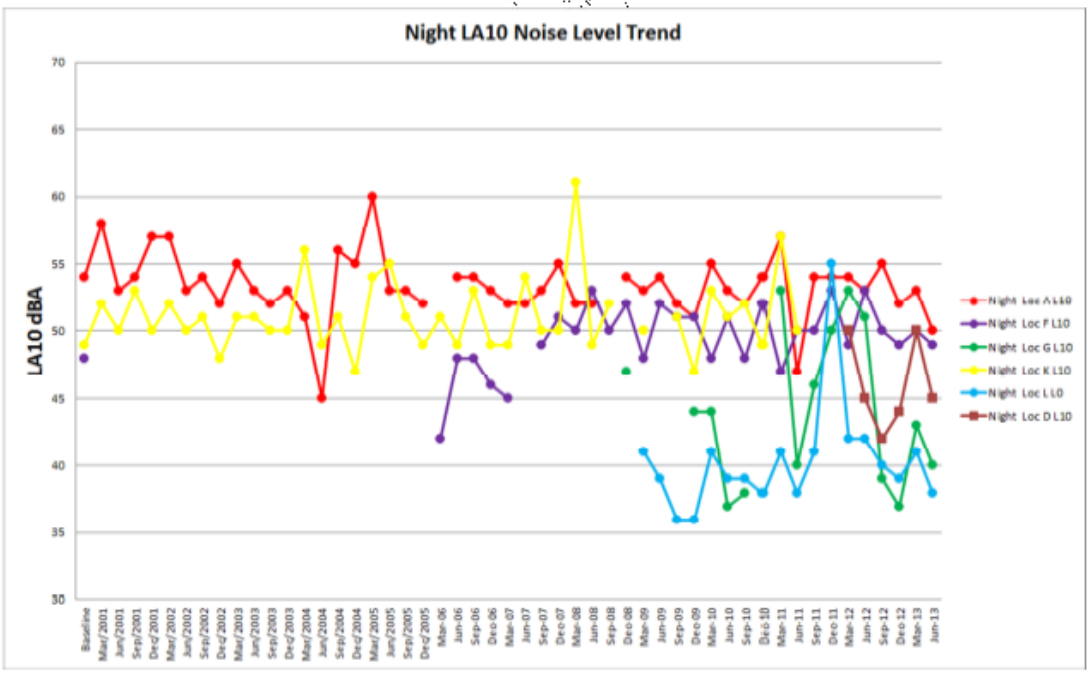


Figure 6 Long term Night-time L_{A10} Noise Levels



Baseline

The summary of results in **Table 8** and **Figure 4**, **Figure 5** and **Figure 6** show that ambient L_{A10} noise levels recorded for the quarter ending June 2013 were 6 dBA greater than levels recorded during the baseline monitoring process at Location F during the daytime, 3 dBA higher during the evening and 2 dBA higher during the night-time period. At Location A L_{A10} noise levels were 1 dBA, 2 dBA and 4 dBA lower during the day, evening and night-timer periods respectively.

Given that no data was available at Locations G, L and D during baseline measurements and no monitoring was conducted at Location K during the June 2013 quarter no comparisons can be made.

Previous Quarter (March 2013)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at location A, Location F, Location G and Location L were similar (within 2 dBA) or lower to those recorded in March 2013. At Location D increases of 4 dBA and decreases of 3 dBA and 5 dBA were recorded during the daytime, evening and night-time monitoring periods.

Coinciding Period Last Year (June 2012)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels were generally lower than those recorded in June 2012 at location A, F, G and L. Increases of 2 dBA and 3 dBA were recorded during the daytime and evening periods respectively at Location D.

Decreases of up to 9 dBA and 7 dBA in the L_{A10} were recorded at Location G and L respectively. The dramatic decreases recorded are considered likely to be due to high insect and frog activity during the June 2012 quarter.

5.3 Discussion

Based on the observations made during the operator attended noise surveys, where noise levels have been observed to increase at Location F, the ambient noise environment is dominated by road traffic or natural noises and not considered to be impacted from the Donaldson or Abel Mine activity.

6 SUMMARY OF RESULTS AND FINDINGS

SLR 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.

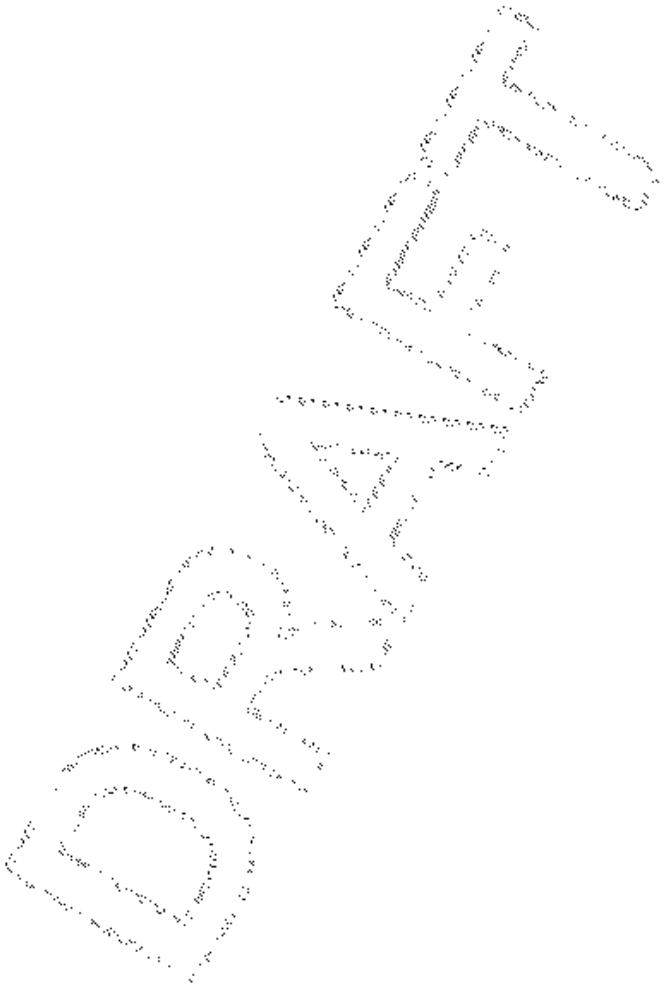
The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 6**.

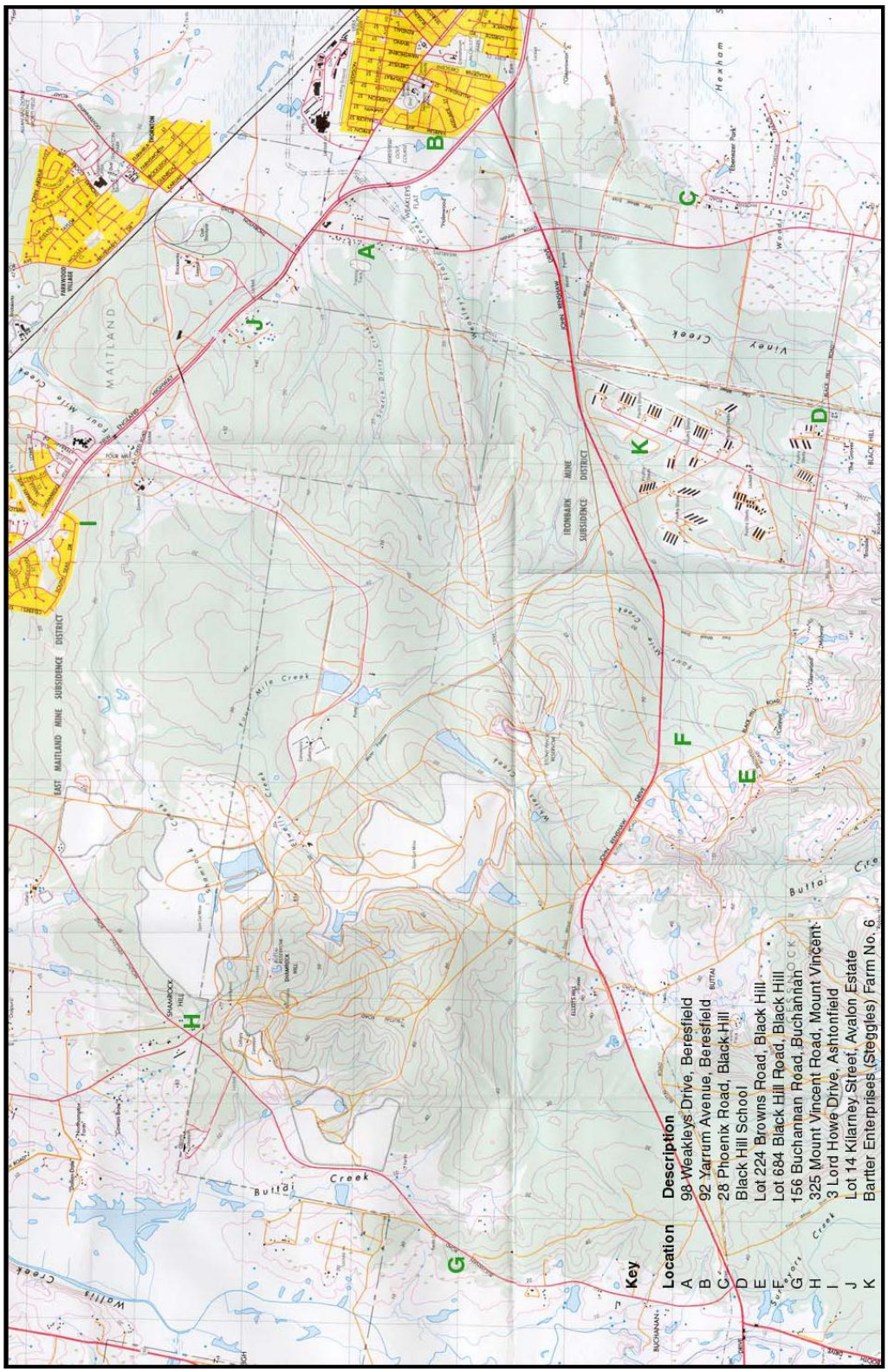
Based on the results and observations from operator attended surveys, it is likely that contributed noise levels from Donaldson Mine comply with noise emission goals for all periods.

Abel Mine operations at the CHPP were audible at Location L during the daytime, evening and night-time periods. Abel operations were not audible at any other locations during all periods and as such it is likely that contributed noise levels from Abel Mine did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Mine *Project Approval* at all locations.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (March 2013), the baseline monitoring period, the last monitoring period (March 2013), and the coinciding monitoring period from last year (June 2012) 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 or noise from other local mining and earthworks and not noise from Donaldson Mine or Abel Mine activity.





Appendix A – Page 1
Noise Monitoring Locations
Report 30-1053

Appendix B

Report Q39 30-1053-R1
Equipment Register Page 1 of 1

APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – March 2010

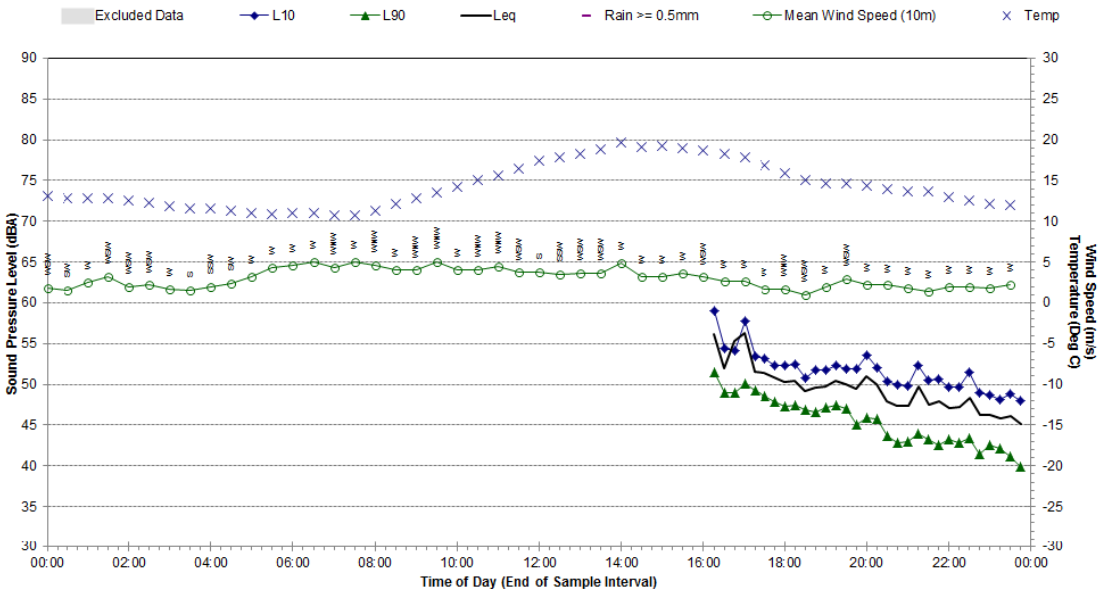
Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 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	

Appendix C1

Statistical Ambient Noise Levels - Location A Page 1 of 6

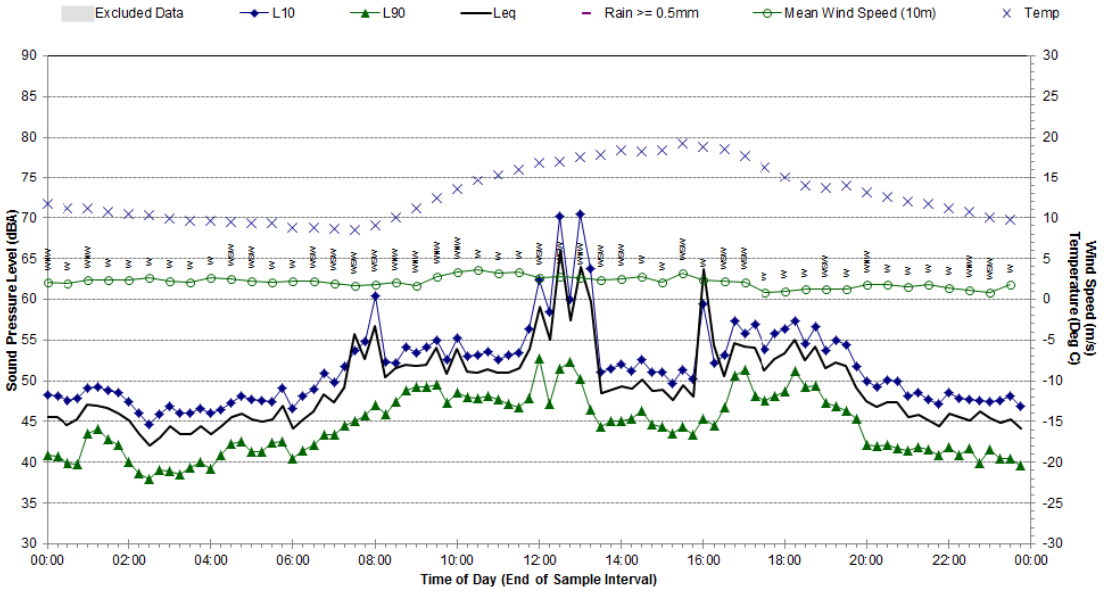
Statistical Ambient Noise Levels

Location A - Friday, 17 May 2013



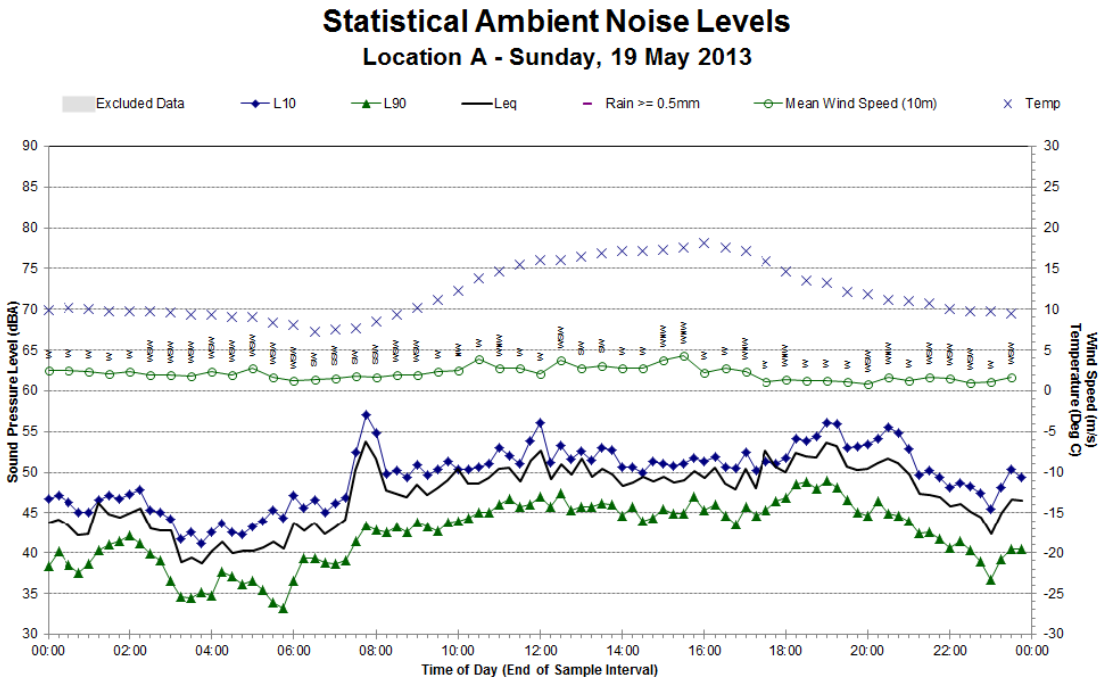
Statistical Ambient Noise Levels

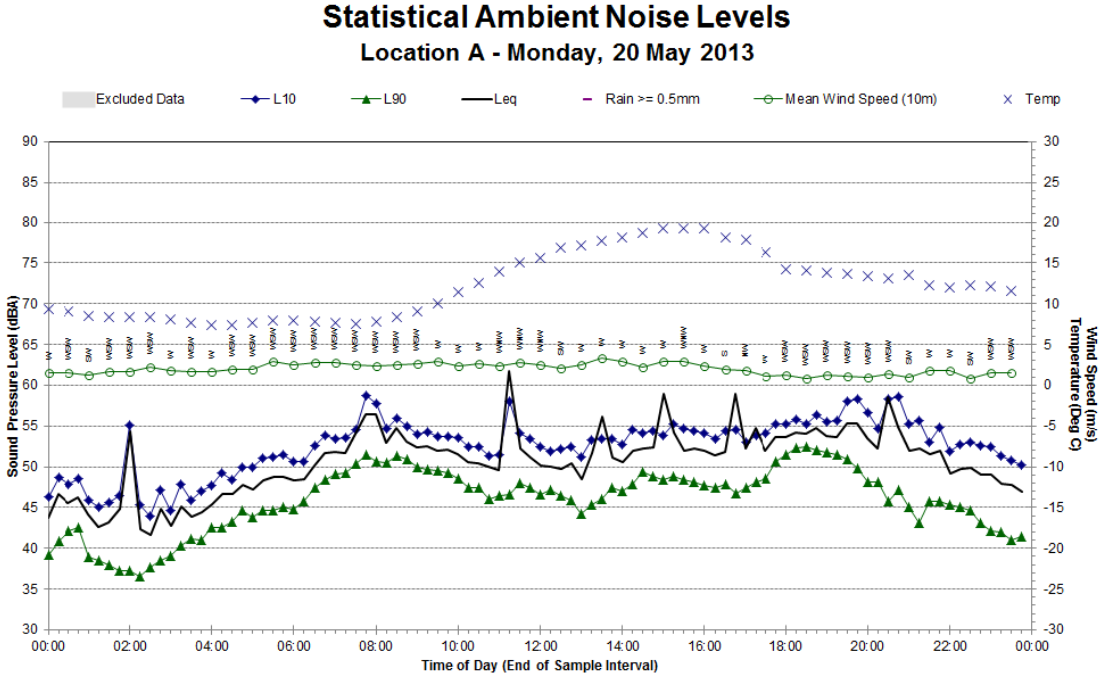
Location A - Saturday, 18 May 2013



Appendix C1

Statistical Ambient Noise Levels - Location A Page 2 of 6



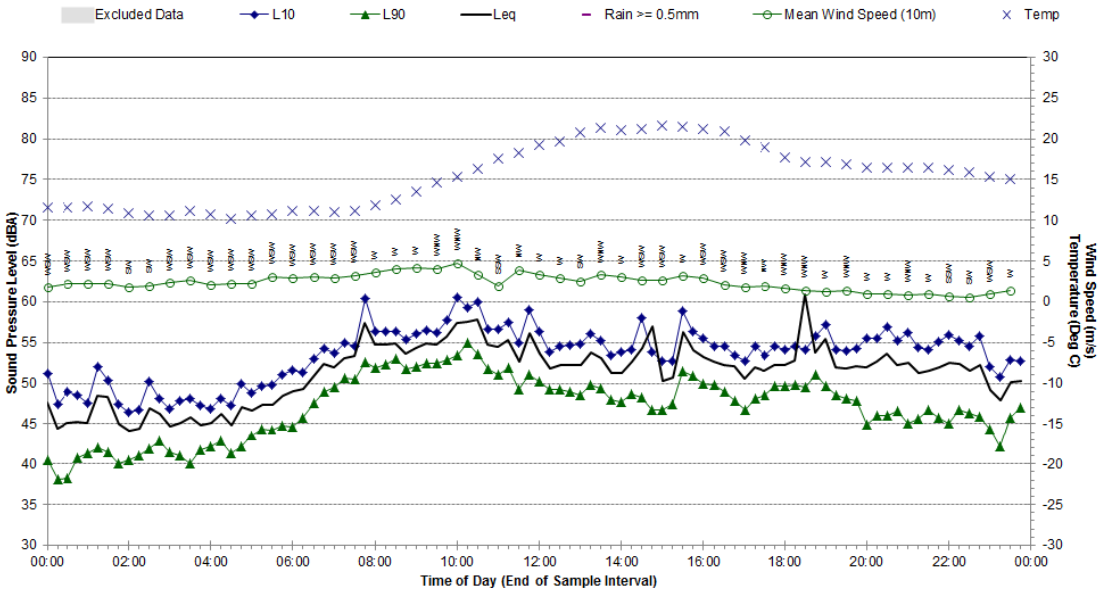


Appendix C1

Statistical Ambient Noise Levels - Location A Page 3 of 6

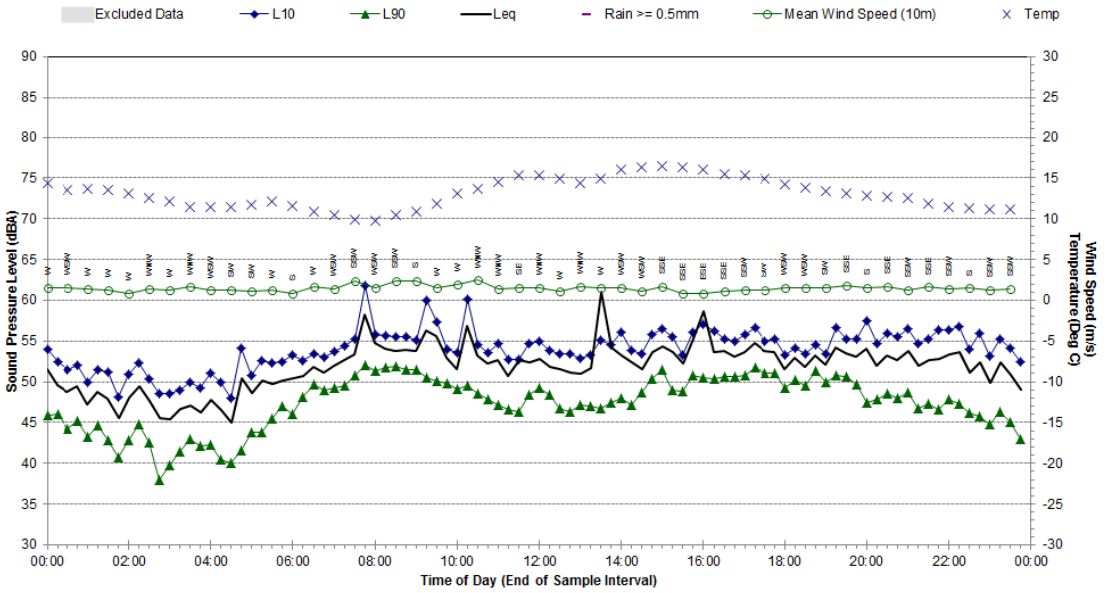
Statistical Ambient Noise Levels

Location A - Tuesday, 21 May 2013



Statistical Ambient Noise Levels

Location A - Wednesday, 22 May 2013

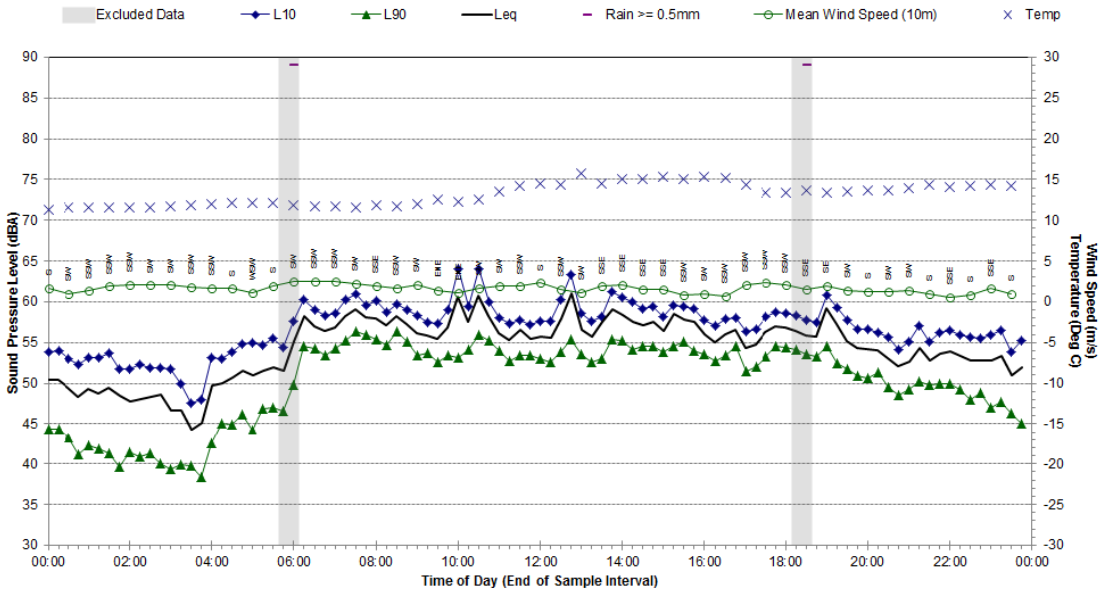


Appendix C1

Statistical Ambient Noise Levels - Location A Page 4 of 6

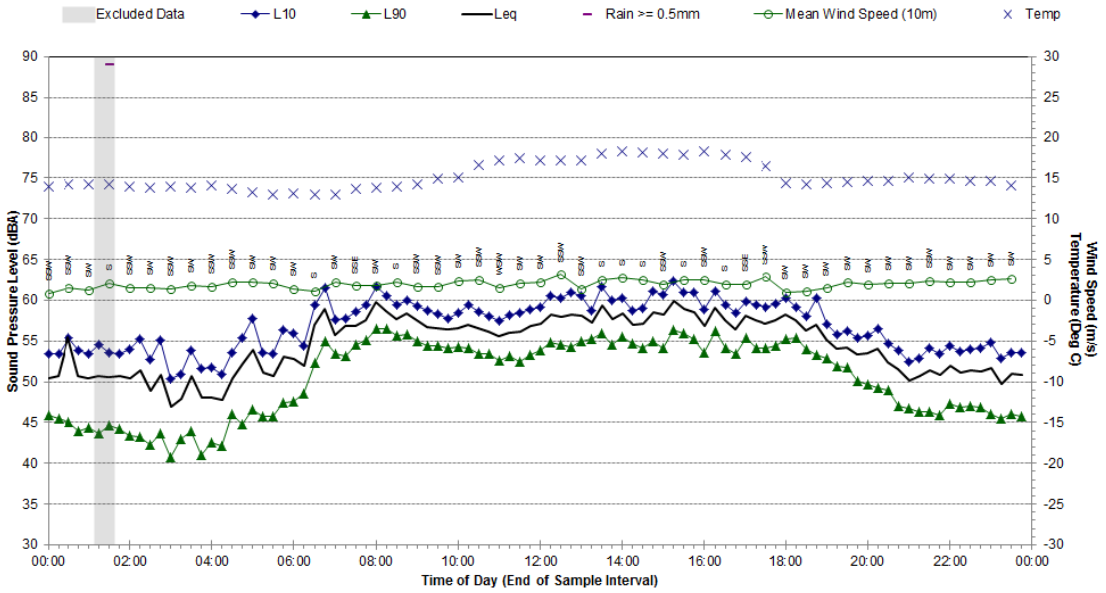
Statistical Ambient Noise Levels

Location A - Thursday, 23 May 2013



Statistical Ambient Noise Levels

Location A - Friday, 24 May 2013

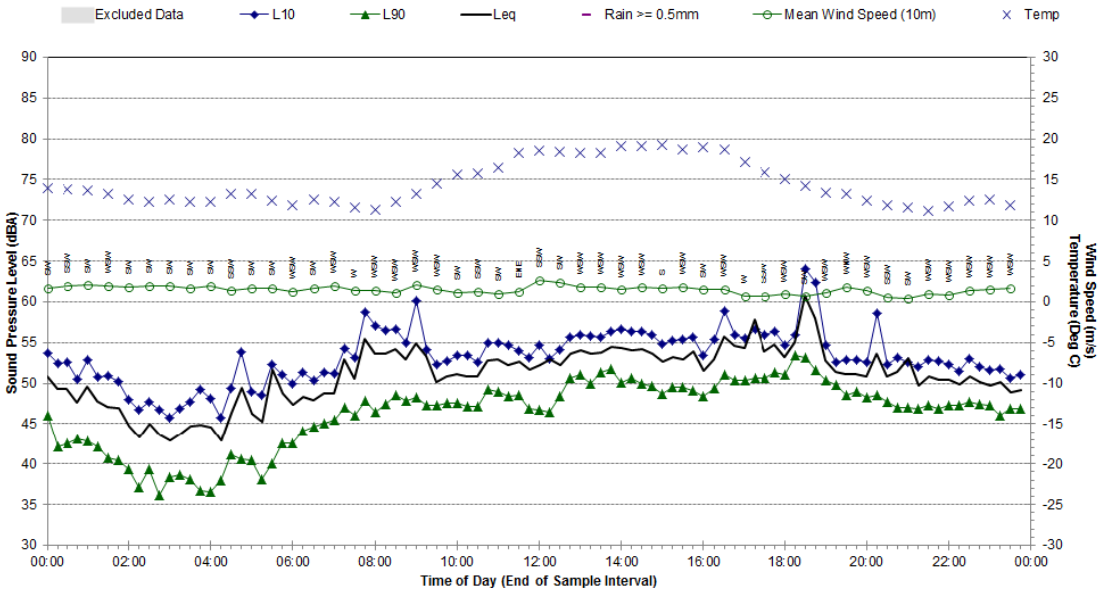


Appendix C1

Statistical Ambient Noise Levels - Location A Page 5 of 6

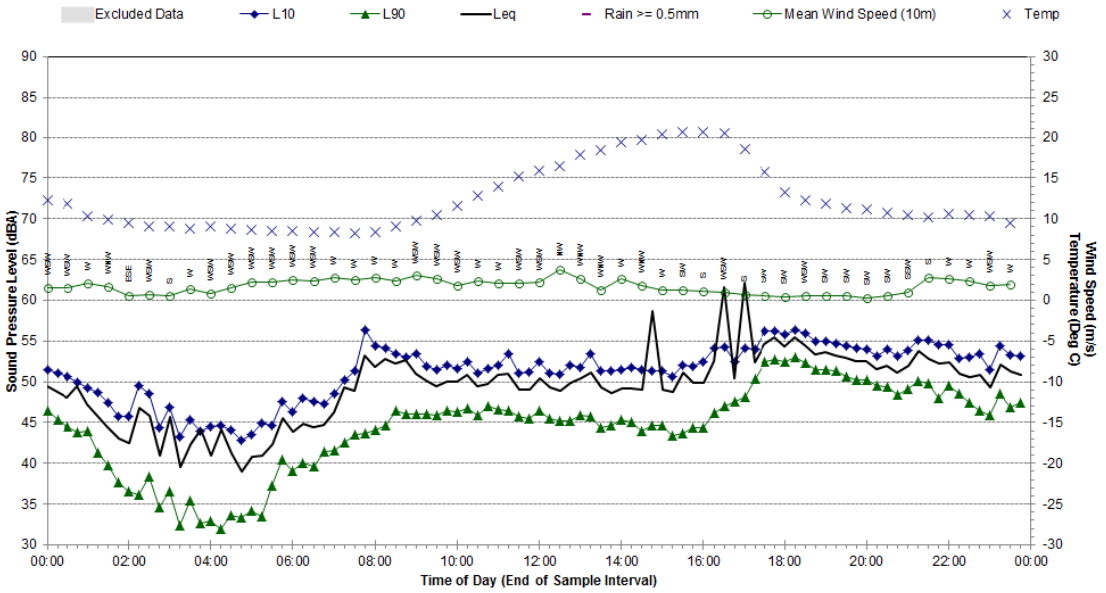
Statistical Ambient Noise Levels

Location A - Saturday, 25 May 2013



Statistical Ambient Noise Levels

Location A - Sunday, 26 May 2013

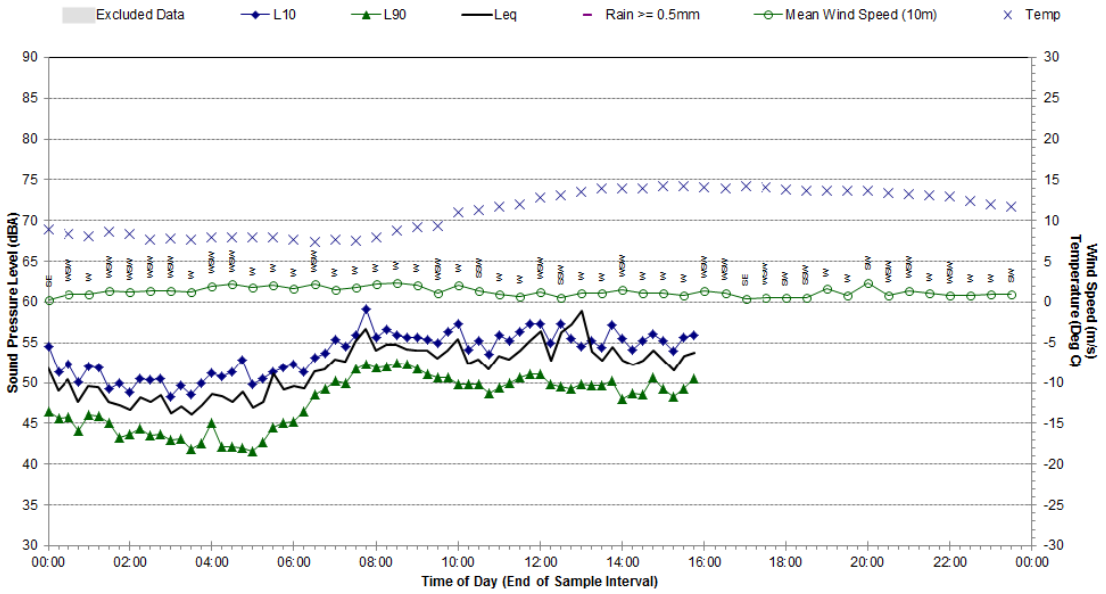


Appendix C1

Statistical Ambient Noise Levels - Location A Page 6 of 6

Statistical Ambient Noise Levels

Location A - Monday, 27 May 2013

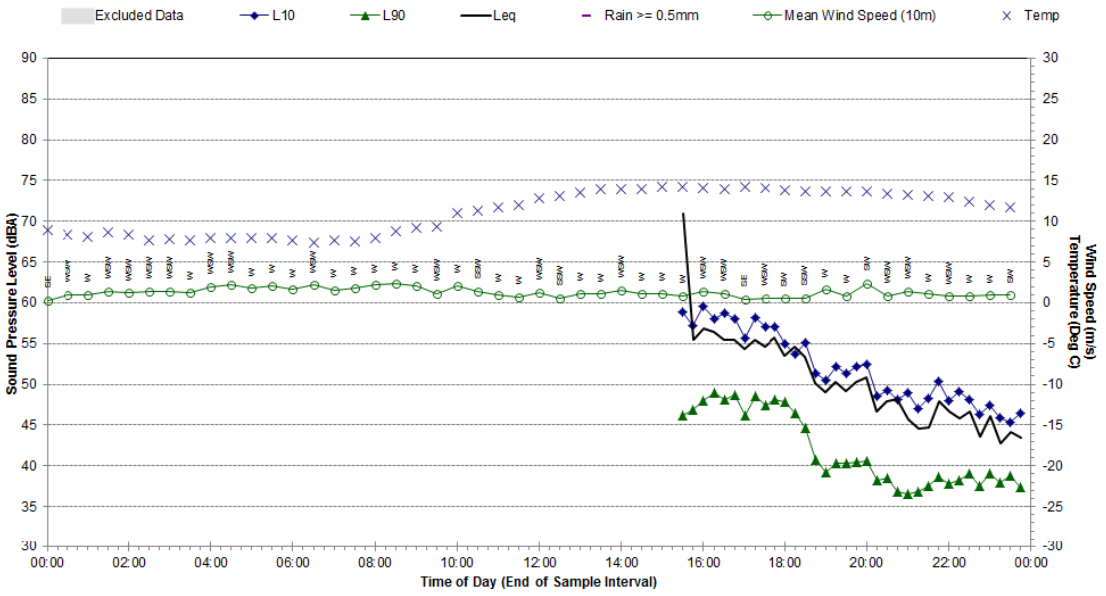


Appendix C2

Statistical Ambient Noise Levels – Location F Page 1 of 4

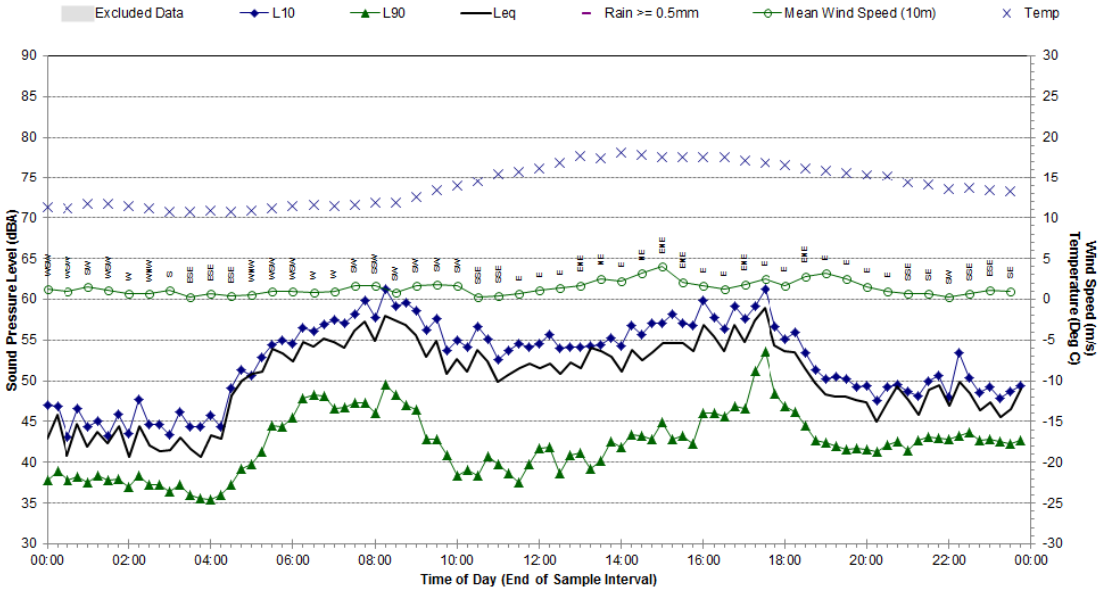
Statistical Ambient Noise Levels

Location F - Monday, 27 May 2013



Statistical Ambient Noise Levels

Location F - Tuesday, 28 May 2013

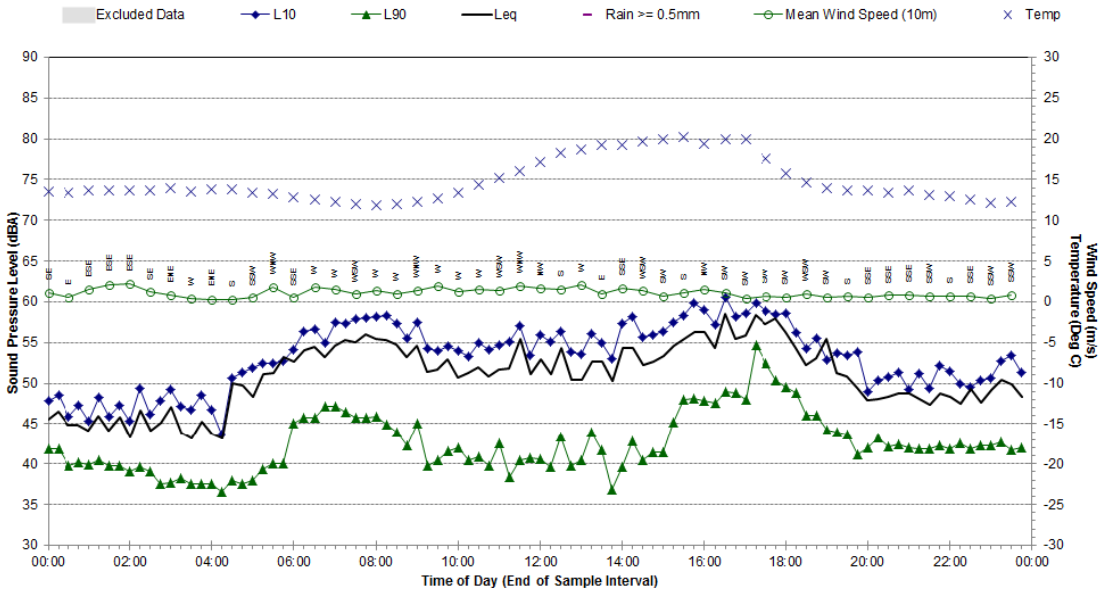


Appendix C2

Statistical Ambient Noise Levels – Location F Page 2 of 4

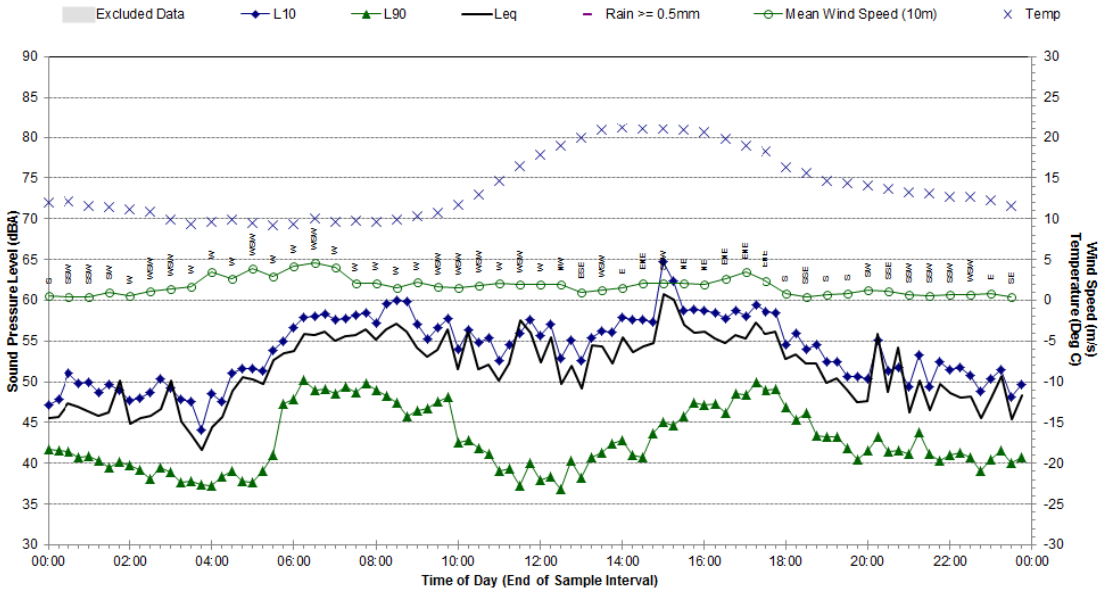
Statistical Ambient Noise Levels

Location F - Wednesday, 29 May 2013



Statistical Ambient Noise Levels

Location F - Thursday, 30 May 2013

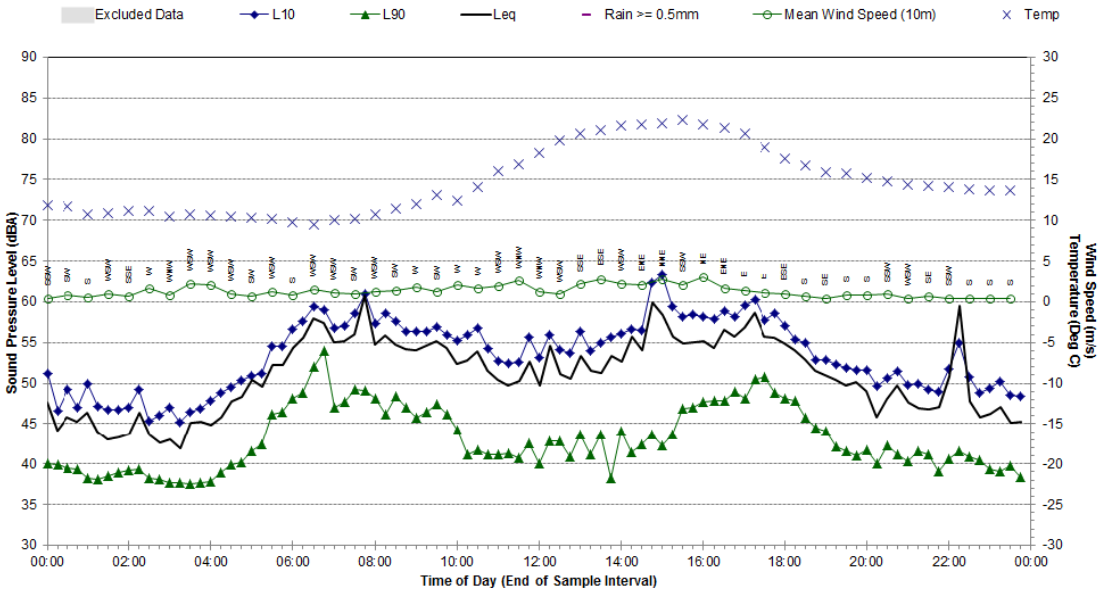


Appendix C2

Statistical Ambient Noise Levels – Location F Page 3 of 4

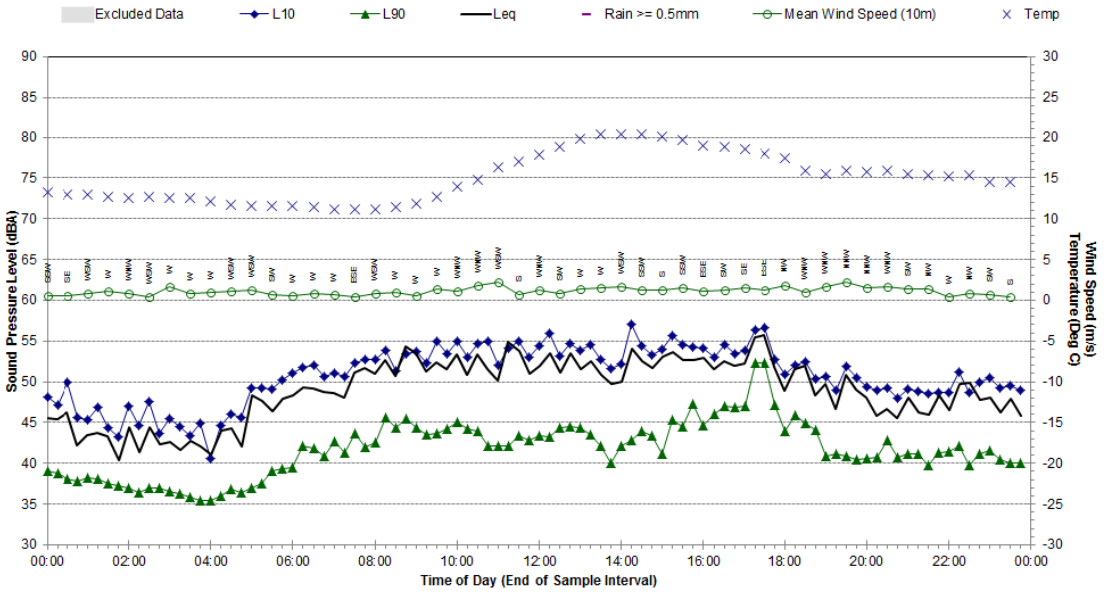
Statistical Ambient Noise Levels

Location F - Friday, 31 May 2013



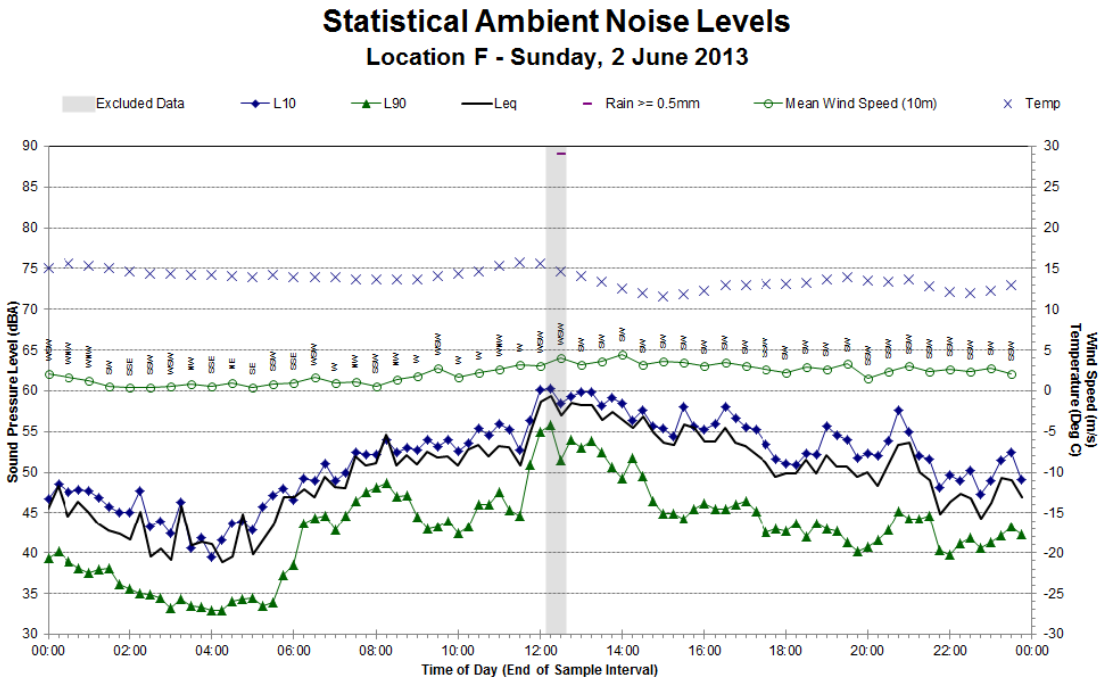
Statistical Ambient Noise Levels

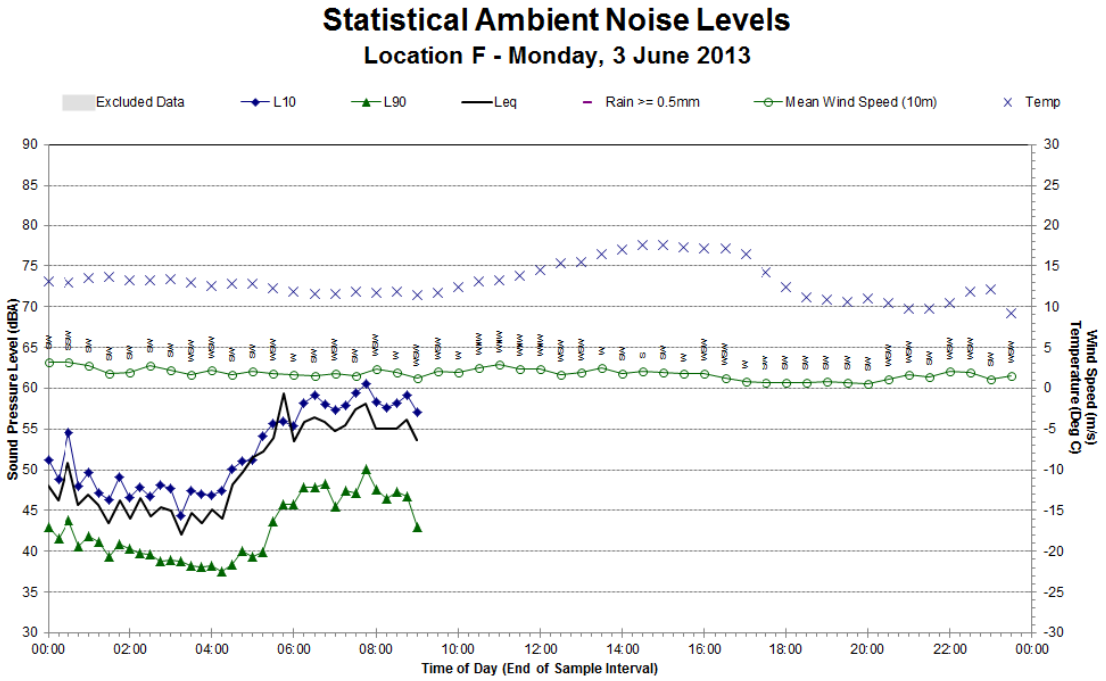
Location F - Saturday, 1 June 2013



Appendix C2

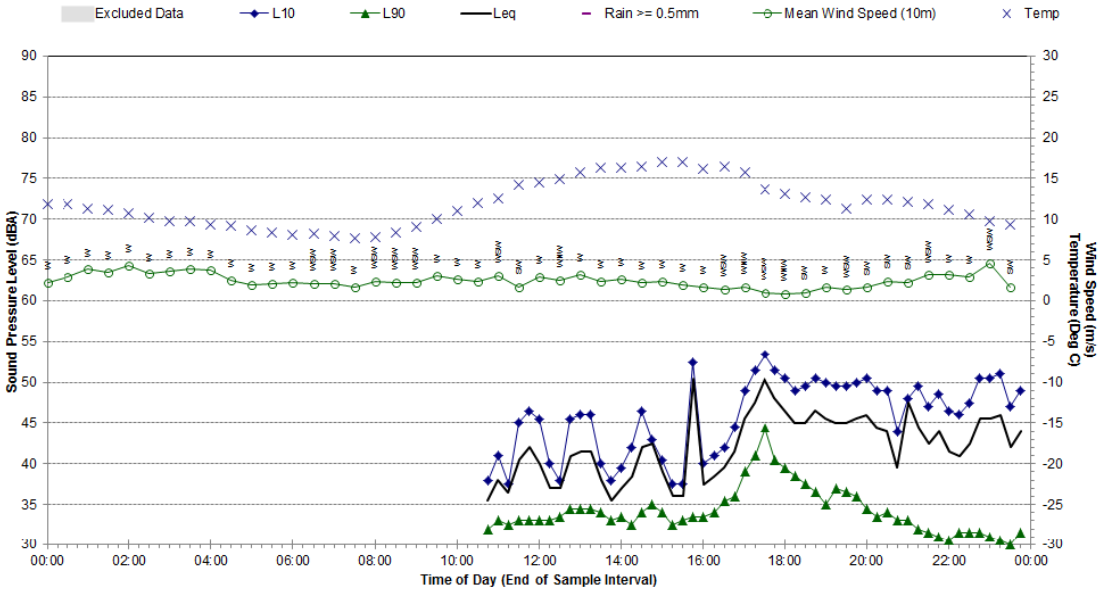
Statistical Ambient Noise Levels – Location F Page 4 of 4



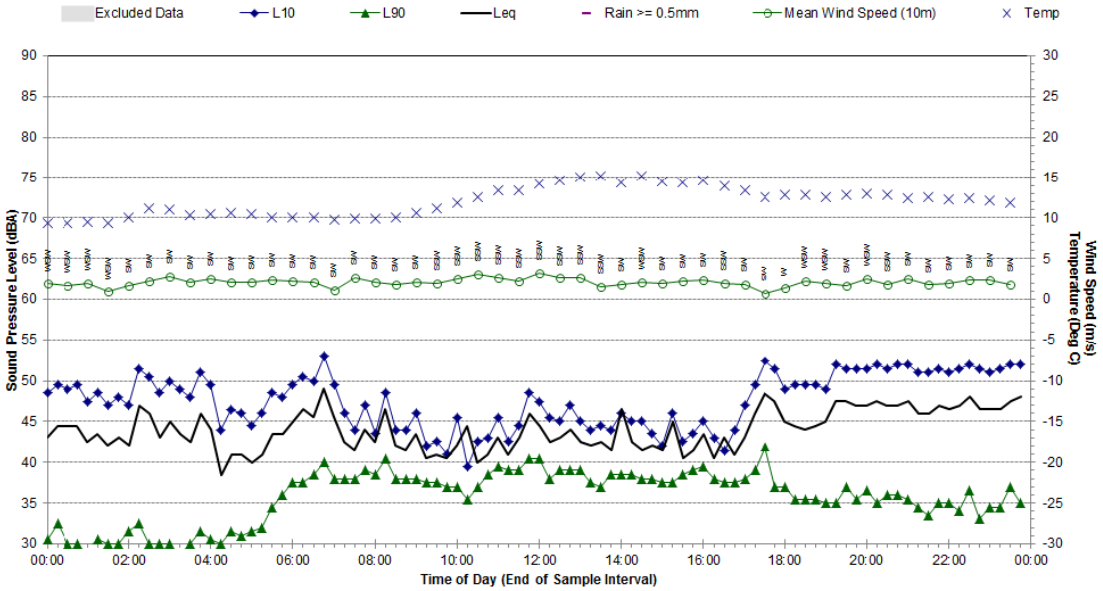


Appendix C3
Statistical Ambient Noise Levels – Location G Page 1 of 4

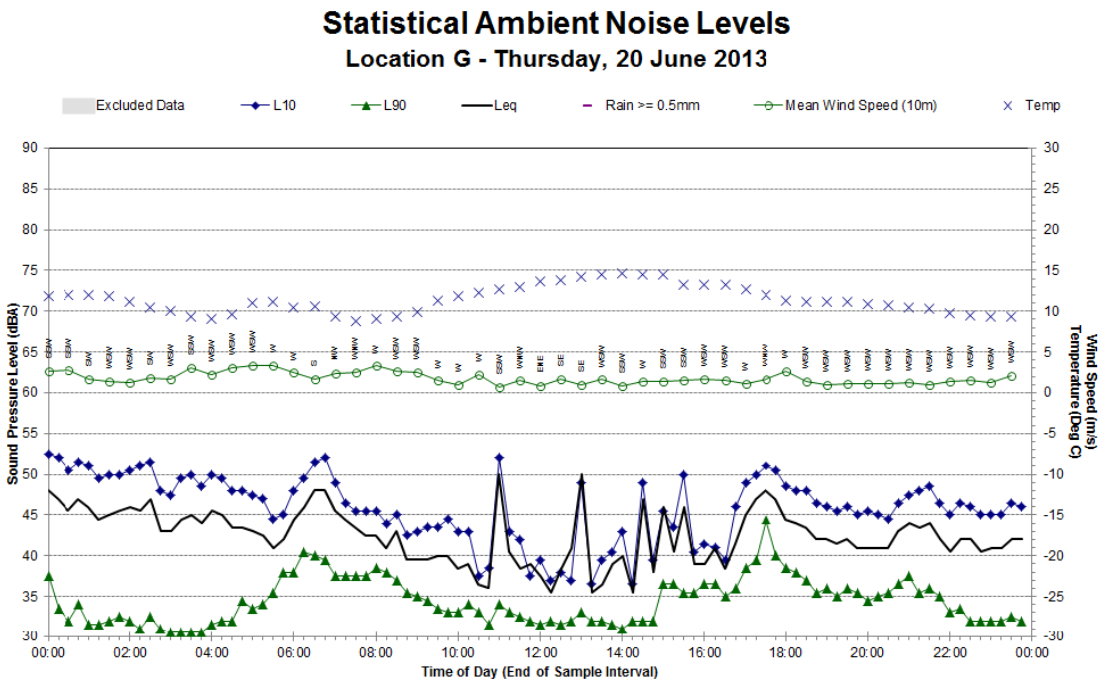
Statistical Ambient Noise Levels
Location G - Tuesday, 18 June 2013

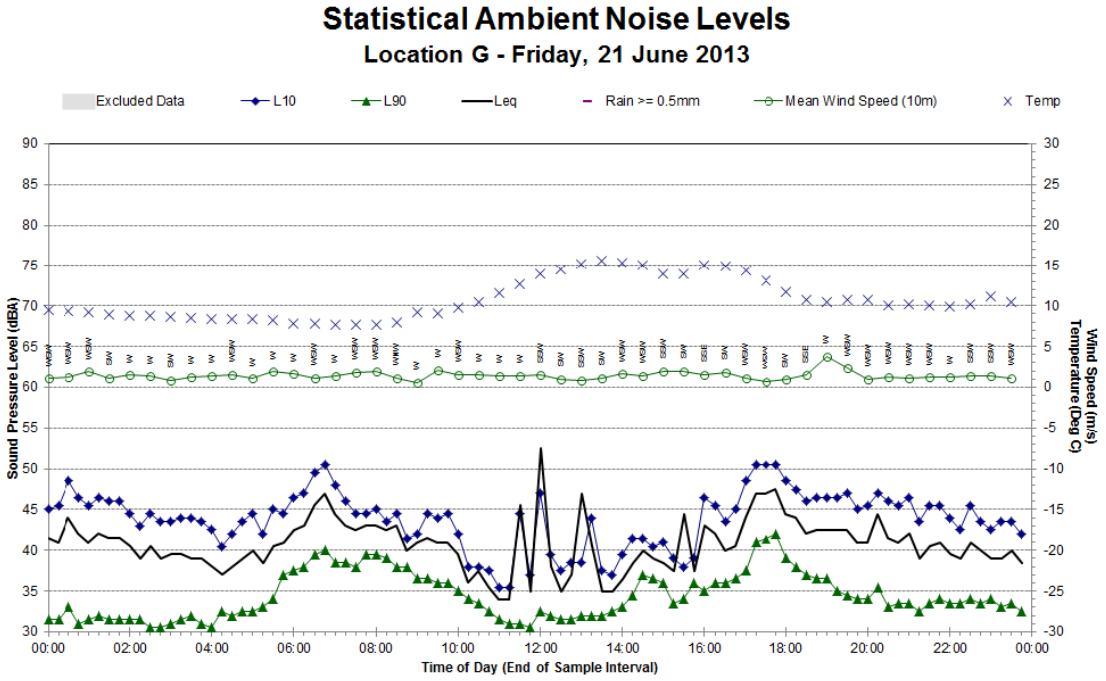


Statistical Ambient Noise Levels
Location G - Wednesday, 19 June 2013



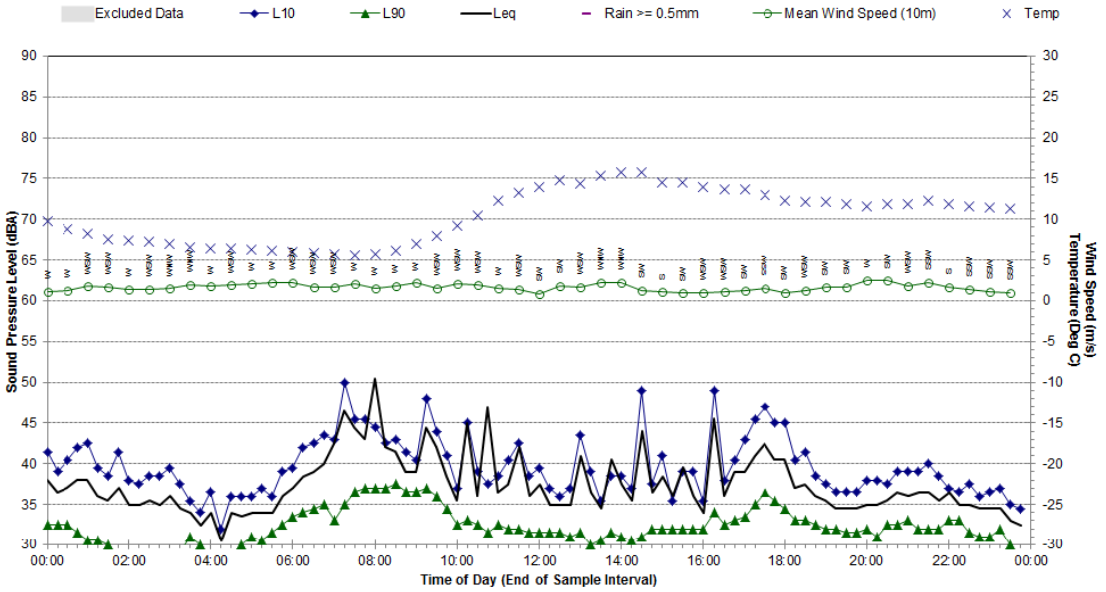
Appendix C3
Statistical Ambient Noise Levels – Location G Page 2 of 4



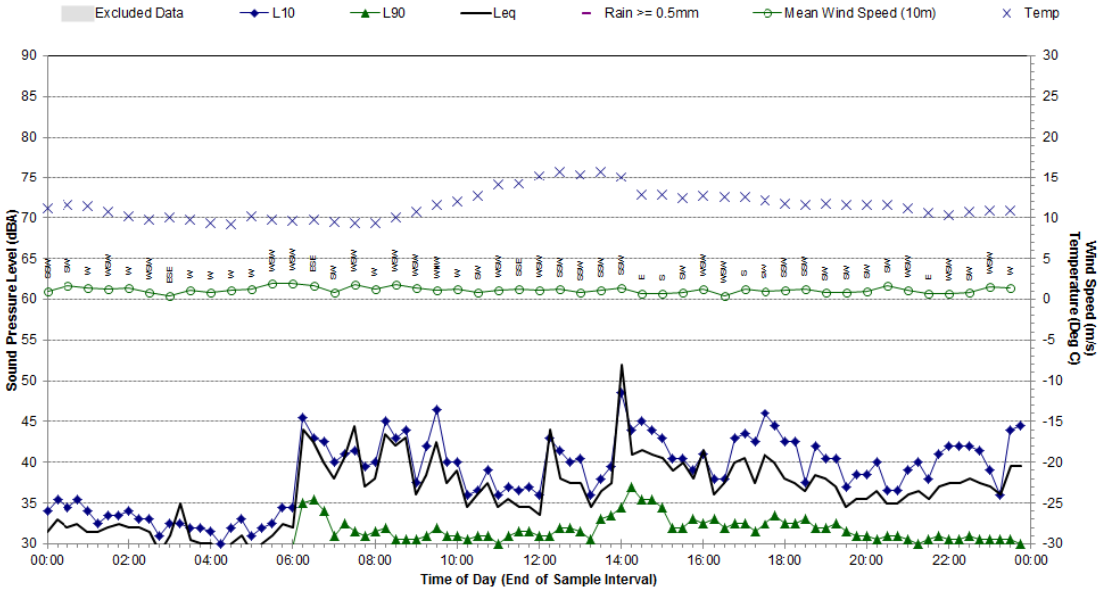


Appendix C3
Statistical Ambient Noise Levels – Location G Page 3 of 4

Statistical Ambient Noise Levels
Location G - Saturday, 22 June 2013



Statistical Ambient Noise Levels
Location G - Sunday, 23 June 2013

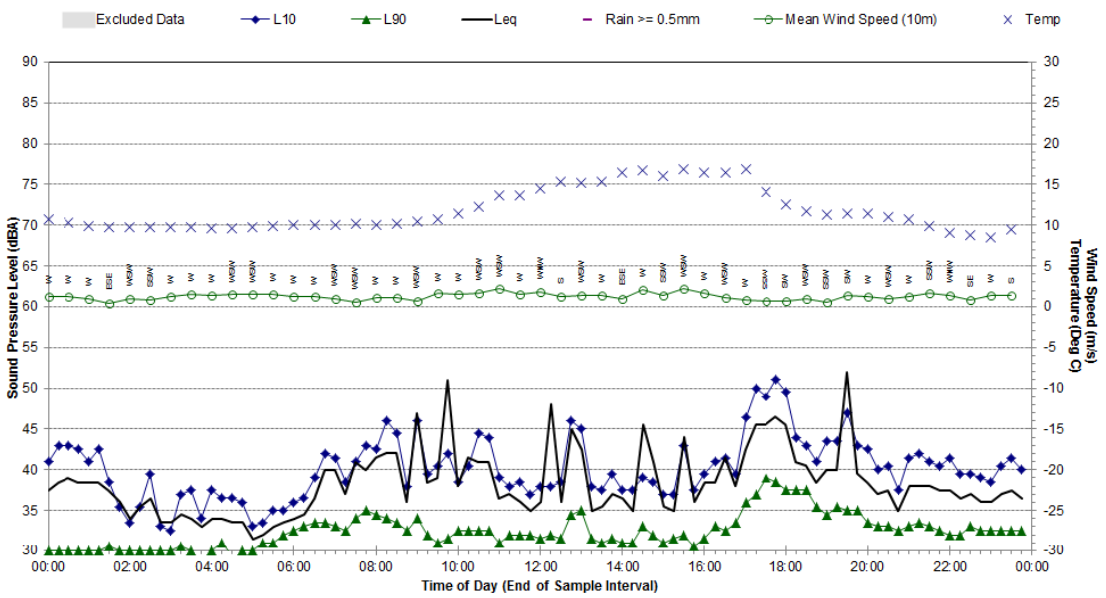


Appendix C3

Statistical Ambient Noise Levels – Location G Page 4 of 4

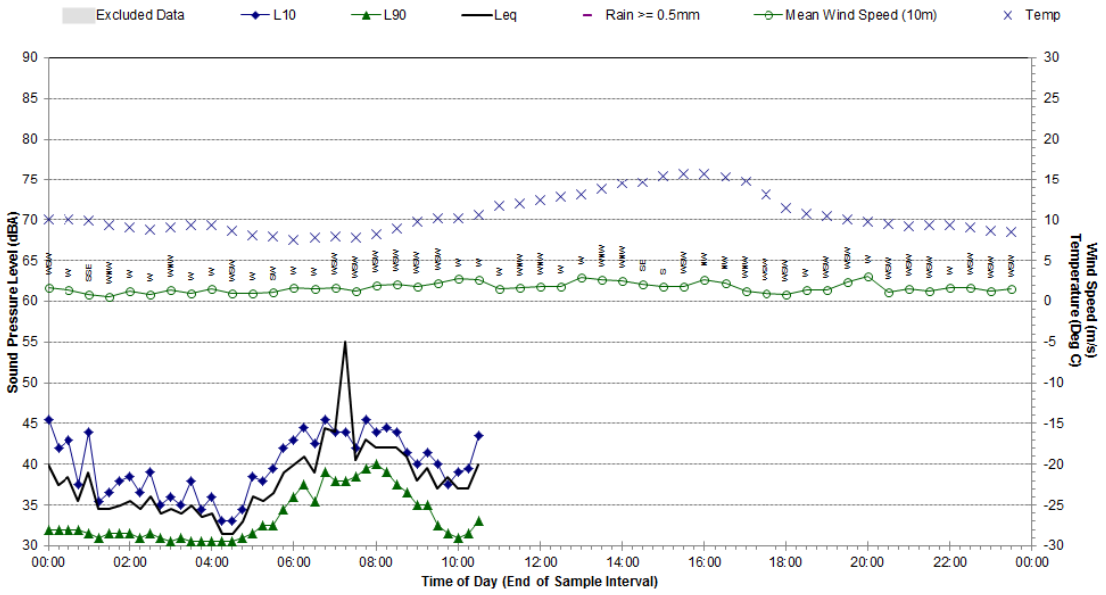
Statistical Ambient Noise Levels

Location G - Monday, 24 June 2013



Statistical Ambient Noise Levels

Location G - Tuesday, 25 June 2013

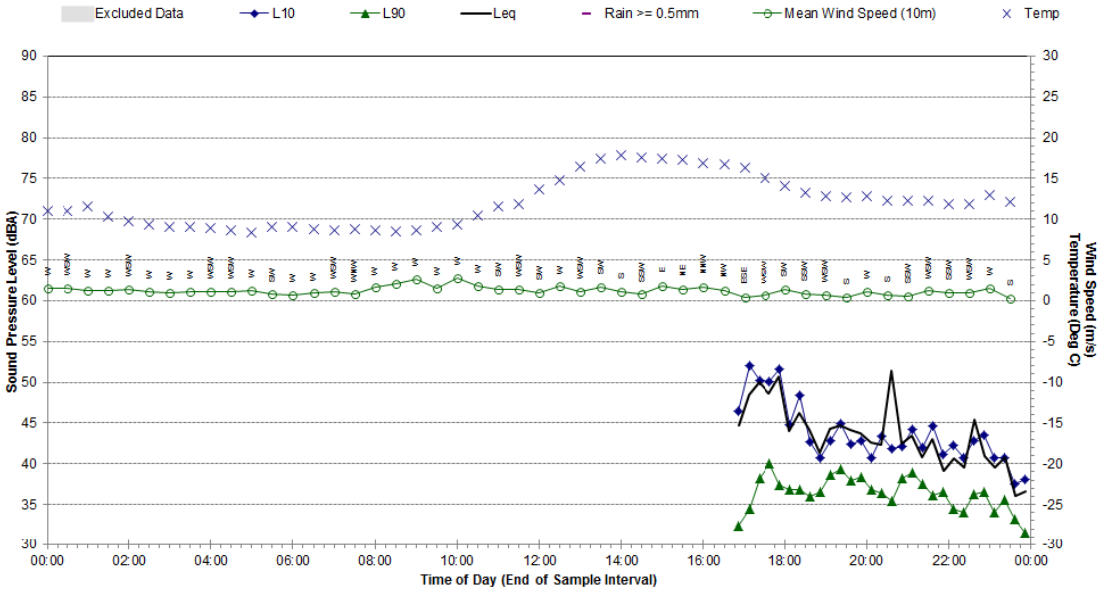


Appendix C4

Statistical Ambient Noise Levels – Location L Page 1 of 4

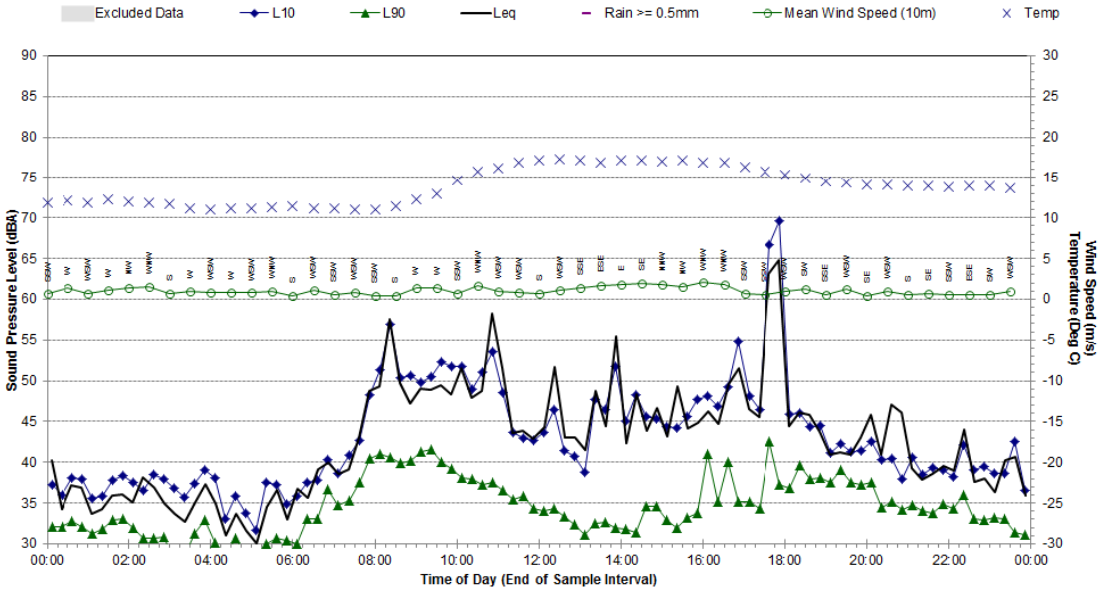
Statistical Ambient Noise Levels

Location L - Wednesday, 5 June 2013



Statistical Ambient Noise Levels

Location L - Thursday, 6 June 2013

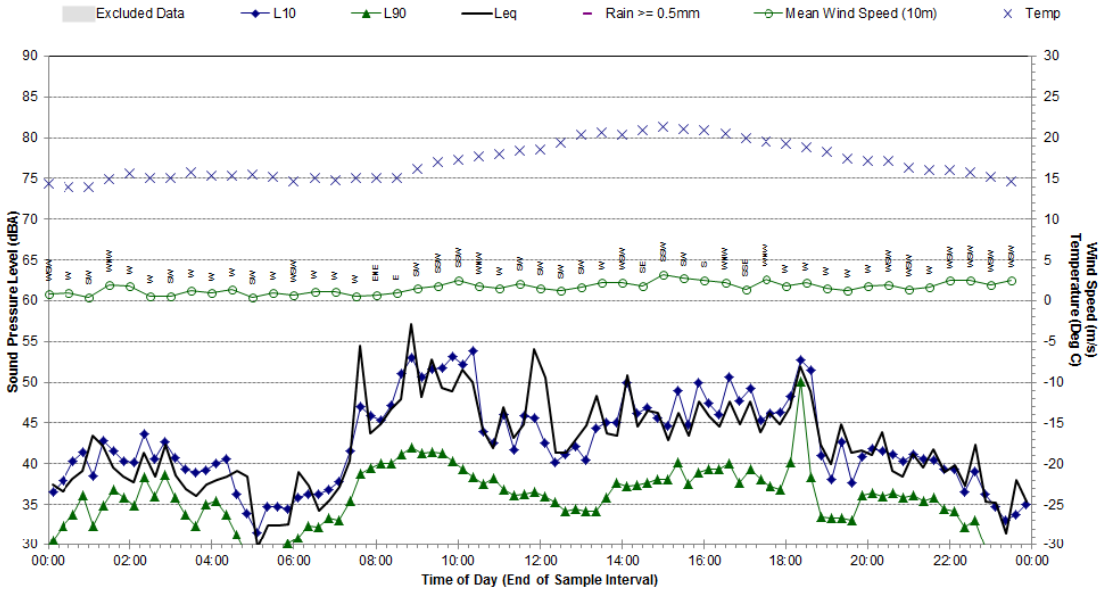


Appendix C4

Statistical Ambient Noise Levels – Location L Page 2 of 4

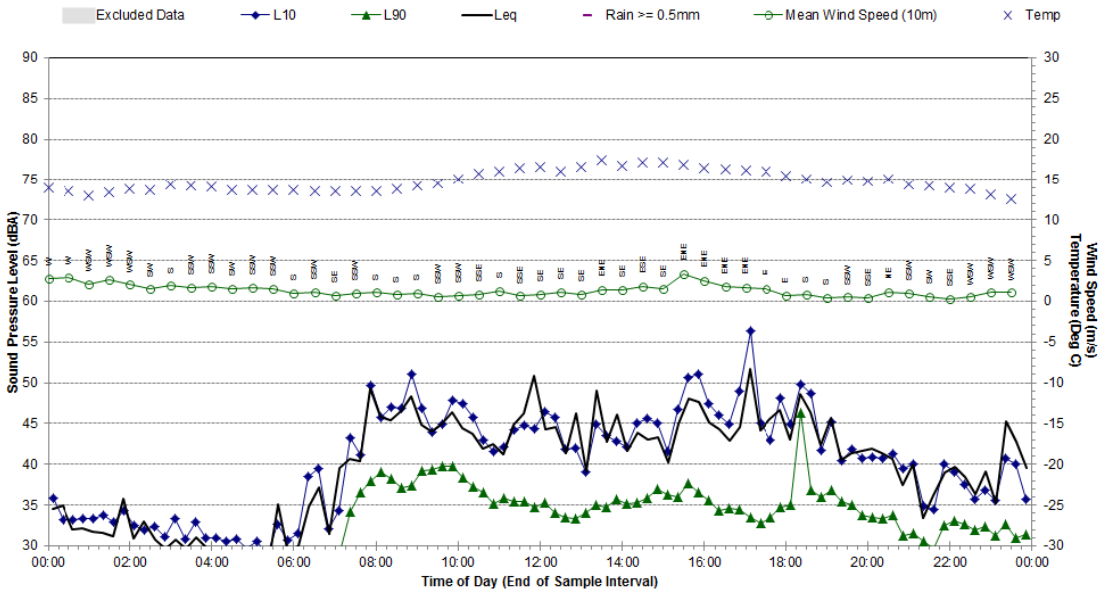
Statistical Ambient Noise Levels

Location L - Friday, 7 June 2013



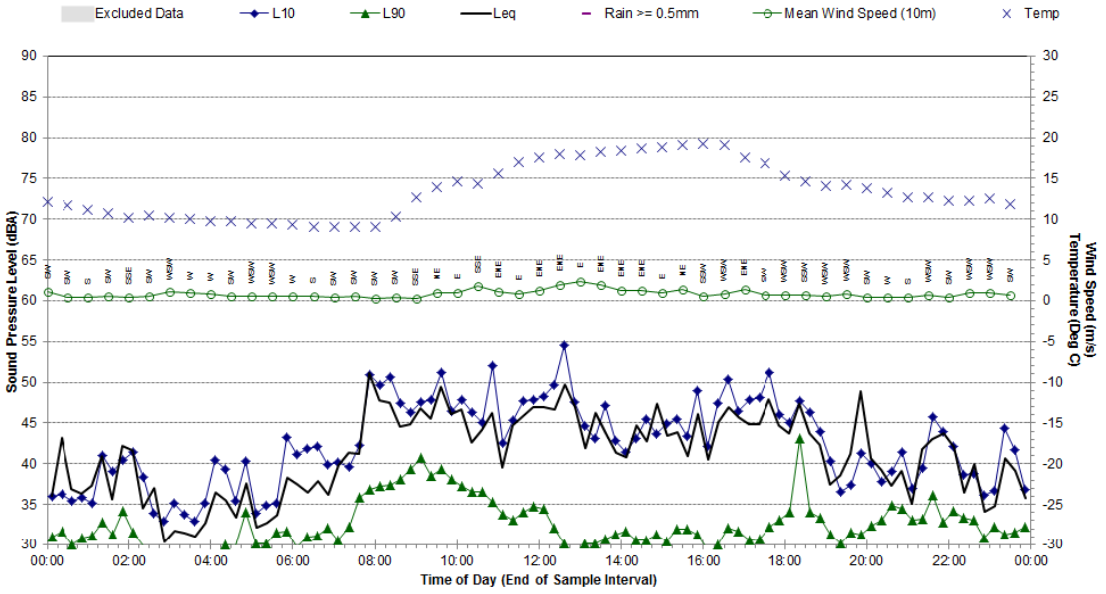
Statistical Ambient Noise Levels

Location L - Saturday, 8 June 2013

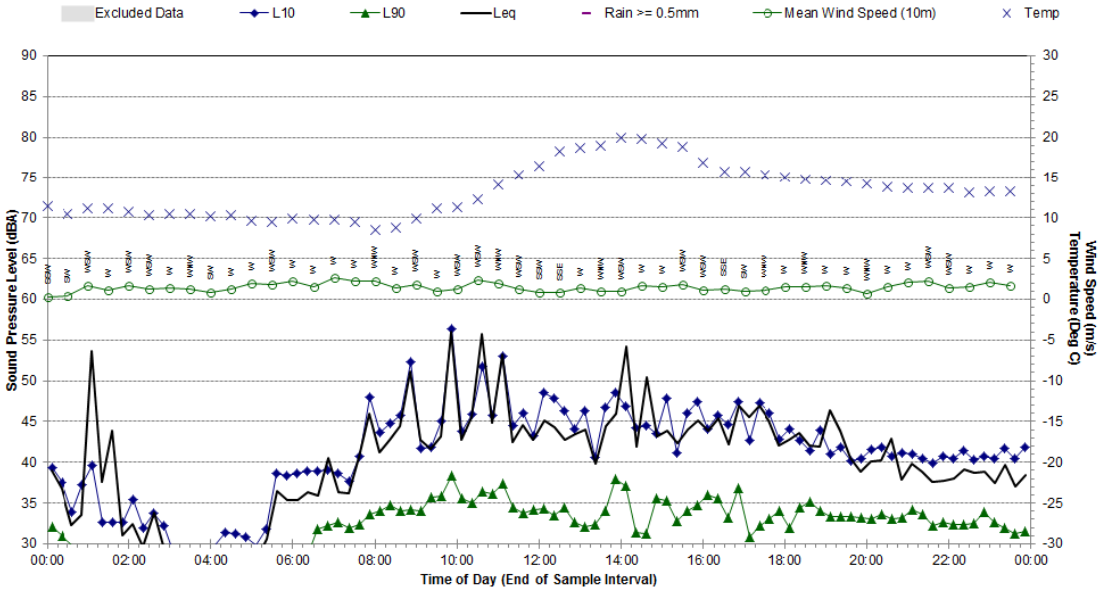


Appendix C4
Statistical Ambient Noise Levels – Location L Page 3 of 4

Statistical Ambient Noise Levels
Location L - Sunday, 9 June 2013



Statistical Ambient Noise Levels
Location L - Monday, 10 June 2013

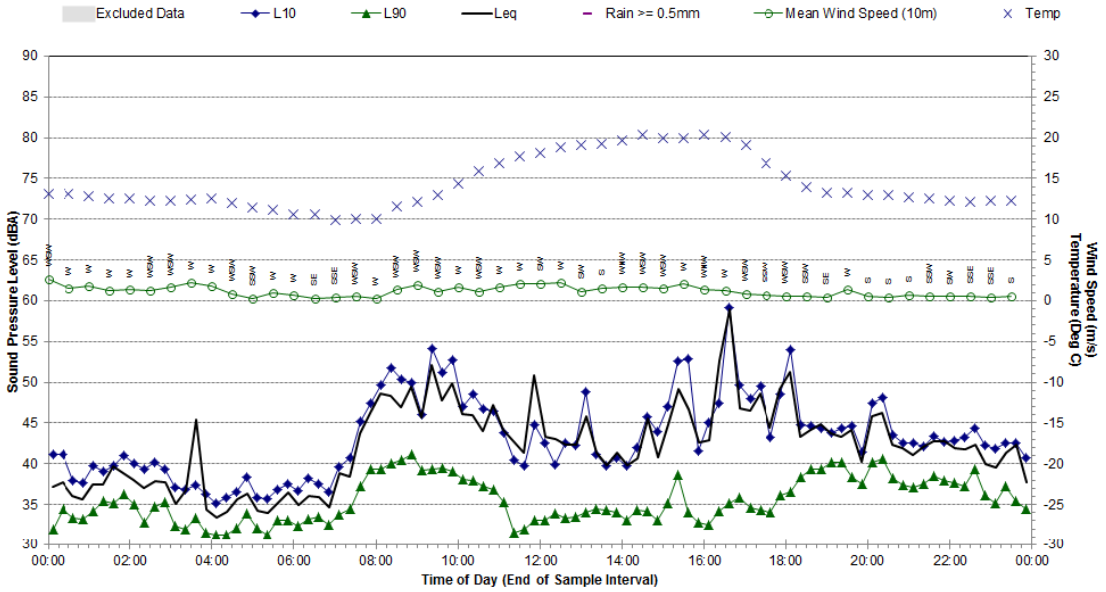


Appendix C4

Statistical Ambient Noise Levels – Location L Page 4 of 4

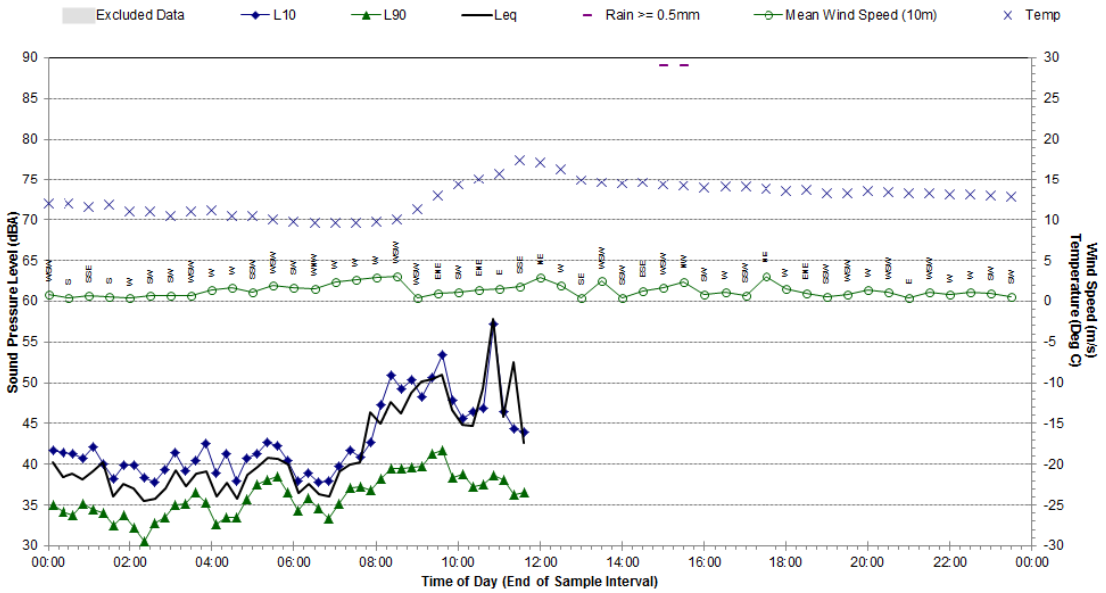
Statistical Ambient Noise Levels

Location L - Tuesday, 11 June 2013

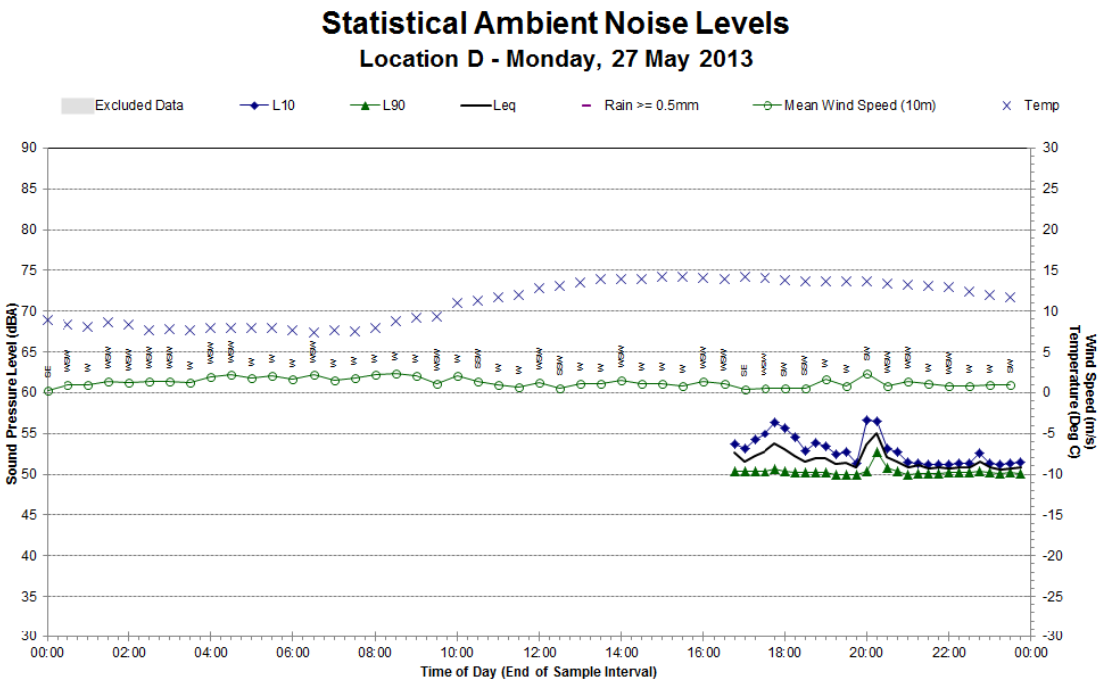


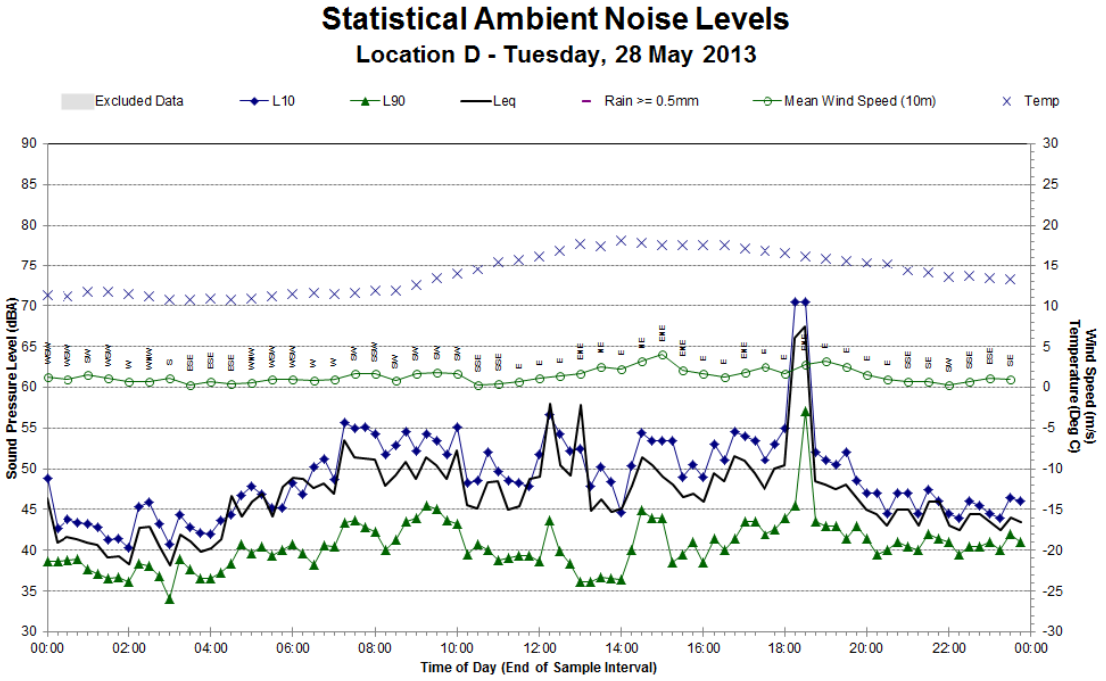
Statistical Ambient Noise Levels

Location L - Wednesday, 12 June 2013



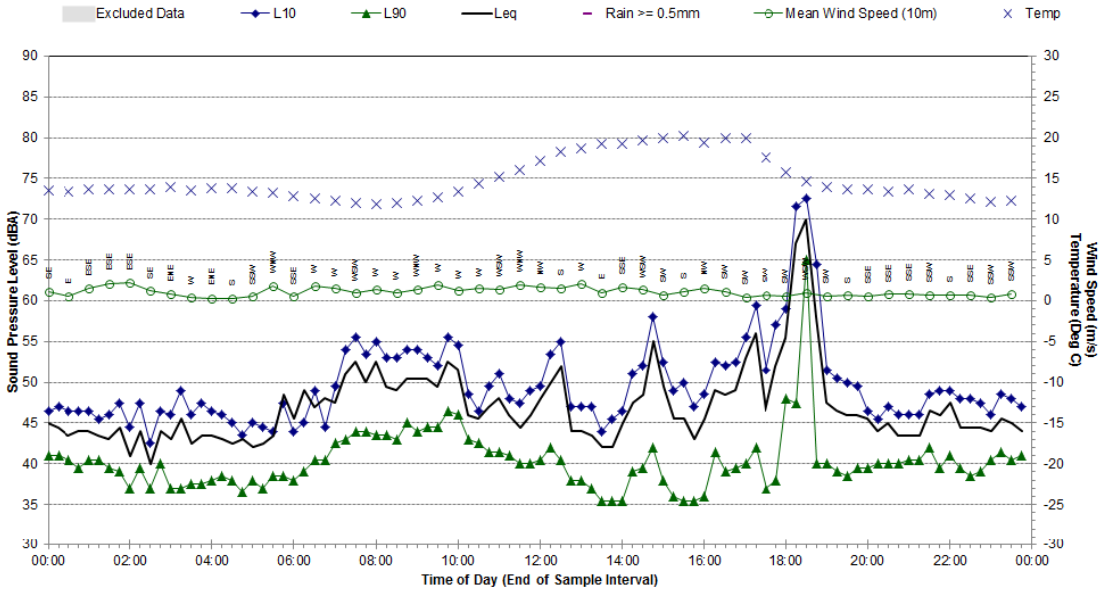
Appendix C5
Statistical Ambient Noise Levels – Location D Page 1 of 4



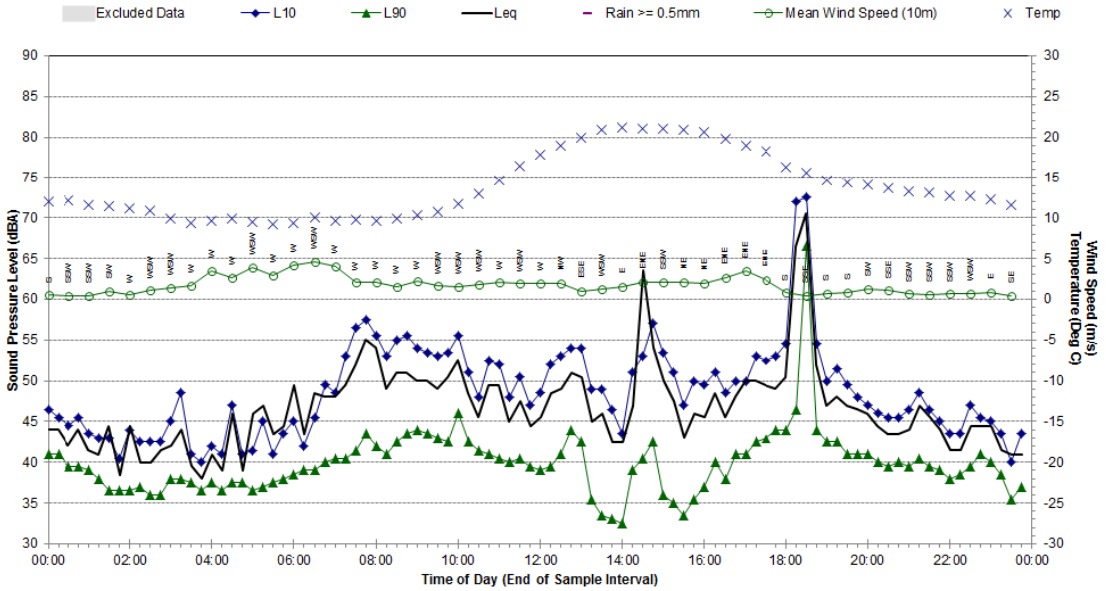


Appendix C5
Statistical Ambient Noise Levels – Location D Page 2 of 4

Statistical Ambient Noise Levels
Location D - Wednesday, 29 May 2013

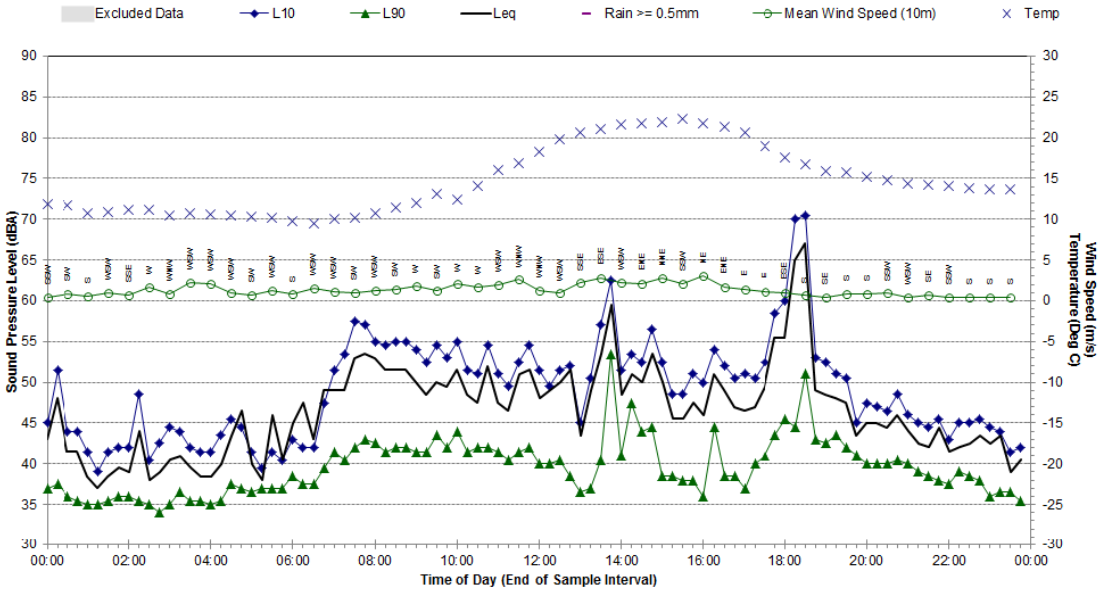


Statistical Ambient Noise Levels
Location D - Thursday, 30 May 2013

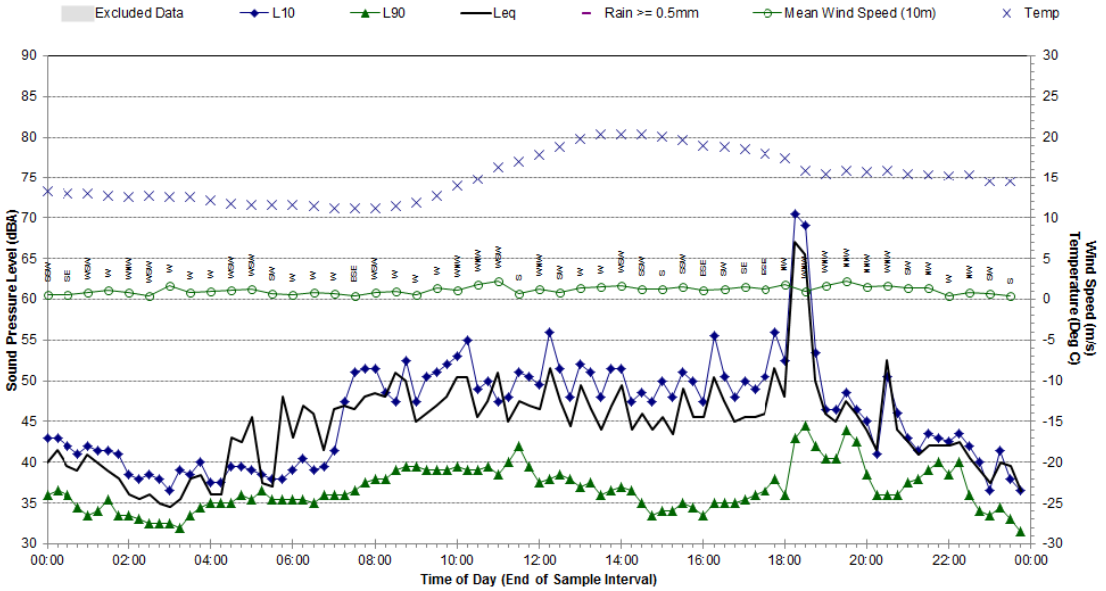


Appendix C5
Statistical Ambient Noise Levels – Location D Page 3 of 4

Statistical Ambient Noise Levels
Location D - Friday, 31 May 2013

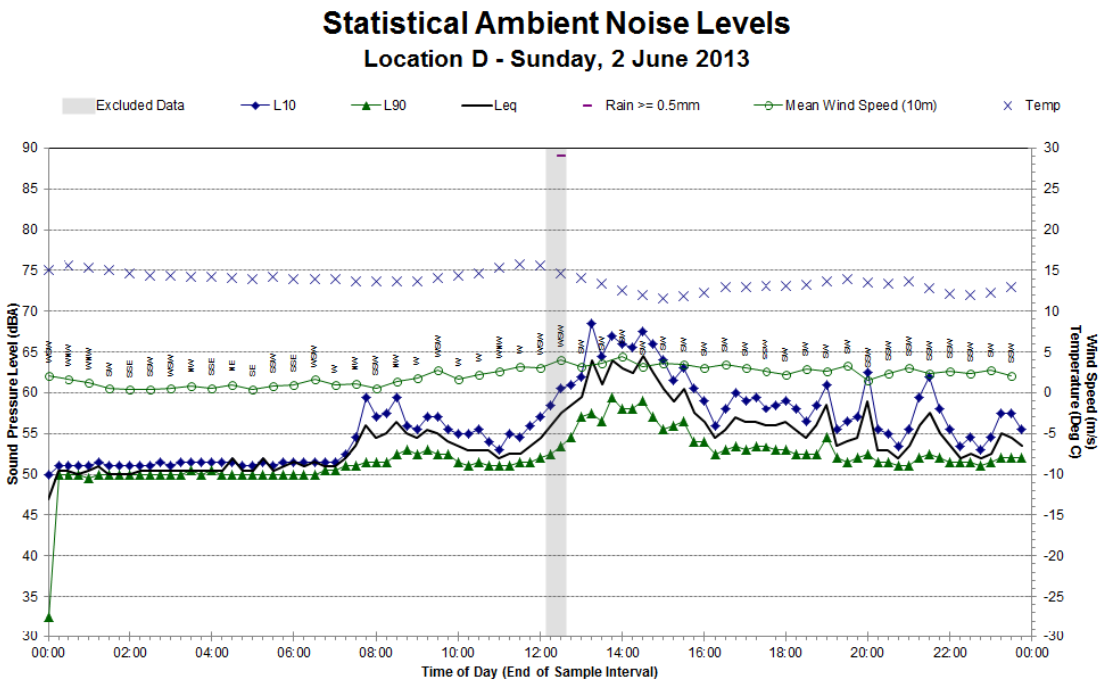


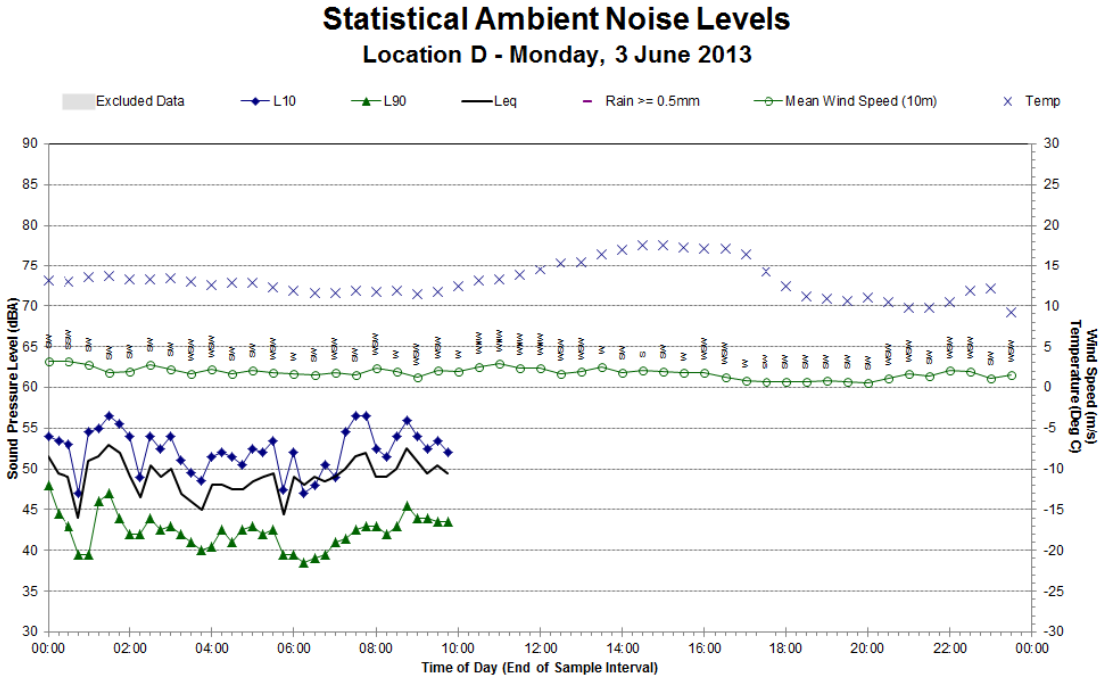
Statistical Ambient Noise Levels
Location D - Saturday, 1 June 2013



Appendix C5

Statistical Ambient Noise Levels – Location D Page 4 of 4





Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending September 2013

Report Number Q51 630.01053R1

9 January 2014

Donaldson Coal Pty Ltd
PO Box 675
Green Hills 2320

Version: Draft 1

Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending September 2013

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
Q51 630.01053R1	Draft 1	9 January 2014	Nicholas Vandenberg	Nathan Archer	

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TABLES

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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 SLR Consulting Pty Ltd (SLR) 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 than 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

Approved Operations

The following operations are approved under the Abel Colliery Project Approval:

- Extraction of up to 4.5 Mtpa of ROM coal from the Abel Underground Coal Mine by bord and pillar methods.
- Transport coal to the existing Bloomfield CHPP by private haul roads.
- Operate the Bloomfield CHPP to process coal extracted from the Abel Coal Mine and the Bloomfield and Donaldson Coal Mines.
- Transportation of product coal from the Bloomfield site by rail via the Bloomfield rail loading facility.

The PA was modified in June 2010 (05_0136 MOD 1) allowing construction and operation of a downcast ventilation fan. In May 2011 the PA was modified again (05_0136 MOD 2) to allow the construction and operation of an upcast ventilation fan (and associated facilities).

Consent Conditions

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		
LAeq(15 minutes)	LAeq(15 minutes)	LAeq(15 minutes)	LA1(1 minute)	Location and Locality*
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 program 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*".

All acoustic instrumentation employed throughout the monitoring programme has been designed to comply with the requirements of IEC 61672.1-2004 "*Electroacoustics – Sound Level Meters – Specifications*" and carries current NATA or manufacturer calibration certificates.

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 during the September 2013 Quarter. The details of the monitoring locations are contained within **Table 1**.

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
D	Black Hill School, Black Hill
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield

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 approximately a seven (7) day period between 20 August 2013 and 6 September 2013 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 Noise 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:

- Moving/rehandling topsoil in the eastern pit.
- Moving/rehandling waste material to west pit.
- Grader and water cart in operation.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was a ventilation fan and the Bloomfield Coal Handling and Preparation Plant (CHPP).

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Noise Monitoring

Operator attended noise measurements were conducted during the daytime on Wednesday 4 September 2013 and Friday 6 September 2013, during the evening on Thursday 5 September 2013 and during the night-time on Thursday 5 September 2013 and Friday 6 September 2013. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, integrating sound level meter (s/n: 2679354).

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	
06/09/2013 09:08 W = 1m/s W Temp = 10°C Cloud cover = 0/8	Daytime Ambient	61	53	49	44	47	Traffic ~ 40 to 61
		Donaldson and Abel mines ~ Inaudible					
05/09/2013 20:44 W = Calm Temp = 15°C Cloud cover = 3/8	Evening Ambient	84	76	69	54	66	Traffic ~ 65 to 84 dBA
		Donaldson and Abel mines ~ Inaudible					
06/09/2013 00:47 W = 0.5 m/s SE Temp = 9°C Cloud cover = 2/8	Night-time Ambient	83	71	58	38	59	Traffic ~ 63 to 81 dBA Trees Rustling ~ 37 dBA Insects ~ 41 to 43 dBA
		Donaldson and Abel mines ~ Inaudible					

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

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
4/09/2013 13:49 W = 0.5 m/s NE Temp = 21°C Cloud cover = 0/8	Daytime Ambient	83	73	60	45	60	JRD Traffic ~ 48 to 65 dBA Birds ~ 48 to 68 dBA Local Traffic ~ 66 to 83 dBA Resident ~ 36 to 51 dBA
		Donaldson and Abel mines ~ Inaudible					
05/09/2013 19:38 W = Calm Temp = 17°C Cloud cover = 0/8	Evening Ambient	82	69	55	49	58	Local Traffic ~ 79 to 82 dBA Insects ~ 50 to 52 dBA Operator ~ 59 dBA JRD Traffic ~ 40 to 62 dBA Other Industry ~ <40
		Donaldson and Abel mines ~ Inaudible					
05/09/2013 23:49 W = 1m/s NW Temp = 9°C Cloud cover = 0/8	Night-time Ambient	70	61	49	41	48	Operator ~ 60 dBA Traffic ~ 56 to 65 dBA Other Industry ~ 35 to 36 dBA Local Traffic ~ 70 dBA
		Donaldson and Abel mines ~ Inaudible					

Table 4 Location G, 156 Buchannan Road, Buchannan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
4/09/2013 15:17 W = 2 m/s SE Temp = 24°C Cloud cover = 0/8	Daytime Ambient	59	51	47	38	43	Insects~ 41 dBA Other Industry ~ 38 to 40 dBA Operator ~ 54 dBA Birds ~ 49 to 53 dBA Resident ~ 45 dBA Plane ~ 46 to 51 dBA
		Donaldson and Abel mines ~ Inaudible					
05/09/2013 21:37 W = Calm Temp = 11°C Cloud cover = 7/8	Evening Ambient	59	49	45	35	41	Resident ~ 50 to 59 dBA Traffic ~ 37 to 48 dBA Insects ~ 40 dBA Air Con ~ 35 dBA
		Donaldson and Abel mines ~ Inaudible					
05/09/2013 22:00 W = Calm Temp = 8°C Cloud cover = 0/8	Night-time Ambient	54	47	43	34	39	Insects ~ 35 to 40 dBA Traffic ~ 37 to 48 dBA Air Conditioner ~ 35 dBA Dog Barking ~ 54 dBA
		Donaldson and Abel mines ~ Inaudible					

Table 5 Location L, 17 Killshanny Ave, Ashtonfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
4/09/2013 15:43 Wind: 1 m/s SE Temp = 22°C Cloud cover = 0/8	Daytime Ambient	67	59	49	38	47	Birds ~ 42 to 55 dBA Residents ~ 42 to 57 dBA Distant Traffic ~ 39 to 45 dBA Local Traffic ~ 62 to 64 dBA Door Slam ~ 55 dBA Rev tone/Dozer faintly audible in lulls ~ <30 dBA
		Donaldson Mine ~ inaudible Estimated Abel LAeq Contribution ~ <30 dBA					
05/09/2013 21:10 W = 0.5 m/s SW Temp = 10°C Cloud cover = 2/8	Evening Ambient	68	54	40	36	43	Traffic ~ 35 to 68 dBA Insects ~ 36 dBA
		Donaldson and Abel mines ~ inaudible					
05/09/2013 22:29 W = Calm Temp = 10°C Cloud cover = 0/8	Night-time Ambient	58	50	40	34	40	Traffic ~ 33 to 58 dBA Dog Barking ~ 39 dBA Resident ~ 40 to 51 dBA CHPP Faintly audible in lulls of ambient noise ~ <30 dBA
		Donaldson Mine ~ inaudible Estimated Abel LAeq Contribution ~ <30 dBA Estimated Abel LA1 Contribution ~ <30 dBA					

Table 6 Location D, Black Hill School, Black Hill

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
4/09/2013 14:09 W = 1 m/s SE Temp = 22°C Cloud cover = 0/8	Daytime Ambient	80	74	61	42	60	Local Traffic ~ 71 to 80 dBA Birds ~ 44 to 48 dBA Distant Traffic ~ 43 dBA Operator ~ 50 dBA Truck Air release ~ 54 dBA Workmen ~ 70 to 78 dBA Students ~ 51 dBA
		Donaldson and Abel mines ~ Inaudible					
5/09/2013 19:19 W = Calm Temp = 17°C Cloud cover = 0/8	Evening Ambient	79	68	50	43	54	F3 Traffic ~ 43 to 51 dBA Insects ~ 40 dBA Local Traffic ~ 71 to 79 dBA Resident ~ 44 to 45 dBA
		Donaldson and Abel mines ~ Inaudible					
5/09/2013 23:29 W = 1-2 m/s NW Temp = 10°C Cloud cover = 0/8	Night-time Ambient	68	54	45	40	46	Local Traffic ~ 68 dBA Trees Rustling ~ 41 to 42 dBA Insects ~ 41 dBA Dist Traffic ~ 38 to 42 dBA Operator ~ 48 dBA
		Donaldson and Abel mines ~ Inaudible					

4.2 Operator Attended Noise 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 "natural" noises such as birds, insects and leaf rustle.

Donaldson operations were not observed to be audible at any location during the monitoring periods.

Based on results and observations from operator attended noise surveys, it is likely that the 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 "natural" noises such as birds, insects and leaf rustle.

Abel operations were observed to be audible at Location L during the daytime and night-time only but remained within the consented noise limits. Abel project operations were inaudible at all other locations.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Noise Monitoring

Unattended continuous noise monitoring was conducted between 20 August 2013 and 6 September 2013 at each of the five (5) nominated locations given in **Table 7**.

Table 7 Noise Loggers and Noise Monitoring Locations

Location	Noise Logger Serial Number	Date of Logging
A – Weakleys Drive, Beresfield	01dB DUO (10826)	28/08/2013 to 06/09/2013
F – Black Hill Road, Black Hill	16-306-039	20/08/2013 to 28/08/2013
G – Buchanan Road, Buchanan	01dB DUO (10767)	28/08/2013 to 06/09/2013
L – Kilshanny Ave, Kilshanny	16-301-473	28/08/2013 to 06/09/2013
D – Black Hill School, Black Hill	16-301-473	20/08/2013 to 28/08/2013

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 (INP). 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 obtained from the Cessnock Airport weather station located approximately 25 km east of the project site. 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 Noise Monitoring Ambient Noise Levels (dBA Re 20 µPa)

Location	Period	Primary Noise Descriptor (dBA re 20 µPa)			
		L_{A1}	L_{A10}	L_{A90}	L_{Aeq}
A Weakleys Drive, Beresfield	Daytime	N/A*			
	Evening				
	ENCM Daytime				
	Night				
F Lot 684 Black Hill Road, Black Hill	Daytime	65	56	43	58
	Evening	60	53	43	51
	ENCM Daytime	64	56	42	58
	Night	57	50	40	51
G 156 Buchanan Road, Buchanan	Daytime	51	46	34	50
	Evening	48	44	35	54
	ENCM Daytime	50	46	34	51
	Night	42	37	<30	42
L 17 Kilshanny Ave, Ashtonfield	Daytime	58	49	32	50
	Evening	52	42	35	45
	ENCM Daytime	56	46	32	50
	Night	44	39	<30	44
D Black Hill School, Black Hill	Daytime	58	52	34	51
	Evening	56	45	32	47
	ENCM Daytime	57	50	32	52
	Night	51	42	31	51

Note: 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.
* No data recorded due to logger malfunction.

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

5.2.1 Ambient L_{A90} Noise Levels

Figure 1 Long term Daytime L_{A90} Noise Levels

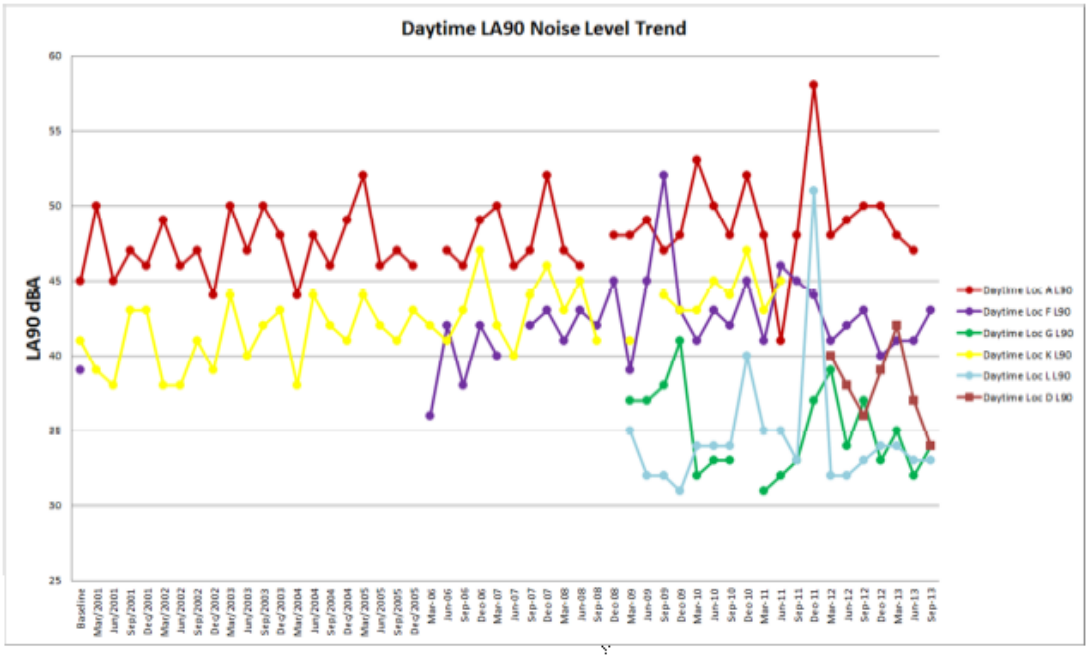


Figure 2 Long term Evening L_{A90} Noise Levels

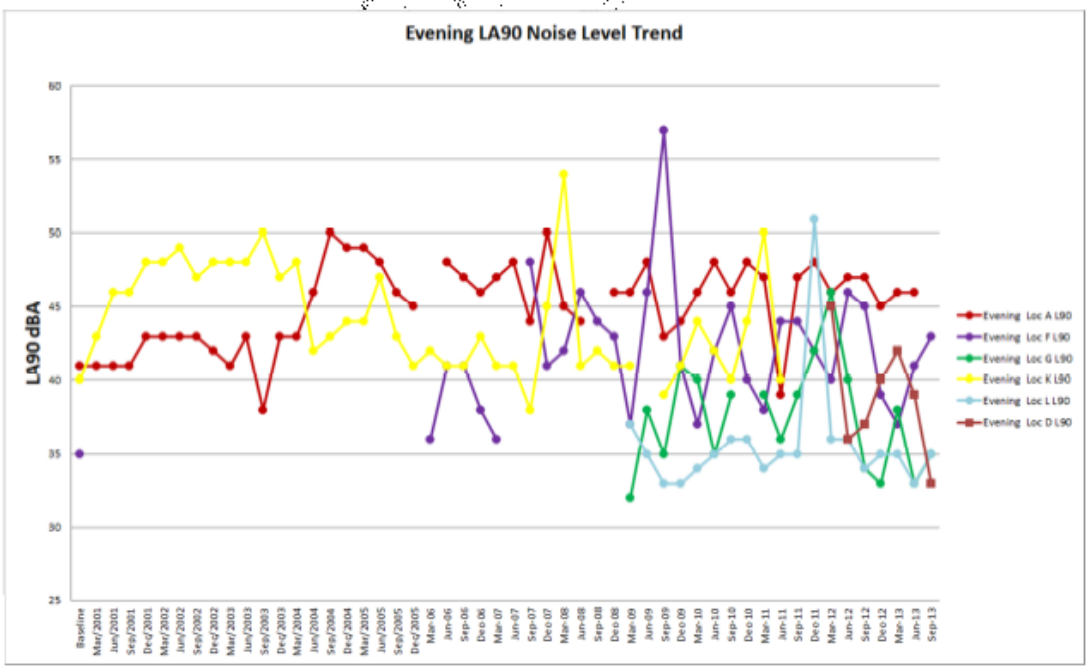
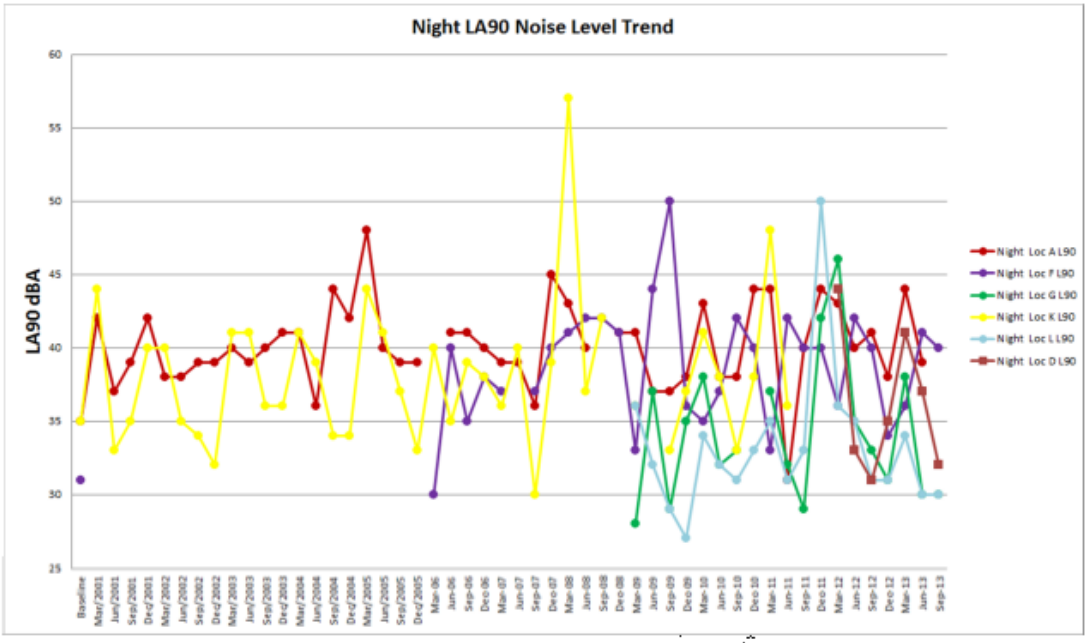


Figure 3 Long term Night-time L_{A90} Noise Levels



Baseline

The summary of results in **Table 8** and **Figure 1**, **Figure 2** and **Figure 3** show that ambient L_{A90} noise levels recorded for the quarter ending September 2013 compared to the levels recorded during the baseline monitoring process at Location F were 4 dBA, 8 dBA and 9 dBA higher during the daytime, evening and night-time periods at respectively.

Given that no data was available at Locations D, G and L during baseline measurements and no monitoring was conducted at Location K during the September 2013 quarter no comparisons can be made. Due to a logger malfunction at Location A, no comparison can be made.

Previous Quarter (June 2013)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were generally similar (within 3 dBA) or lower than those recorded during June 2013 at Location F, Location G, Location L and Location D.

Decreases of up to 6 dBA in the L_{A90} were recorded at Location D. Due to a logger malfunction at Location A, no comparison can be made.

Coinciding Period Last Year (September 2012)

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 September 2012 at locations F, G, L and D with slight increases (1 dBA) at location L and G during the evening period and at location D during the night-time period.

Due to a logger malfunction at Location A, no comparison can be made.

5.2.2 Ambient La10 Noise Comparison

The long term ambient LA10 noise levels collected from each monitoring location are presented graphically in **Figure 4**, **Figure 5** and **Figure 6** for the daytime, evening and night-time periods respectively.

Figure 4 Long Term Daytime LA10 Noise levels

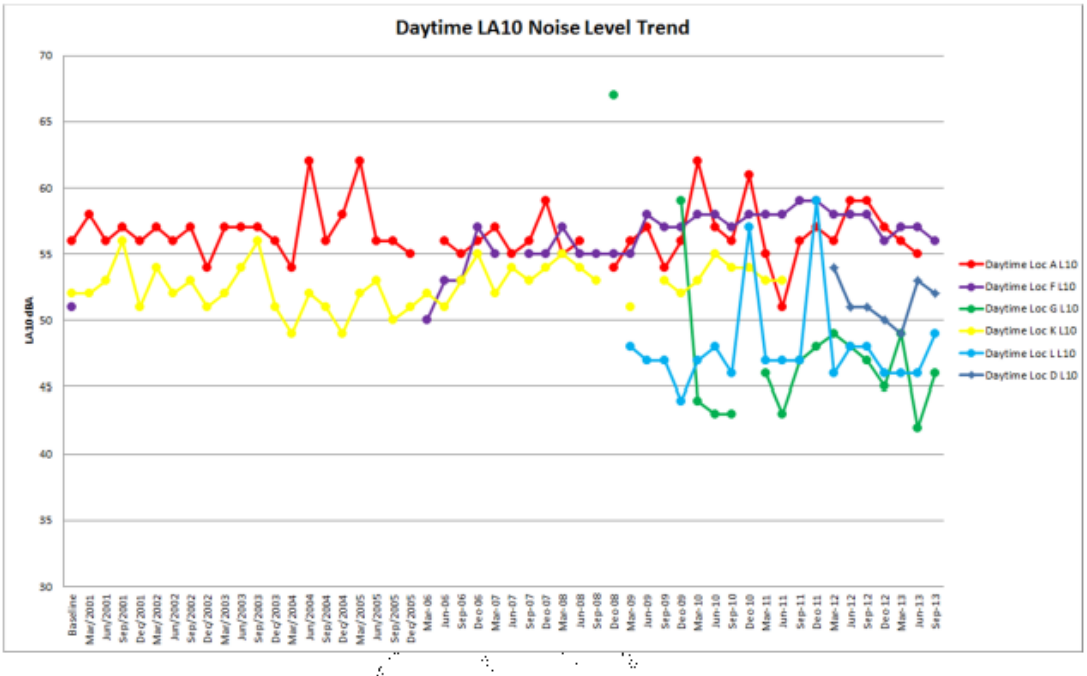


Figure 5 Long term Evening L_{A10} Noise Levels

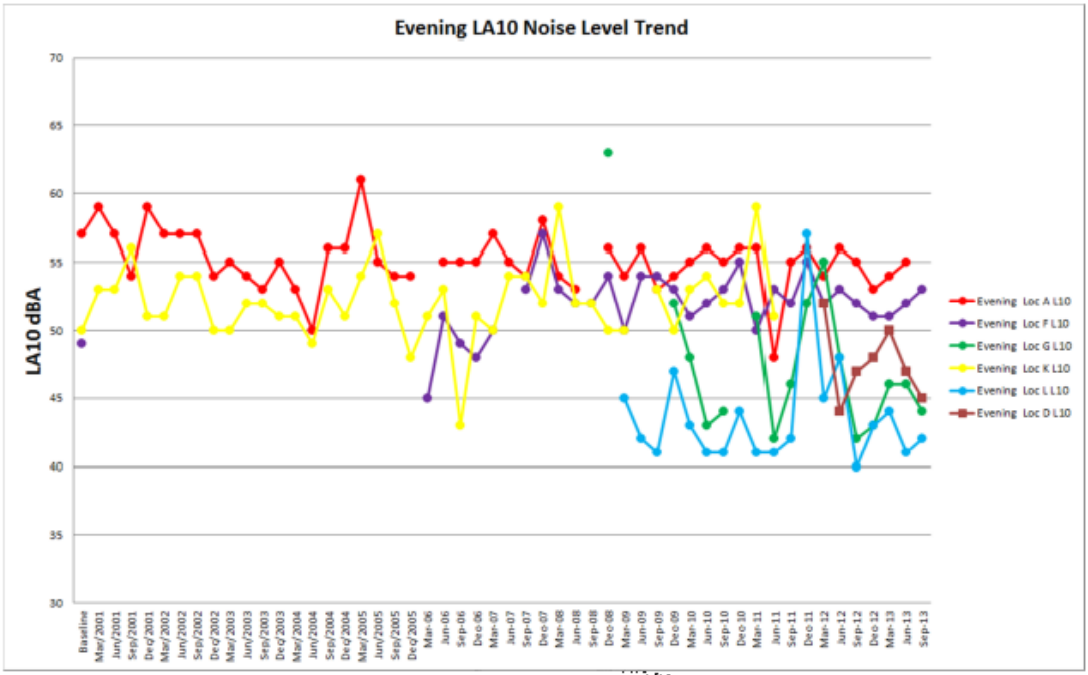
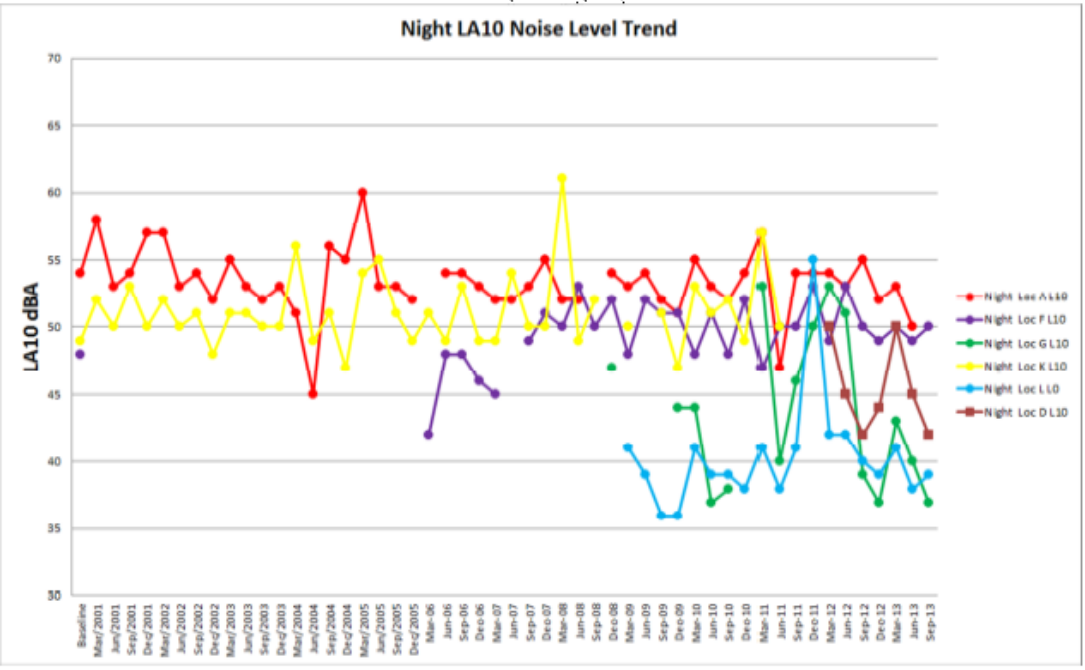


Figure 6 Long term Night-time L_{A10} Noise Levels



Baseline

The summary of results in **Table 8** and **Figure 4**, **Figure 5** and **Figure 6** show that ambient L_{A10} noise levels recorded for the quarter ending September 2013 were 5 dBA greater than levels recorded during the baseline monitoring process at Location F during the daytime, 4 dBA higher during the evening and 3 dBA higher during the night-time period.

Given that no data was available at Locations G, L and D during baseline measurements during the September 2013 quarter no comparisons can be made.

Due to a logger malfunction at Location A, no comparison can be made.

Previous Quarter (June 2013)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at Location F, Location L and Location D were similar (within 3 dBA) or lower to those recorded in June 2013. At Location G increases of 4 dBA were recorded during the daytime monitoring period.

Due to a logger malfunction at Location A, no comparison can be made.

Coinciding Period Last Year (September 2012)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels were generally similar (within 2 dBA) than those recorded in September 2012 at all monitoring locations.

Due to a logger malfunction at Location A, no comparison can be made.

5.3 Discussion

Based on the observations made during the operator attended noise surveys, where noise levels have been observed to increase at Location F, the ambient noise environment is dominated by road traffic or natural noises and not considered to be impacted from the Donaldson or Abel Mine activity.

6 SUMMARY OF RESULTS AND FINDINGS

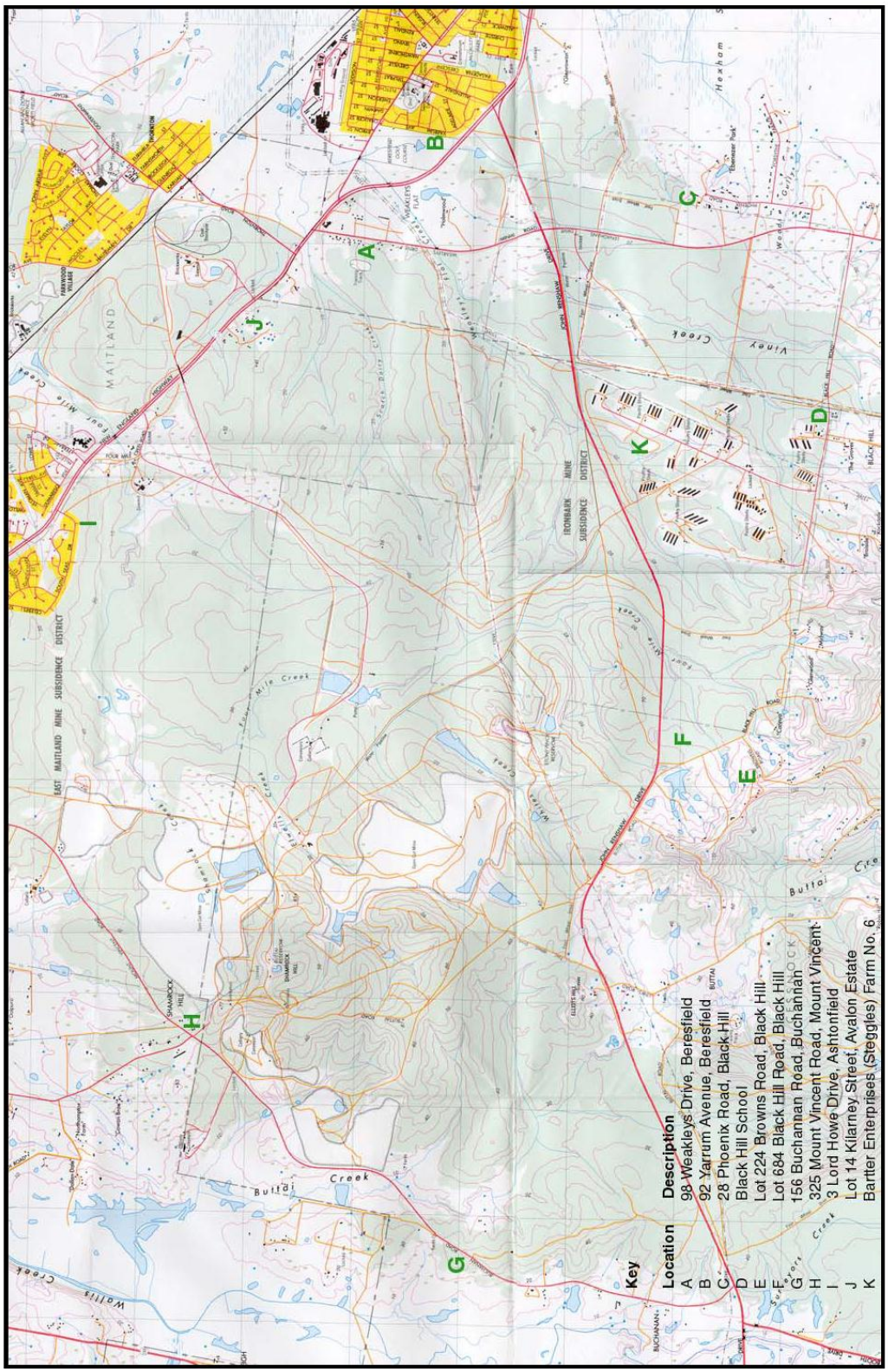
SLR was engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2008.

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**.

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

Abel Mine operations at the CHPP were audible at Location L during the daytime and night-time periods but remained within the Consented noise limits. Abel operations were not audible at any other locations during all periods and as such it is likely that contributed noise levels from Abel Mine did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Mine *Project Approval* at all locations.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (September 2013), the baseline monitoring period, the last monitoring period (June 2013), and the coinciding monitoring period from last year (September 2012) has been conducted.



Appendix A – Page 1
Noise Monitoring Locations
Report 30-1053

Appendix B

Report Q39 30-1053-R1
Equipment Register Page 1 of 1

APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – March 2010

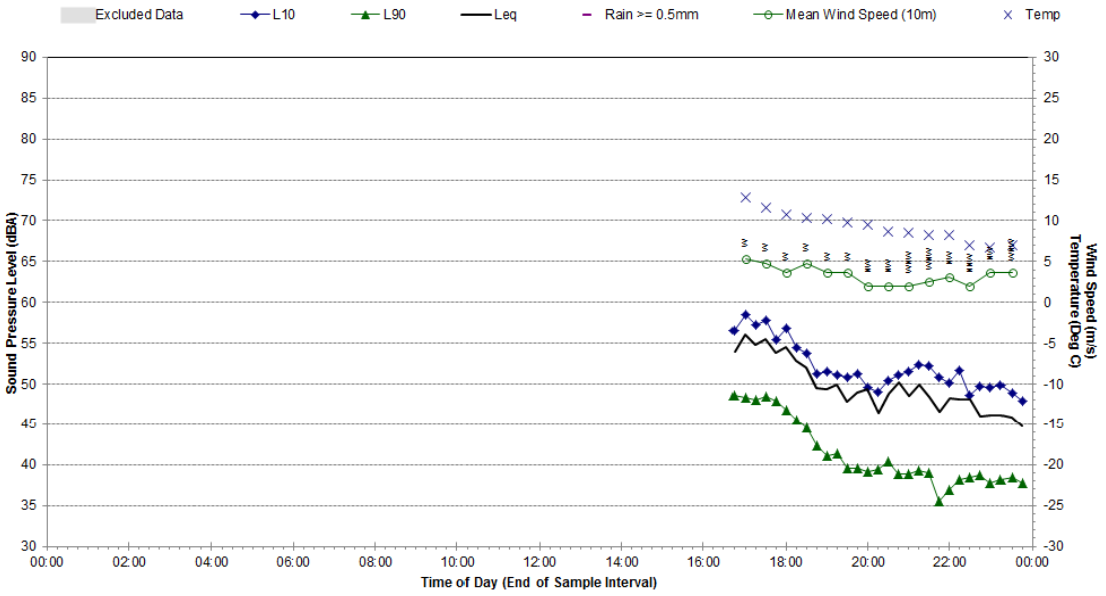
Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 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	

Appendix C1

Statistical Ambient Noise Levels – Location F Page 1 of 5

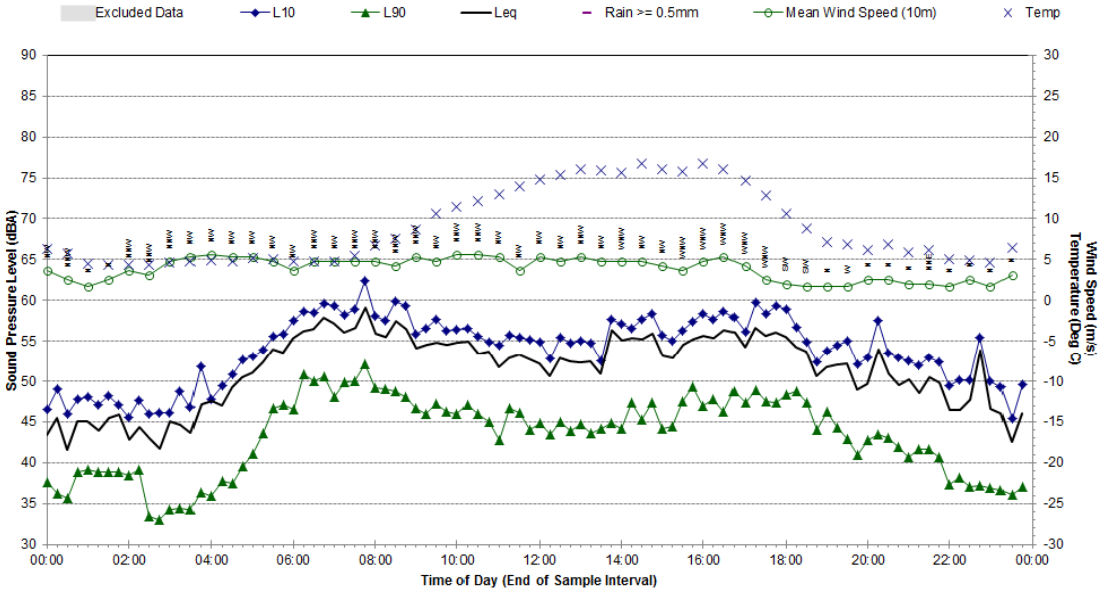
Statistical Ambient Noise Levels

Location F - Tuesday, 20 August 2013



Statistical Ambient Noise Levels

Location F - Wednesday, 21 August 2013

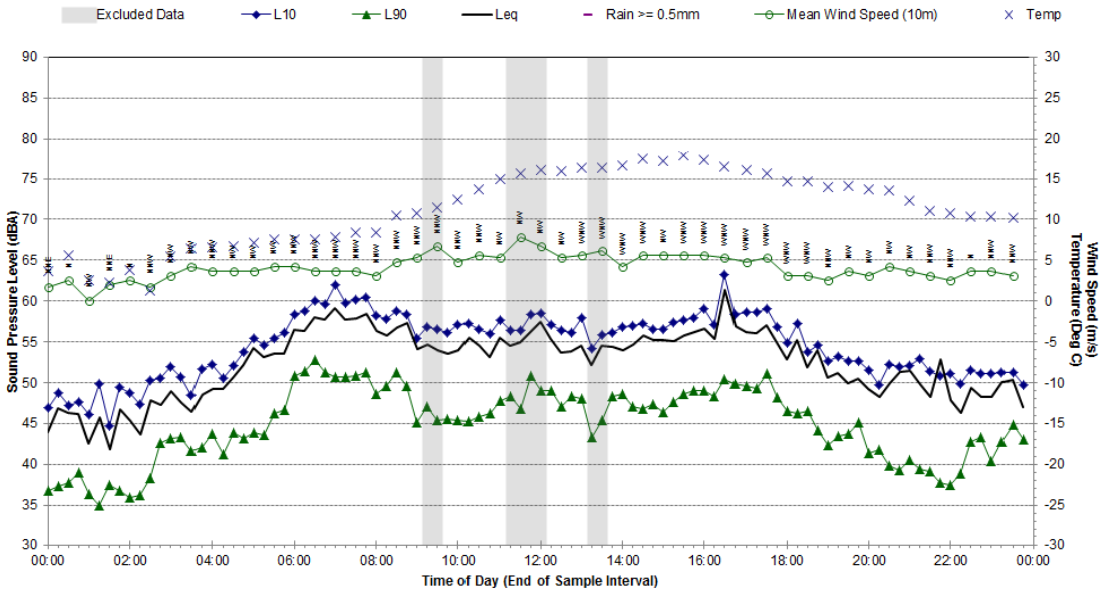


Appendix C1

Statistical Ambient Noise Levels – Location F Page 2 of 5

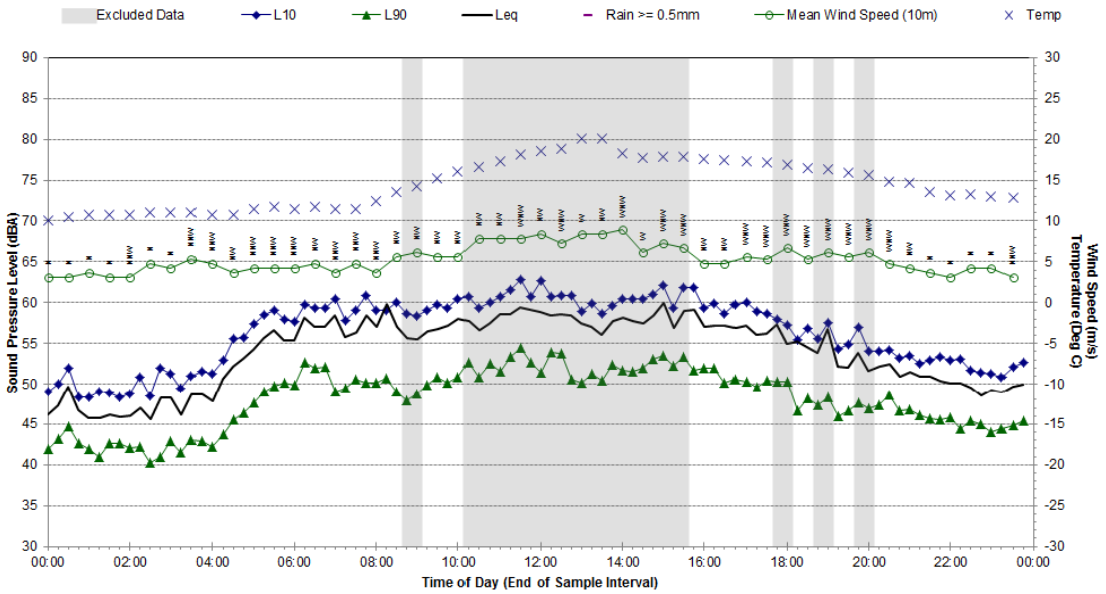
Statistical Ambient Noise Levels

Location F - Thursday, 22 August 2013



Statistical Ambient Noise Levels

Location F - Friday, 23 August 2013

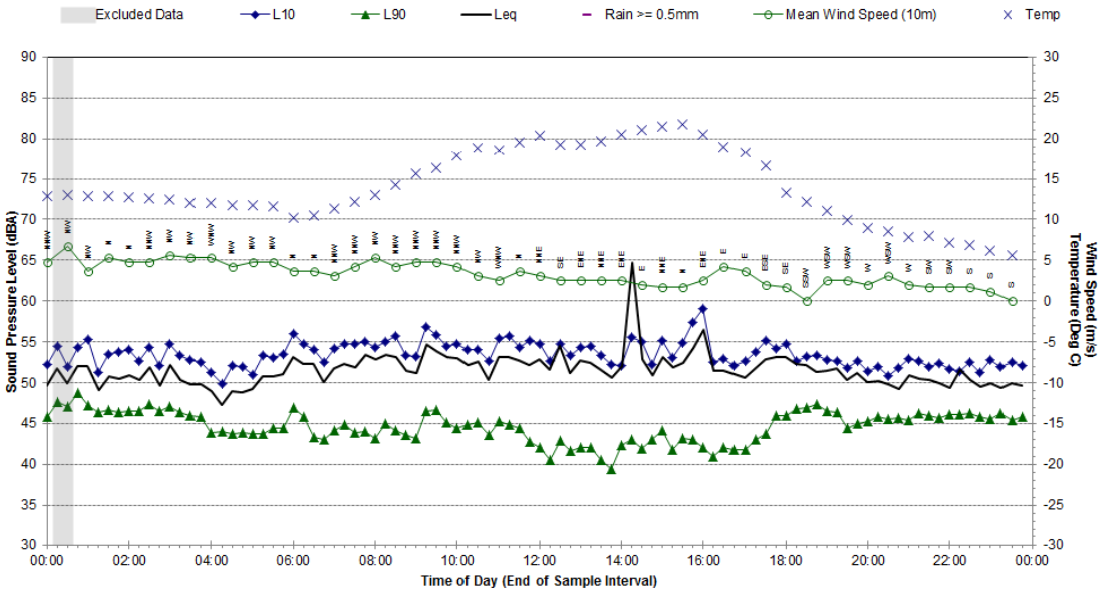


Appendix C1

Statistical Ambient Noise Levels – Location F Page 3 of 5

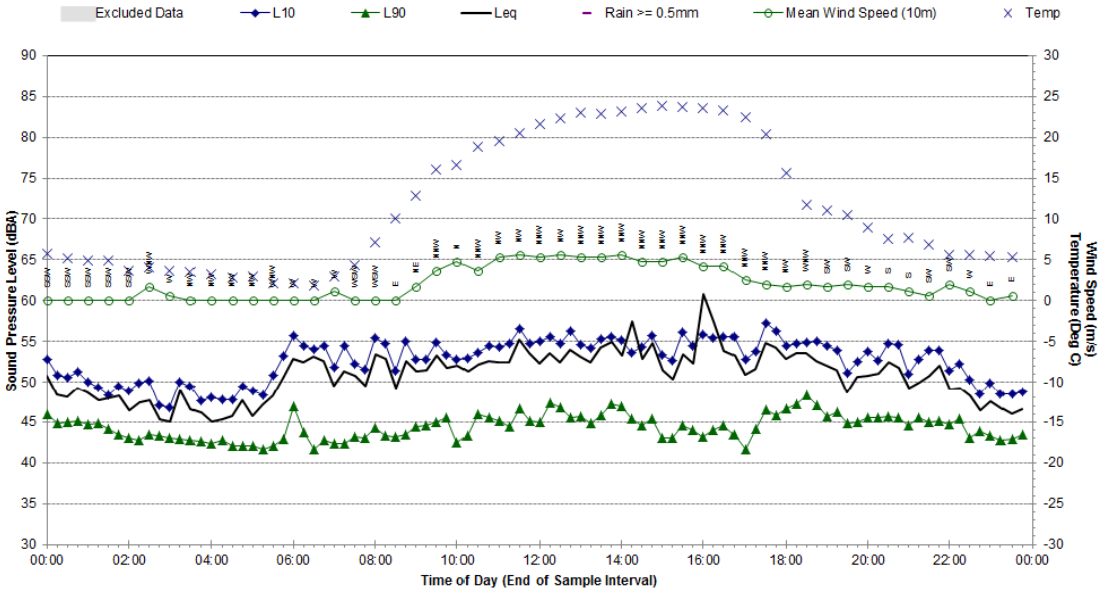
Statistical Ambient Noise Levels

Location F - Saturday, 24 August 2013



Statistical Ambient Noise Levels

Location F - Sunday, 25 August 2013

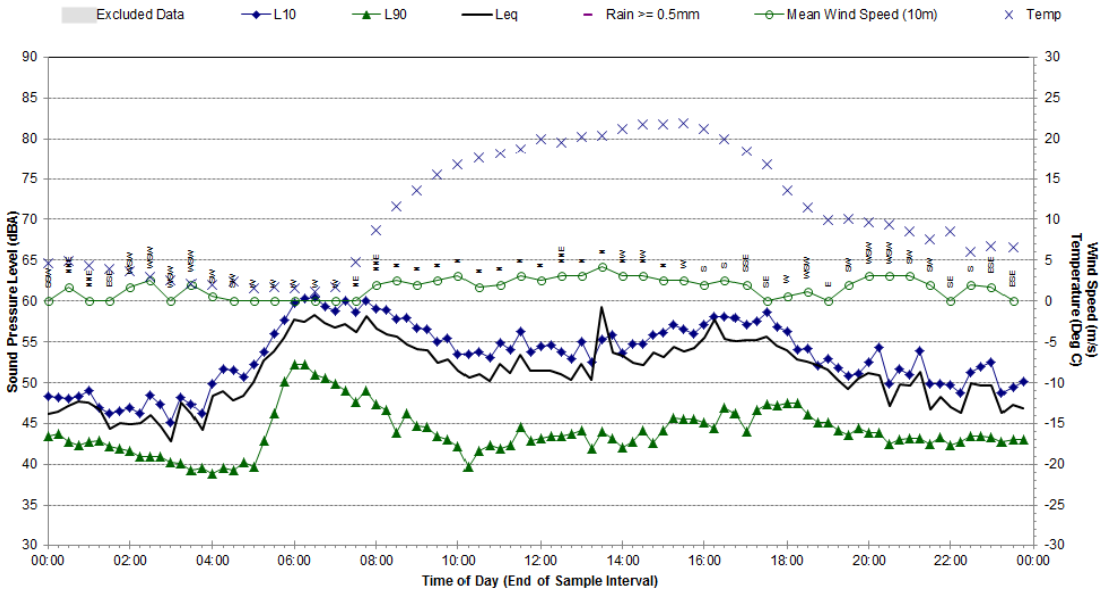


Appendix C1

Statistical Ambient Noise Levels – Location F Page 4 of 5

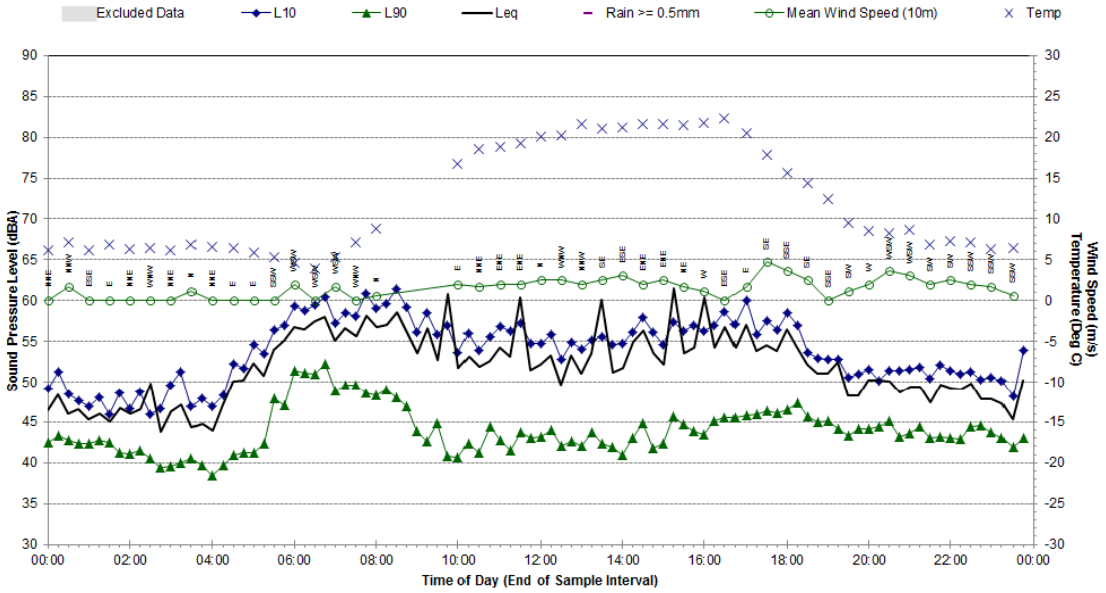
Statistical Ambient Noise Levels

Location F - Monday, 26 August 2013



Statistical Ambient Noise Levels

Location F - Tuesday, 27 August 2013

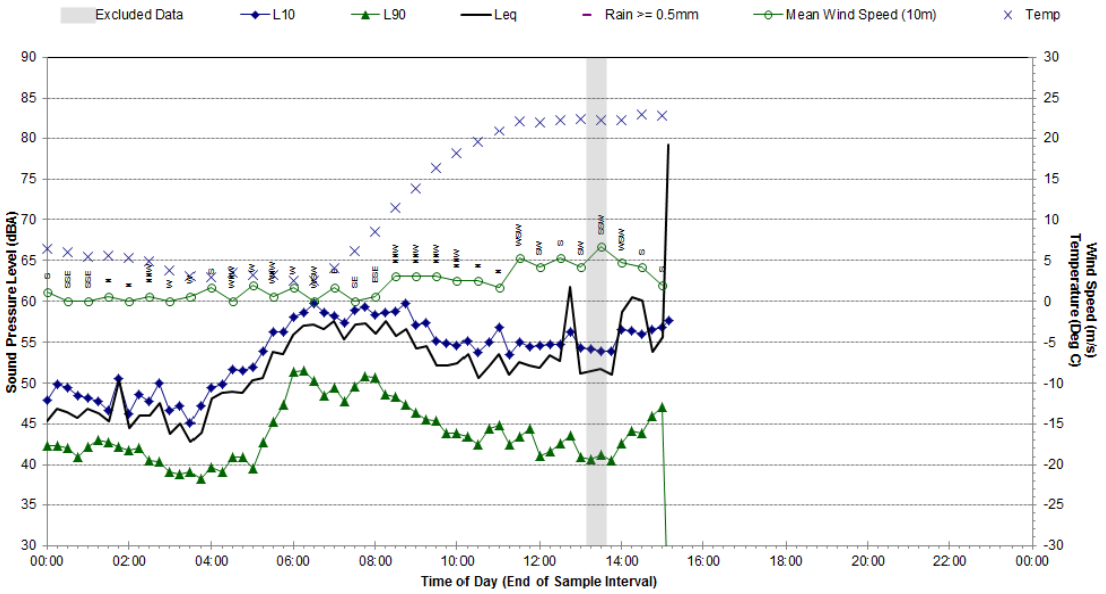


Appendix C1

Statistical Ambient Noise Levels – Location F Page 5 of 5

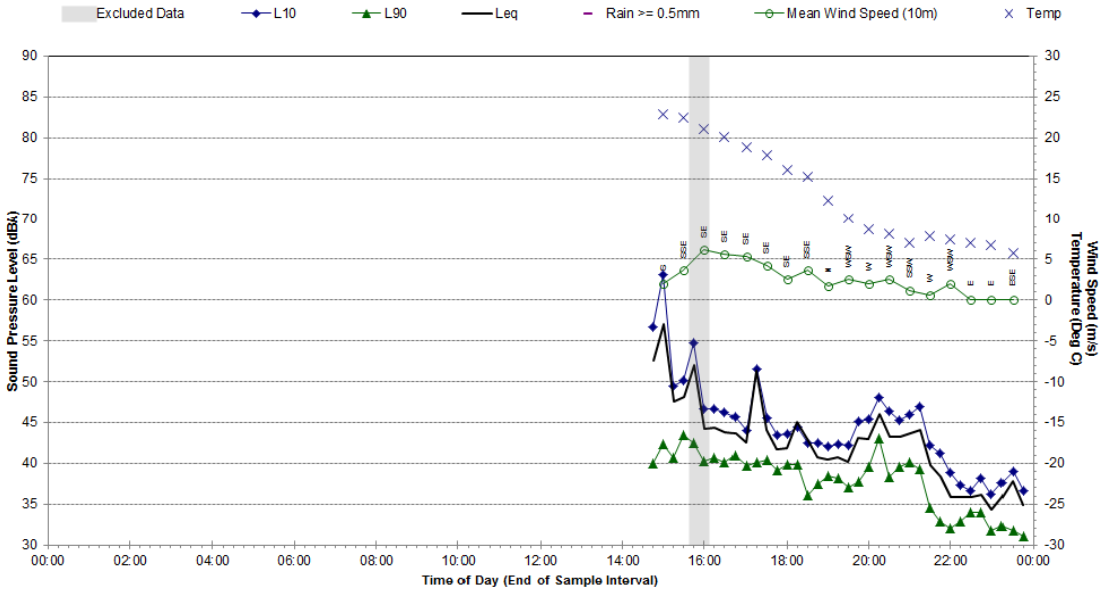
Statistical Ambient Noise Levels

Location F - Wednesday, 28 August 2013

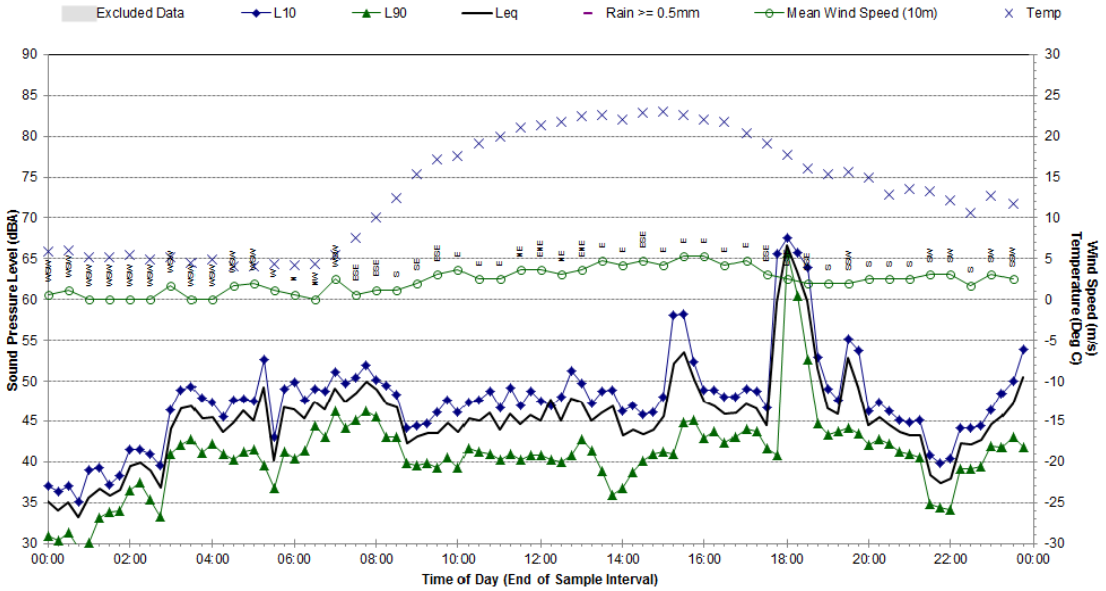


Appendix C2
Statistical Ambient Noise Levels – Location G Page 1 of 5

Statistical Ambient Noise Levels
Location G - Wednesday, 28 August 2013

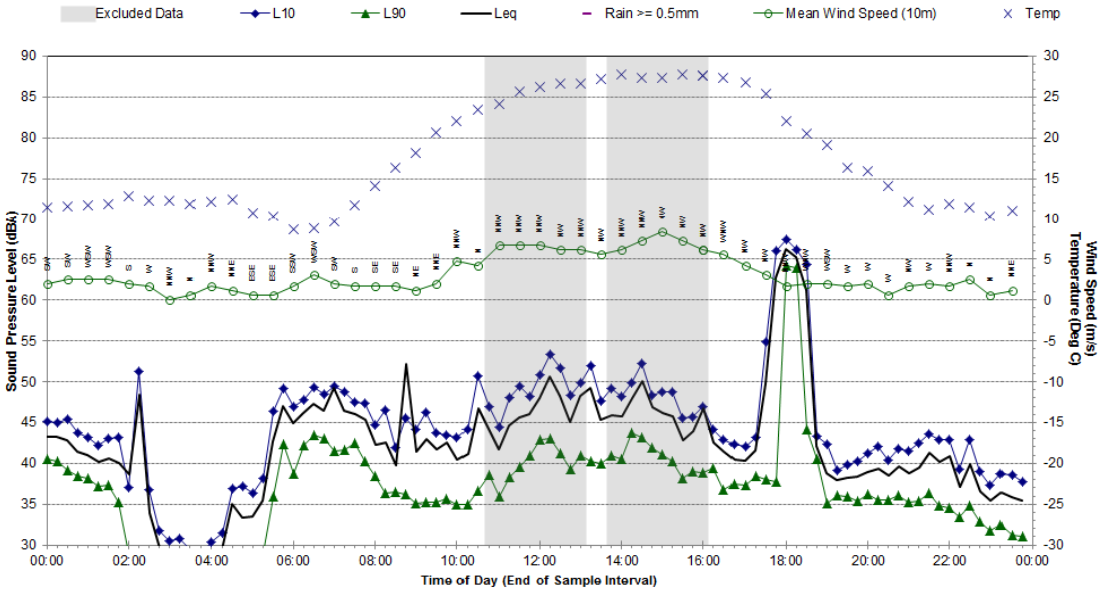


Statistical Ambient Noise Levels
Location G - Thursday, 29 August 2013

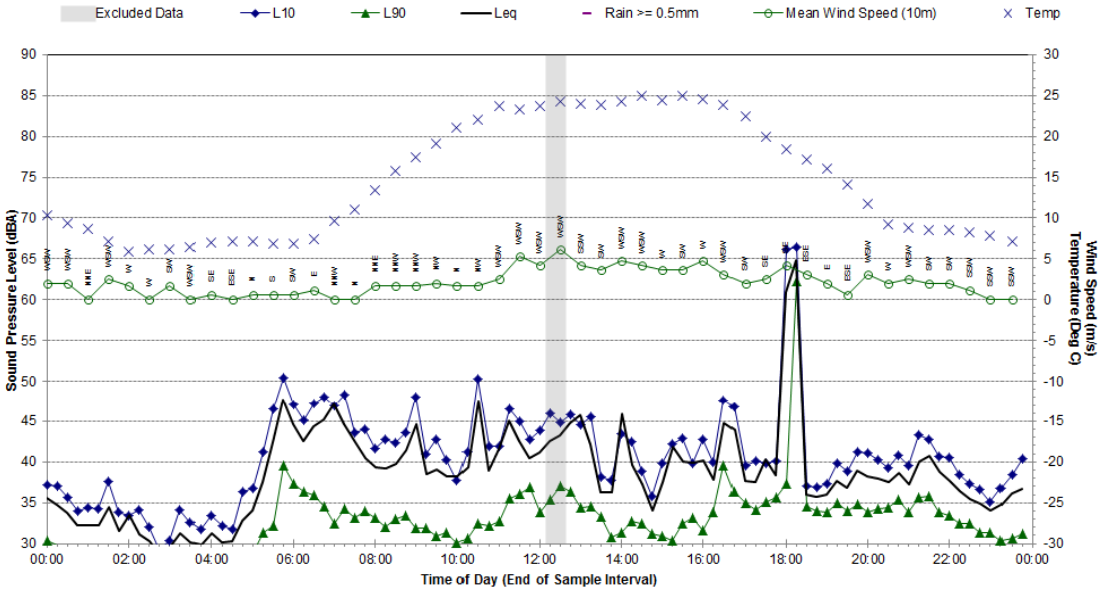


Appendix C2
Statistical Ambient Noise Levels – Location G Page 2 of 5

Statistical Ambient Noise Levels
Location G - Friday, 30 August 2013

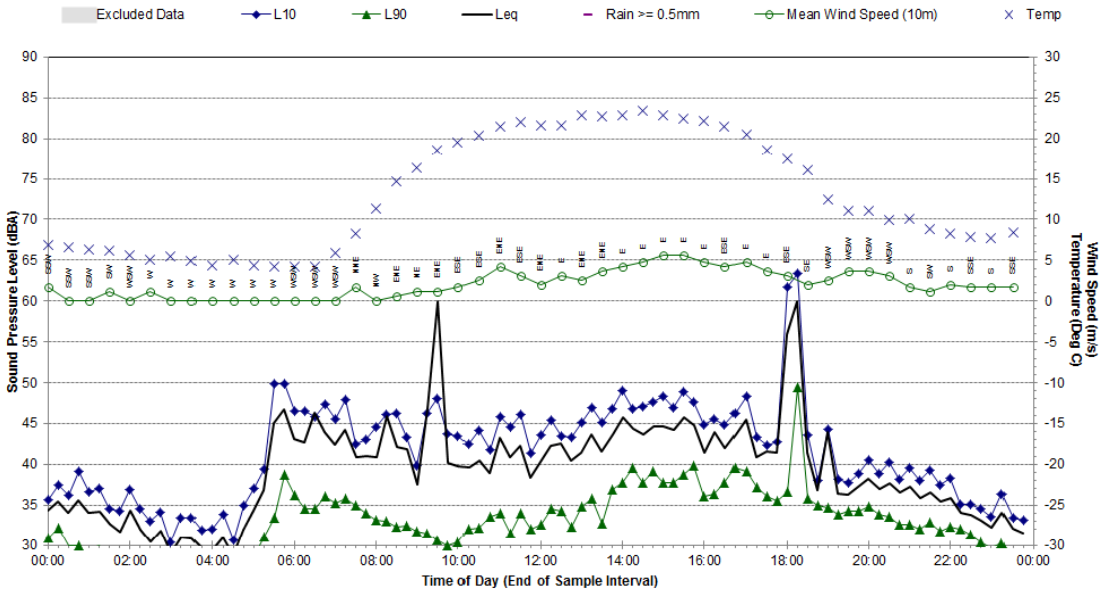


Statistical Ambient Noise Levels
Location G - Saturday, 31 August 2013

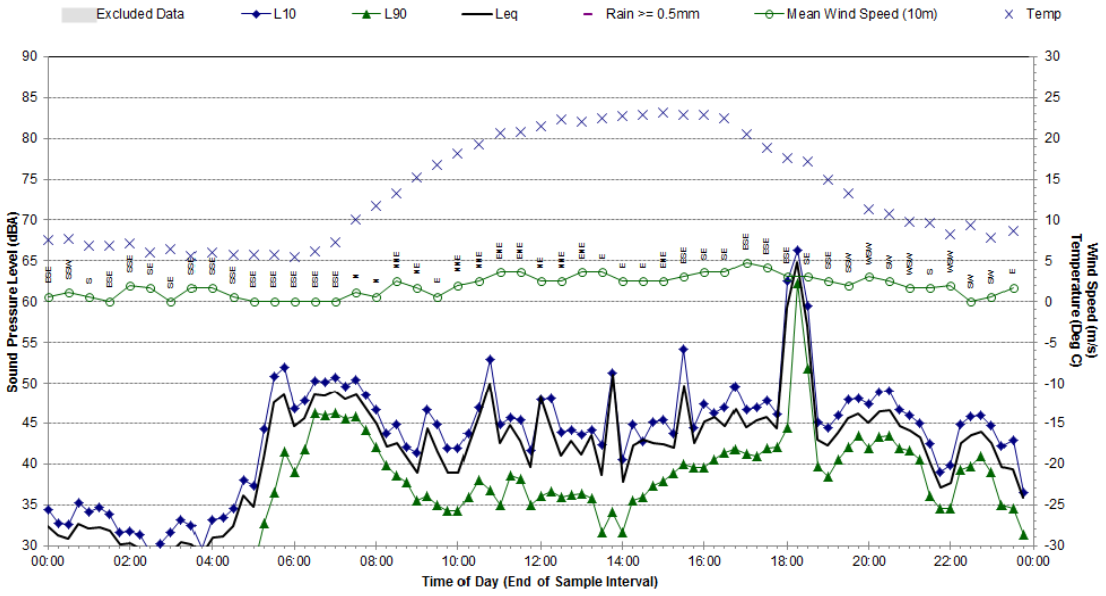


Appendix C2
Statistical Ambient Noise Levels – Location G Page 3 of 5

Statistical Ambient Noise Levels
Location G - Sunday, 1 September 2013

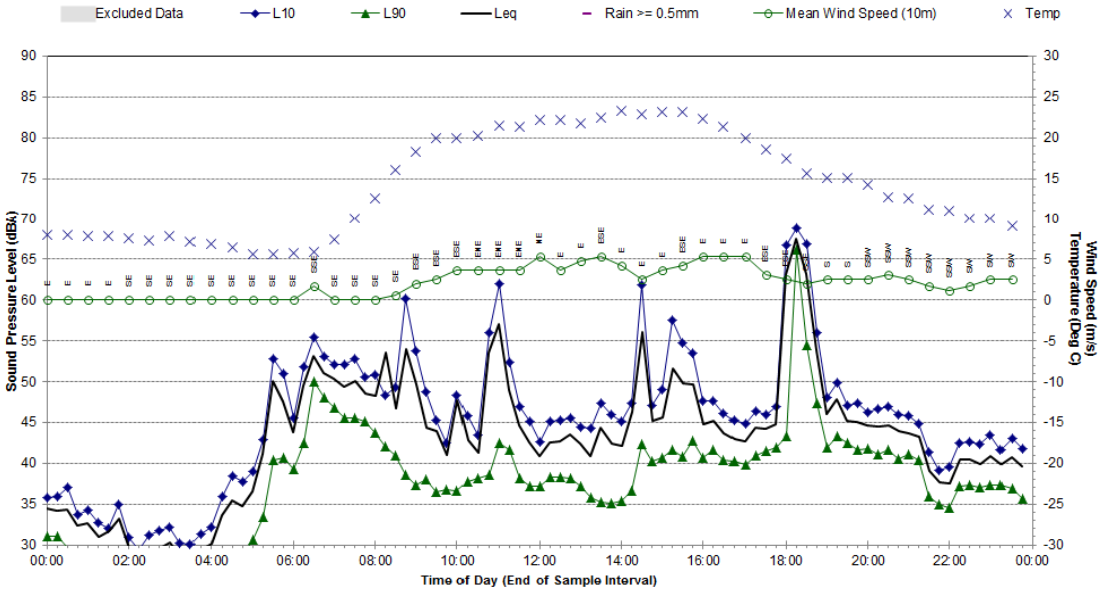


Statistical Ambient Noise Levels
Location G - Monday, 2 September 2013

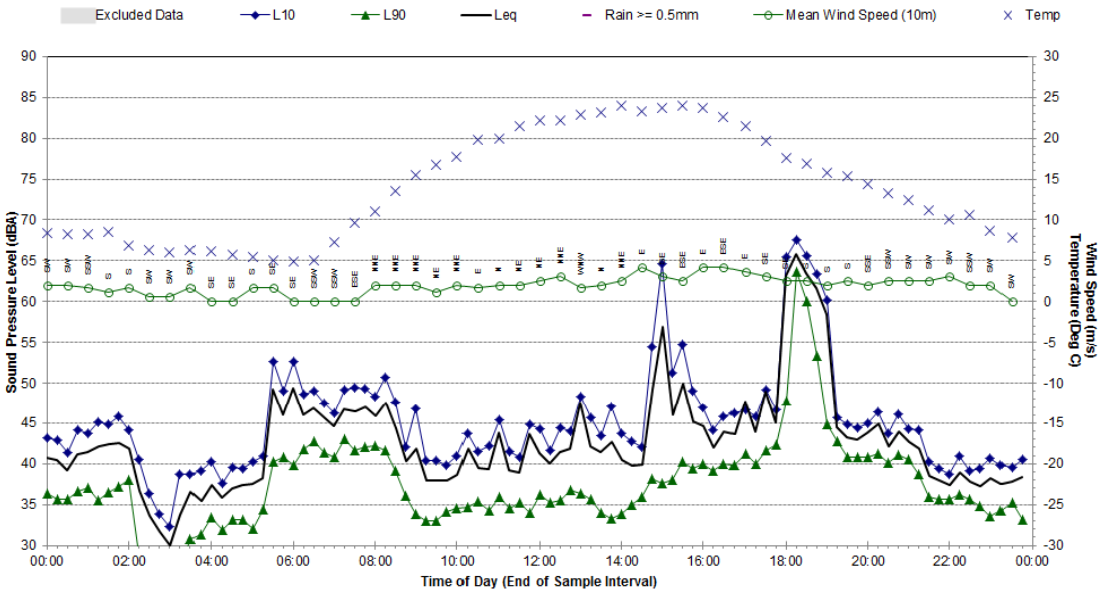


Appendix C2
Statistical Ambient Noise Levels – Location G Page 4 of 5

Statistical Ambient Noise Levels
Location G - Tuesday, 3 September 2013

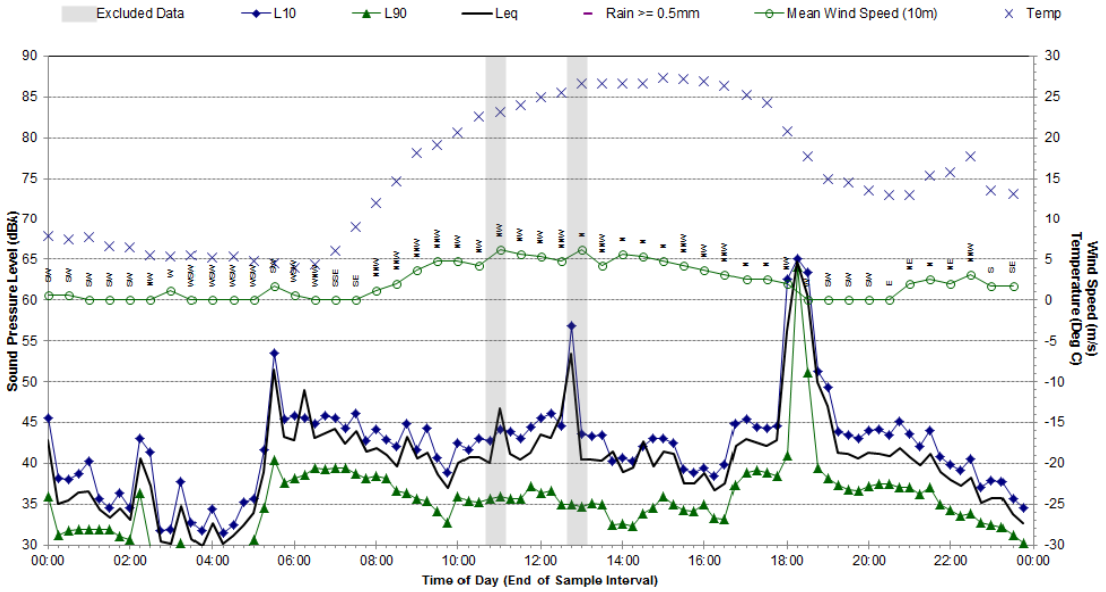


Statistical Ambient Noise Levels
Location G - Wednesday, 4 September 2013

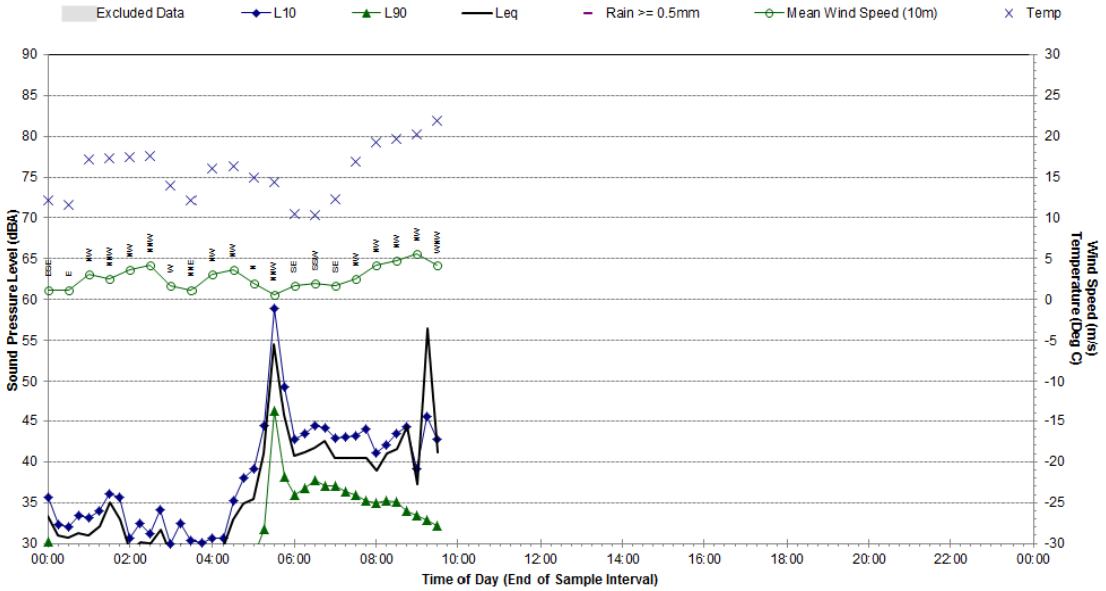


Appendix C2
Statistical Ambient Noise Levels – Location G Page 5 of 5

Statistical Ambient Noise Levels
Location G - Thursday, 5 September 2013



Statistical Ambient Noise Levels
Location G - Friday, 6 September 2013

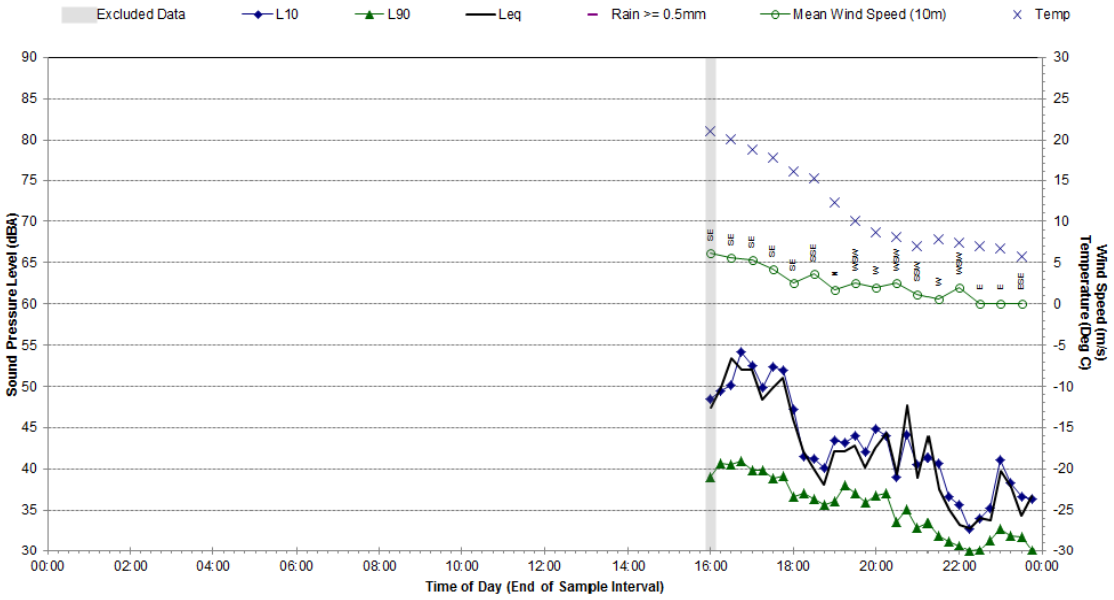


Appendix C3

Statistical Ambient Noise Levels – Location L Page 1 of 5

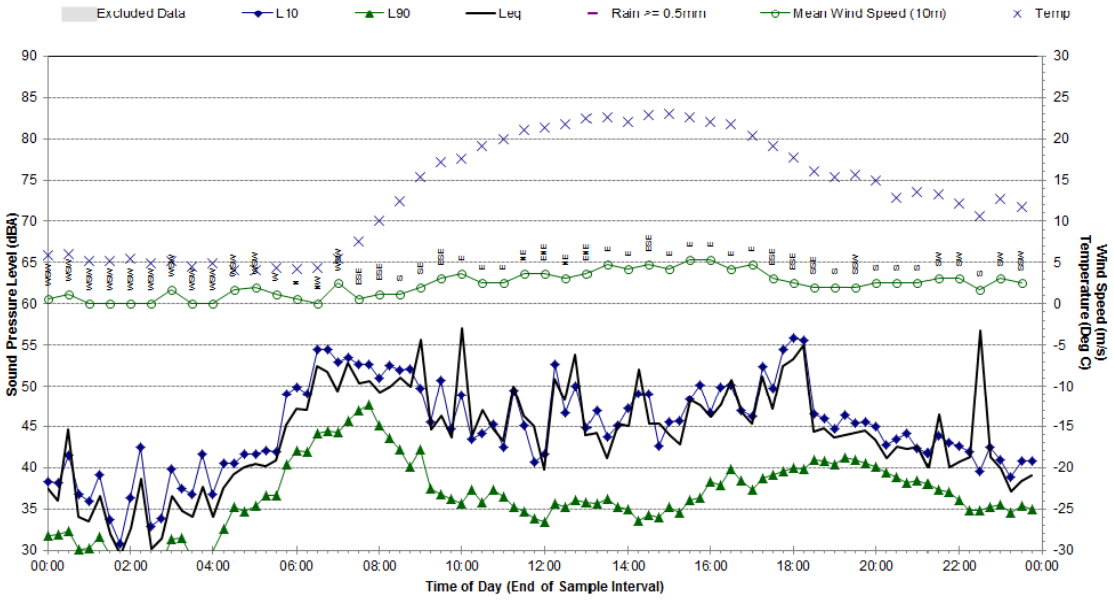
Statistical Ambient Noise Levels

Location L - Wednesday, 28 August 2013



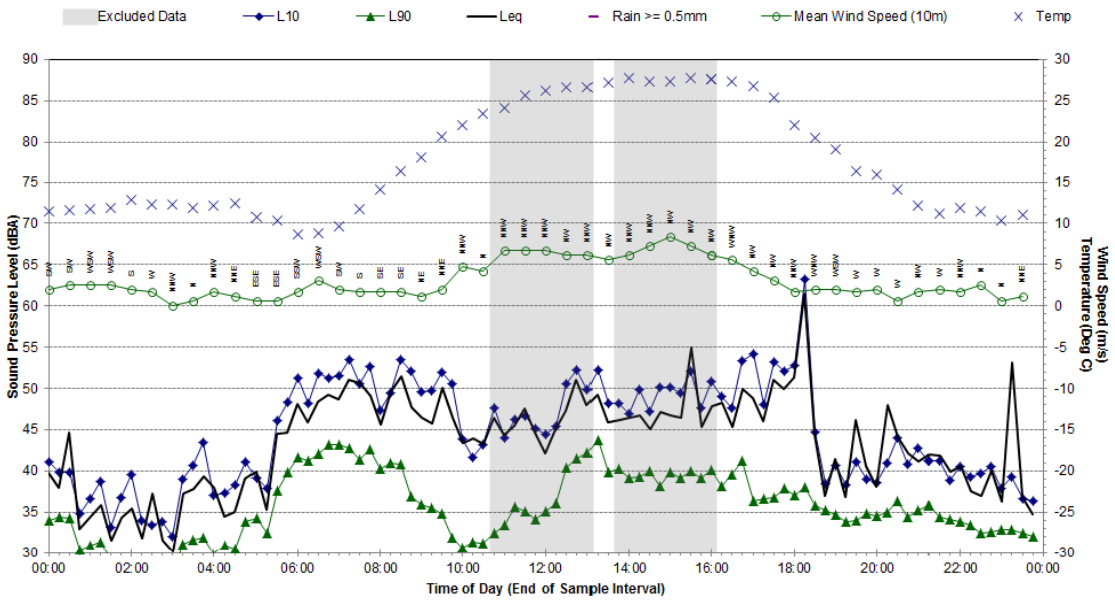
Statistical Ambient Noise Levels

Location L - Thursday, 29 August 2013



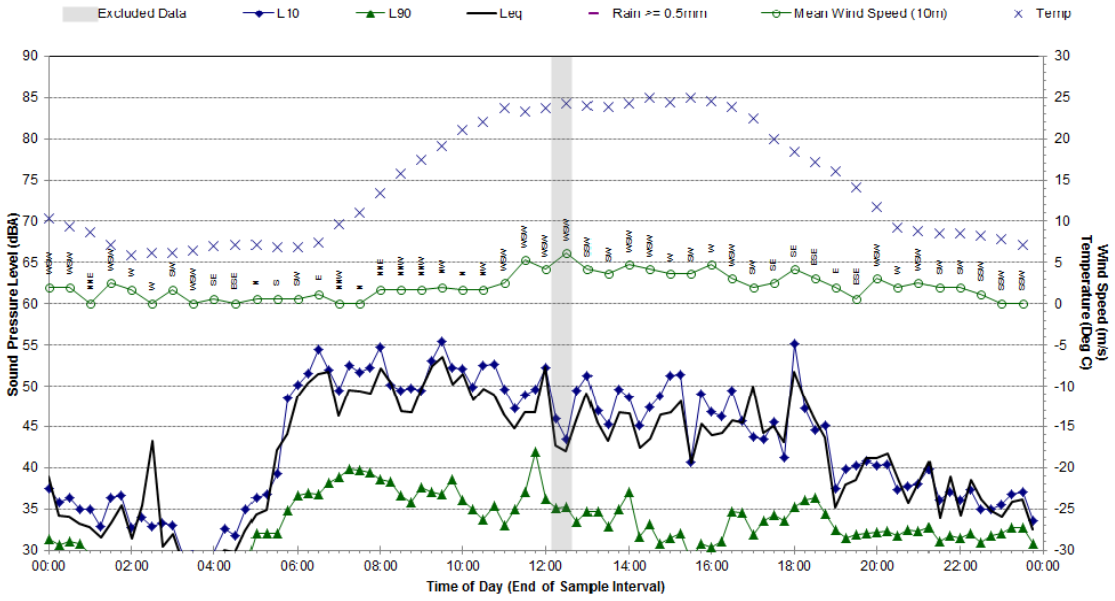
Statistical Ambient Noise Levels

Location L - Friday, 30 August 2013



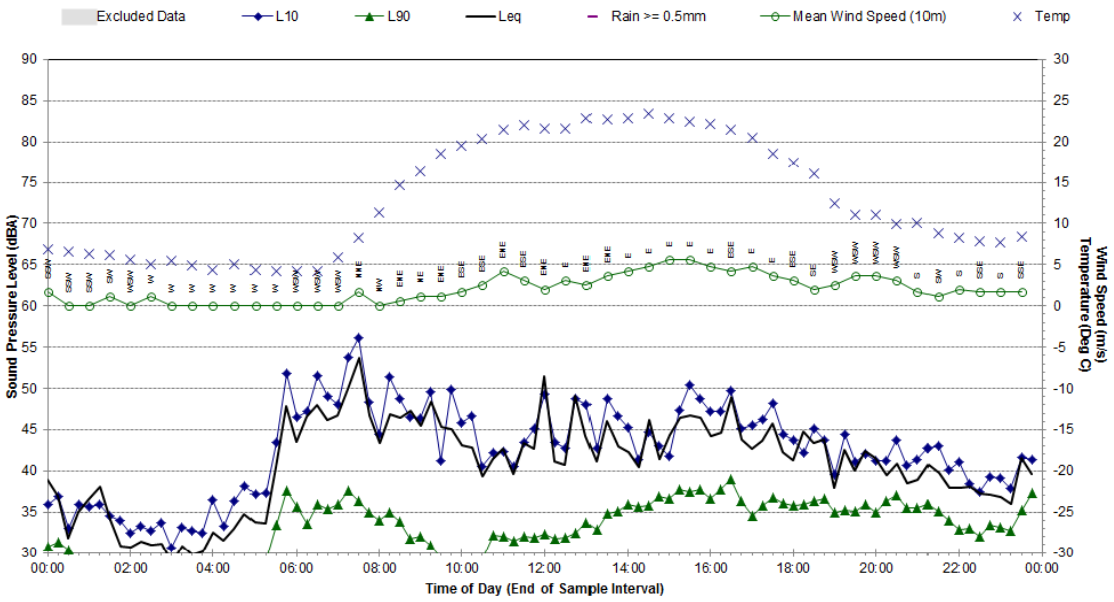
Statistical Ambient Noise Levels

Location L - Saturday, 31 August 2013

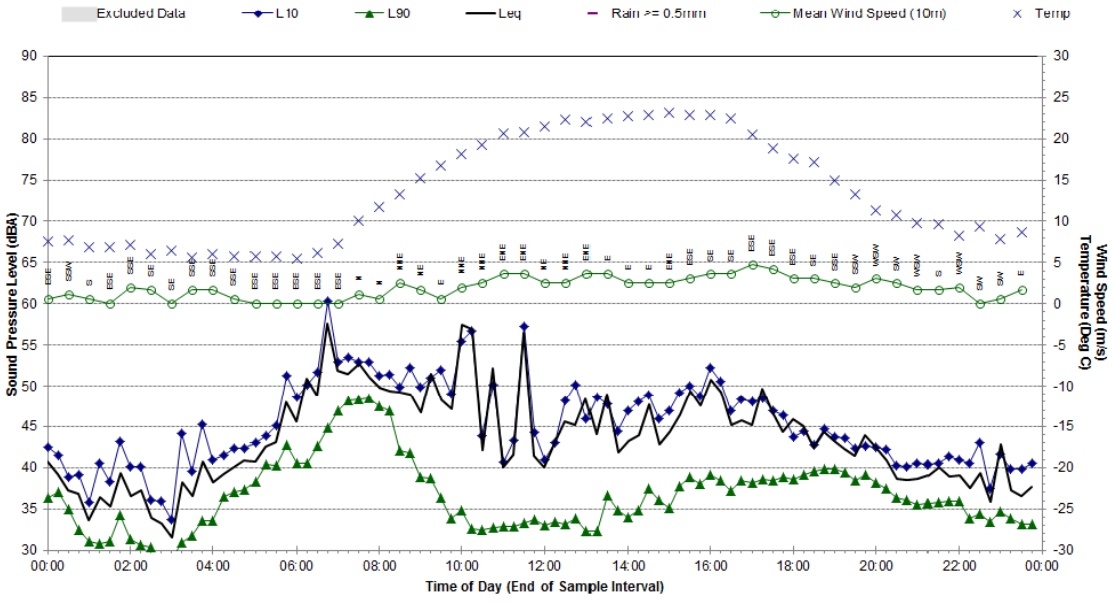


Appendix C3
Statistical Ambient Noise Levels – Location L Page 3 of 5

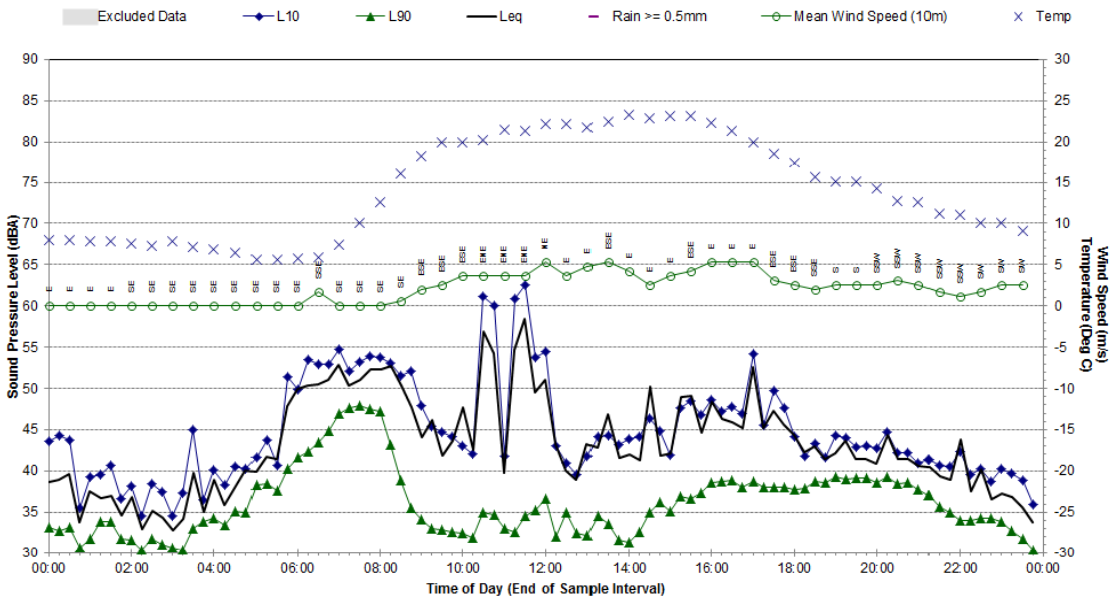
Statistical Ambient Noise Levels
Location L - Sunday, 1 September 2013



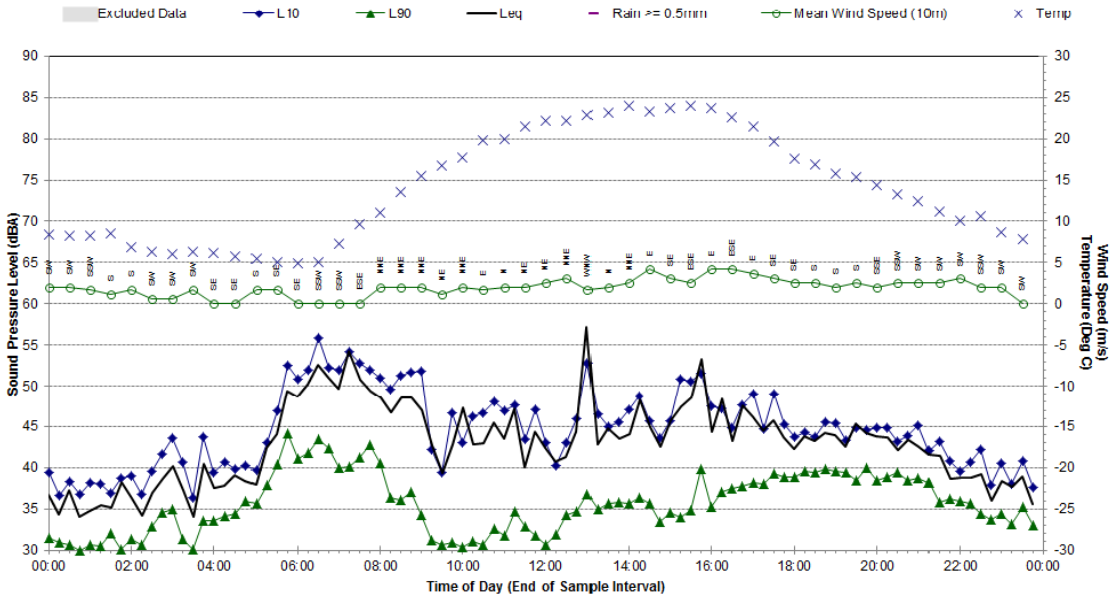
Statistical Ambient Noise Levels
Location L - Monday, 2 September 2013



Statistical Ambient Noise Levels
Location L - Tuesday, 3 September 2013

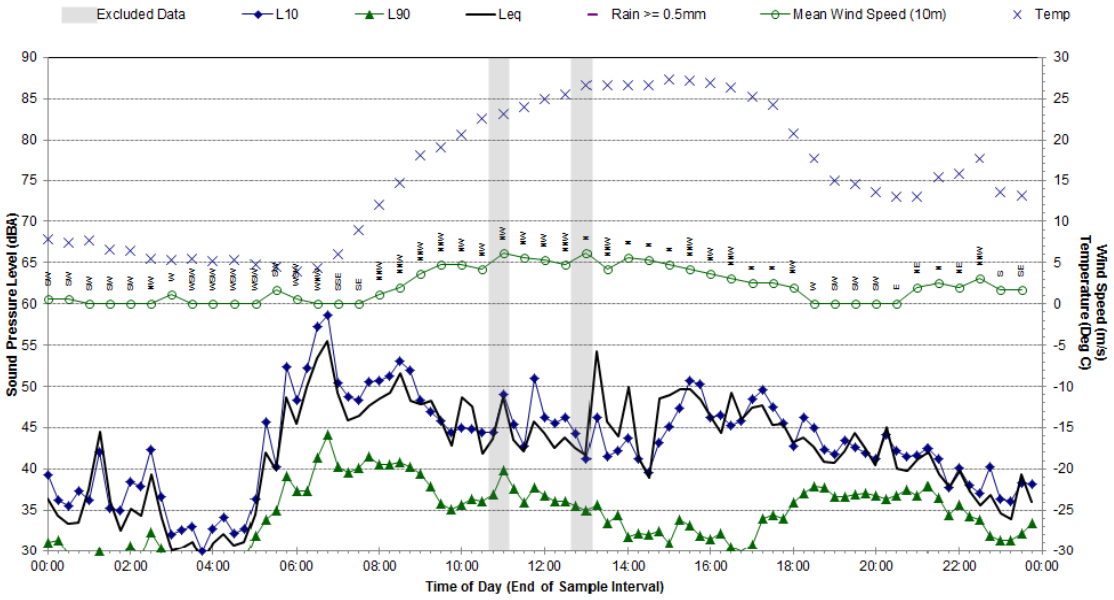


Statistical Ambient Noise Levels
Location L - Wednesday, 4 September 2013

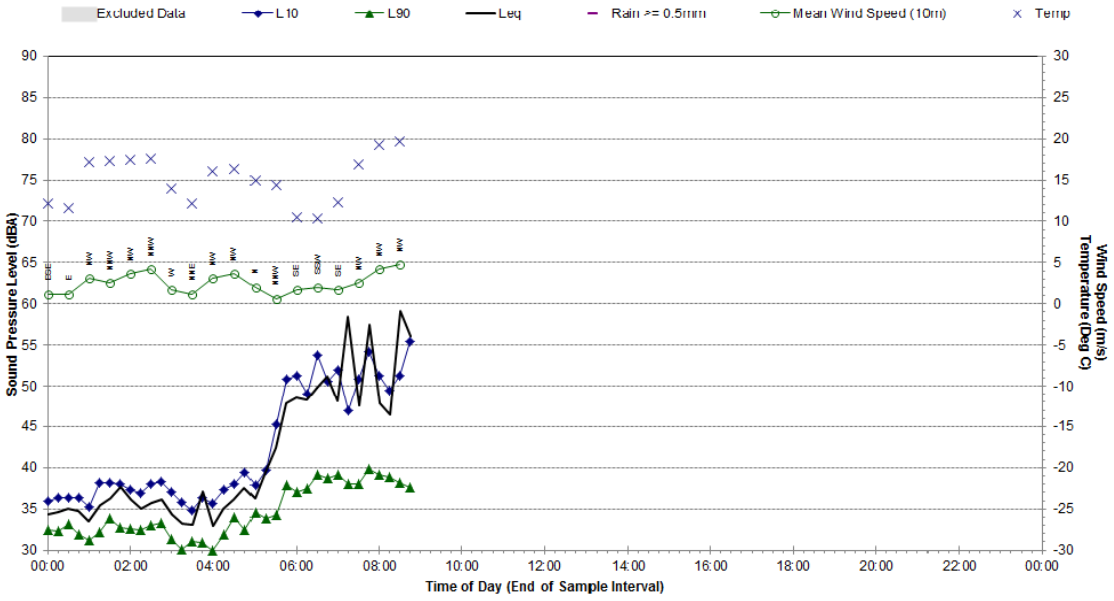


Appendix C3
Statistical Ambient Noise Levels – Location L Page 5 of 5

Statistical Ambient Noise Levels
Location L - Thursday, 5 September 2013

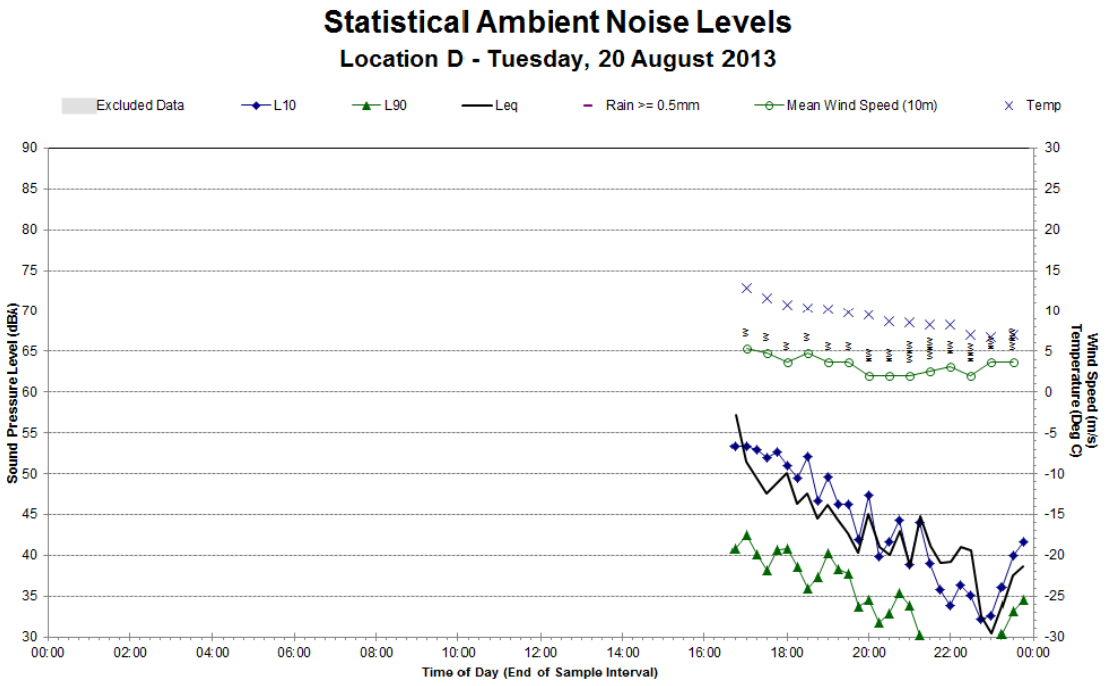


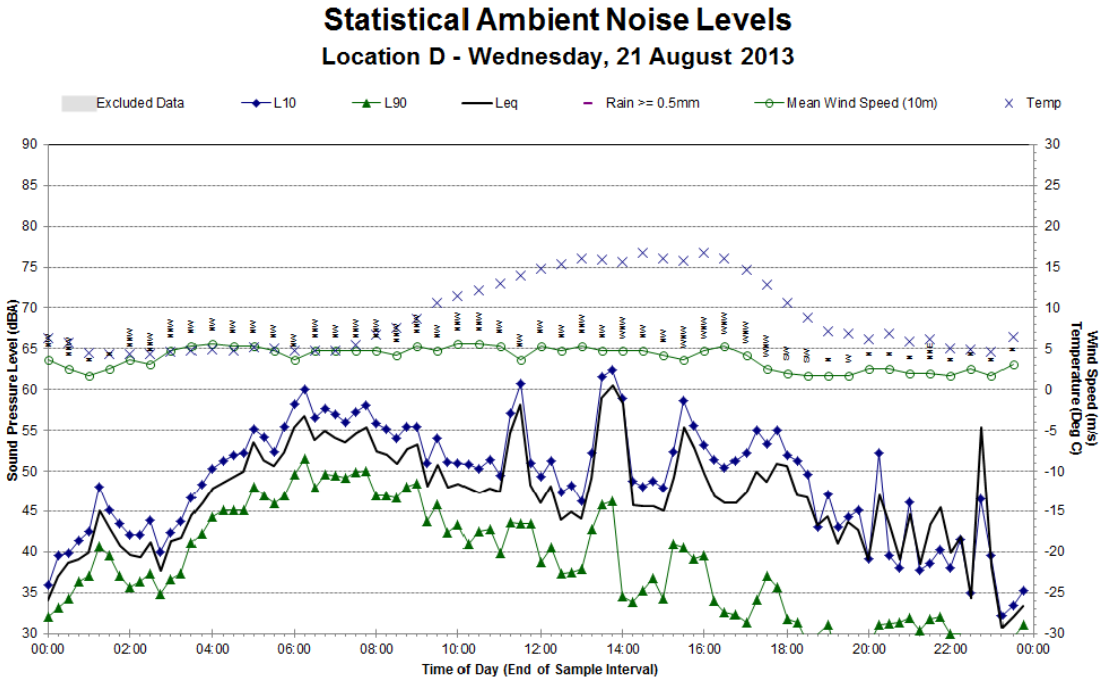
Statistical Ambient Noise Levels
Location L - Friday, 6 September 2013



Appendix C4

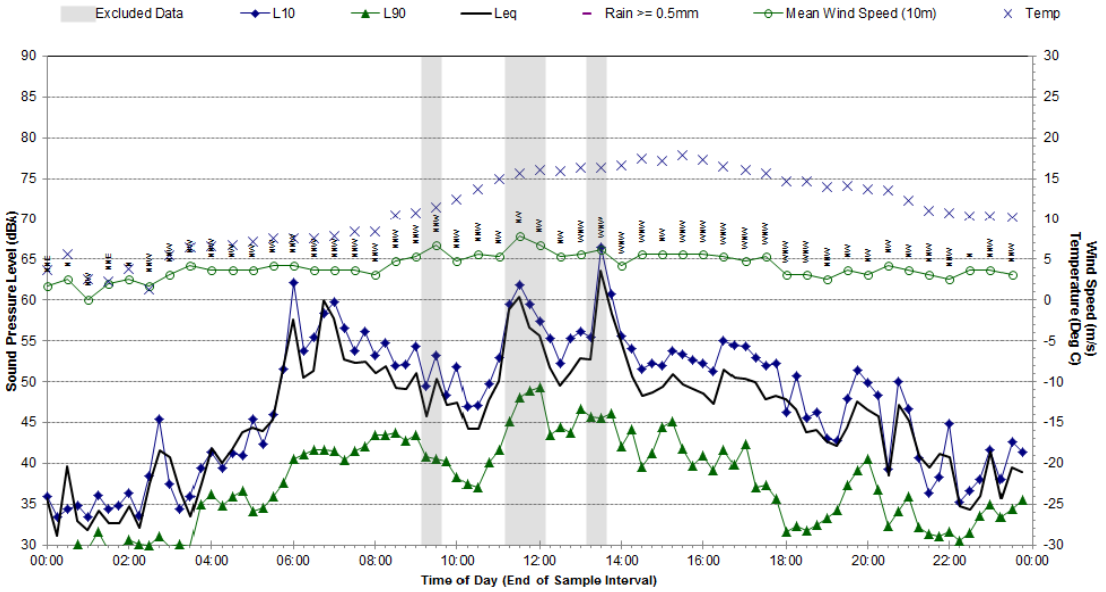
Statistical Ambient Noise Levels – Location D Page 1 of 5



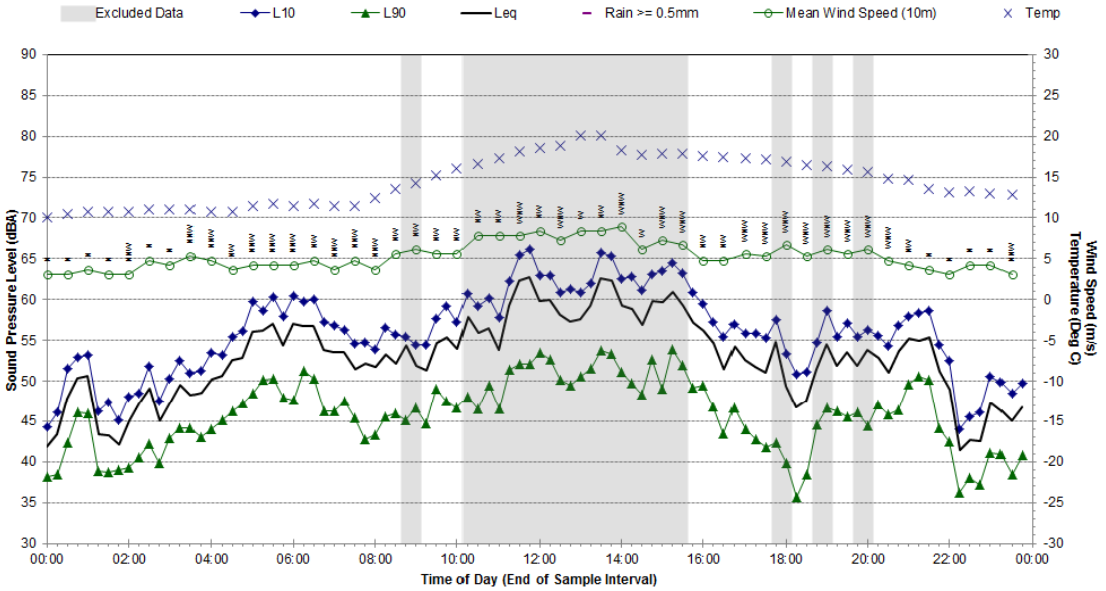


Appendix C4
Statistical Ambient Noise Levels – Location D Page 2 of 5

Statistical Ambient Noise Levels
Location D - Thursday, 22 August 2013



Statistical Ambient Noise Levels
Location D - Friday, 23 August 2013

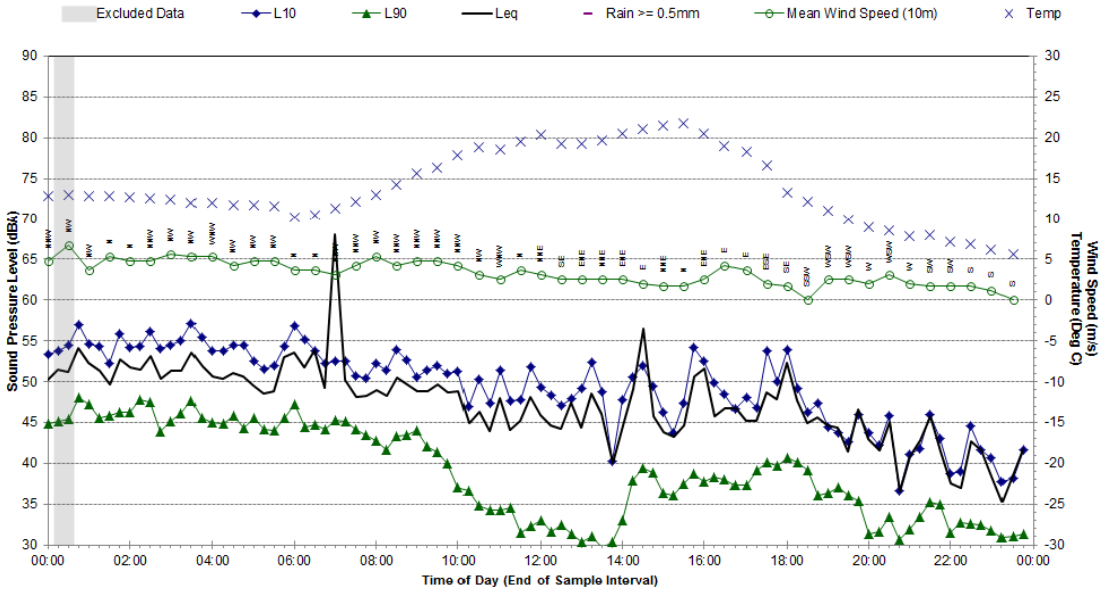


Appendix C4

Statistical Ambient Noise Levels – Location D Page 3 of 5

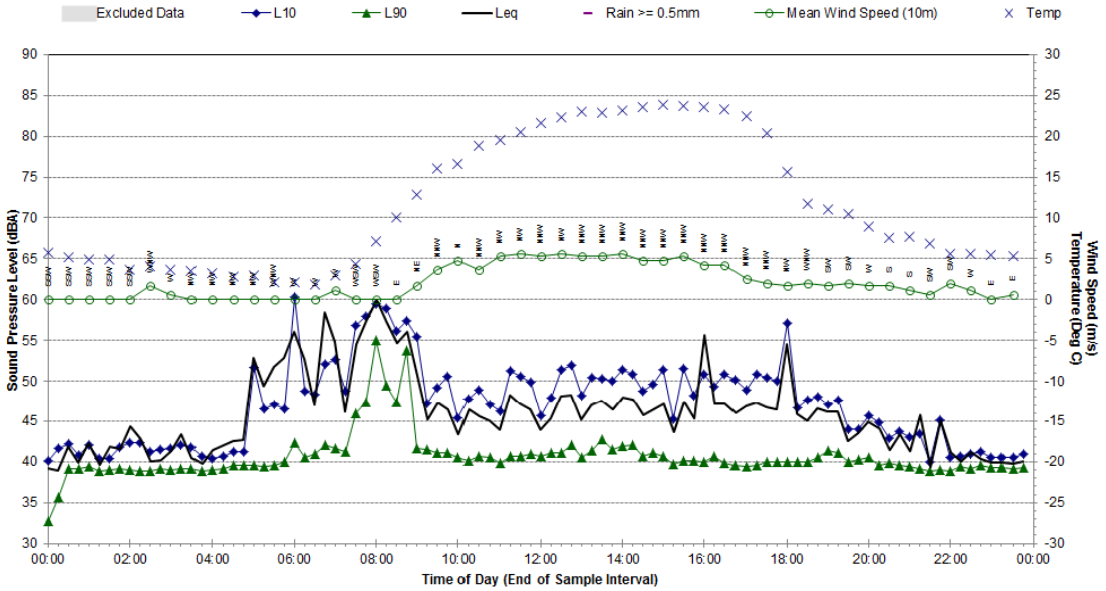
Statistical Ambient Noise Levels

Location D - Saturday, 24 August 2013



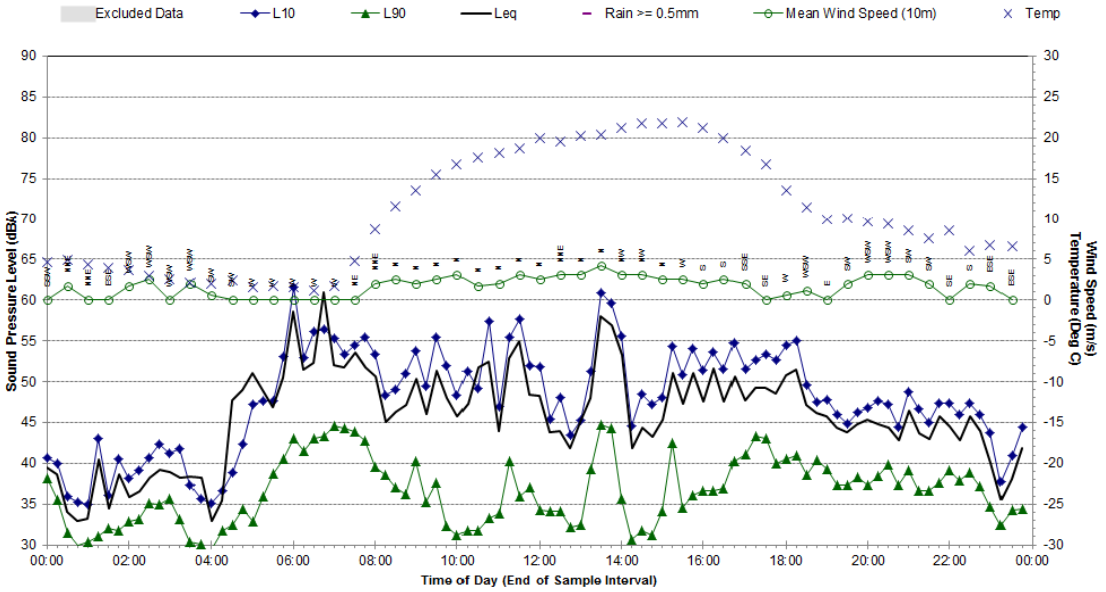
Statistical Ambient Noise Levels

Location D - Sunday, 25 August 2013

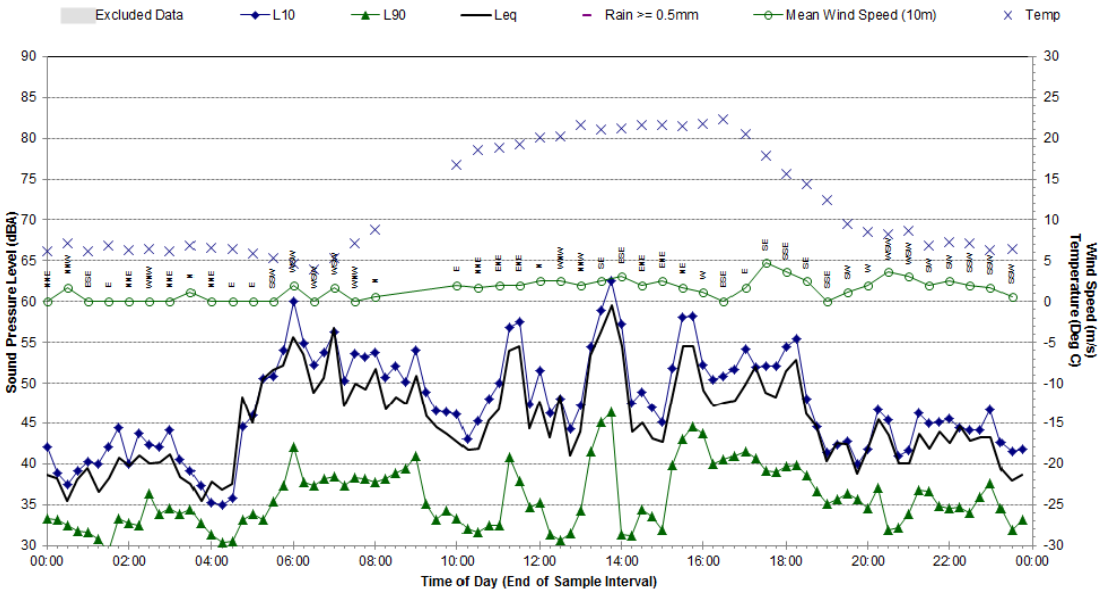


Appendix C4
Statistical Ambient Noise Levels – Location D Page 4 of 5

Statistical Ambient Noise Levels
Location D - Monday, 26 August 2013

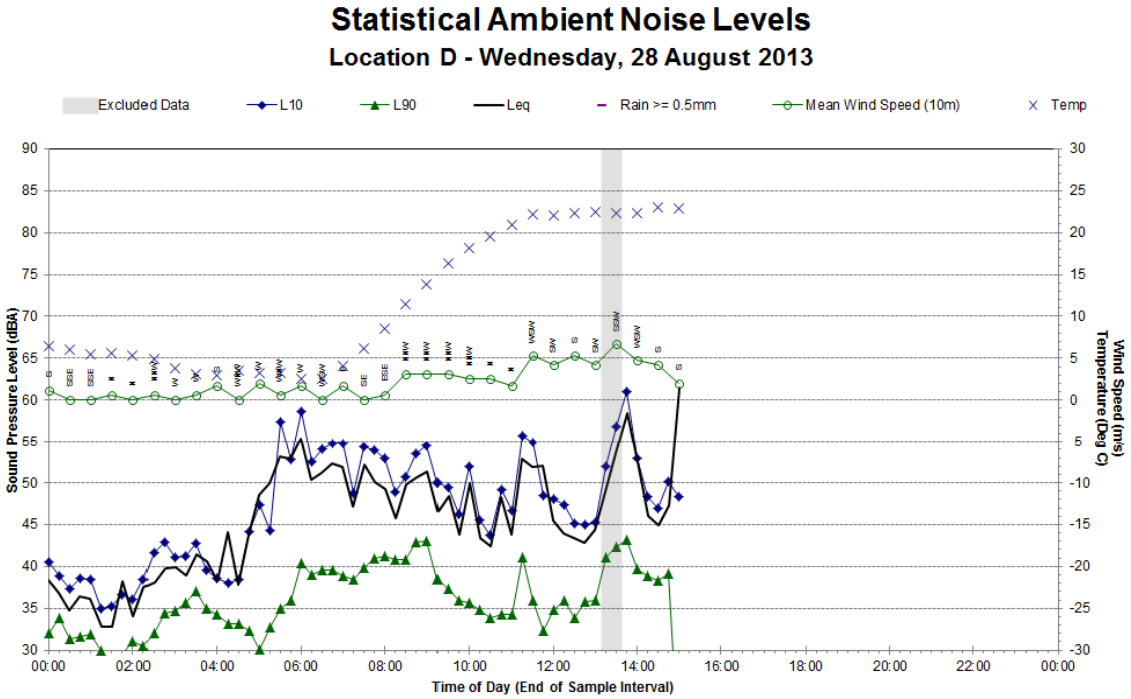


Statistical Ambient Noise Levels
Location D - Tuesday, 27 August 2013



Appendix C4

Statistical Ambient Noise Levels – Location D Page 5 of 5



Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending December 2013

Report Number Q52 630.01053R1

5 February 2014

Donaldson Coal Pty Ltd
PO Box 675
Green Hills 2320

Version: Draft 1

Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending December 2013

PREPARED BY:

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
Q52 630.01053R1	Draft 1	5 February 2014	Nicholas Vandenberg	John Cotterill	

Table of Contents

TABLES

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 2007

Donaldson Coal Pty Ltd has commissioned SLR Consulting Pty Ltd (SLR) 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 than 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

Approved Operations

The following operations are approved under the Abel Colliery Project Approval:

- Extraction of up to 6.1 Mtpa of ROM coal from the Abel Underground Coal Mine.
- Transport coal to the existing Bloomfield CHPP by private haul roads, or by coal conveyor, or by a combination of both methods.
- Operate the Bloomfield CHPP to process coal extracted from the Abel Coal Mine and the Bloomfield and Donaldson Coal Mines.
- Transportation of product coal from the Bloomfield site by rail via the Bloomfield rail loading facility.

The PA was modified in June 2010 (05_0136 MOD 1) allowing construction and operation of a downcast ventilation fan. In May 2011 the PA was modified again (05_0136 MOD 2) to allow the construction and operation of an upcast ventilation fan (and associated facilities). In December 2013 the PA was modified again (05_0136 MOD3) to account for the increase in coal extracted including the upgrade of the Bloomfield Coal Handling and Preparation Plant (CHPP).

Consent Conditions

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

Schedule 4

NOISE

Operational Noise Criteria

1. *The Proponent shall ensure that the noise generated by the Project does not exceed the criteria in Table 4 at any residence on privately-owned land.*

Table 4: Operational Noise Criteria dB(A)

Location	Receiver Area	Day	Evening	Night	
		LAeq(15min)	LAeq(15min)	LAeq(15min)	LA1(1min)
Location I	*Lord Howe Drive, Ashtronfield*	*36*	*36*	*36*	*45*
Location K	*Catholic Diocese Land*	*37*	*37*	*37*	*45*
Location L	*Killshanny Avenue, Ashtonfield*	*40*	*40*	*40*	*47*
All other Locations	*All other privately-owned Residences*	*35*	*35*	*35*	*45*

Notes:

- *To interpret the locations referred to in Table 4, see plan in Appendix 3 (Appendix A).*
- *Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.*

However, these noise criteria do not apply if the Proponent has an Agreement with the relevant landowner to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.

Construction Noise Criteria

2. The proponent shall ensure that the noise generated during the construction of the downcast ventilation shaft as described in EA (MOD3) does not exceed the criteria in Table 5.

Table 5: Construction Noise Criteria dB(A)

Location	Receiver	Day
		LAeq(15minute)
Location R	*281 Lings Road, Buttai*	*50*
Location S	*189 Lings Road, Buttai*	*43*

Notes:

- *The criteria in Table 5 apply only whilst the downcast ventilation shaft is being constructed, and for a maximum of 12 weeks from the commencement of construction.*
- *To interpret the locations refered to in Table 5, see plan in Appendix 3 (Appendix A).*
- *Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.*

However, these noise criteria do not apply if the Proponent has an Agreement with the relevant landowner to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.

Rail Noise Criteria

3. The proponent shall ensure that the noise from rail movements on the Bloomfield Rail Spur does not exceed the limits in Table 6 at any residence on privately owned land.

Table 6: Rail Spur noise criteria dB (A)

Location	Day	Evening	Night
		$L_{Aeq(period)}$	
All privately-owned land	*55*	*45*	*40*

Cumulative Noise Criteria

4. The proponent shall implement all reasonable and feasible measures to ensure that the noise generated by the project combined with noise generated by other mines does not exceed the criteria in Table 7 at any residence on privately-owned land.

Table 7: Cumulative noise criteria dB (A)

Location	Day	Evening	Night
		$L_{Aeq(period)}$	
All privately-owned land	*55*	*45*	*40*

Notes: Cumulative noise is to be measured in accordance with the relevant requirements, and exemptions (including meteorological conditions), of the NSW Industrial Noise Policy. Appendix 4 sets out the metrological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

Operating Conditions

5. The proponent shall:
    a. Implement best management practise to minimise the construction, operational, road and rail noise of the project;
    b. Operate an on-site noise management system to ensure compliance with the relevant conditions of this approval;
    c. Minimise the noise impacts of the project during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 4);
    d. Only receive and/or dispatch locomotives and rolling stock either on or from the site that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC's EPL (No. 3142);
    e. Carry out regular monitoring to determine whether the project is complying with the noise criteria and other relevant conditions of approval,

    to the satisfaction of the Director-General.

Noise Management Plan

6. The proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Director-General. This plan must:
    a. Be prepared in consultation with the EPA, and be submitted to the Director-General for approval within 6 months of the date of approval of MOD 3;

b. Describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval;
c. Describe the proposed noise management system in detail; and
d. Include a monitoring program that:
   - Uses attended monitoring to evaluate the compliance of the project against the noise criteria in this approval;
   - Evaluates and reports on:
     - The effectiveness of the on-site noise management system; and
     - Compliance against the noise operating conditions; and
   - Defines what constitutes a noise incident, and includes protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

Appendix 4

Noise Compliance Assessment

Applicable Meteorological Conditions

1. The noise criteria in Tables 4 and 7 are to apply under all metrological conditions except the following:
   a. During periods of rain or hail.
   b. Average wind speed at microphone height exceeds 5 m/s;
   c. Wind speeds greater than 3 m/s measured at 10m above ground level; or
   d. Temperature inversion conditions greater than 3°C/100m.

Determination of metrological conditions

2. Except for wind speed at microphone height, the data to be used for determining metrological conditions shall be that recorded by the meteorological station located on the site.

Compliance monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
4. Unless otherwise agreed with the director-general, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:
   a. Monitoring locations for the collection of representative noise data;
   b. Metrological conditions during which collection of noise data is not appropriate;
   c. Equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
   d. Modification to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

Appendix 5

Statement of Commitments

3. Noise

3.1 Construction Activities

The following noise control measures will be implemented prior to commencement of construction of the Abel Underground Mine or the upgrade of the Bloomfield CHPP.

1. Maintain all machinery and equipment in working order;
    a. No construction activities at the Abel pit top will take place on Sundays or Public Holidays;
    b. Where possible locate noisy site equipment behind structures that act as barriers or at the greatest distance from noise sensitive areas; and
    c. Orientate equipment so that noise emissions are directed away from noise sensitive areas.

3.2 Noise Control Measures

a. The following noise control measures will be implemented prior to the mining of coal from the Abel underground Mine:
    i. Orientation of the ventilation fans away from residential receivers and angle the output parallel to the ground.
    ii. The sound power level of the front end loader to be used near the portal should not exceed 113 dBA and will be fitted with a noise sensitive reversing alarm.

b. The following noise control measures will be implemented prior to the Bloomfield CHPP receiving any ROM coal from Able Underground Mine;
    i. Noise mitigation works including partial enclosure and noise screening of drives and conveyors of the Bloomfield CHPP to screen residences to the north of the site.

3.2 Monitoring

The Company will implement a Noise Monitoring Program 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.

3.4 Continuous Improvement

The Company shall:

a. Report on these investigations and implementation of any new noise mitigation measures on site in the AEMR, to the satisfaction of the Director General.

The operator of the Bloomfield CHPP shall:

b. Investigate ways to reduce the noise generated by the Bloomfield CHPP, including maximum noise levels which may result in sleep disturbance;

c. Implement all reasonable and feasible best practice noise mitigation measures on the site; and

d. Report on these investigations and the implementation of any new noise mitigation measures on site in the AEMR, to the satisfaction of the Director-General.

3 PROCEDURES AND METHODOLOGY

3.1 General Requirements

The operational noise monitoring program 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*".

All acoustic instrumentation employed throughout the monitoring programme has been designed to comply with the requirements of IEC 61672.1-2004 "*Electroacoustics – Sound Level Meters – Specifications*" and carries current NATA or manufacturer calibration certificates.

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 during the December 2013 Quarter. The details of the monitoring locations are contained within **Table 1**.

Table 1 Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
D	Black Hill School, Black Hill
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
L	17 Kilshanny Ave, Ashtonfield

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 approximately a seven (7) day period between 9 December 2013 and 23 December 2013 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 Noise 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:

- Final rehabilitation of the site including shaping waste material in the west pit.
- Ripping/seeding areas in the eastern area.
- A water cart was available during this time.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was the ventilation fan, the Bloomfield Coal Handling and Preparation Plant (CHPP) and haulage to the CHPP.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Noise Monitoring

Operator attended noise measurements were conducted during the daytime on Monday 9 December 2013 and Monday 16 December 2013, during the evening on Monday 9 December 2013 and during the night-time on Monday 9 December 2013 and Tuesday 10 December 2013. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, integrating sound level meter (s/n: 2679354).

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 (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
16/12/2013 14:36 W = 2m/s SE Temp = 26°C Cloud cover = 0/8	Daytime Ambient	71	61	56	51	54	Traffic ~ 52 to 57 dBA Construction ~ <30 to 57 dBA Insects ~ 35 dBA Birds ~ 45 to 60 dBA Rooster ~ 62 to 67 dBA
		Donaldson and Abel mines ~ Inaudible					
09/12/2013 18:00 W = Calm Temp = 34°C Cloud cover = 8/8	Evening Ambient	71	65	59	49	56	Traffic ~ 56 to 71 dBA Birds ~ 51 dBA
		Donaldson and Abel mines ~ Inaudible					
10/12/2013 00:20 W = 3 m/s W Temp = 27°C Cloud cover = 8/8	Night-time Ambient	73	64	57	43	53	Traffic ~ 55 to 73 dBA Insects ~ 45 dBA Wind ~ 49 dBA Helicopter ~ 63 to 66 dBA
		Donaldson and Abel mines ~ Inaudible					

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

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
09/12/2013 17:22 W = Calm Temp = 36°C Cloud cover = 7/8	Daytime Ambient	76	69	61	47	58	JRD Traffic ~ 53 to 65 dBA Insects ~ 40 to 50 dBA Local Traffic ~ 66 to 76 dBA Birds ~ 50 to 56 dBA
		Donaldson and Abel mines ~ Inaudible					
09/12/2013 18:46 W = 0.5 m/s NE Temp = 32°C Cloud cover = 8/8	Evening Ambient	77	72	63	43	61	Traffic ~ 72 to 77 dBA JRD Traffic ~ 55 dBA Birds ~ 48 dBA Insects ~ 45 to 73 dBA Donaldson faintly audible at times ~ 33 to 36 dBA
		Estimated Donaldson LAeq(15min) Contribution ~ <30 dBA Abel Mine~ inaudible					
09/12/2013 23:35 W = Calm Temp = 27°C Cloud cover = 8/8	Night-time Ambient	68	57	52	46	50	Insects ~ 47 to 55 dBA Plane ~ 38 dBA JRD Traffic ~ 52 to 68 dBA Other Industry ~ 33 dBA
		Donaldson and Abel mines ~ Inaudible					

Table 4 Location G, 156 Buchannan Road, Buchannan

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
09/12/2013 14:48 W = 1 m/s NW Temp = 36°C Cloud cover = 2/8	Daytime Ambient	58	55	54	47	51	Insects ~ 48 dBA Construction works ~ 42 dBA Wind ~ 53 dBA Other Industry ~ <30 dBA
		Donaldson and Abel mines ~ Inaudible					
09/12/2013 21:42 W = Calm Temp = 28°C Cloud cover = 8/8	Evening Ambient	54	43	39	36	38	Birds ~ 42 dBA Insects ~ 38 to 43 dBA Distant Traffic ~ 35 to 40 dBA Resident ~ 43 dBA Dog Barking ~ 41 dBA
		Donaldson and Abel mines ~ Inaudible					
09/12/2013 22:00 W = 1 m/s W Temp = 28°C Cloud cover = 8/8	Night-time Ambient	51	42	40	36	38	Insects ~ 38 dBA Distant Traffic ~ 36 to 44 dBA Wind ~ 38 dBA
		Donaldson and Abel mines ~ Inaudible					

Table 5 Location L, 17 Killshanny Ave, Ashtonfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
09/12/2013 15:56 Wind: Calm Temp = 36°C Cloud cover = 5/8	Daytime Ambient	67	54	44	37	45	Traffic ~ 55 to 64 dBA Plane ~ 46 to 49 dBA Insects ~ 40 to 46 dBA Resident ~ 40 dBA
		Donaldson and Abel Mines ~ inaudible					
09/12/2013 19:52 W = 0.5 m/s E Temp = 30°C Cloud cover = 7/8	Evening Ambient	62	57	52	46	49	Dist Traffic ~ 40 to 49 dBA Insects ~ 46 to 50 dBA Resident ~ 48 to 54 dBA Local Traffic ~ 57 to 61 dBA Dog Barking ~ 50 to 62 dBA
		Donaldson and Abel Mines ~ inaudible					
09/12/2013 22:27 W = Calm Temp = 29°C Cloud cover = 8/8	Night-time Ambient	71	61	45	39	48	Insects ~ 41 to 49 dBA Traffic ~ 51 to 68 dBA Dog Barking ~ 69 to 71 dBA Resident ~ 51 dBA Distant Traffic ~ <33 dBA
		Donaldson and Abel Mines ~ inaudible					

Table 6 Location D, Black Hill School, Black Hill

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
09/12/2013 16:55 W = Calm Temp = 36°C Cloud cover = 7/8	Daytime Ambient	76	70	55	39	56	Traffic ~ 73 to 75 dBA Birds ~ 42 to 56 dBA Insects ~ 40 to 42 dBA Plane ~ 45 dBA
		Donaldson and Abel mines ~ Inaudible					
09/12/2013 19:19 W = Calm Temp = 17°C Cloud cover = 0/8	Evening Ambient	76	72	57	43	57	Local Traffic ~ 72 to 76 dBA Insects ~ <40 dBA Birds ~ 52 to 55 dBA Animals ~ 46 dBA Distant Traffic ~ 46 to 53 dBA Plane ~ 51 to 53 dBA
		Donaldson and Abel mines ~ Inaudible					
09/12/2013 23:55 W = 0.5 m/s W Temp = 27°C Cloud cover = 8/8	Night-time Ambient	59	47	45	41	43	Operator ~ 55 dBA Distant Traffic ~ 35 to 36 dBA Insects ~ 42 to 44 dBA JRD Traffic ~ 35 to 40 dBA Wind ~ 40 dBA
		Donaldson and Abel mines ~ Inaudible					

4.2 Operator Attended Noise 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 "natural" noises such as birds, insects and leaf rustle.

Donaldson operations were observed to only be audible at Location F during the evening monitoring period.

Based on results and observations from operator attended noise surveys, it is likely that the 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 "natural" noises such as birds, insects and leaf rustle.

Abel operations were not observed to be audible at any noise monitoring location.

Due to monitoring results recorded at Location L and Location D compliance can be inferred at Location I and Location K respectively.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Noise Monitoring

Unattended continuous noise monitoring was conducted between 09 December 2013 and 23 December 2013 at each of the five (5) nominated locations given in **Table 7**.

Table 7 Noise Loggers and Noise Monitoring Locations

Location	Noise Logger Serial Number	Date of Logging
A – Weakleys Drive, Beresfield	SVAN (23816)	16/12/2013 to 23/12/2013
F – Black Hill Road, Black Hill	16-203-531	9/12/2013 to 16/12/2013
G – Buchanan Road, Buchanan	16-203-509	9/12/2013 to 16/12/2013
L – Kilshanny Ave, Kilshanny	01dB DUO (10767)	9/12/2013 to 16/12/2013
D – Black Hill School, Black Hill	Svan (23816)	9/12/2013 to 16/12/2013

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 (INP). 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 Bloomfield Colliery. 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 Noise Monitoring Ambient Noise Levels (dBA Re 20 µPa)

Location	Period	Primary Noise Descriptor (dBA re 20 µPa)			
		L_{A1}	L_{A10}	L_{A90}	L_{Aeq}
A Weakleys Drive, Beresfield	Daytime	57	53	46	52
	Evening	58	53	45	53
	ENCM Daytime	57	53	46	52
	Night	57	52	42	51
F Lot 684 Black Hill Road, Black Hill	Daytime	65	56	44	58
	Evening	63	53	41	60
	ENCM Daytime	64	55	43	59
	Night	56	51	40	53
G 156 Buchanan Road, Buchanan	Daytime	62	59	50	58
	Evening	55	53	44	52
	ENCM Daytime	58	55	46	56
	Night	51	49	43	50
L 17 Kilshanny Ave, Ashtonfield	Daytime	57	51	42	50
	Evening	55	48	37	48
	ENCM Daytime	55	48	38	49
	Night	46	41	35	43
D Black Hill School, Black Hill	Daytime	62	55	41	60
	Evening	62	51	40	56
	ENCM Daytime	62	53	40	59
	Night	52	46	38	54

Note: 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 Long term Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

5.2.1 Ambient LA90 Noise Levels

Figure 1 Long term Daytime LA90 Noise Levels

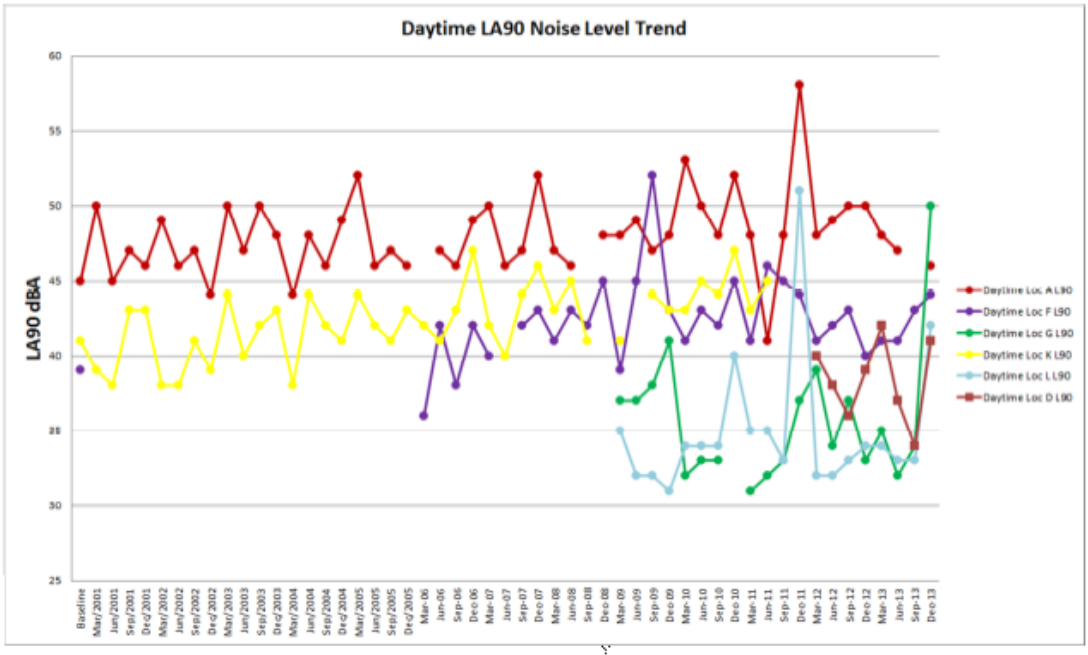


Figure 2 Long term Evening LA90 Noise Levels

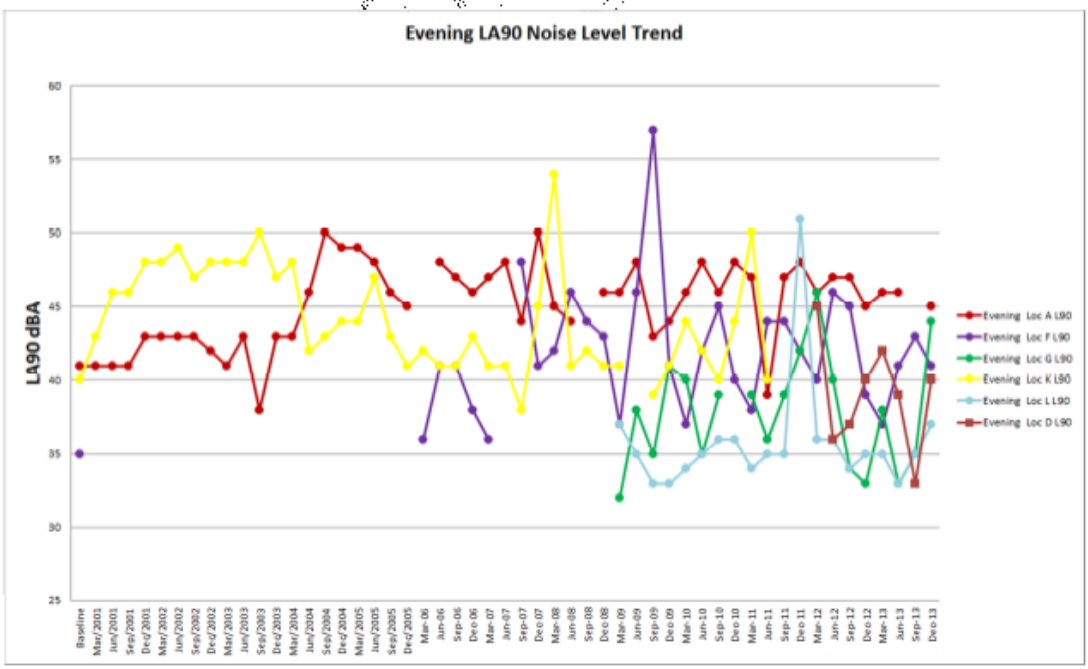
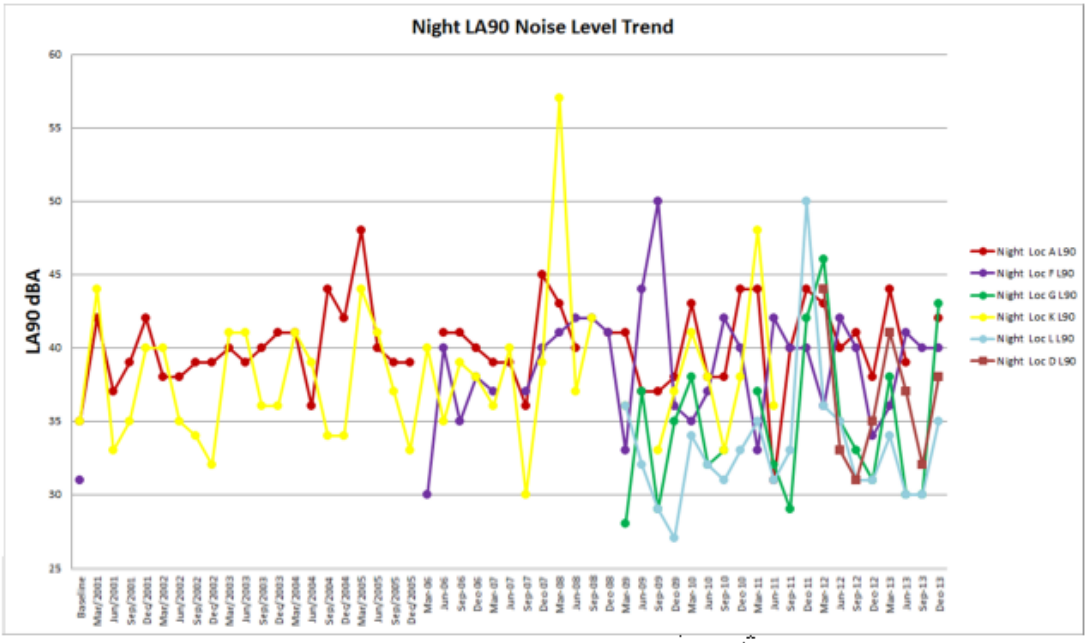


Figure 3 Long term Night-time L_{A90} Noise Levels



Baseline

The summary of results in **Table 8** and **Figure 1**, **Figure 2** and **Figure 3** show that ambient L_{A90} noise levels recorded for the quarter ending December 2013 compared to the levels recorded during the baseline monitoring process at Location F were 5 dB, 6 dB and 9 dB higher during the daytime, evening and night-time periods at respectively, and within 3 dB at Location F during the Daytime, evening and night-time periods.

Given that no data was available at Locations D, G and L during baseline measurements and no monitoring was conducted at Location K during the December 2013 quarter no comparisons can be made.

Previous Quarter (September 2013)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were generally similar (within 3 dB) or lower than those recorded during June 2013 at Location F.

Increases of up to 7 dB in the L_{A90} were recorded at Location D, 16 dB at Location G and 9 dB at Location L. It is considered that this is likely attributed to a higher presence of insects at these locations.

Due to a logger malfunction at Location A during the September 2013 quarter, no comparison can be made.

Coinciding Period Last Year (December 2012)

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 December 2012, with increases of up to 4 dB at Location A, 3 dB at Location D, 6 dB at Location F, 17 dB at Location G and 8 dB at Location L.

5.2.2 Ambient La10 Noise Comparison

The long term ambient LA10 noise levels collected from each monitoring location are presented graphically in **Figure 4**, **Figure 5** and **Figure 6** for the daytime, evening and night-time periods respectively.

Figure 4 Long Term Daytime LA10 Noise levels

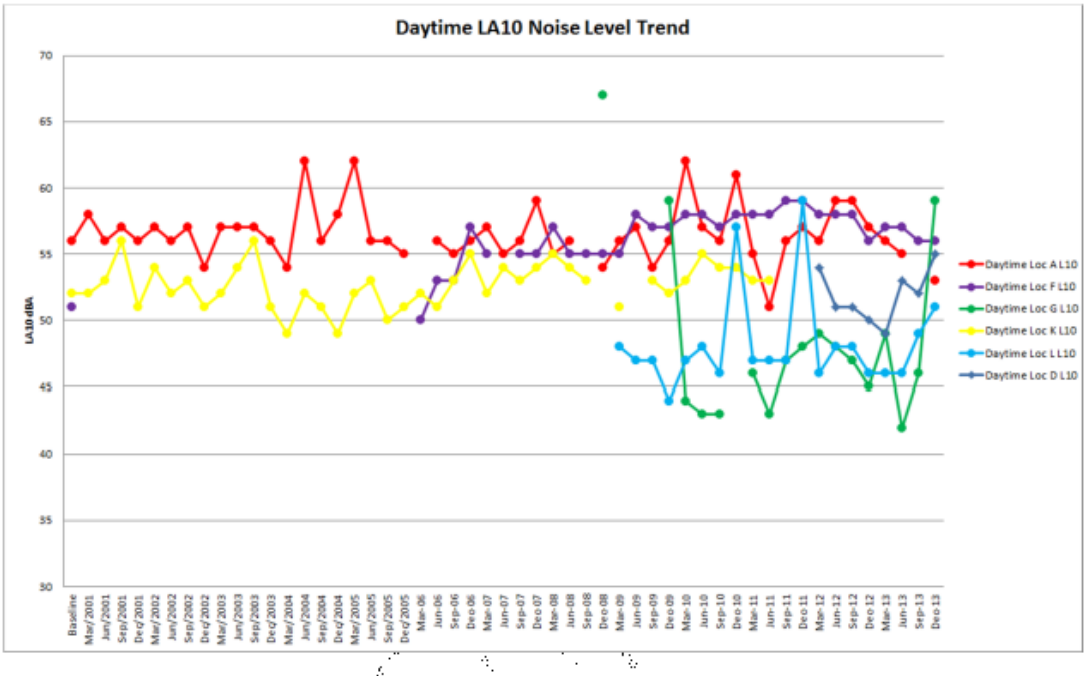


Figure 5 Long term Evening L_{A10} Noise Levels

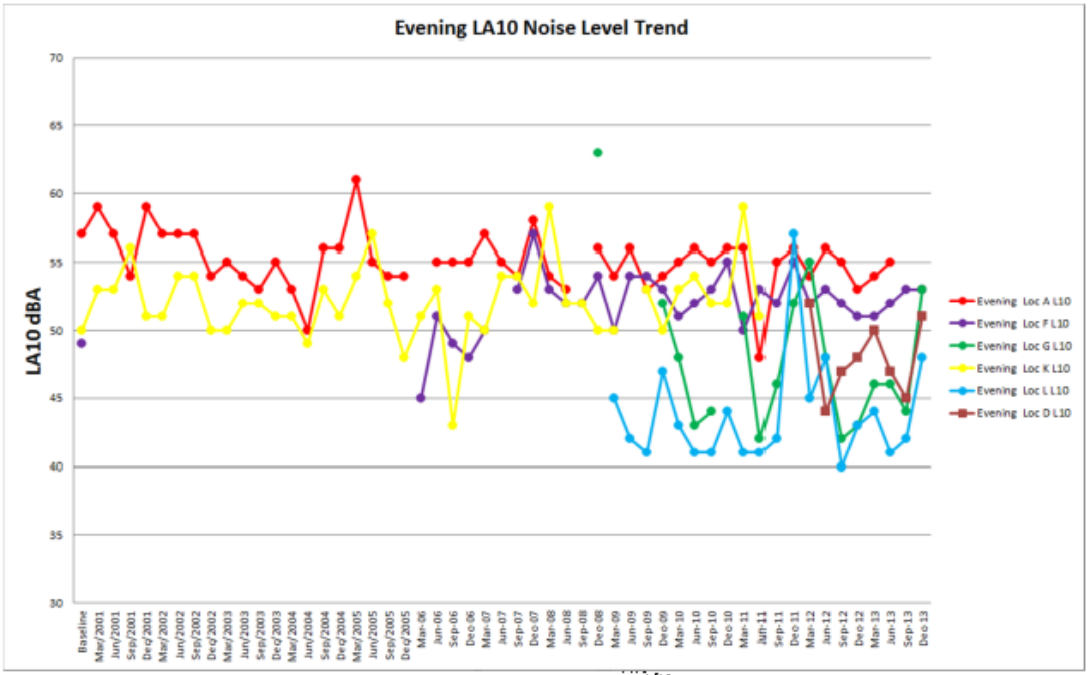
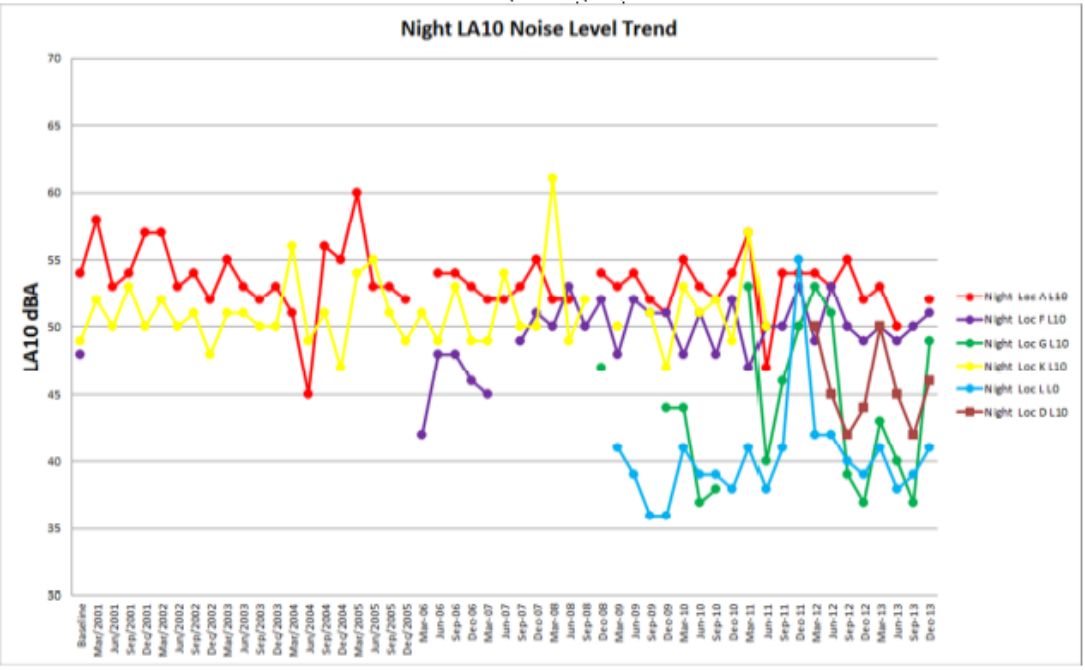


Figure 6 Long term Night-time L_{A10} Noise Levels



Baseline

The summary of results in **Table 8** and **Figure 4**, **Figure 5** and **Figure 6** show that ambient L_{A10} noise levels recorded for the quarter ending December 2013 were 5 dB greater than levels recorded during the baseline monitoring process at Location F during the daytime and 4 dB higher during the evening and night-time periods. At Location A, decreases of up to 4 dB were recorded during the monitoring period.

Given that no data was available at Locations G, L and D during baseline measurements, no comparisons can be made during the December 2013 quarter.

Previous Quarter (September 2013)

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 dB) or lower to those recorded in September 2013. Increases of up to 13 dB at Location G, 6 dB at Location L and Location D were recorded during the monitoring period.

Due to a logger malfunction at Location A during the September 2013 quarter, no comparison can be made.

Coinciding Period Last Year (December 2012)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels were generally similar (within 2 dB) than those recorded in September 2012 at Location A and Location F. Increases of up to 14 dB at Location G and 5 dB at Location L and Location D were recorded during the monitoring period.

5.3 Discussion

Based on the observations made during the operator attended noise surveys, where noise levels have been observed to increase at each location, the ambient noise environment is dominated by road traffic or natural noises and not considered to be impacted from the Donaldson or Abel Mine activity.

6 SUMMARY OF RESULTS AND FINDINGS

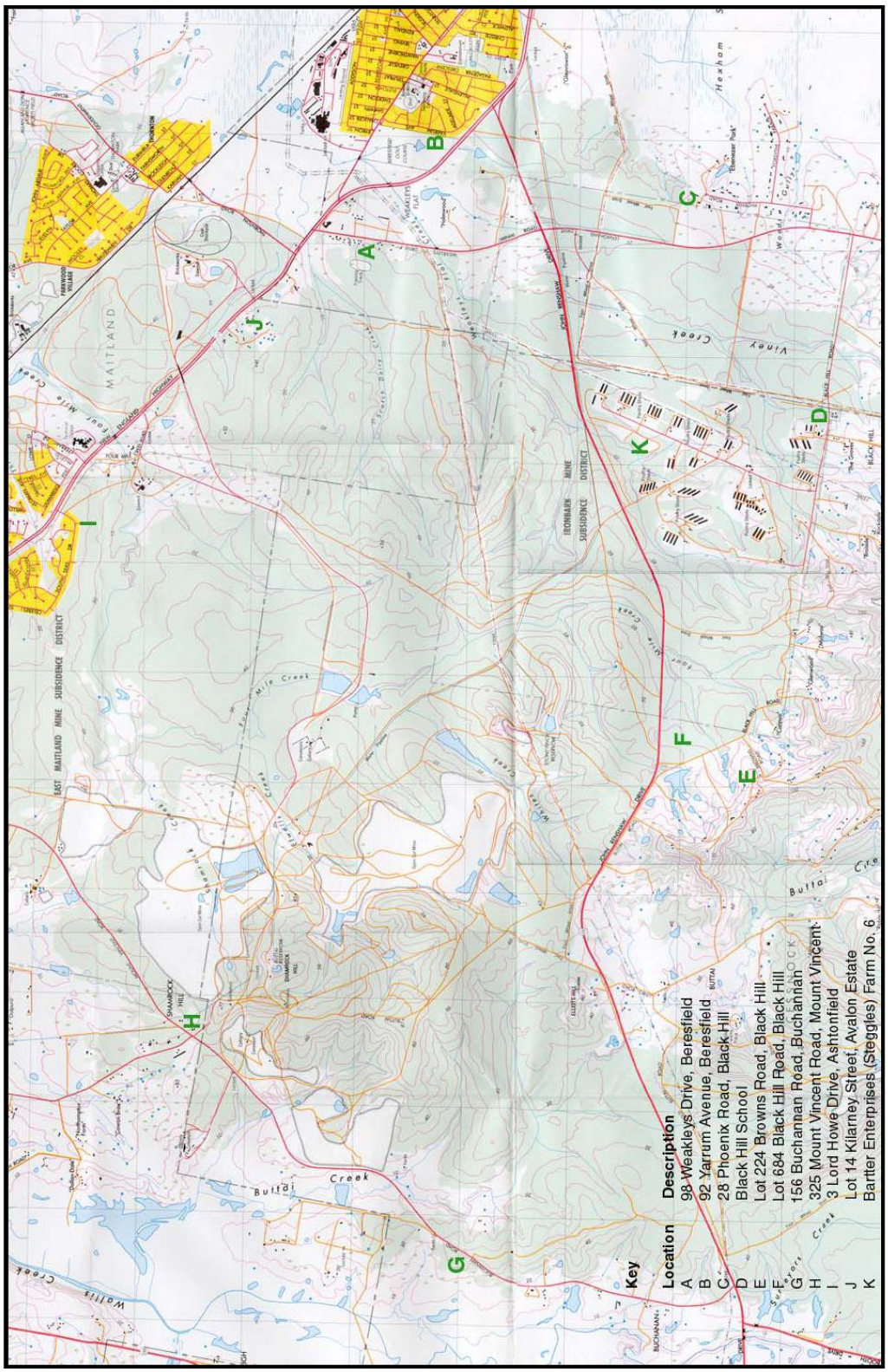
SLR was engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2007.

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**.

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

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

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (December 2013), the baseline monitoring period, the last monitoring period (September 2013), and the coinciding monitoring period from last year (December 2012) has been conducted.



Appendix A – Page 1
Noise Monitoring Locations
Report 30-1053

Appendix B

Report Q39 30-1053-R1
Equipment Register Page 1 of 1

APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – March 2010

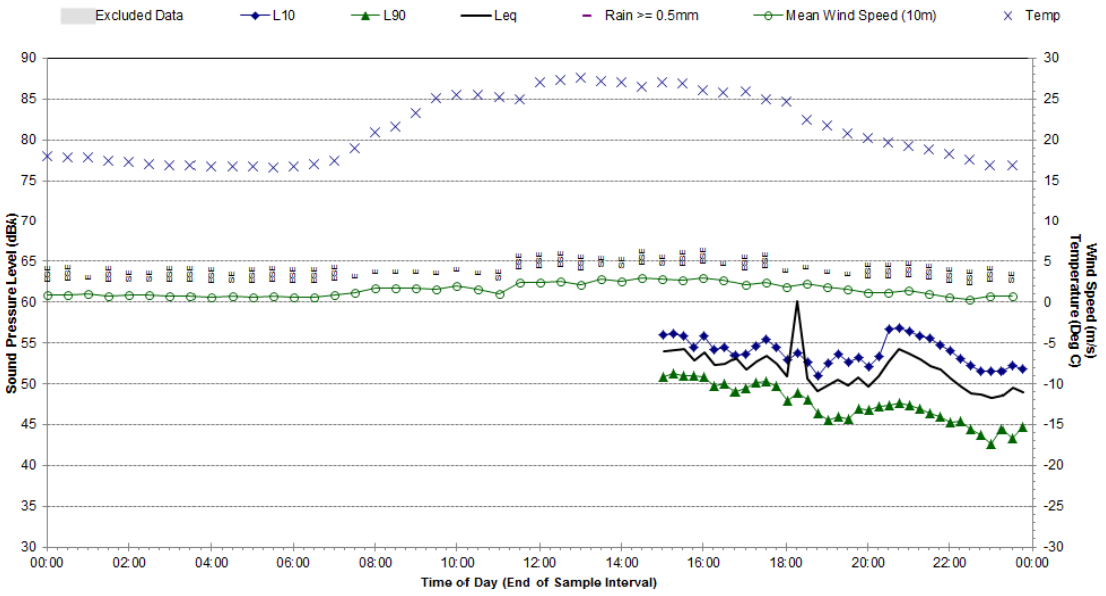
Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 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	

Appendix C1

Statistical Ambient Noise Levels - Location A Page 1 of 4

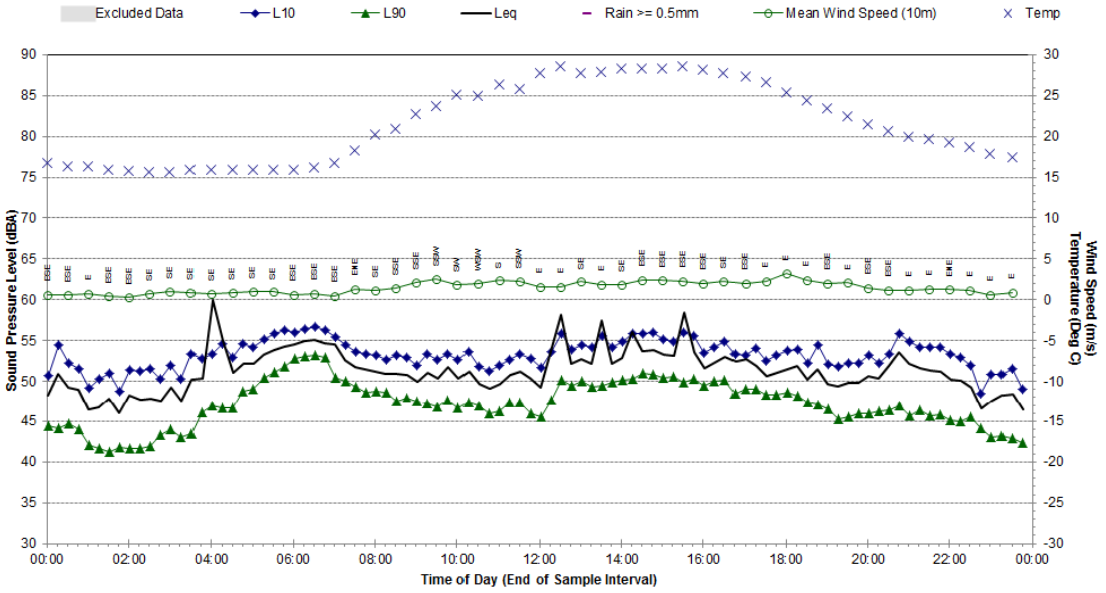
Statistical Ambient Noise Levels

Location A - Monday, 16 December 2013



Statistical Ambient Noise Levels

Location A - Tuesday, 17 December 2013

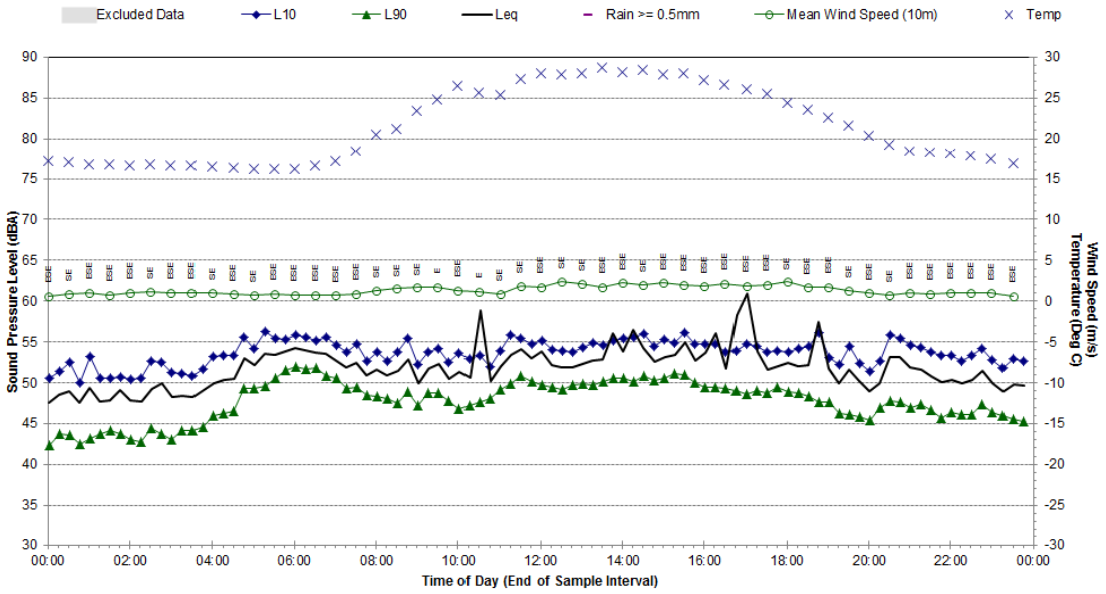


Appendix C1

Statistical Ambient Noise Levels - Location A Page 2 of 4

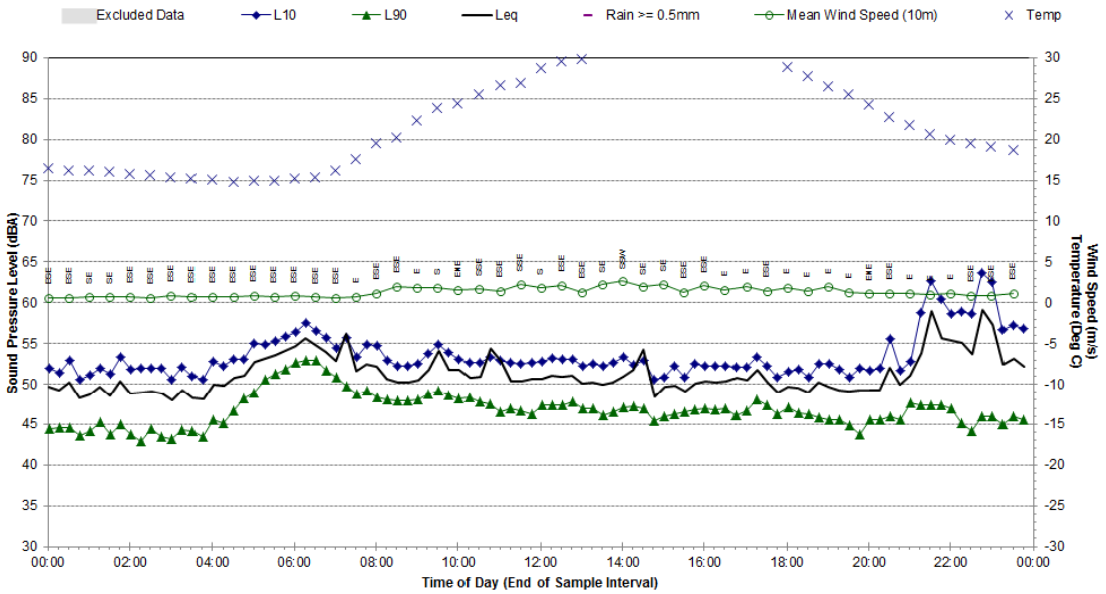
Statistical Ambient Noise Levels

Location A - Wednesday, 18 December 2013



Statistical Ambient Noise Levels

Location A - Thursday, 19 December 2013

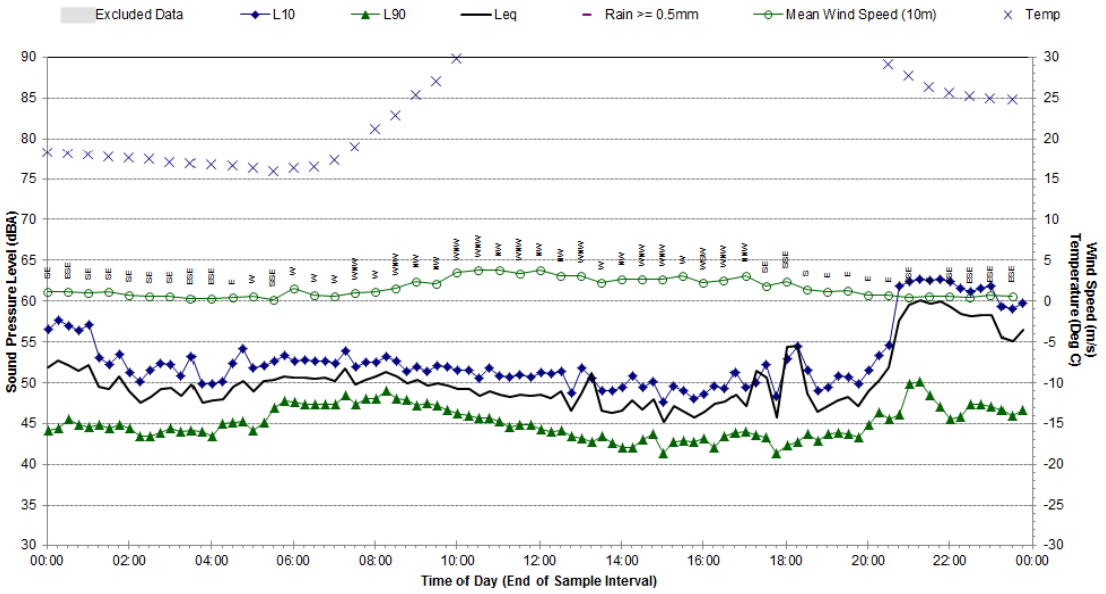


Appendix C1

Statistical Ambient Noise Levels - Location A Page 3 of 4

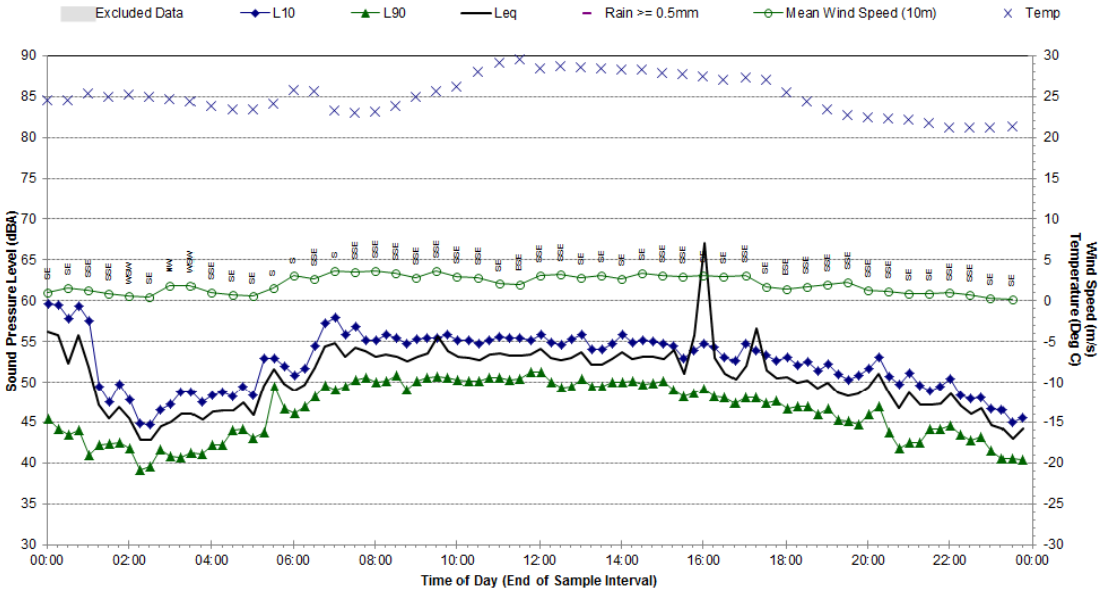
Statistical Ambient Noise Levels

Location A - Friday, 20 December 2013



Statistical Ambient Noise Levels

Location A - Saturday, 21 December 2013

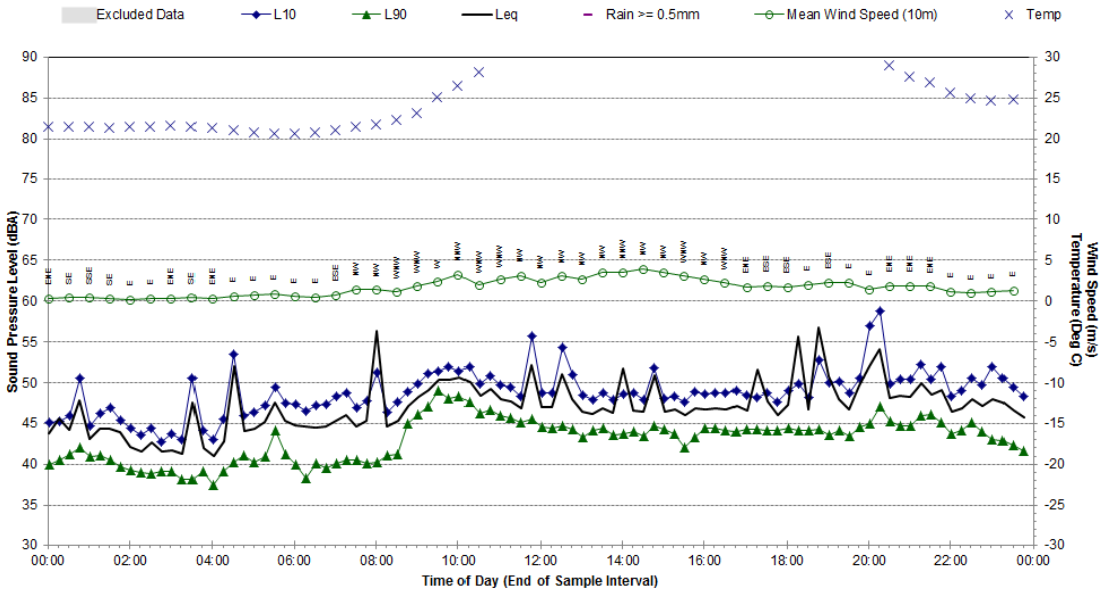


Appendix C1

Statistical Ambient Noise Levels - Location A Page 4 of 4

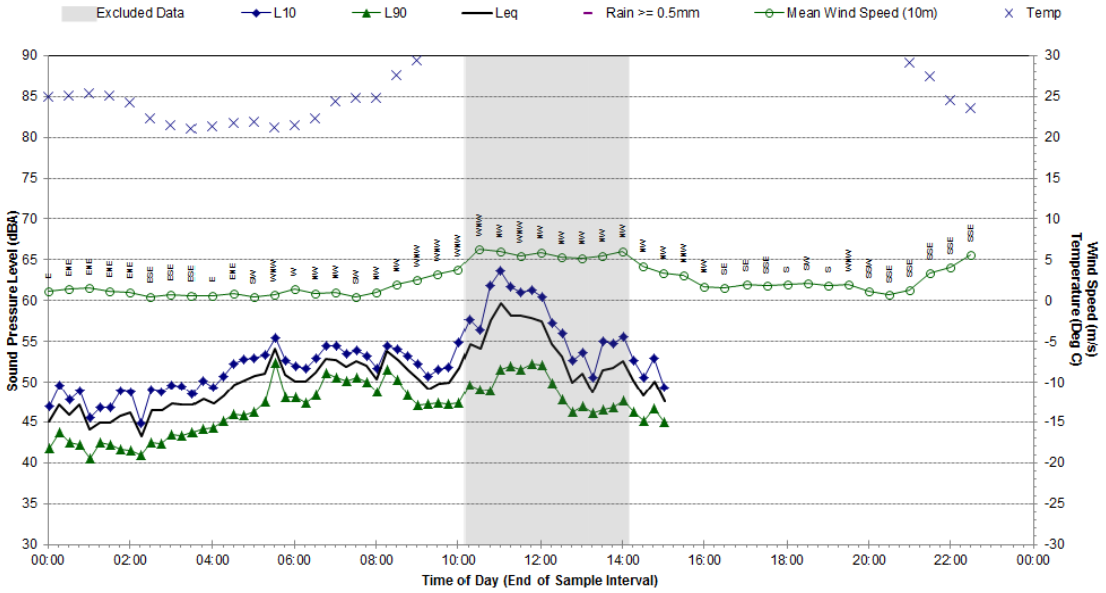
Statistical Ambient Noise Levels

Location A - Sunday, 22 December 2013



Statistical Ambient Noise Levels

Location A - Monday, 23 December 2013

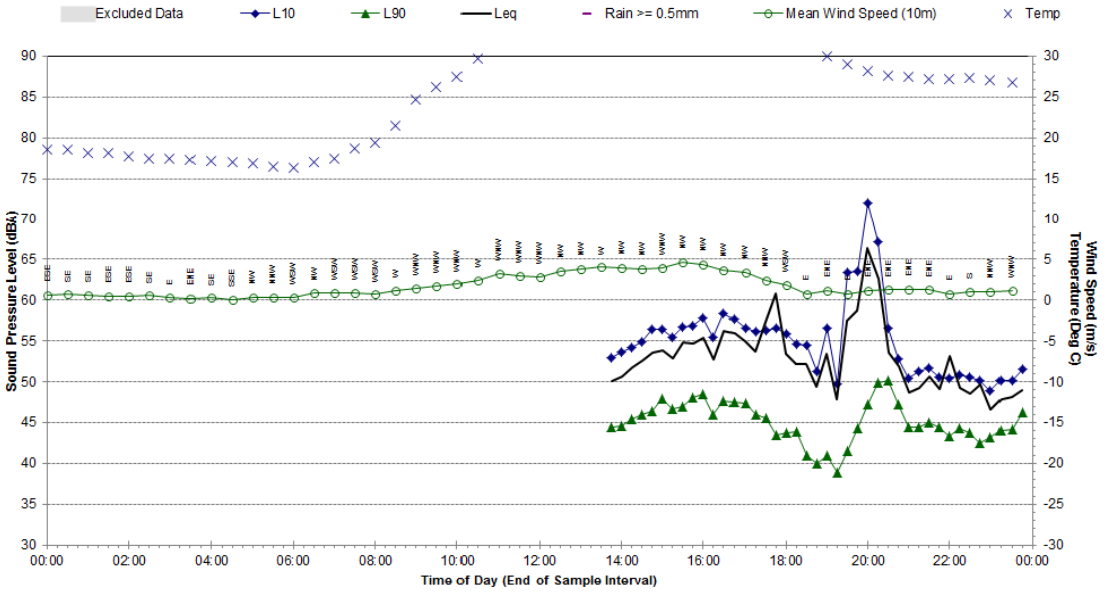


Appendix C2

Statistical Ambient Noise Levels – Location F Page 1 of 4

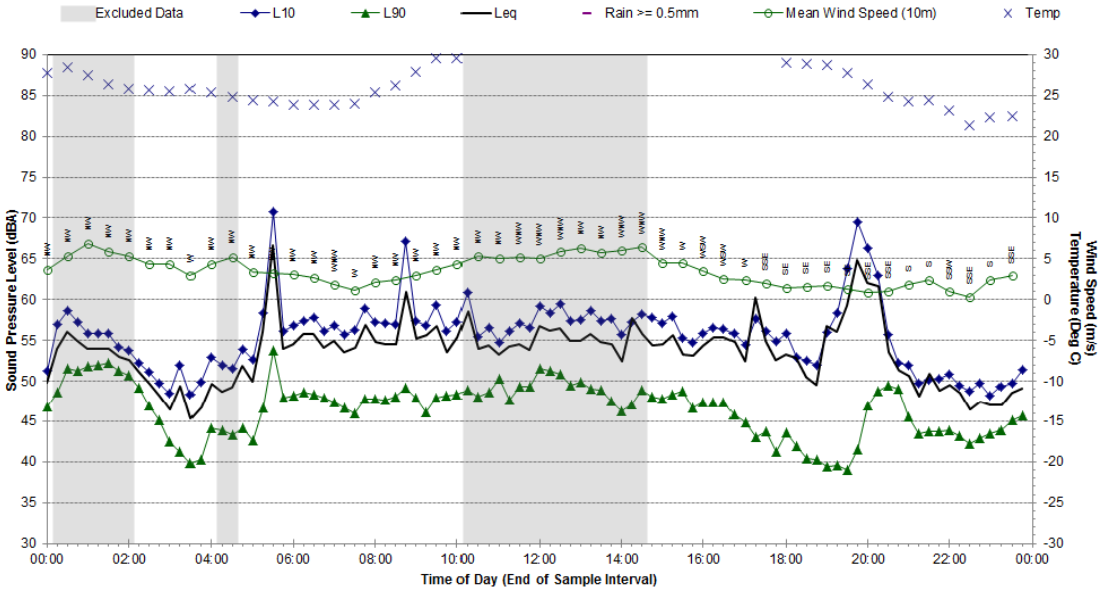
Statistical Ambient Noise Levels

Location F - Monday, 9 December 2013



Statistical Ambient Noise Levels

Location F - Tuesday, 10 December 2013

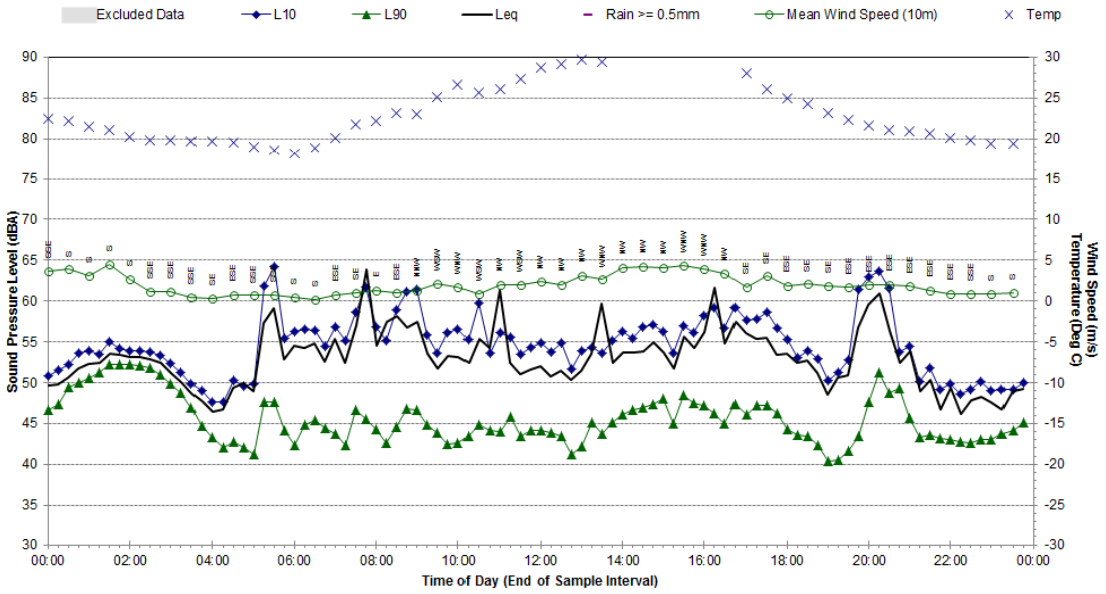


Appendix C2

Statistical Ambient Noise Levels – Location F Page 2 of 4

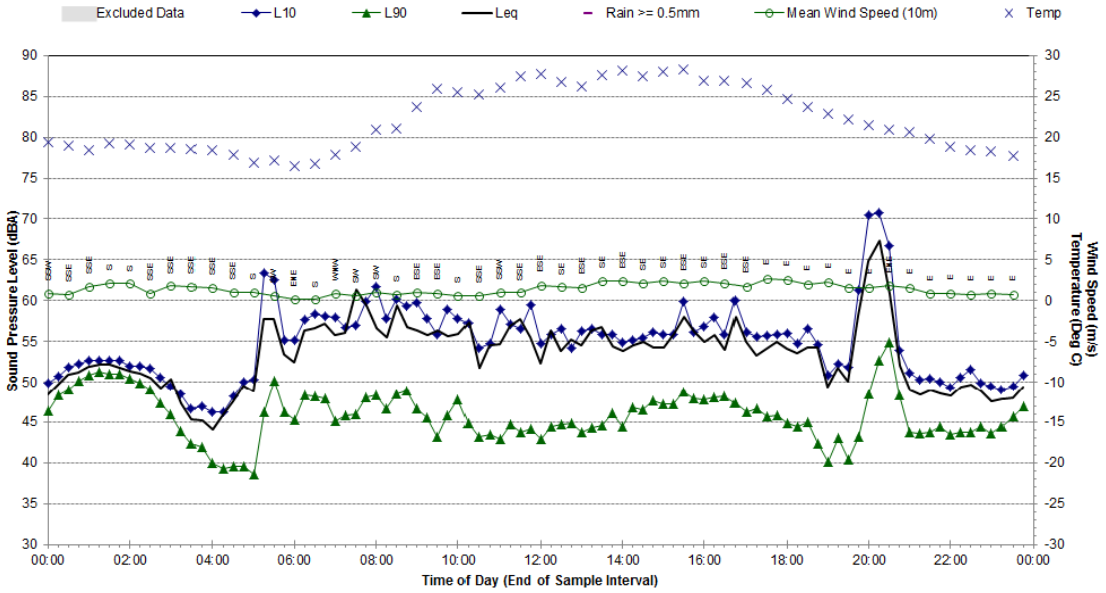
Statistical Ambient Noise Levels

Location F - Wednesday, 11 December 2013



Statistical Ambient Noise Levels

Location F - Thursday, 12 December 2013

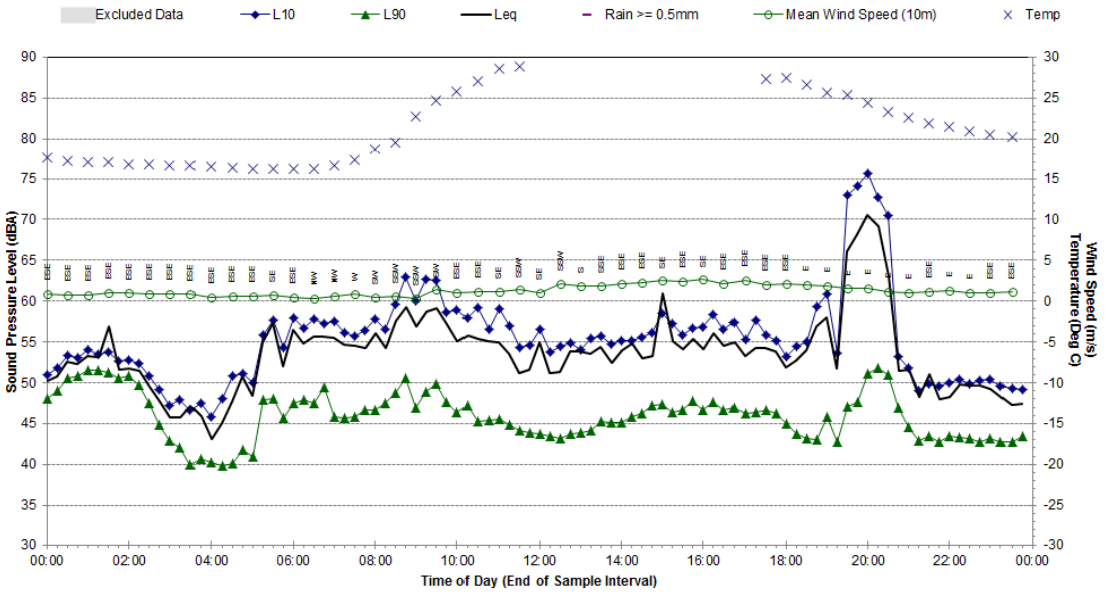


Appendix C2

Statistical Ambient Noise Levels – Location F Page 3 of 4

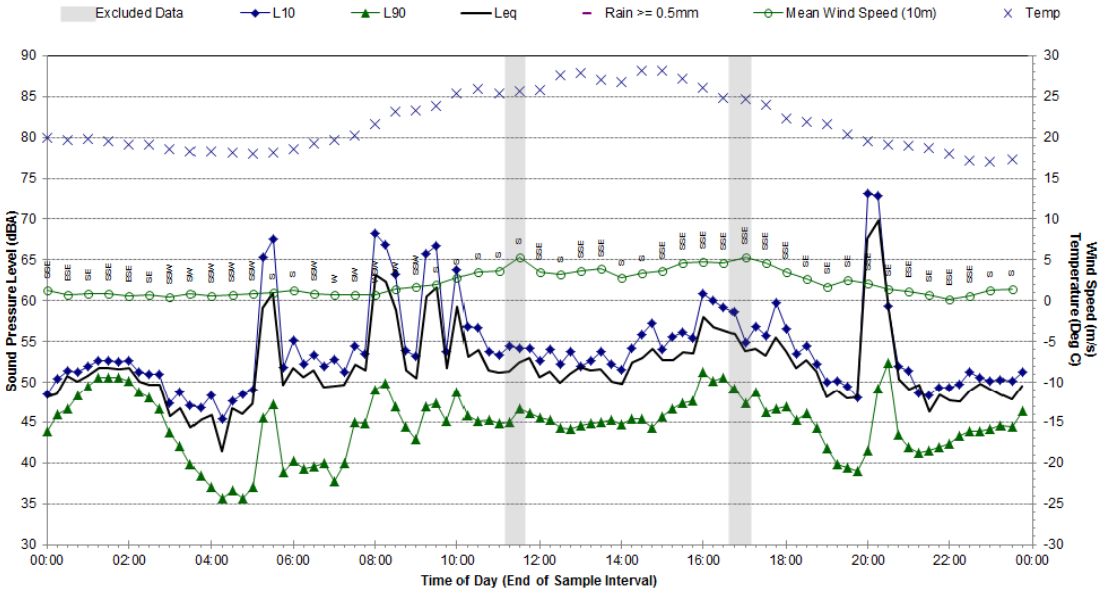
Statistical Ambient Noise Levels

Location F - Friday, 13 December 2013



Statistical Ambient Noise Levels

Location F - Saturday, 14 December 2013

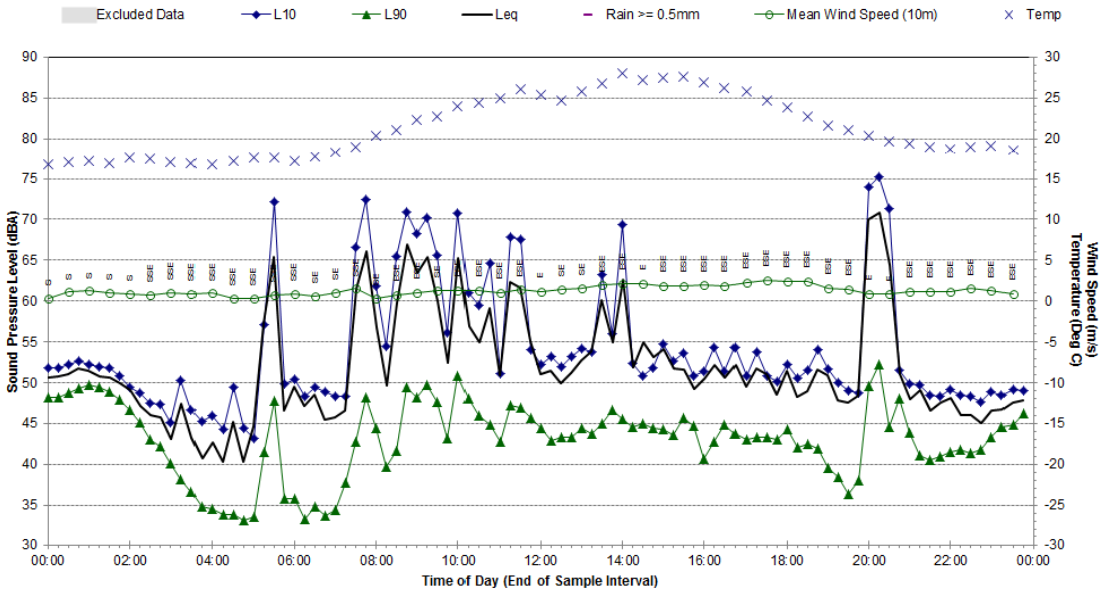


Appendix C2

Statistical Ambient Noise Levels – Location F Page 4 of 4

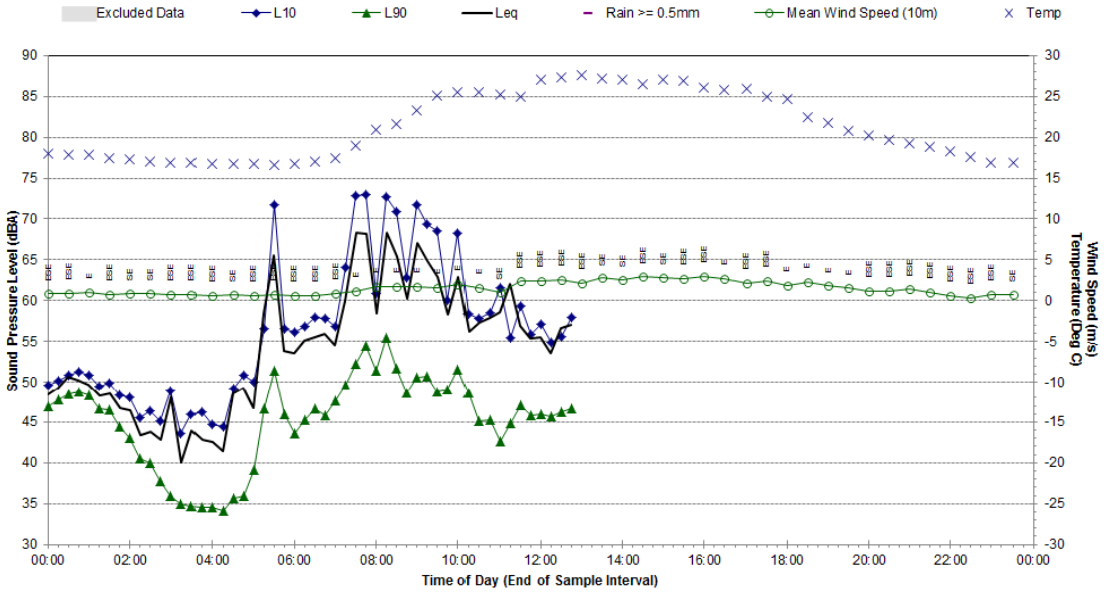
Statistical Ambient Noise Levels

Location F - Sunday, 15 December 2013



Statistical Ambient Noise Levels

Location F - Monday, 16 December 2013

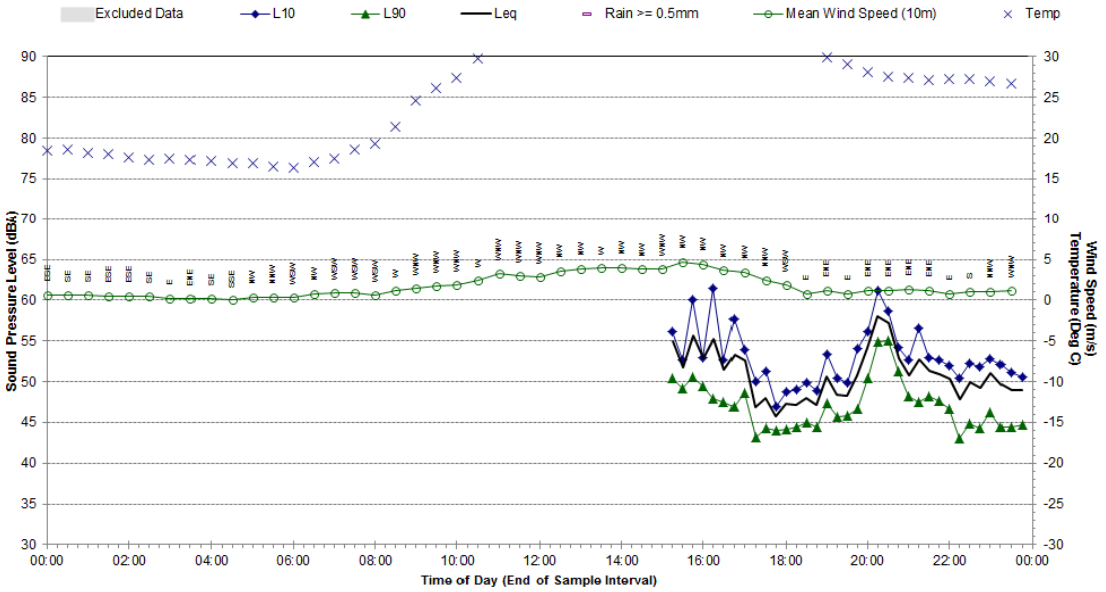


Appendix C3

Statistical Ambient Noise Levels – Location G Page 1 of 4

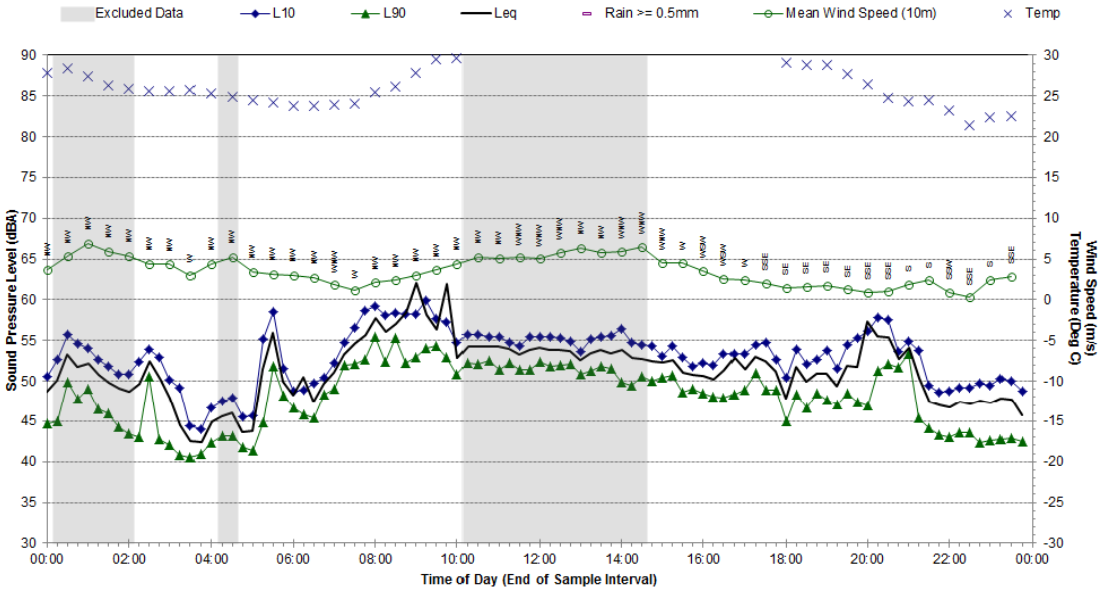
Statistical Ambient Noise Levels

Location G - Monday, 9 December 2013



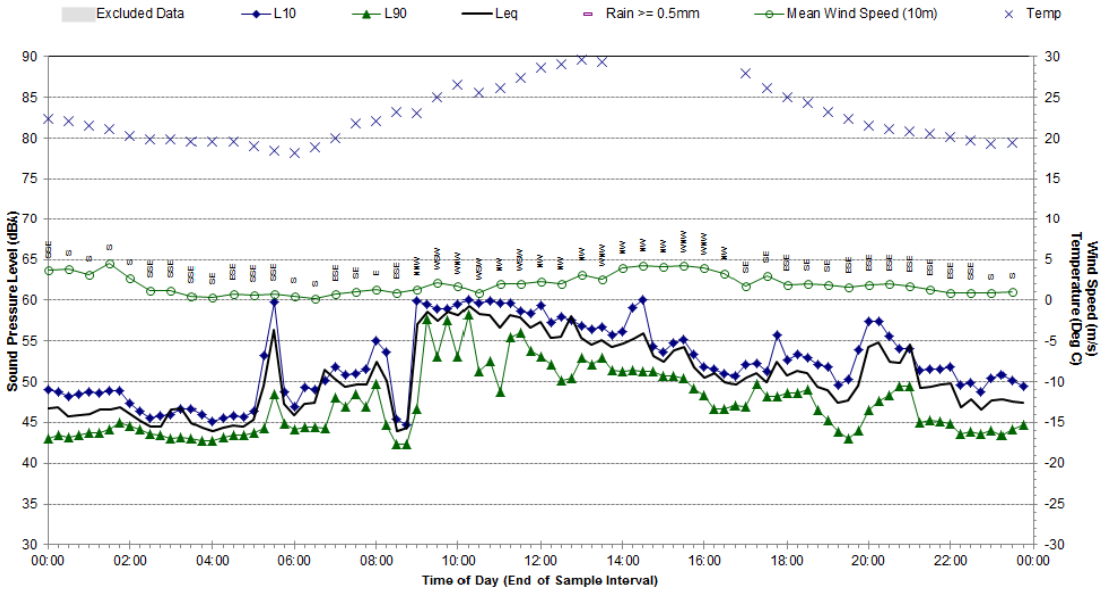
Statistical Ambient Noise Levels

Location G - Tuesday, 10 December 2013

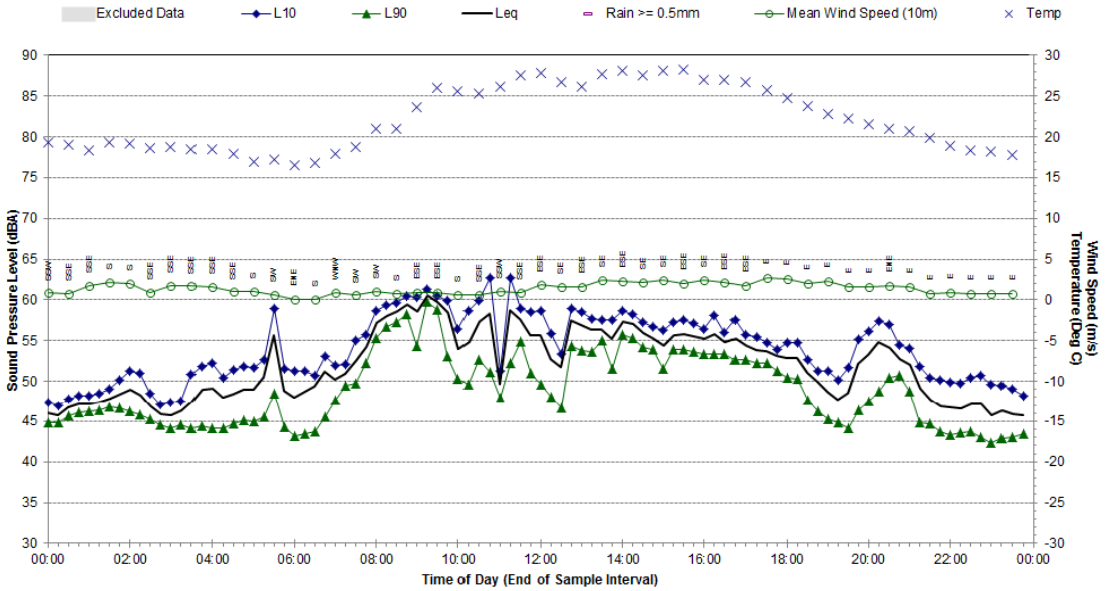


Appendix C3
Statistical Ambient Noise Levels – Location G Page 2 of 4

Statistical Ambient Noise Levels
Location G - Wednesday, 11 December 2013

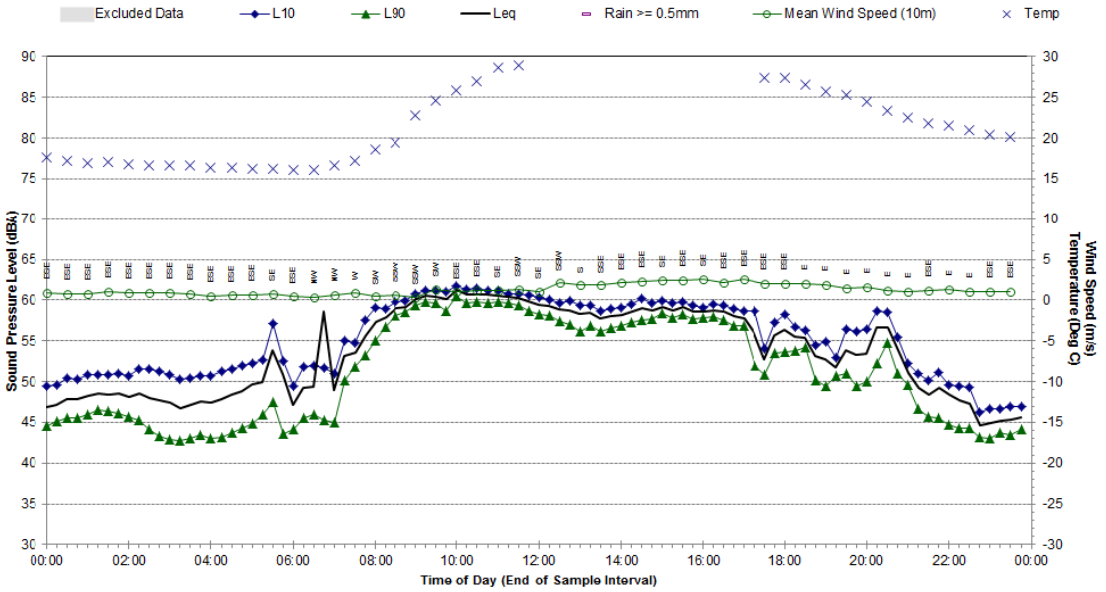


Statistical Ambient Noise Levels
Location G - Thursday, 12 December 2013

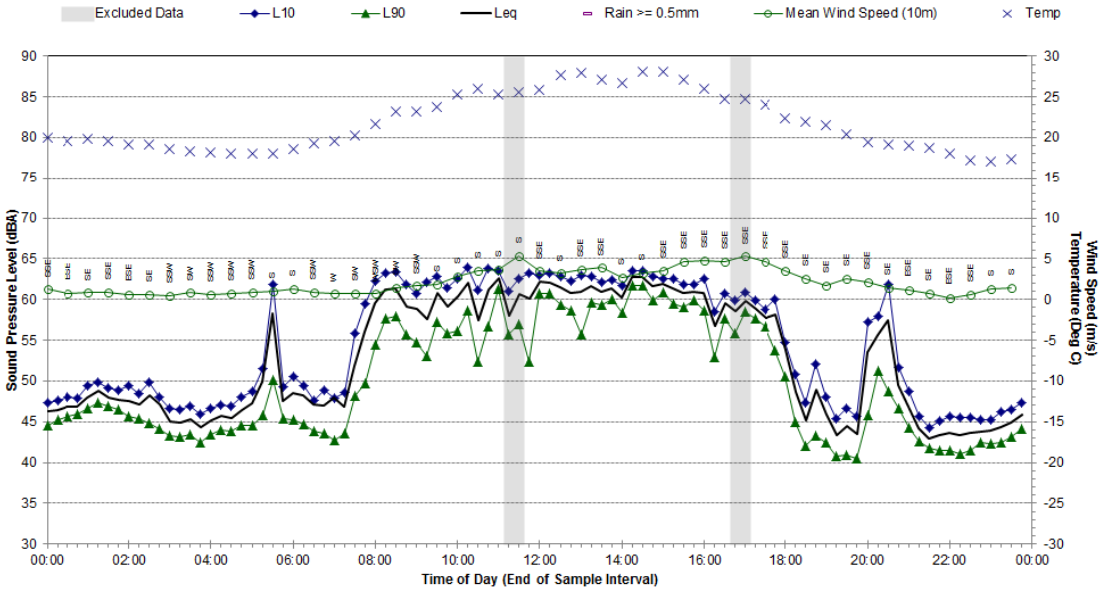


Appendix C3
Statistical Ambient Noise Levels – Location G Page 3 of 4

Statistical Ambient Noise Levels
Location G - Friday, 13 December 2013

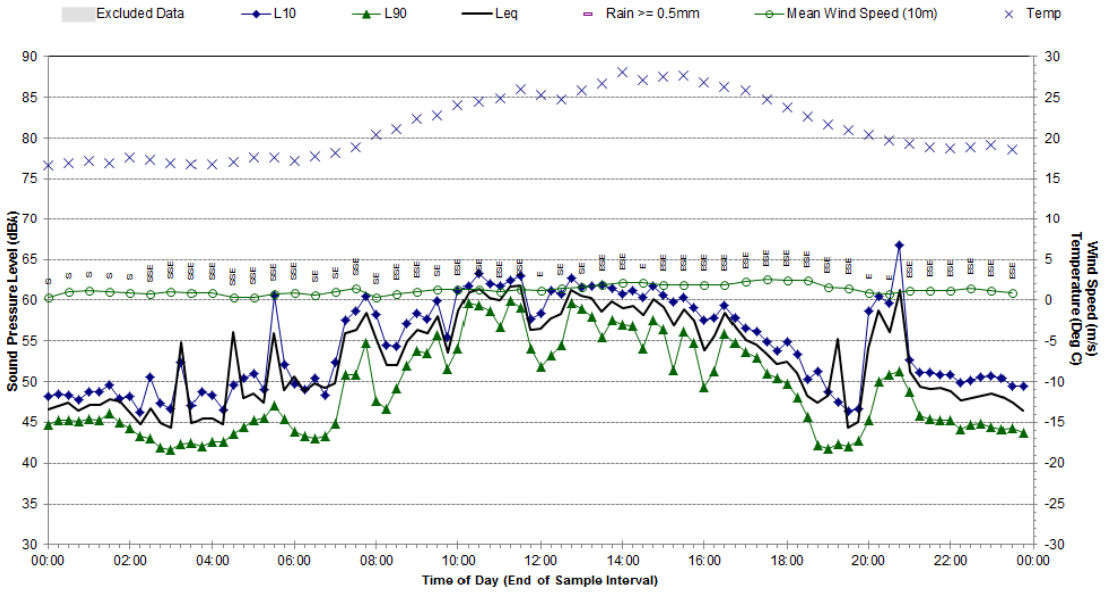


Statistical Ambient Noise Levels
Location G - Saturday, 14 December 2013

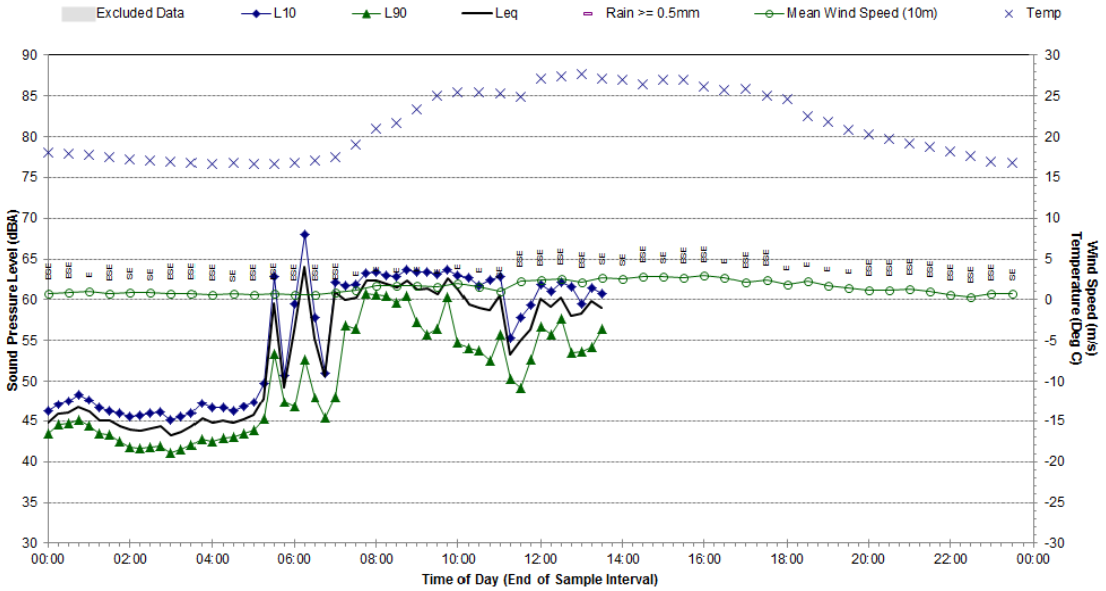


Appendix C3
Statistical Ambient Noise Levels – Location G Page 4 of 4

Statistical Ambient Noise Levels
Location G - Sunday, 15 December 2013



Statistical Ambient Noise Levels
Location G - Monday, 16 December 2013

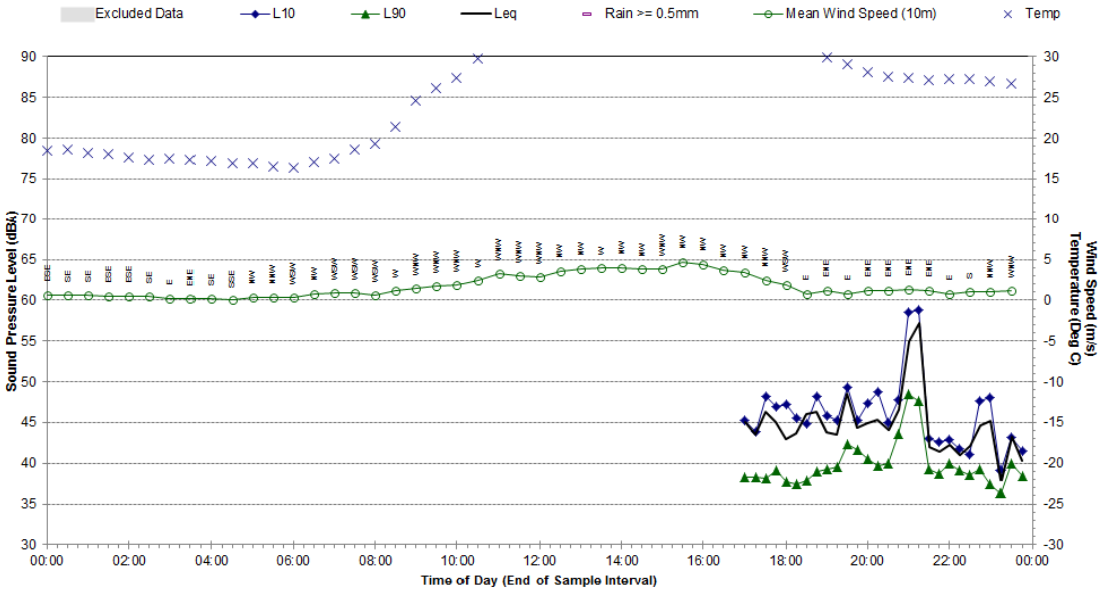


Appendix C4

Statistical Ambient Noise Levels – Location L Page 1 of 4

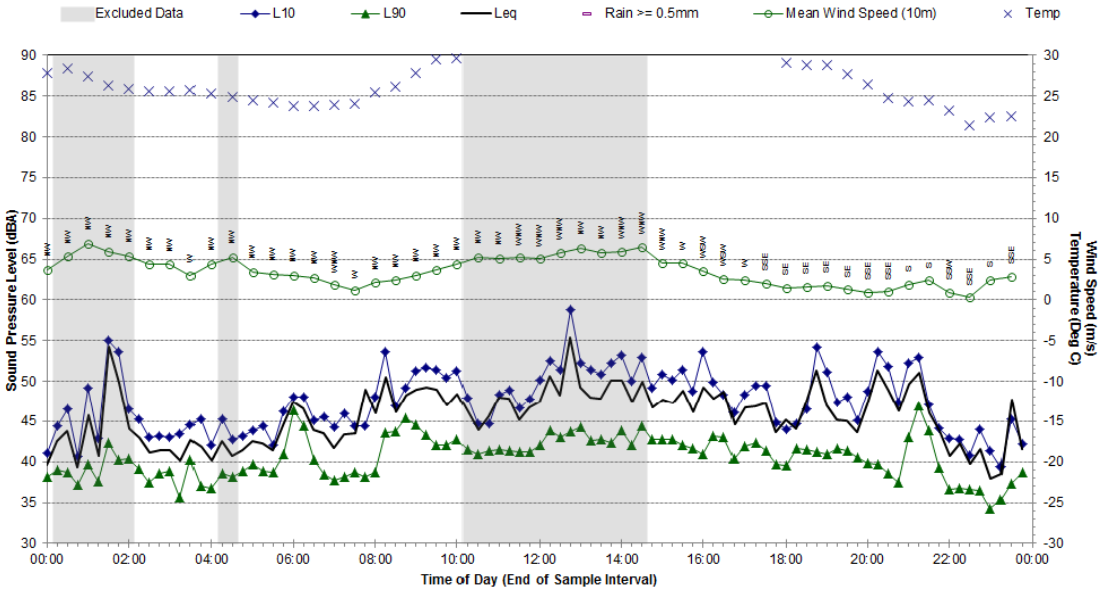
Statistical Ambient Noise Levels

Location L - Monday, 9 December 2013



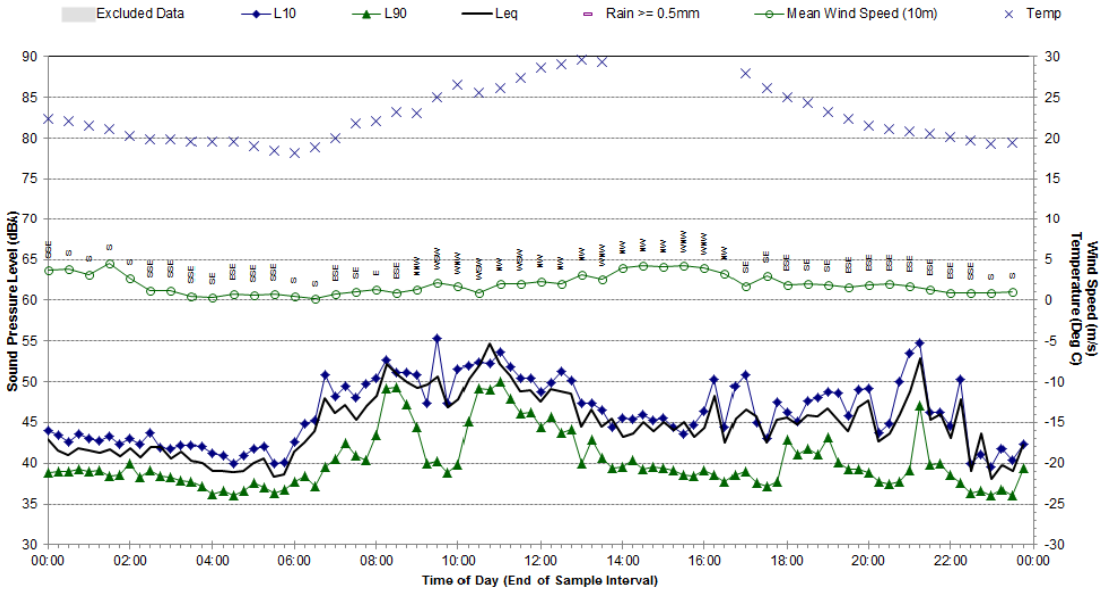
Statistical Ambient Noise Levels

Location L - Tuesday, 10 December 2013

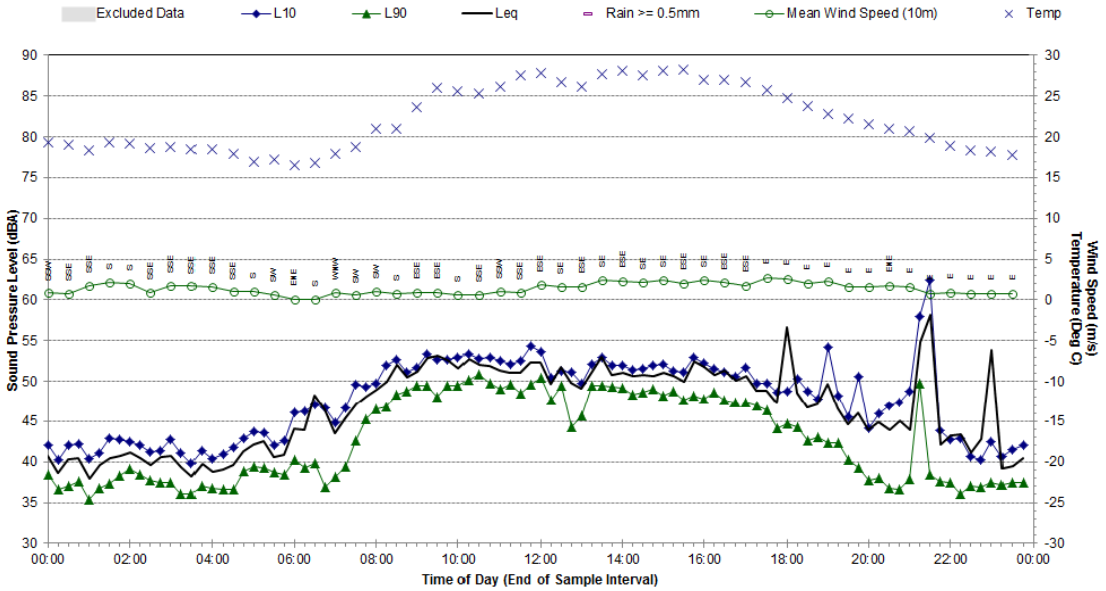


Appendix C4
Statistical Ambient Noise Levels – Location L Page 2 of 4

Statistical Ambient Noise Levels
Location L - Wednesday, 11 December 2013

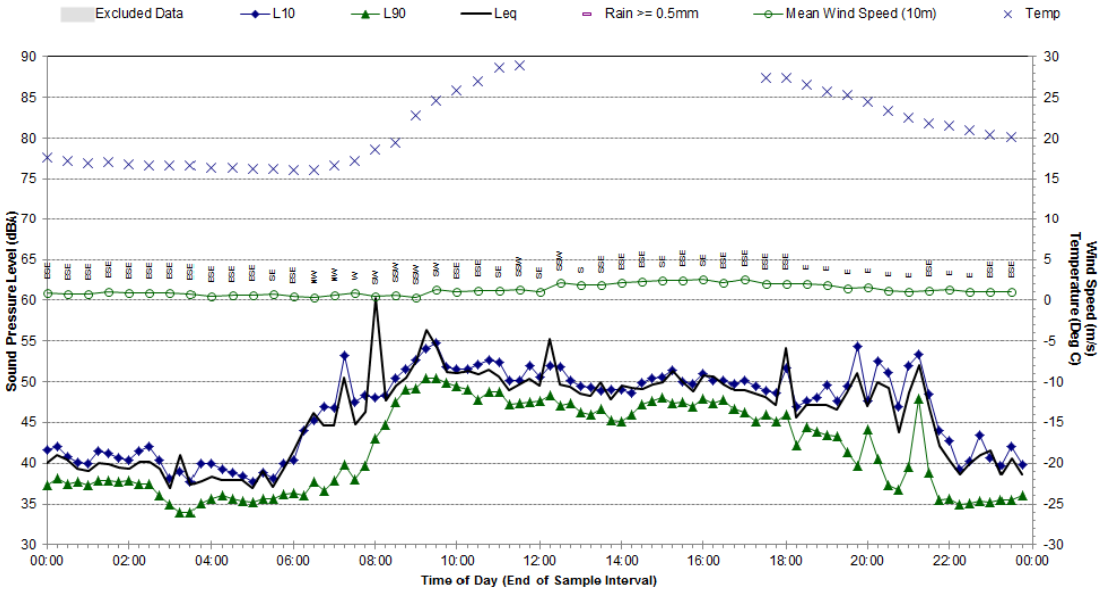


Statistical Ambient Noise Levels
Location L - Thursday, 12 December 2013

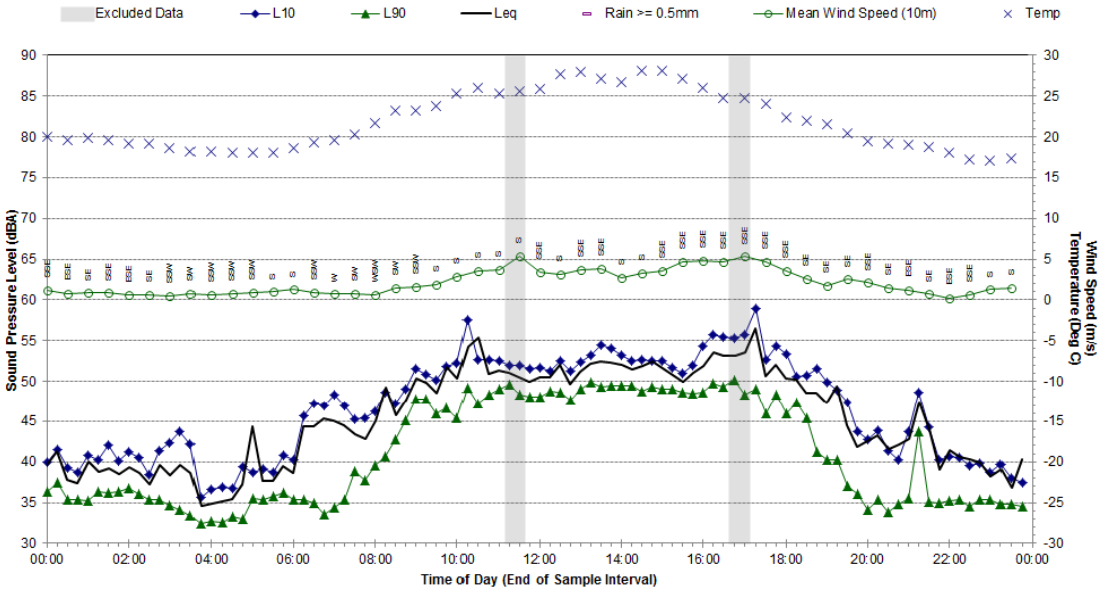


Appendix C4
Statistical Ambient Noise Levels – Location L Page 3 of 4

Statistical Ambient Noise Levels
Location L - Friday, 13 December 2013



Statistical Ambient Noise Levels
Location L - Saturday, 14 December 2013

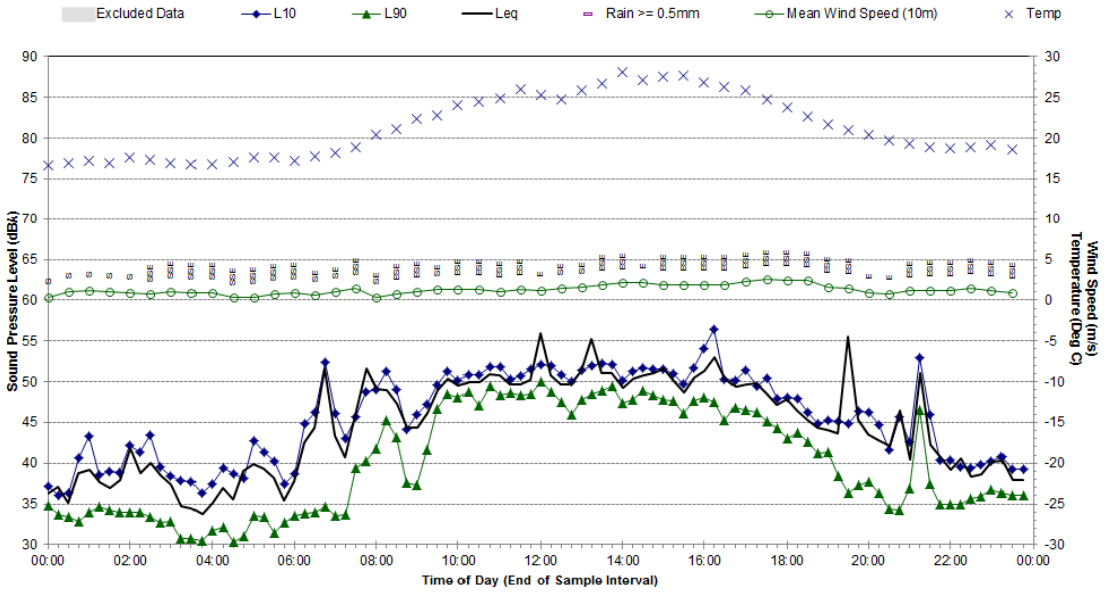


Appendix C4

Statistical Ambient Noise Levels – Location L Page 4 of 4

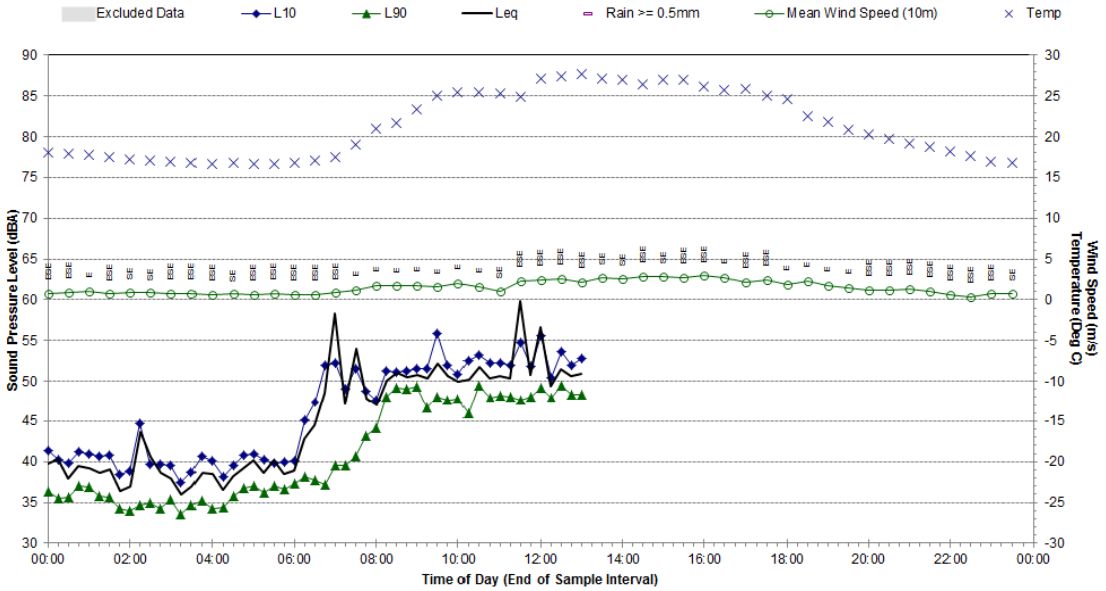
Statistical Ambient Noise Levels

Location L - Sunday, 15 December 2013



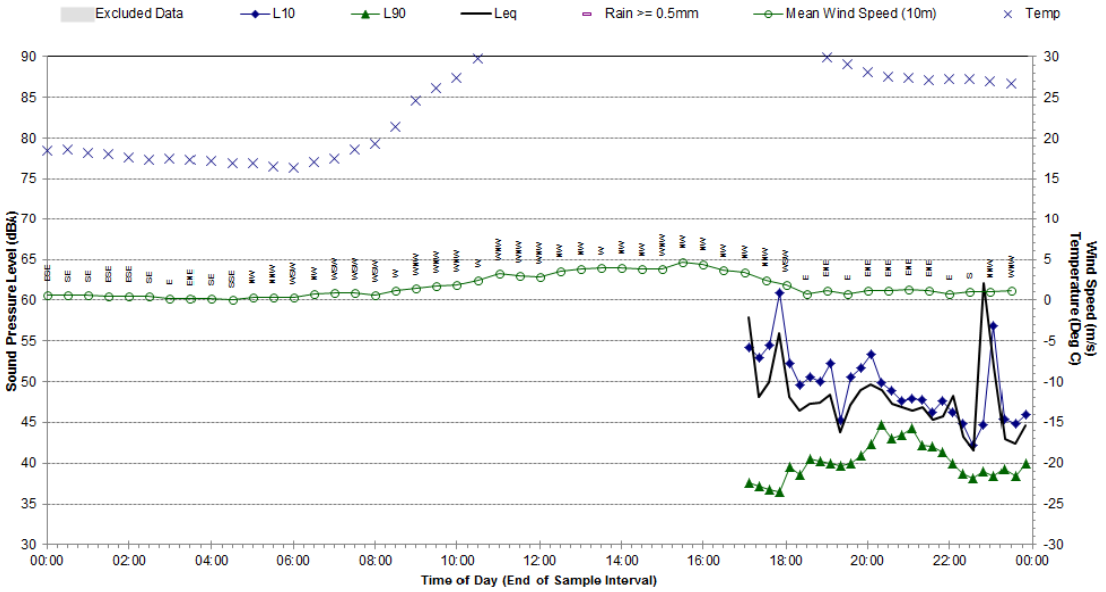
Statistical Ambient Noise Levels

Location L - Monday, 16 December 2013

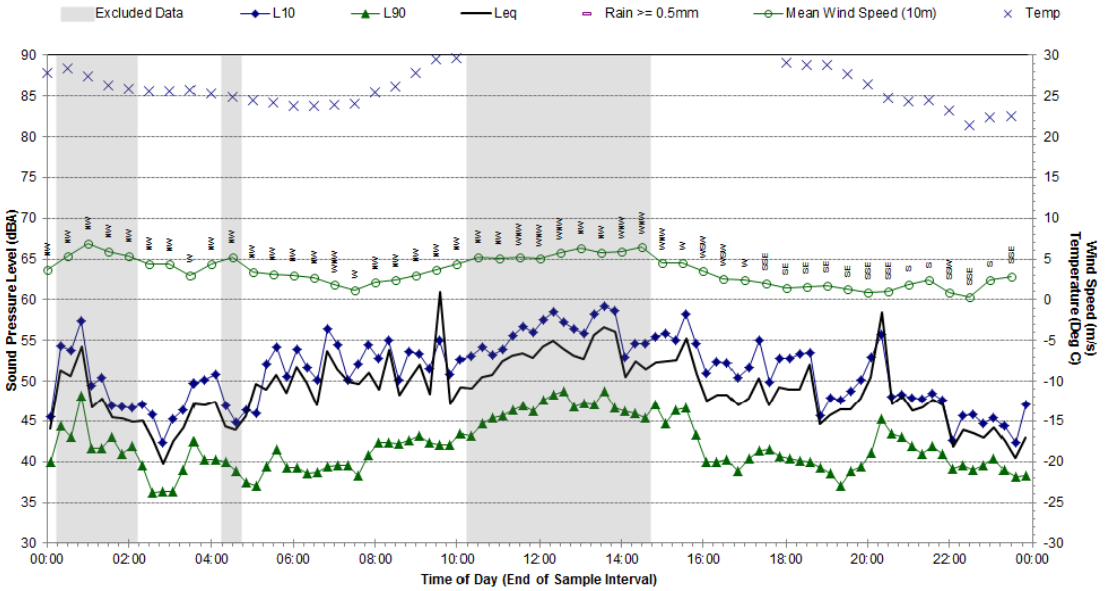


Appendix C5
Statistical Ambient Noise Levels – Location D Page 1 of 4

Statistical Ambient Noise Levels
Location D - Monday, 9 December 2013

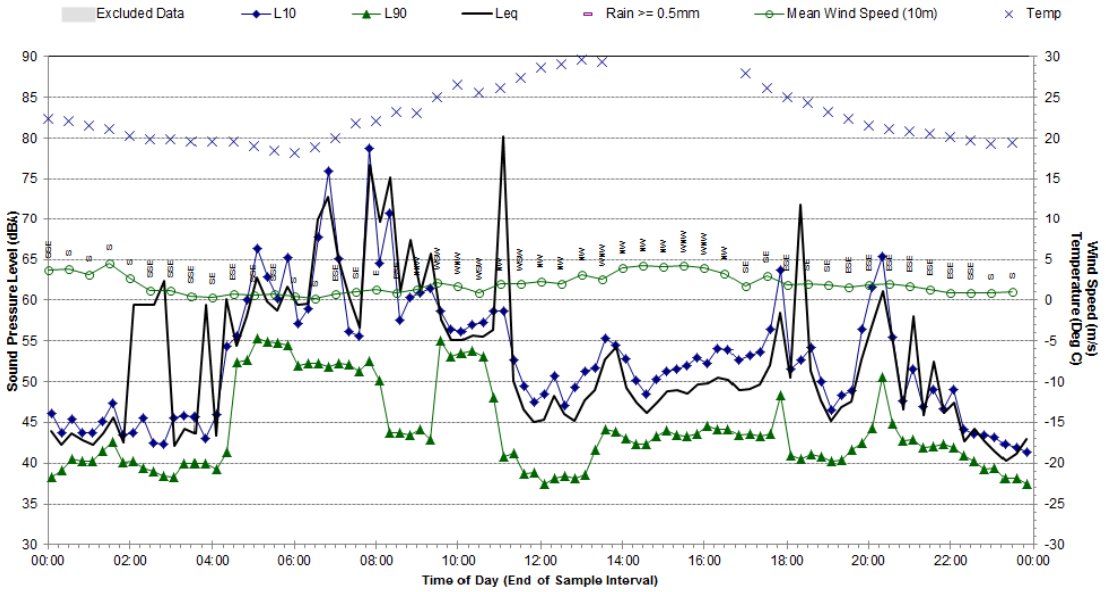


Statistical Ambient Noise Levels
Location D - Tuesday, 10 December 2013

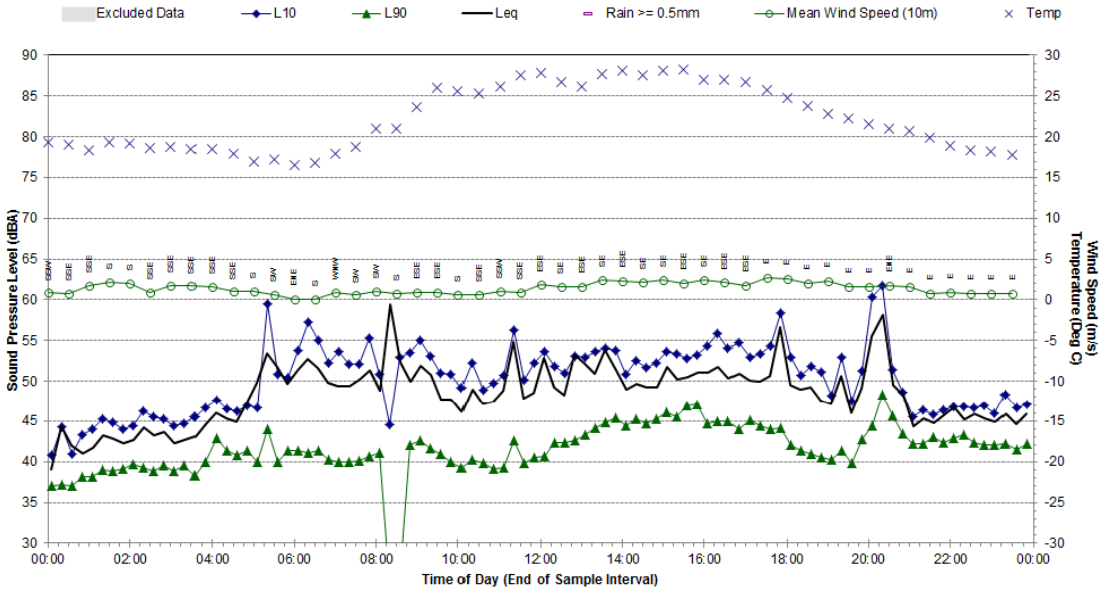


Appendix C5
Statistical Ambient Noise Levels – Location D Page 2 of 4

Statistical Ambient Noise Levels
Location D - Wednesday, 11 December 2013

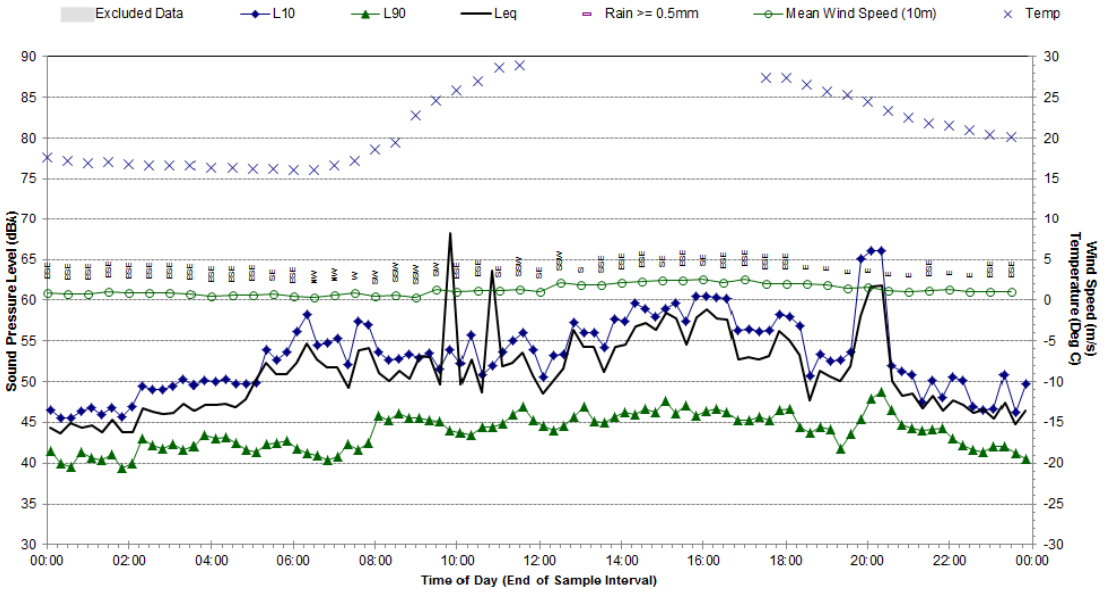


Statistical Ambient Noise Levels
Location D - Thursday, 12 December 2013

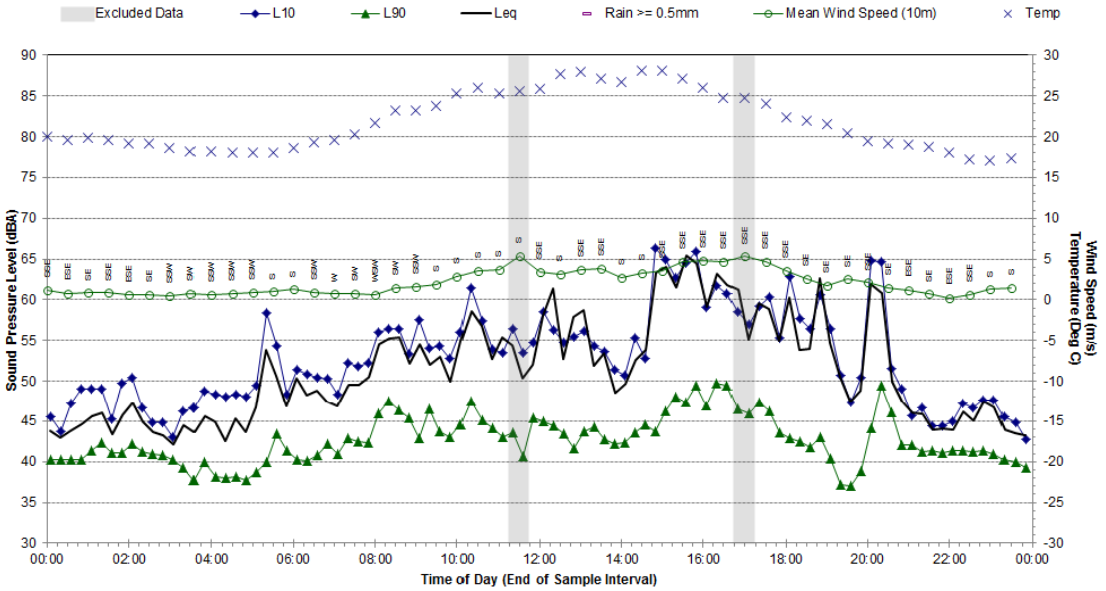


Appendix C5
Statistical Ambient Noise Levels – Location D Page 3 of 4

Statistical Ambient Noise Levels
Location D - Friday, 13 December 2013



Statistical Ambient Noise Levels
Location D - Saturday, 14 December 2013

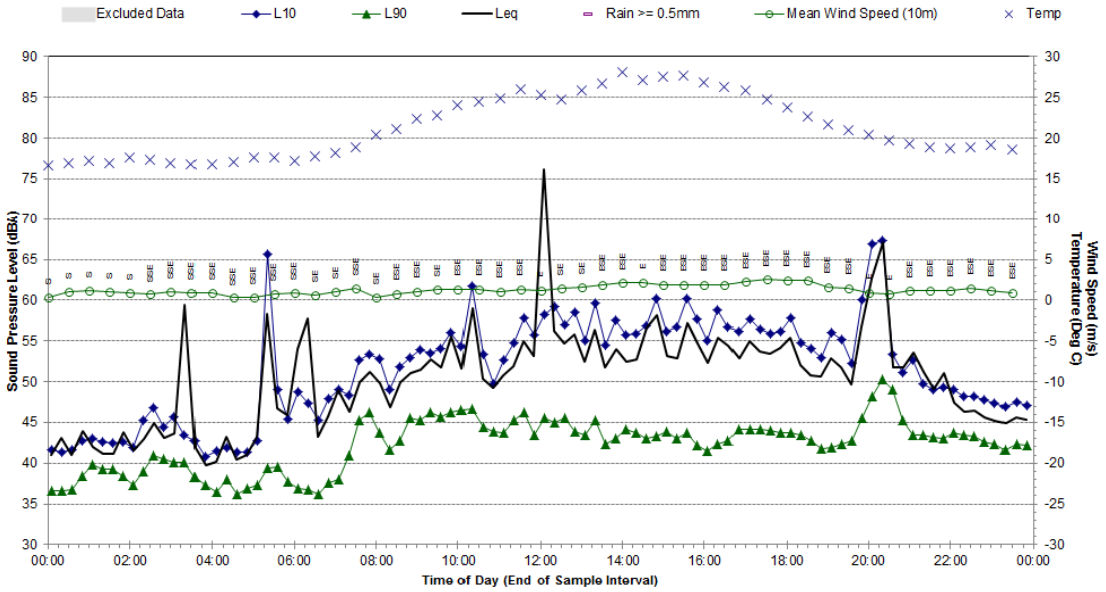


Appendix C5

Statistical Ambient Noise Levels – Location D Page 4 of 4

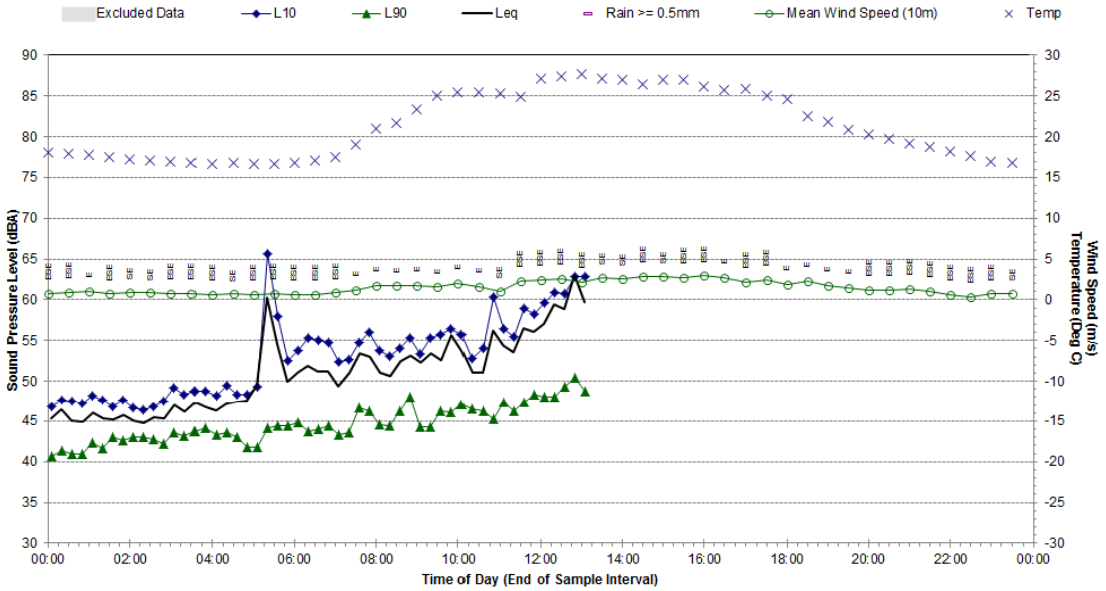
Statistical Ambient Noise Levels

Location D - Sunday, 15 December 2013



Statistical Ambient Noise Levels

Location D - Monday, 16 December 2013



Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending March 2014

Report Number Q53 630.01053-R1

30 April 2014

Donaldson Coal Pty Ltd
PO Box 675
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Version: Draft 1

Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending March 2014

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Reference	Status	Date	Prepared	Checked	Authorised
Q53 630.01053-R1	Draft 1	30 April 2014	Nicholas Vandenberg	John Cotterill	

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TABLES

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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 2007.

Donaldson Coal Pty Ltd has commissioned SLR Consulting Pty Ltd (SLR) 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 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 than 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

Approved Operations

The following operations are approved under the Abel Colliery Project Approval:

- Extraction of up to 6.1 Mtpa of ROM coal from the Abel Underground Coal Mine.
- Transport coal to the existing Bloomfield CHPP by private haul roads, or by coal conveyor, or by a combination of both methods.
- Operate the Bloomfield CHPP to process coal extracted from the Abel Coal Mine and the Bloomfield and Donaldson Coal Mines.
- Transportation of product coal from the Bloomfield site by rail via the Bloomfield rail loading facility.

The PA was modified in June 2010 (05_0136 MOD 1) allowing construction and operation of a downcast ventilation fan. In May 2011 the PA was modified again (05_0136 MOD 2) to allow the construction and operation of an upcast ventilation fan (and associated facilities). In December 2013 the PA was further modified (05_0136 MOD3) to account for the increase in coal extracted including the upgrade of the Bloomfield Coal Handling and Preparation Plant (CHPP).

Consent Conditions

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

Schedule 4

NOISE

Operational Noise Criteria

1. *The Proponent shall ensure that the noise generated by the Project does not exceed the criteria in Table 4 at any residence on privately-owned land.*

Table 4: Operational Noise Criteria dB(A)

Location	Receiver Area	Day	Evening	Night	
		LAeq(15min)	LAeq(15min)	LAeq(15min)	LA1(1min)
Location I	*Lord Howe Drive, Ashtronfield*	*36*	*36*	*36*	*45*
Location K	*Catholic Diocese Land*	*37*	*37*	*37*	*45*
Location L	*Killshanny Avenue, Ashtonfield*	*40*	*40*	*40*	*47*
All other Locations	*All other privately-owned Residences*	*35*	*35*	*35*	*45*

Notes:

- *To interpret the locations referred to in Table 4, see plan in Appendix 3 (Appendix A).*
- *Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.*

However, these noise criteria do not apply if the Proponent has an Agreement with the relevant landowner to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.

Construction Noise Criteria

2. The proponent shall ensure that the noise generated during the construction of the downcast ventilation shaft as described in EA (MOD3) does not exceed the criteria in Table 5.

Table 5: Construction Noise Criteria dB(A)

Location	Receiver	Day
		LAeq(15minute)
Location R	*281 Lings Road, Buttai*	*50*
Location S	*189 Lings Road, Buttai*	*43*

Notes:

- *The criteria in Table 5 apply only whilst the downcast ventilation shaft is being constructed, and for a maximum of 12 weeks from the commencement of construction.*
- *To interpret the locations refered to in Table 5, see plan in Appendix 3 (Appendix A).*
- *Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.*

However, these noise criteria do not apply if the Proponent has an Agreement with the relevant landowner to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.

Rail Noise Criteria

3. The proponent shall ensure that the noise from rail movements on the Bloomfield Rail Spur does not exceed the limits in Table 6 at any residence on privately owned land.

Table 6: Rail Spur noise criteria dB (A)

Location	Day	Evening	Night
		$L_{Aeq(period)}$	
All privately-owned land	*55*	*45*	*40*

Cumulative Noise Criteria

4. The proponent shall implement all reasonable and feasible measures to ensure that the noise generated by the project combined with noise generated by other mines does not exceed the criteria in Table 7 at any residence on privately-owned land.

Table 7: Cumulative noise criteria dB (A)

Location	Day	Evening	Night
		$L_{Aeq(period)}$	
All privately-owned land	*55*	*45*	*40*

Notes: Cumulative noise is to be measured in accordance with the relevant requirements, and exemptions (including meteorological conditions), of the NSW Industrial Noise Policy. Appendix 4 sets out the metrological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

Operating Conditions

5. The proponent shall:
    a. Implement best management practise to minimise the construction, operational, road and rail noise of the project;
    b. Operate an on-site noise management system to ensure compliance with the relevant conditions of this approval;
    c. Minimise the noise impacts of the project during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 4);
    d. Only receive and/or dispatch locomotives and rolling stock either on or from the site that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC's EPL (No. 3142);
    e. Carry out regular monitoring to determine whether the project is complying with the noise criteria and other relevant conditions of approval,

    to the satisfaction of the Director-General.

Noise Management Plan

6. The proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Director-General. This plan must:
    a. Be prepared in consultation with the EPA, and be submitted to the Director-General for approval within 6 months of the date of approval of MOD 3;

b. Describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval;
c. Describe the proposed noise management system in detail; and
d. Include a monitoring program that:
   - Uses attended monitoring to evaluate the compliance of the project against the noise criteria in this approval;
   - Evaluates and reports on:
     - The effectiveness of the on-site noise management system; and
     - Compliance against the noise operating conditions; and
   - Defines what constitutes a noise incident, and includes protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

Appendix 4

Noise Compliance Assessment

Applicable Meteorological Conditions

1. The noise criteria in Tables 4 and 7 are to apply under all metrological conditions except the following:
   a. During periods of rain or hail.
   b. Average wind speed at microphone height exceeds 5 m/s;
   c. Wind speeds greater than 3 m/s measured at 10m above ground level; or
   d. Temperature inversion conditions greater than 3°C/100m.

Determination of metrological conditions

2. Except for wind speed at microphone height, the data to be used for determining metrological conditions shall be that recorded by the meteorological station located on the site.

Compliance monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
4. Unless otherwise agreed with the director-general, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:
   a. Monitoring locations for the collection of representative noise data;
   b. Metrological conditions during which collection of noise data is not appropriate;
   c. Equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
   d. Modification to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

Appendix 5

Statement of Commitments

3. Noise

3.1 Construction Activities

The following noise control measures will be implemented prior to commencement of construction of the Abel Underground Mine or the upgrade of the Bloomfield CHPP.

1. Maintain all machinery and equipment in working order;
    a. No construction activities at the Abel pit top will take place on Sundays or Public Holidays;
    b. Where possible locate noisy site equipment behind structures that act as barriers or at the greatest distance from noise sensitive areas; and
    c. Orientate equipment so that noise emissions are directed away from noise sensitive areas.

3.2 Noise Control Measures

a. The following noise control measures will be implemented prior to the mining of coal from the Abel underground Mine:
    i. Orientation of the ventilation fans away from residential receivers and angle the output parallel to the ground.
    ii. The sound power level of the front end loader to be used near the portal should not exceed 113 dBA and will be fitted with a noise sensitive reversing alarm.

b. The following noise control measures will be implemented prior to the Bloomfield CHPP receiving any ROM coal from Able Underground Mine;
    i. Noise mitigation works including partial enclosure and noise screening of drives and conveyors of the Bloomfield CHPP to screen residences to the north of the site.

3.2 Monitoring

The Company will implement a Noise Monitoring Program 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.

3.4 Continuous Improvement

The Company shall:

a. Report on these investigations and implementation of any new noise mitigation measures on site in the AEMR, to the satisfaction of the Director General.

The operator of the Bloomfield CHPP shall:

b. Investigate ways to reduce the noise generated by the Bloomfield CHPP, including maximum noise levels which may result in sleep disturbance;

c. Implement all reasonable and feasible best practice noise mitigation measures on the site; and

d. Report on these investigations and the implementation of any new noise mitigation measures on site in the AEMR, to the satisfaction of the Director-General.

3 PROCEDURES AND METHODOLOGY

3.1 General Requirements

The operational noise monitoring program 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*".

All acoustic instrumentation employed throughout the monitoring programme has been designed to comply with the requirements of IEC 61672.1-2004 "*Electroacoustics – Sound Level Meters – Specifications*" and carries current NATA or manufacturer calibration certificates.

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 during the March 2014 quarter. The details of the monitoring locations are contained within **Table 1**.

Table 1 Monitoring Locations

Noise Monitoring Location	Description
D	Black Hill School, Black Hill
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchannan Road, Buchannan
I	Lord Howe Drive, Ashtonfield
L	17 Kilshanny Ave, Ashtonfield

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 minimum of seven (7) days between 4 March 2014 and 19 March 2014 at each of the five (5) nominated locations given in **Table 1**. An additional unattended noise logger was positioned at Location J for the purpose of determining compliance with the Rail Noise Criteria.

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 Noise Monitoring

Operator attended surveys were conducted at each of the five (5) monitoring locations during the 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 Operations

The mobile equipment operating on the Donaldson Mine site during the survey period are contained in **Appendix B**. However, no operations at Donaldson Mine were undertaken on the 11th of March.

The only surface equipment operating on the Abel Coal Mine site during the survey periods was the ventilation fan, the Bloomfield Coal Handling and Preparation Plant (CHPP) and haulage to the CHPP.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Noise Monitoring

Operator attended noise measurements were conducted during the daytime on Tuesday 11 March 2014, during the evening on Tuesday 11 March 2014 and during the night-time on Tuesday 11 March 2014 and Wednesday 12 March 2014. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, integrating sound level meter (s/n: 2679354).

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 (°C) 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 D, Black Hill School, 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	
11/03/2014 16:46 W = 1 m/s E Temp = 28°C Cloud cover = 1/8	Daytime Ambient	81	74	62	43	60	M1 Traffic ~ 43 to 45 dBA Local Traffic ~ 67 to 81 dBA Birds ~ 47 to 54 dBA School gate ~ 48 to 51 dBA Car Brakes ~ 49 dBA
		Donaldson and Abel mines ~ Inaudible					
11/03/2014 19:27 W = 0.5 m/s E Temp = 22°C Cloud cover = 1/8	Evening Ambient	80	72	57	44	58	Traffic ~ 73 to 80 dBA Dist Traffic ~ 42 to 44 dBA Birds ~ 46 to 60 dBA Plane ~ 47 to 51 dBA Operator ~ 58 dBA
		Donaldson and Abel mines ~ Inaudible					
12/03/2014 00:08 W = 1 m/s E Temp = 17°C Cloud cover = 1/8	Night-time Ambient	73	59	47	42	49	Insects ~ 41 to 46 dBA Animals ~ 47 to 51 dBA M1 Traffic ~ 38 to 46 dBA Local Traffic ~ 73 dBA Birds ~ 49 to 50 dBA Burnout ~ 46 dBA
		Donaldson and Abel mines ~ 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	
11/03/2014 17:07 W = 2 m/s SE Temp = 26°C Cloud cover = 1/8	Daytime Ambient	83	77	65	49	64	Local Traffic ~ 71 to 83 dBA Birds ~ 65 dBA JRD Traffic ~ 53 to 64 dBA Truck turning off JRD~ 83 dBA
		Donaldson and Abel mines ~ Inaudible					
11/03/2014 20:52 W = 1 m/s SE Temp = 19°C Cloud cover = 1/8	Evening Ambient	79	69	54	38	56	JRD Traffic ~ 56 to 70 dBA Distant Traffic ~ 44 dBA Insects ~ 41 to 40 dBA
		Donaldson and Abel mines ~ Inaudible					
12/03/2014 00:29 W = 1 m/s E Temp = 17°C Cloud cover = 1/8	Night-time Ambient	68	57	47	38	46	JRD Traffic 57 to 68 dBA Abel Bang ~ < 35 dBA
		Estimated Abel Contribution ~ <30 dBA					

Table 4 Location G, 156 Buchannan Road, Buchannan

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	
11/03/2014 15:33 W = 2 m/s E Temp =28°C Cloud cover = 1/8	Daytime Ambient	61	50	47	38	44	Wind ~ 41 to 52 dBA Operator ~ 61 dBA Birds ~ 49 dBA
		Donaldson and Abel mines ~ Inaudible					
11/03/2014 21:43 W = 1 m/s E Temp = 19°C Cloud cover = 1/8	Evening Ambient	52	48	47	39	44	Insects ~ 39 to 52 dBA Dog Barking ~ 46 to 51 dBA Dist Traffic ~ 33 to 43 dBA Resi ~ 33 to 45 dBA
		Donaldson and Abel mines ~ Inaudible					
11/03/2014 22:00 W = 1 m/s E Temp = 19°C Cloud cover = 1/8	Night-time Ambient	52	49	48	41	45	Insects ~ 41 to 46 dBA Distant Traffic ~ 31 to 42 dBA Train Horn ~ <30 dBA
		Donaldson and Abel mines ~ Inaudible					

Table 5 Location I, Lord Howe Drive, 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	
11/03/2014 14:55 W = 1 m/s SE Temp = 29°C Cloud cover = 1/8	Daytime Ambient	67	61	56	47	53	Dist Traffic ~ 53 dBA Birds ~ 54 to 62 dBA Local Traffic ~ 55 to 56 dBA Lawn Mower ~ 46 dBA Other Industry ~ <35 dBA
		Donaldson and Abel mines ~ Inaudible					
11/03/2014 18:29 W = 1 m/s E Temp = 24°C Cloud cover = 1/8	Evening Ambient	69	60	55	46	52	Dist Traffic ~ 41 to 49 dBA Birds ~ 55 to 69 dBA Local Traffic ~ 64 to 63 dBA Dog Barking ~ 63 to 66 dBA
		Donaldson and Abel mines ~ Inaudible					
11/03/2014 23:21 W = 0.5 m/s NE Temp = 18°C Cloud cover = 1/8	Night-time Ambient	53	47	44	39	42	Dist Traffic ~ 33 to 52 dBA Insects ~ 43 dBA
		Donaldson and Abel mines ~ Inaudible					

Table 6 Location L, 17 Killshanny Ave, Ashtonfield

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dB A re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dB A
		LAmax	LA1	LA10	LA90	LAeq	
11/03/2014 15:00 Wind: 1 m/s SE Temp = 29°C Cloud cover = 1/8	Daytime Ambient	62	58	46	36	45	Resi Bang ~ 57 dBA Dist Traffic ~ 42 dBA Birds ~ 43 dBA Local Traffic ~ 60 to 62 dBA Plane ~ 39 to 47 dBA Trees rustling ~ 45 to 48 dBA Abel faintly audible ~ <30 dBA
		Estimated Abel Contribution ~ <30 dBA					
11/03/2014 18:07 W = 1 m/s E Temp = 25°C Cloud cover = 1/8	Evening Ambient	88	69	56	39	58	Traffic ~ 65 to 88 dBA Resident ~ 60 dBA Dog Barking ~ 53 to 56 dBA Birds ~ 41 dBA Distant Traffic ~ 35 to 36 dBA Resident ~ 47 to 55 dBA Trees rustling ~ 41 to 44 dBA Insects ~ 43 to 39 dBA
		Donaldson and Abel mines ~ Inaudible					
11/03/2014 22:28 W = 1 m/s E Temp = 19°C Cloud cover = 1/8	Night-time Ambient	52	50	43	38	41	Dist Traffic ~ 35 to 47 dBA Local Traffic ~ 43 to 46 dBA Insects ~ 51 dBA Dog Barking ~ 48 to 52 dBA
		Donaldson and Abel mines ~ Inaudible					

4.2 Operator Attended Noise 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 "natural" noises such as birds, insects and leaf rustle.

Donaldson operations were not observed to be audible during the monitoring 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 "natural" noises such as birds, insects and leaf rustle.

Abel operations were only observed to be faintly audible at times at Location L during the daytime period and at Location F during the night-time period.

4.3 Compliance Assessment and Discussion of Results

4.3.1 Operations

Results of the operator compliance assessment are given in **Table 7**.

Table 7 Compliance Noise Assessment – Operations

Location	Estimated Abel $L_{Aeq(15minute)}$ Contribution			Consent Conditions $L_{Aeq(15minute)}$			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
D – Black Hill School, Black Hill	<33	<34	<32	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
F – Black Hill Road, Black Hill	<39	<30	<30	35	35	35	Yes[1,2]	Yes[1,2]	Yes
G – Buchanan Road, Buchanan	<30	<30	<31	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
I – Lord Howe Drive, Ashtonfield	<37	<36	<30	36	36	36	Yes[1,2]	Yes[1,2]	Yes[1,2]
L – Kilshanny Ave, Ashtonfield	<30	<30	<30	40	40	40	Yes	Yes[1,2]	Yes[3]

1 – Abel operations inaudible/not measurable.
2 – Estimated contribution equals LA90 minus 10 dBA.
3 – Within 2 dB as per the Industrial Noise Policy.
4 – Mine owned Property

Table 7 indicates that compliance with the consent conditions was achieved at all noise monitoring locations during all periods.

Noise levels at all monitoring locations during various periods were inaudible over the existing ambient noise levels. Where this is the case, noise levels from the source are typically 10 dB (or more) below the measured L_{A90} noise level. Therefore, subtracting 10 dB from the measured L_{A90} noise level gives an indication of the maximum contribution of Abel operations at these locations.

4.3.2 Sleep Disturbance

Results of the sleep disturbance compliance assessment are given in **Table 8**.

Table 8 Compliance Noise Assessment – Sleep Disturbance

Location	Estimated Abel $L_{A1(1minute)}$ Contribution	Consent Conditions $L_{A1(1minute)}$	Compliance
D – Black Hill School, Black Hill	<30	45	Yes
F – Black Hill Road, Black Hill	35	45	Yes
G – Buchanan Road, Buchanan	<31	45	Yes
I – Lord Howe Drive, Ashtonfield	<30	45	Yes
L – Kilshanny Ave, Ashtonfield	<30	47	Yes

1 – Within 2 dBA tolerance as per Chapter 11 of INP.

Table 8 indicates that compliance with the sleep disturbance consent conditions was achieved at all noise monitoring locations during the night-time noise surveys.

5 UNATTENDED CONTINUOUS NOISE MONITORING

5.1 Results of Unattended Continuous Noise Monitoring

Unattended continuous noise monitoring was conducted between 4 March 2014 and 19 March 2014 at each of the six (6) monitoring locations given in **Table 9**.

Table 9 Noise Logger and Noise Monitoring Locations

Location	Noise Logger Serial Number	Date of Logging
D – Black Hill School, Black Hill	16-306-039	10/03/2014 to 18/03/2014
F – Black Hill Road, Black Hill	SVAN 957 – 23816	10/03/2014 to 18/03/2014
G – Buchanan Road, Buchanan	16-203-509	10/03/2014 to 18/03/2014
I – Lord Howe Drive, Ashtonfield	16-103-494	10/03/2014 to 11/03/2014
L – Kilshanny Ave, Ashtonfield	01 dB DUO – 10767	04/03/2014 to 12/03/2014
J – Parish Drive, Thornton	01 dB DUO – 10826	12/03/2013 to 19/03/2014

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 10**.

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 (INP). 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 Bloomfield Colliery. 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 10 Unattended Continuous Noise Monitoring Ambient Noise Levels (dBA Re 20 µPa)

Location	Period	Primary Noise Descriptor (dBA re 20 µPa)			
		LA1	LA10	LA90	LAeq
D Black Hill School, Black Hill	Daytime	58	51	36	55
	Evening	56	48	39	50
	ENCM Daytime	57	49	39	53
	Night	51	47	40	48
F Lot 684 Black Hill Road, Black Hill	Daytime	64	55	40	59
	Evening	61	50	35	51
	ENCM Daytime	62	52	37	57
	Night	57	48	31	51
G 156 Buchanan Road, Buchanan	Daytime	55	48	34	48
	Evening	53	49	39	59
	ENCM Daytime	54	49	36	56
	Night	50	47	41	48
I 49 Magnetic Drive, Ashtonfield	Daytime	61	56	43	54
	Evening	54	48	39	50
	ENCM Daytime	60	54	41	53
	Night	48	44	36	44
L 17 Kilshanny Ave, Ashtonfield	Daytime	61	49	33	53
	Evening	57	51	37	54
	ENCM Daytime	58	50	36	54
	Night	52	50	37	50
J 220 Parish Drive, Thornton	Daytime	52	46	38	50
	Evening	52	49	44	50
	ENCM Daytime	52	49	40	50
	Night	50	48	41	47

Note: 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 Long term Unattended Continuous Monitoring Summary for Donaldson Mine and Abel Coal Mine

5.2.1 Ambient LA90 Noise Levels

The long term ambient LA90 noise levels collected from each monitoring location are presented graphically in **Figure 1**, **Figure 2** and **Figure 3** for the daytime, evening and night-time periods respectively.

Figure 1 Long term Daytime L_{A90} Noise Levels

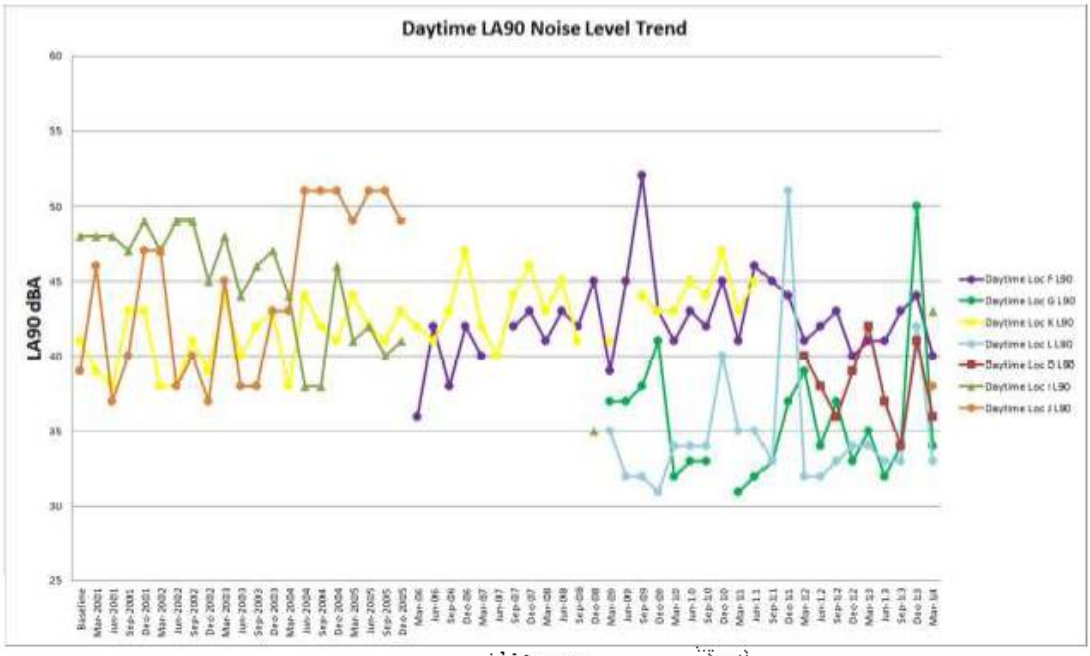


Figure 2 Long term Evening L_{A90} Noise Levels

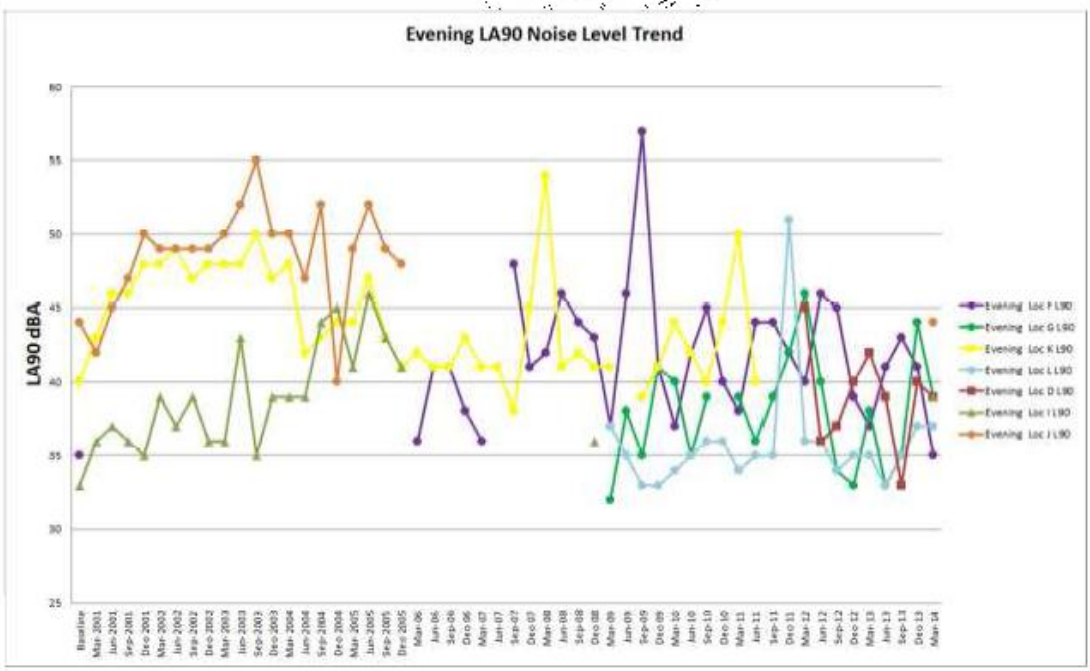
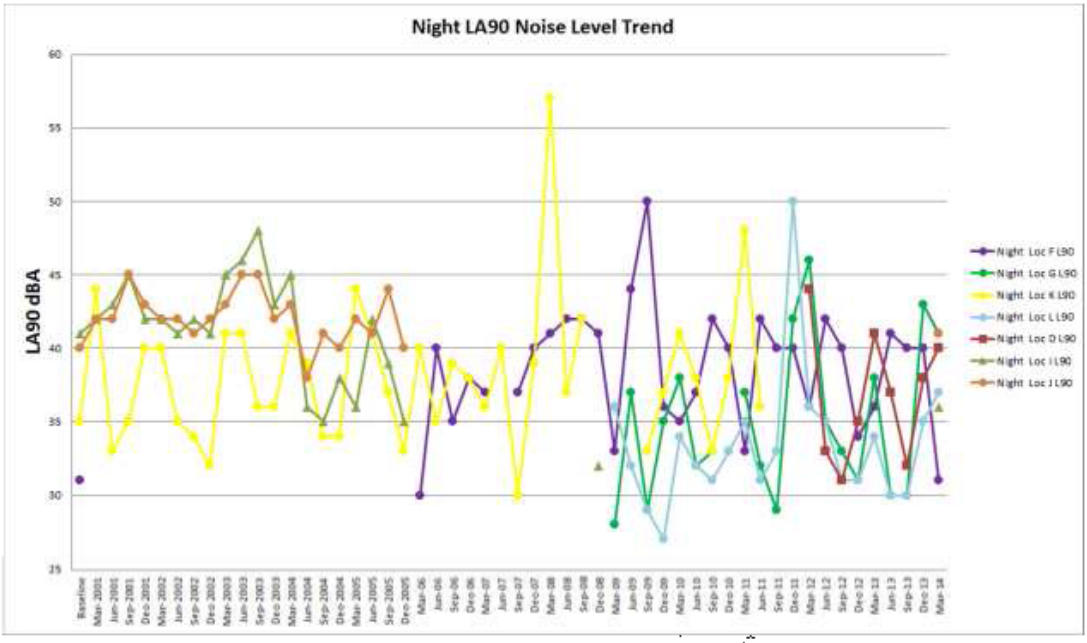


Figure 3 Long term Night-time L_{A90} Noise Levels



Baseline

The summary of results in **Table 10** and **Figure 1**, **Figure 2** and **Figure 3** shows that ambient L_{A90} noise levels recorded for the quarter ending March 2014 compared to the levels recorded during the baseline monitoring process were within 1 dB at Location F during the daytime, evening and night-time periods, and at Location I, noise levels were 4 dB higher during the daytime, 2 dB lower during the evening and 3 dB higher during the night-time period.

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

Previous Quarter (December 2013)

A comparison of the current monitoring period with the previous monitoring period shows that L_{A90} noise levels were significantly lower than those recorded during December 2013 at Location F. Location G location L and Location D.

Decreases of up to 5 dB in the L_{A90} were recorded at Location D, 16 dB at Location G and 14 dB at Location L. It is considered that this is likely attributed to a lower presence of insects at these locations in particular during the daytime period.

No data was recorded at Location I and during the previous quarter.

Coinciding Period Last Year (March 2013)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A90} noise levels were generally similar or lower than those recorded in March 2013, with decreases of up to 5 dB at Location F, 6 dB at Location D and increases of up to 3 dBA at Location G and Location L.

No data was recorded at Location I and during the March 2013 quarter.

5.2.2 Ambient L_{A10} Noise Comparison

The long term ambient L_{A10} noise levels collected from each monitoring location are presented graphically in **Figure 4**, **Figure 5** and **Figure 6** for the daytime, evening and night-time periods respectively.

Figure 4 Long term Daytime L_{A10} Noise Levels

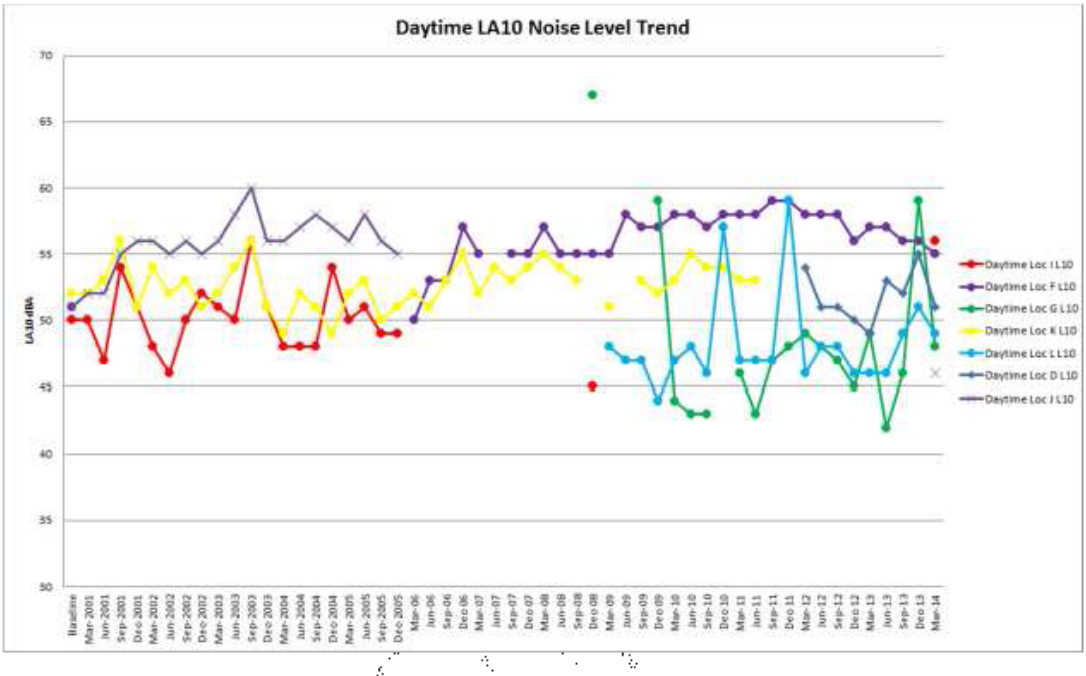


Figure 5 Long term Evening L_{A10} Noise Levels

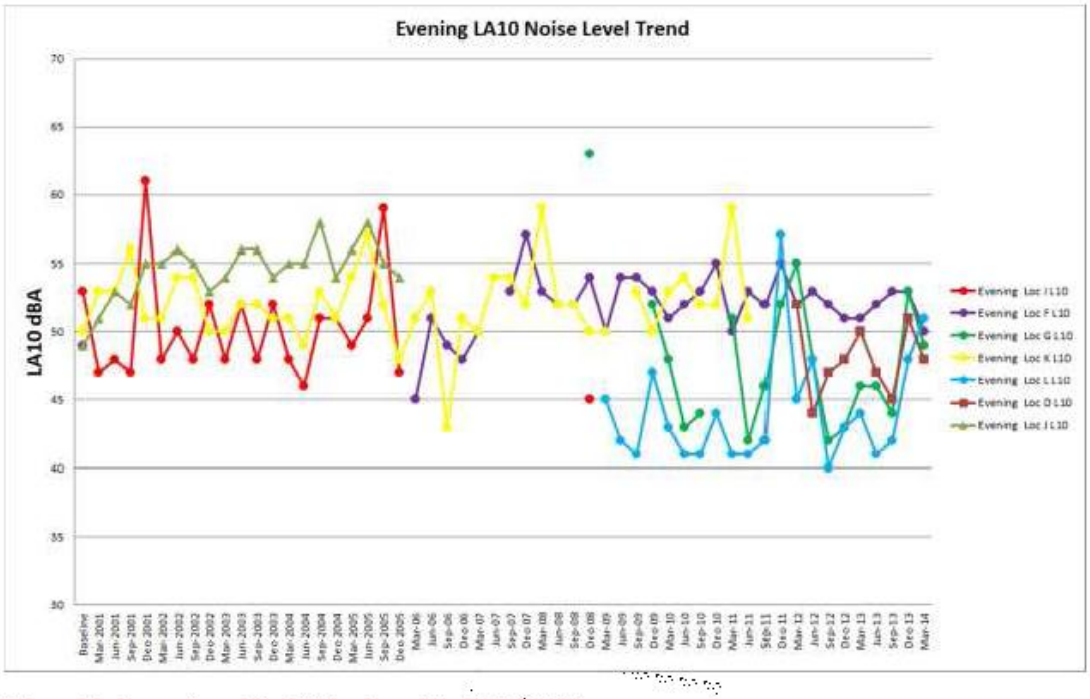
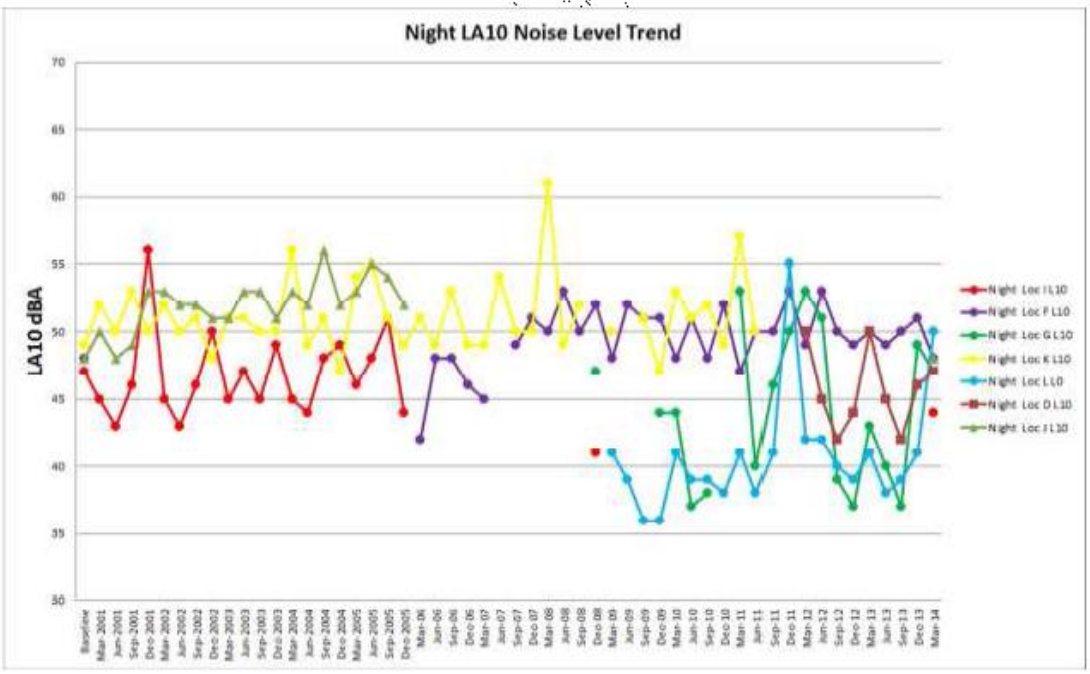


Figure 6 Long term Night-time L_{A10} Noise Levels



Baseline

The summary of results in **Table 10** and **Figure 4**, **Figure 5** and **Figure 6** show that ambient L_{A10} noise levels recorded for the quarter ending March 2014 were 4 dB greater than levels recorded during the baseline monitoring process at Location F during the daytime and 1 dB higher during the evening and night-time periods. At Location I, an increase of 6 dB was recorded during the daytime, and a decrease of 5 dB and 3 dB were recorded during the evening and night-time periods respectively.

Given that no data was available at Locations G, L and D during baseline measurements, no comparisons can be made during the March 2014 quarter.

Previous Quarter (December 2013)

A comparison of the current monitoring period with the previous monitoring period shows that recorded L_{A10} noise levels at Location F and Location D were similar or up to 4 dB lower to those recorded in December 2013.

A decrease of 11 dB was recorded during the daytime at location G, 4 dB during the evening and 2 dB during the night-time. A decrease of 2 dB was recorded at Location L during the daytime and an increase of 3 dB and 9 dB during the evening and night-time period respectively.

Given that no data was recorded at Location I during the December 2013 quarter, no comparison can be made.

Coinciding Period Last Year (March 2013)

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that L_{A10} noise levels were generally similar (within 3 dB) than those recorded in March 2013 at Location D and Location F.

Increases of up to 9 dB at Location L and 4 dB at Location G were recorded during the monitoring period.

Given that no data was recorded at Location I during the March 2013 quarter, no comparison can be made.

5.3 Rail Noise Impact

In order to determine compliance with the rail noise criteria, a noise logger was positioned at Location J. The noise logger positioned at this location was capable of recording 1/3 octave band data in 1 second intervals. This, together with the train loading times it was possible to identify a rail pass by, and assess the rail noise contribution against the criteria. Furthermore, only 10 trains were recorded to have passed the monitoring location during the monitoring period.

The maximum resultant noise level for each period from rail traffic at Location J are presented in **Table 11**.

Table 11 Calculated Rail Noise Impact

Location	Period	Rail Noise $L_{Aeq(Period)}$	Criteria $L_{Aeq(Period)}$	Compliance
Location J	Day	39	55	Yes
	Evening	41	45	Yes
	Night	n/a	40	n/a

The results contained in Table 11 show that compliance with the rail noise criteria was achieved during the March Quarter.

6 CONCLUSION

SLR was 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 2007.

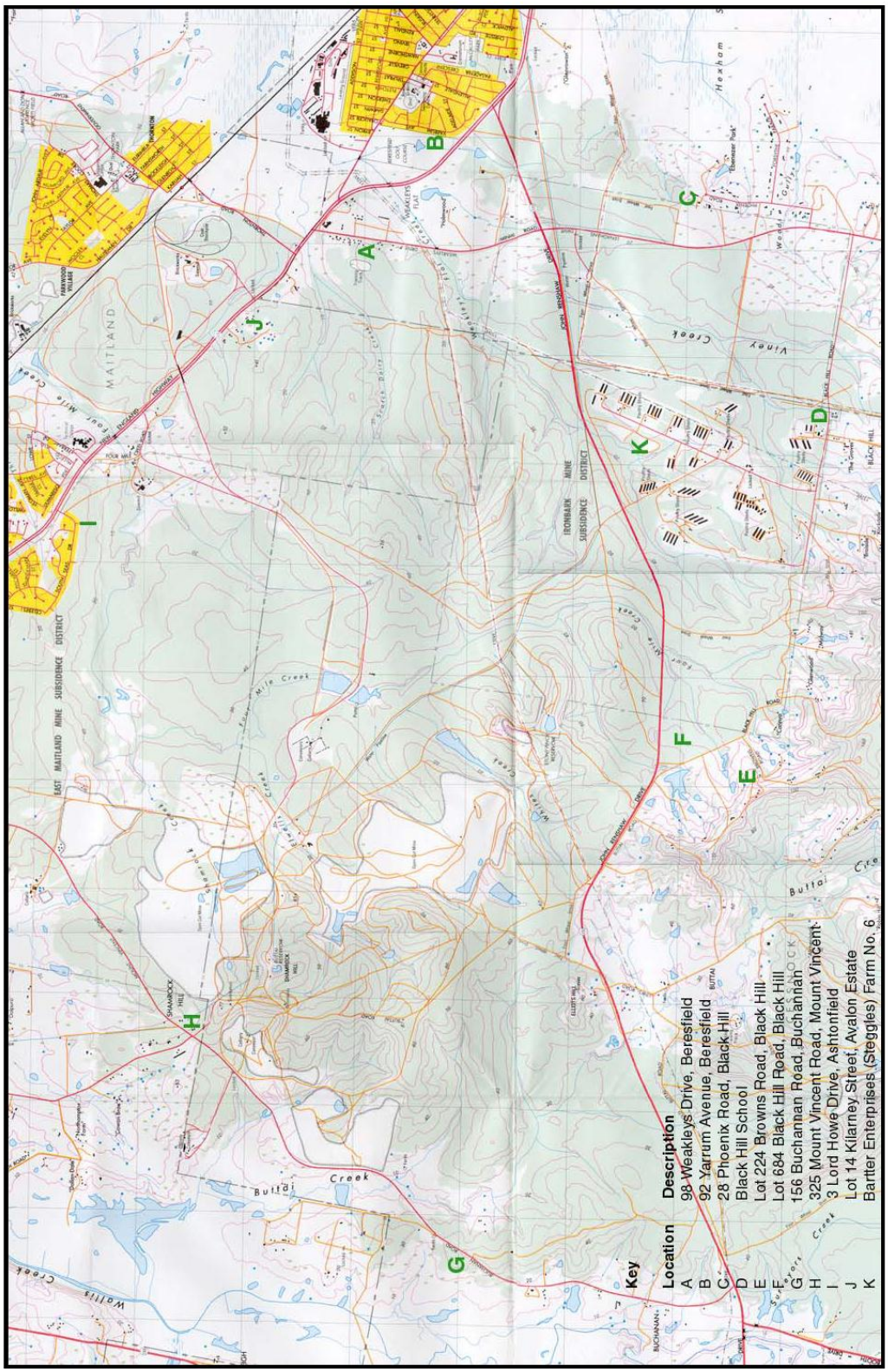
The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 6**.

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

Abel Mine operations at the CHPP were only faintly audible at Location L during the daytime monitoring period. Abel portal operations were only audible at times at location F during the night-time period, and were not observed to be audible at any other locations during the monitoring period and as such contributed noise levels from Abel Mine did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Abel Mine *Project Approval* at all locations.

A comparison of ambient L_{A10} and L_{A90} noise levels recorded during the current monitoring period (March 2014), the baseline monitoring period, the last monitoring period (December 2013), and the coinciding monitoring period from last year (March 2013) has been conducted.

An assessment of the rail noise impact was also undertaken, determining compliance with the criteria stated in **Section 2.2**.



Appendix A – Page 1
Noise Monitoring Locations
Report 30-1053

Appendix B

Report Q39 30-1053-R1
Equipment Register Page 1 of 1

APPENDIX B - EQUIPMENT REGISTER

JOB NUMBER: 30-1053

JOB DESCRIPTION: Donaldson Mine Quarterly Monitoring – March 2010

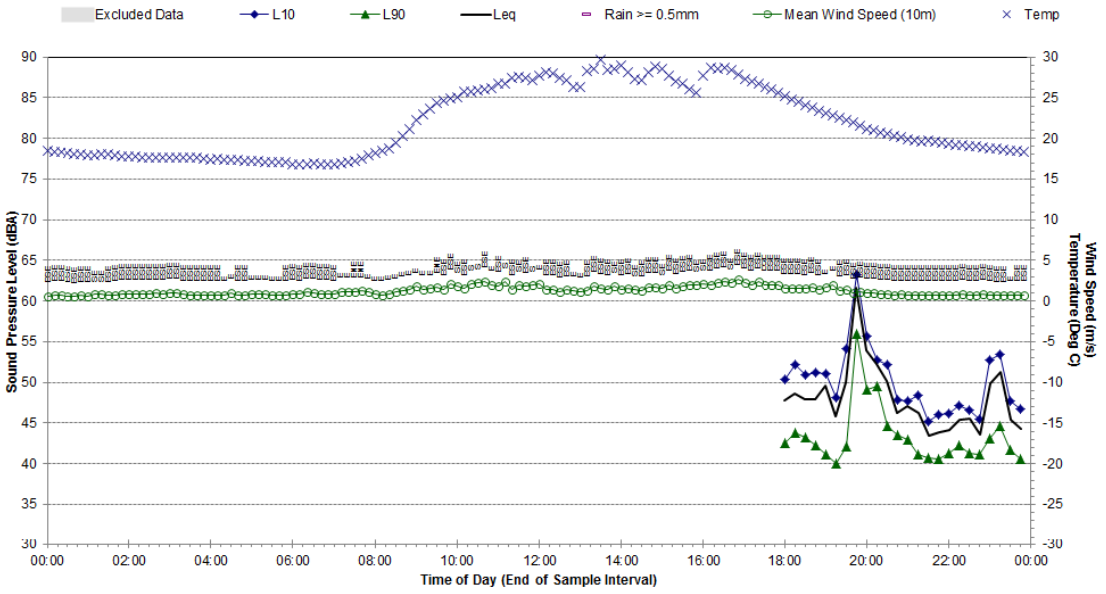
Unit No	Equipment	Description	Serial Number
1	DOZ004	CATERPILLAR D9R	7TL00898
2	DOZ005	CATERPILLAR D10R	3KR01384
3	DOZ006	CATERPILLAR D11N	74Z00717
4	DOZ008	CATERPILLAR D10R	3KR01233
5	DOZ009	CATERPILLAR D10R	AKT00823
6	EXC021	CATERPILLAR 330DL	NBD00168
7	EXC072	HITACHI EX2500	184-00108
8	EXC089	CATERPILLAR 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	

Appendix C1

Statistical Ambient Noise Levels - Location D Page 1 of 5

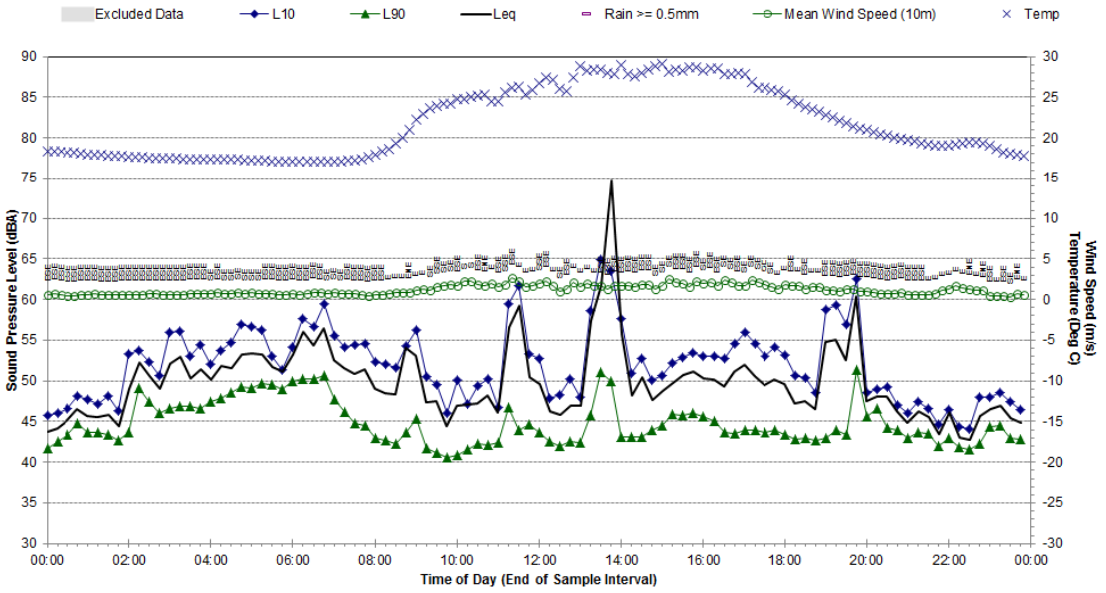
Statistical Ambient Noise Levels

Location D - Monday, 10 March 2014



Statistical Ambient Noise Levels

Location D - Tuesday, 11 March 2014

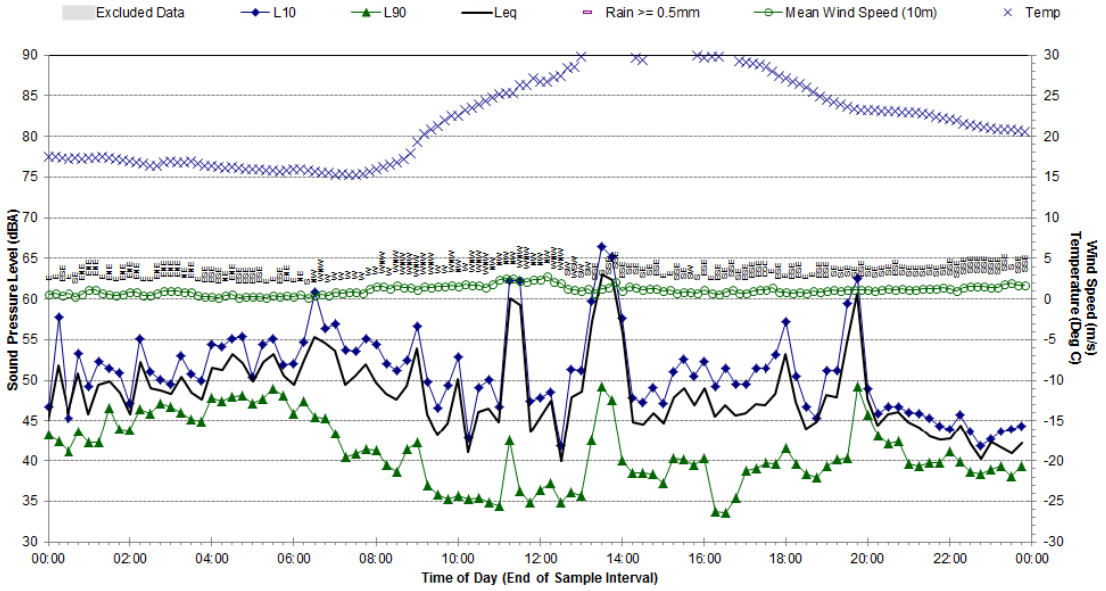


Appendix C1

Statistical Ambient Noise Levels - Location D Page 2 of 5

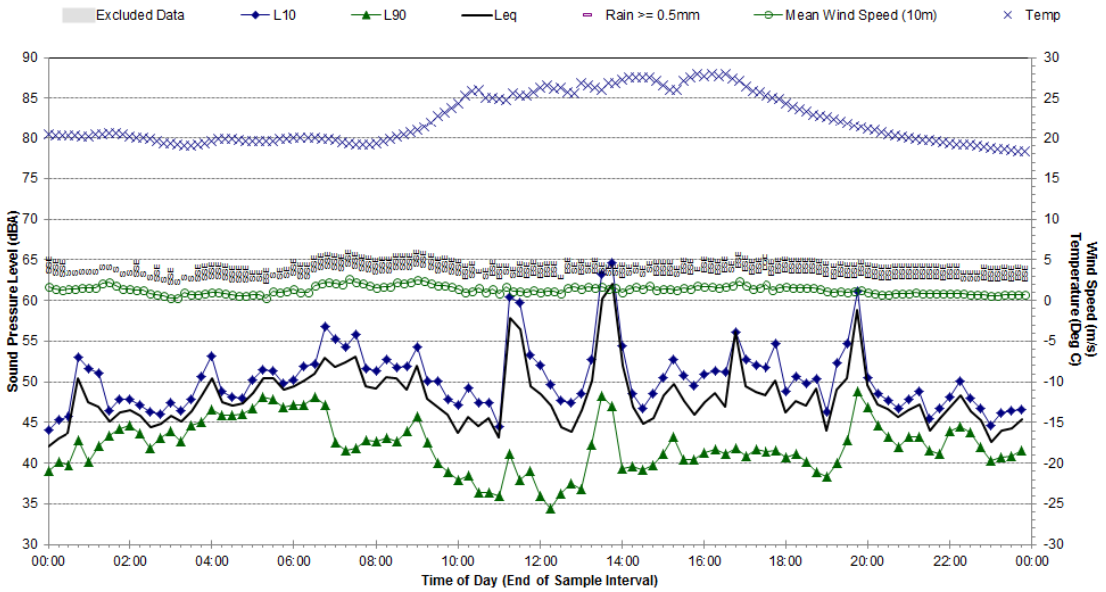
Statistical Ambient Noise Levels

Location D - Wednesday, 12 March 2014



Statistical Ambient Noise Levels

Location D - Thursday, 13 March 2014

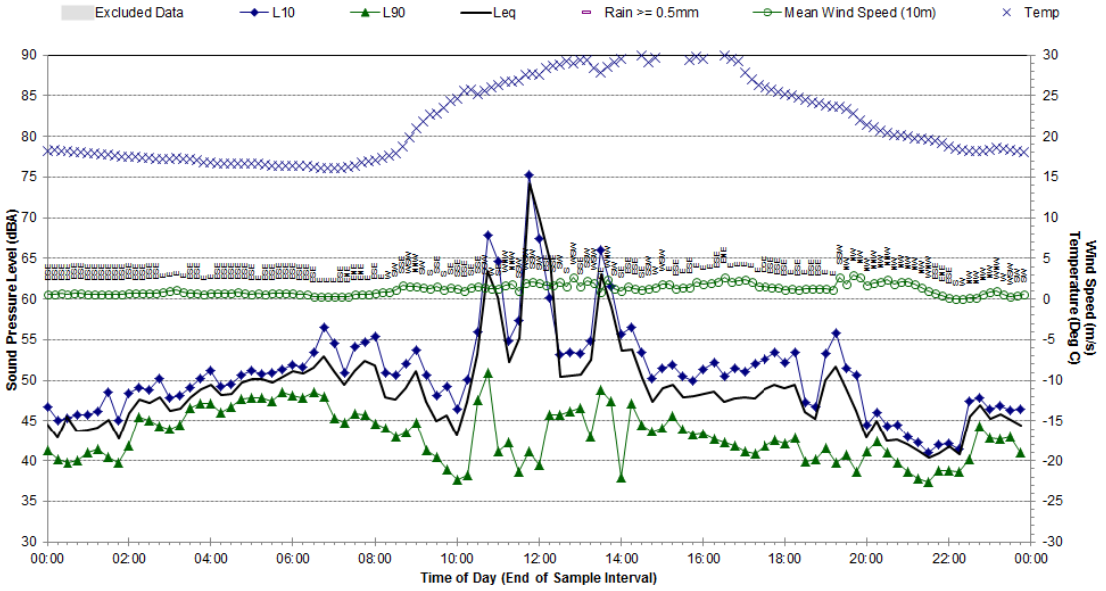


Appendix C1

Statistical Ambient Noise Levels - Location D Page 3 of 5

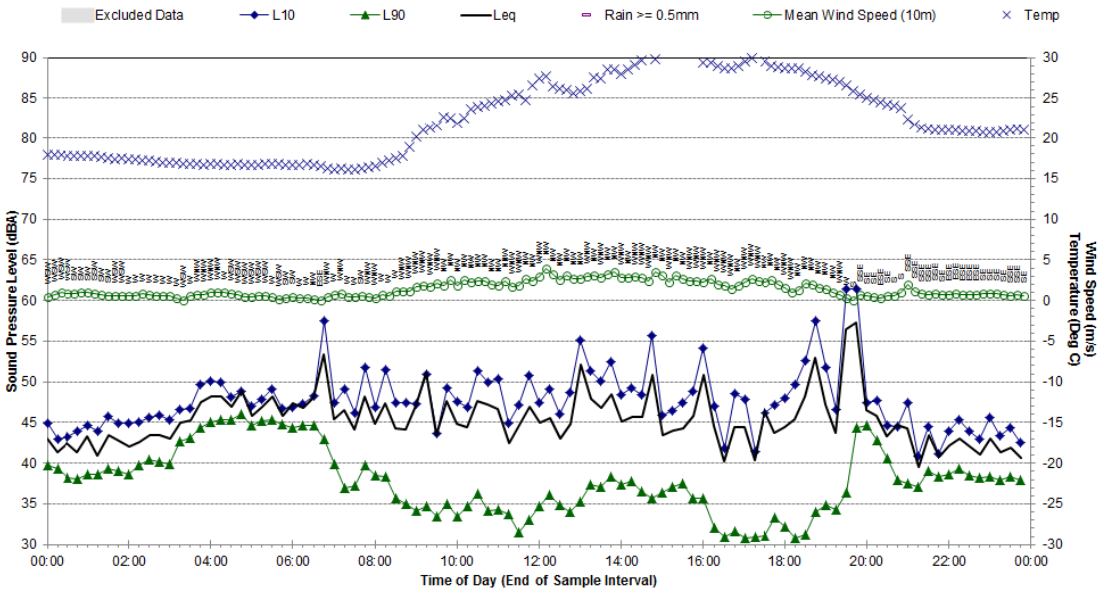
Statistical Ambient Noise Levels

Location D - Friday, 14 March 2014



Statistical Ambient Noise Levels

Location D - Saturday, 15 March 2014

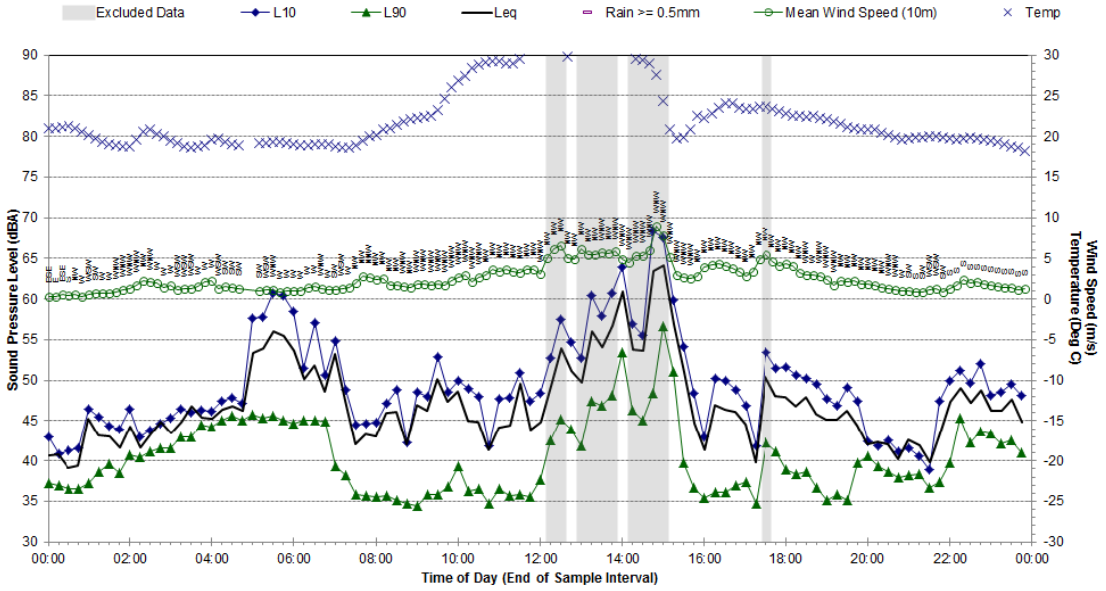


Appendix C1

Statistical Ambient Noise Levels - Location D Page 4 of 5

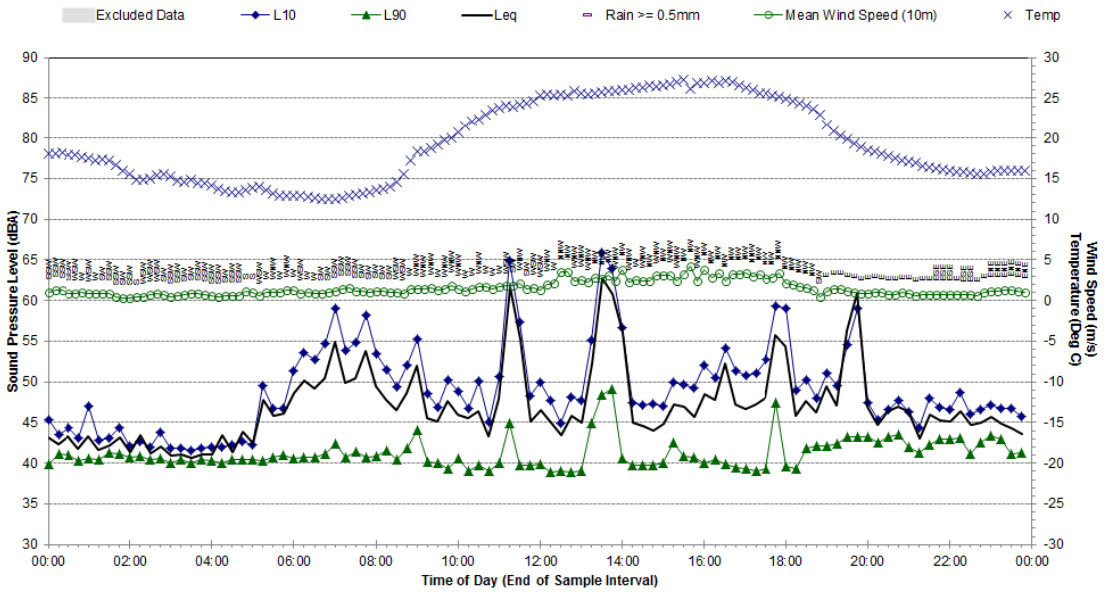
Statistical Ambient Noise Levels

Location D - Sunday, 16 March 2014



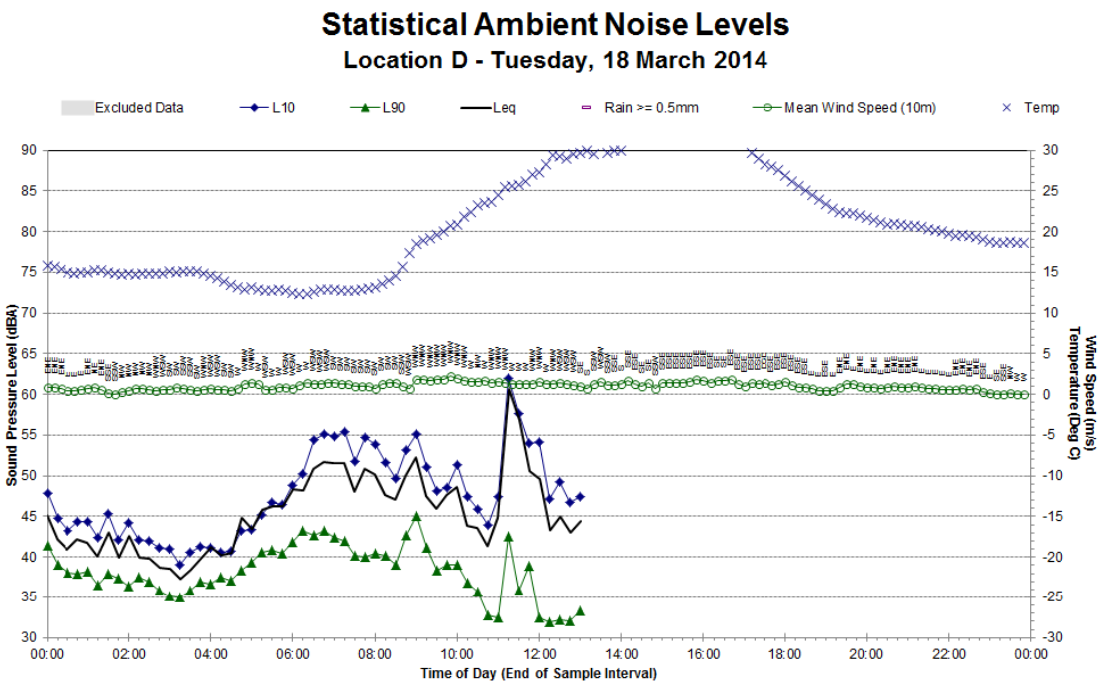
Statistical Ambient Noise Levels

Location D - Monday, 17 March 2014



Appendix C1

Statistical Ambient Noise Levels - Location D Page 5 of 5

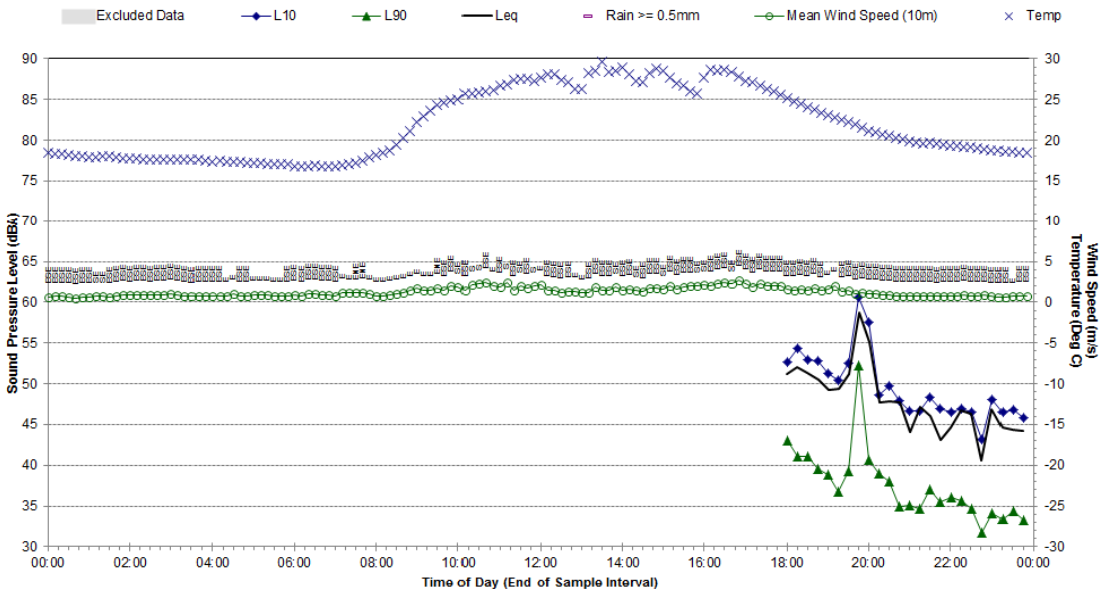


Appendix C2

Statistical Ambient Noise Levels – Location F Page 1 of 5

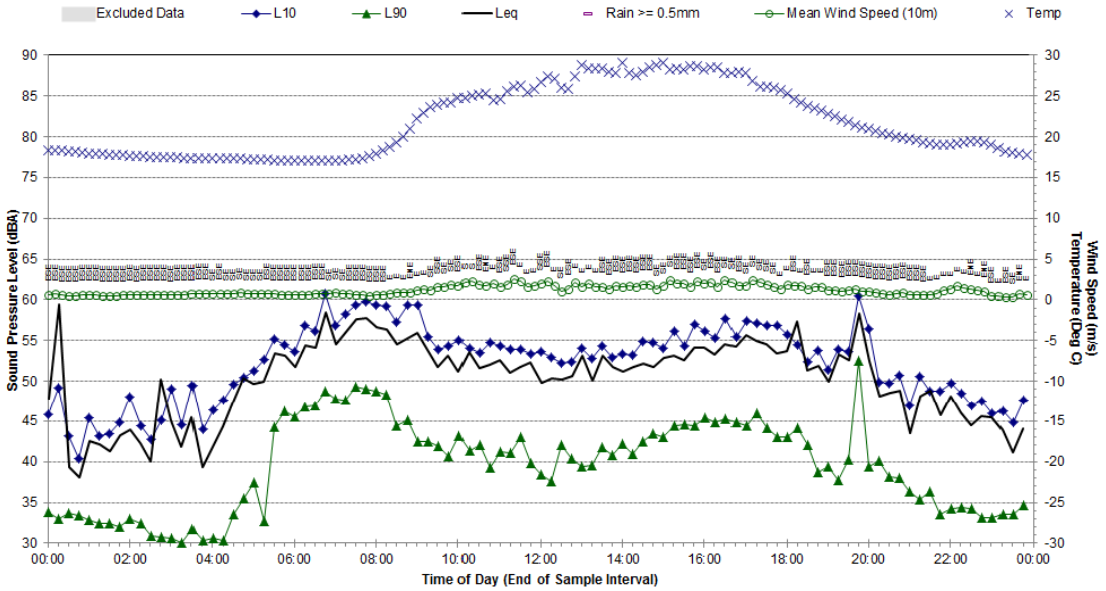
Statistical Ambient Noise Levels

Location F - Monday, 10 March 2014



Statistical Ambient Noise Levels

Location F - Tuesday, 11 March 2014

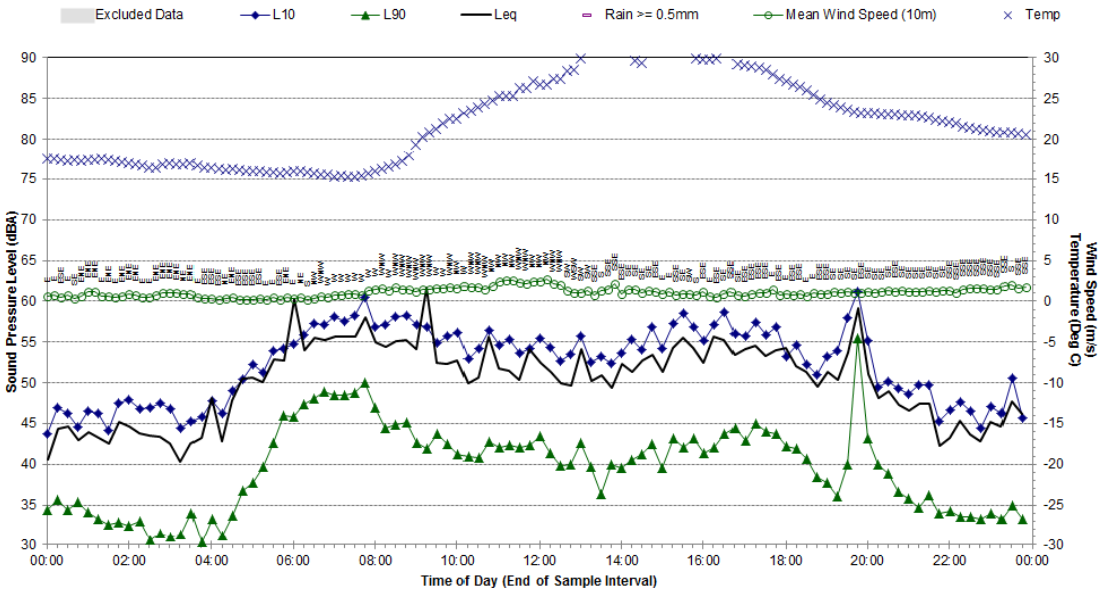


Appendix C2

Statistical Ambient Noise Levels – Location F Page 2 of 5

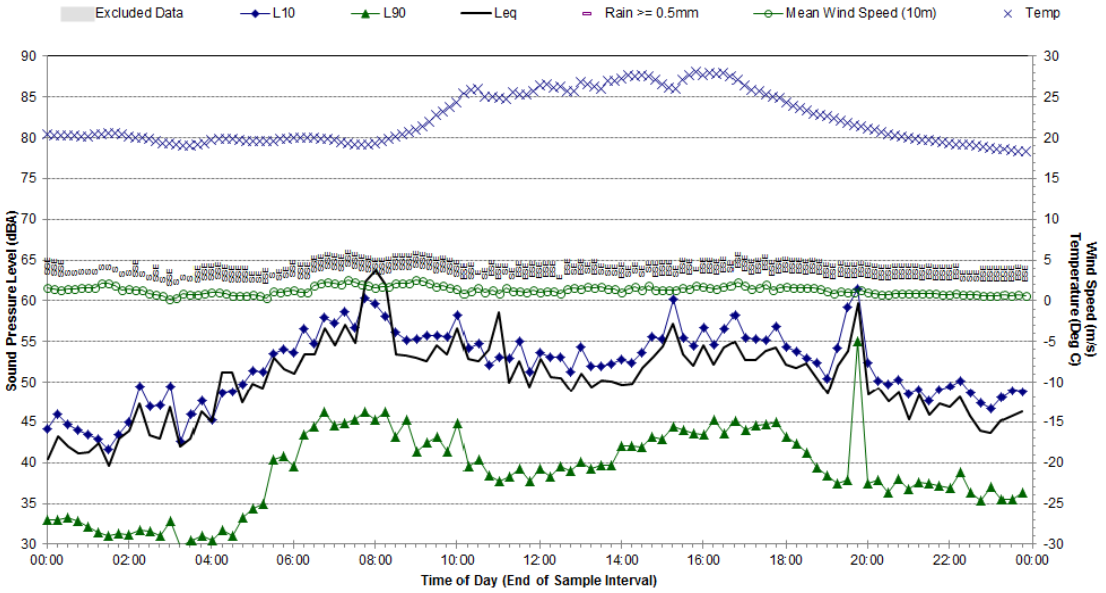
Statistical Ambient Noise Levels

Location F - Wednesday, 12 March 2014



Statistical Ambient Noise Levels

Location F - Thursday, 13 March 2014

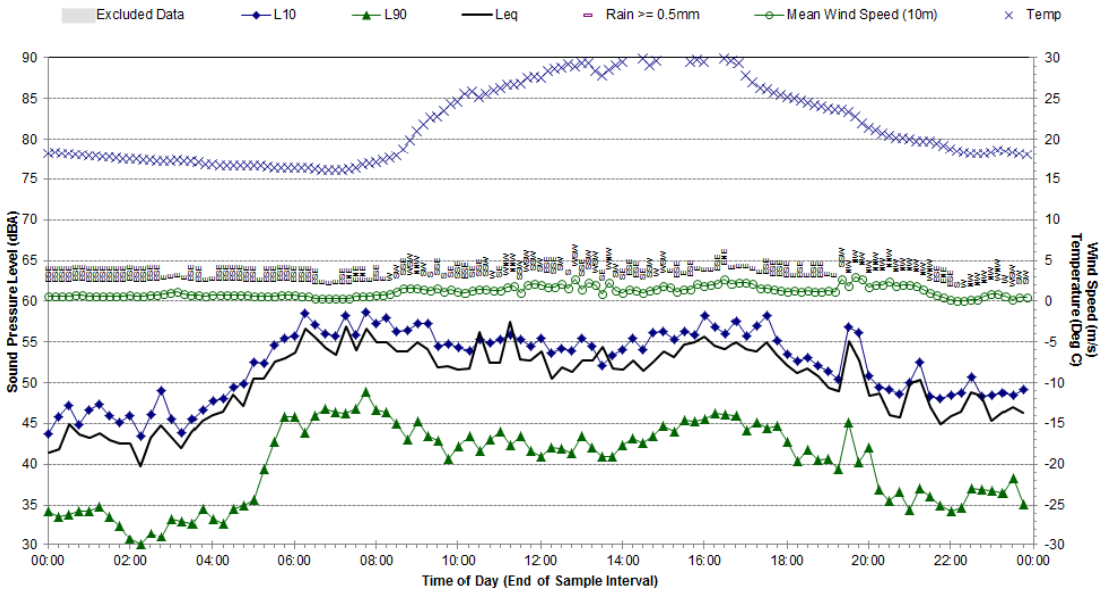


Appendix C2

Statistical Ambient Noise Levels – Location F Page 3 of 5

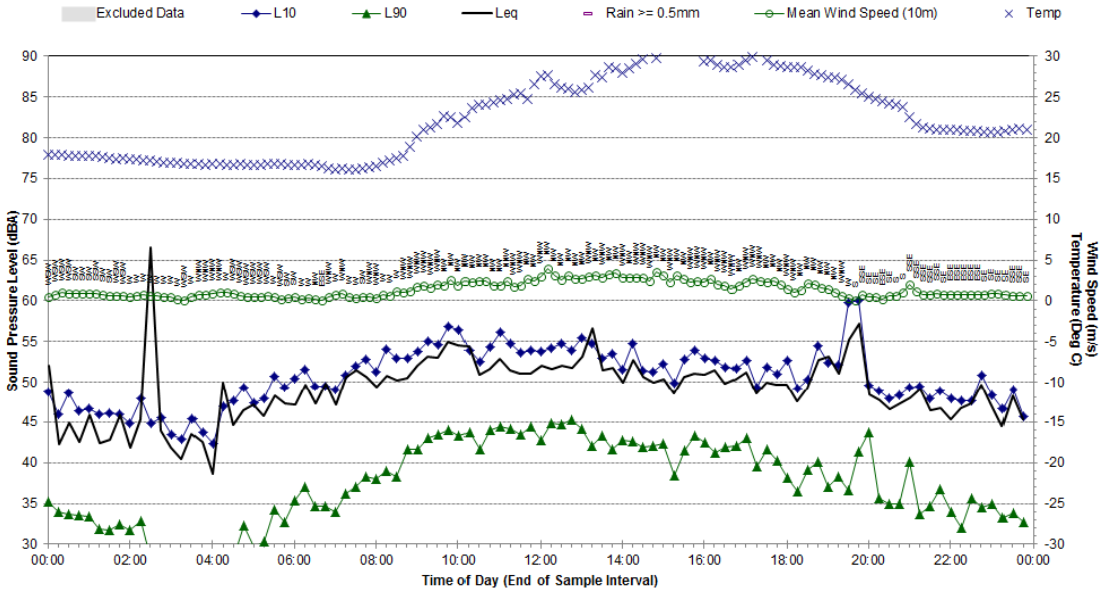
Statistical Ambient Noise Levels

Location F - Friday, 14 March 2014



Statistical Ambient Noise Levels

Location F - Saturday, 15 March 2014

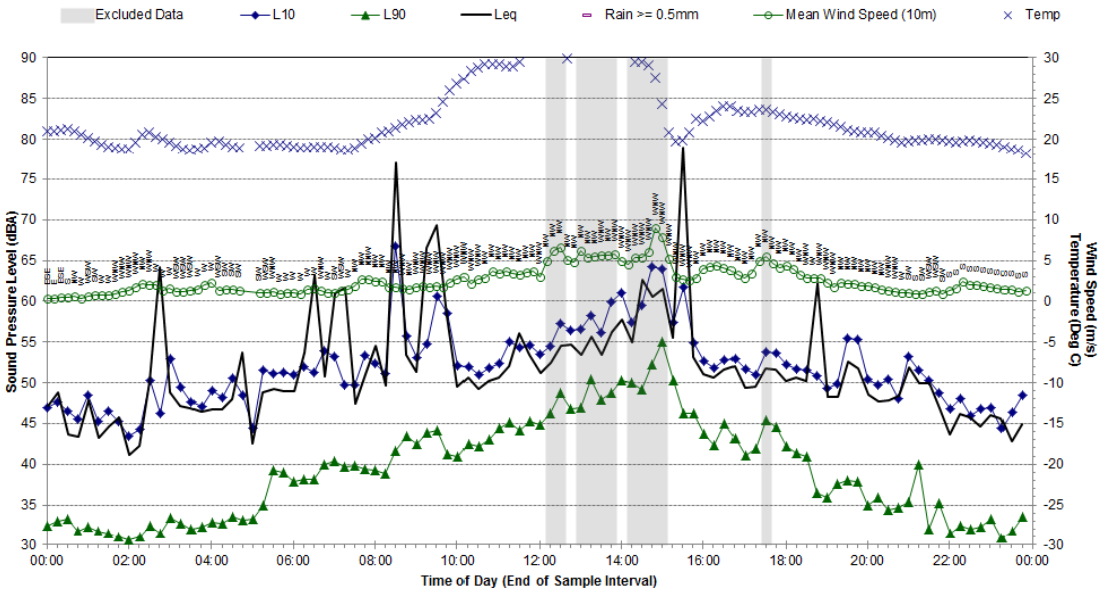


Appendix C2

Statistical Ambient Noise Levels – Location F Page 4 of 5

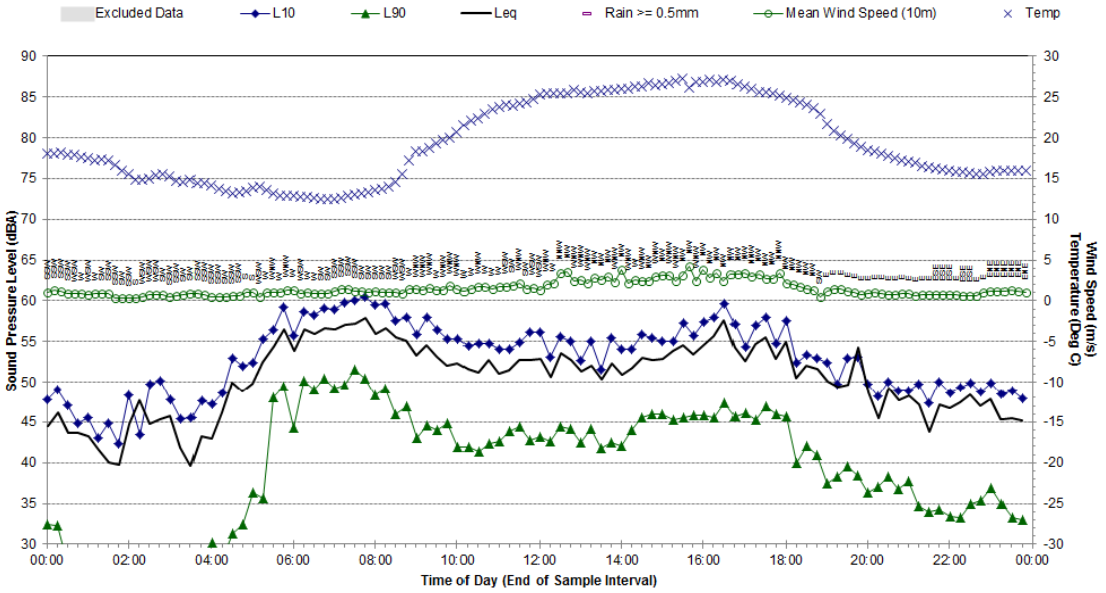
Statistical Ambient Noise Levels

Location F - Sunday, 16 March 2014



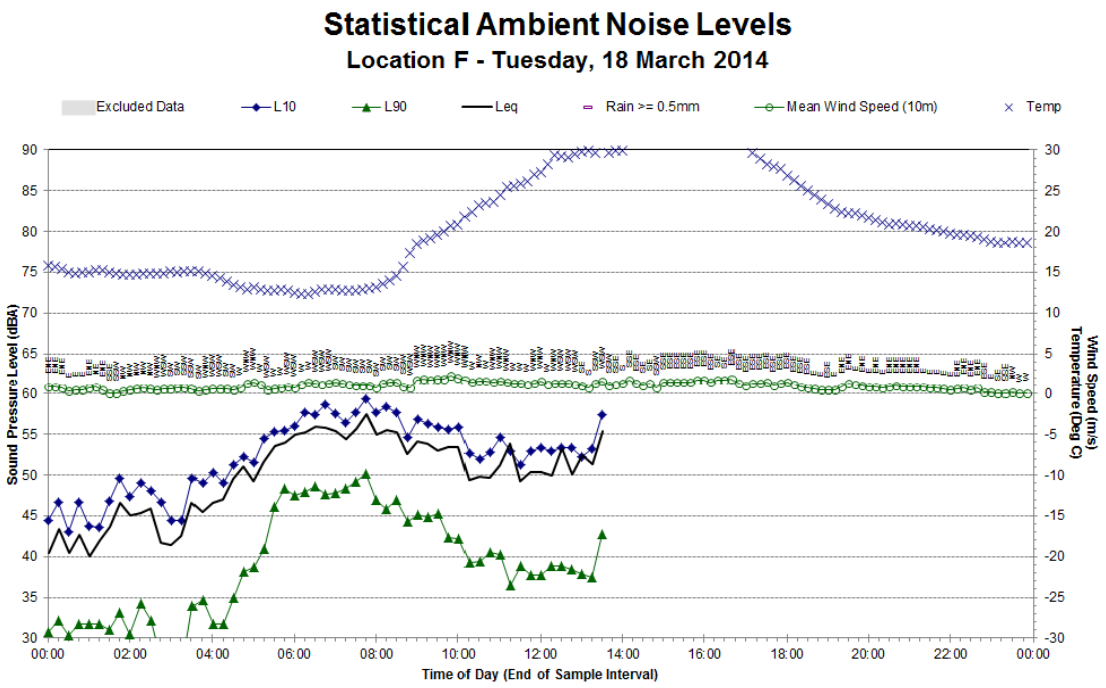
Statistical Ambient Noise Levels

Location F - Monday, 17 March 2014

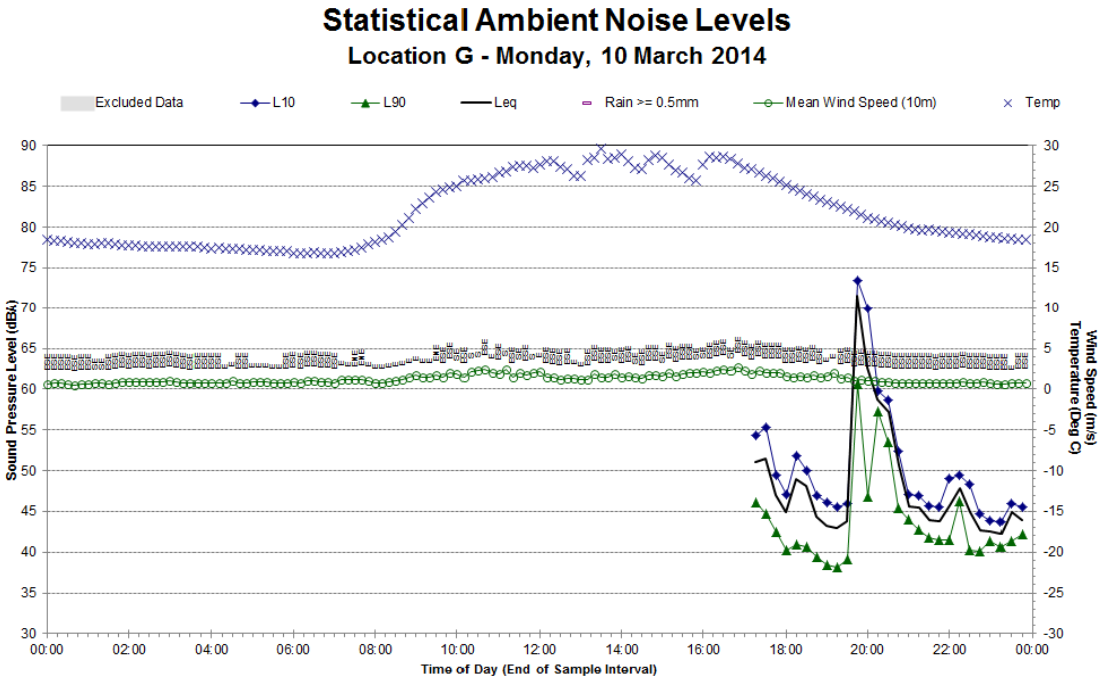


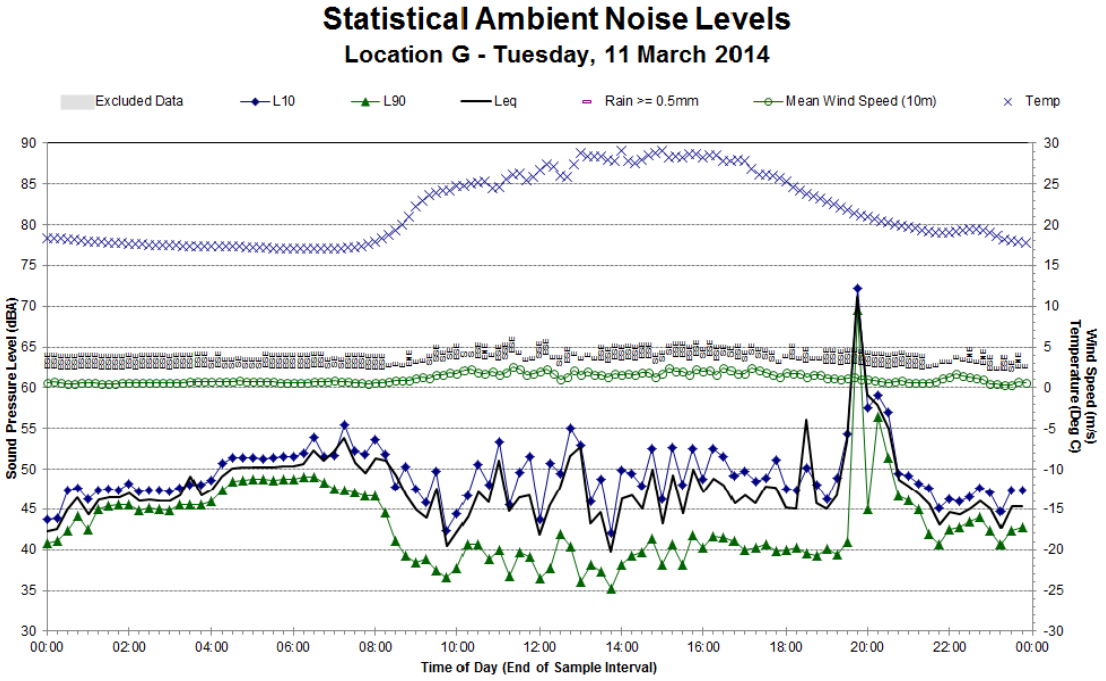
Appendix C2

Statistical Ambient Noise Levels – Location F Page 5 of 5



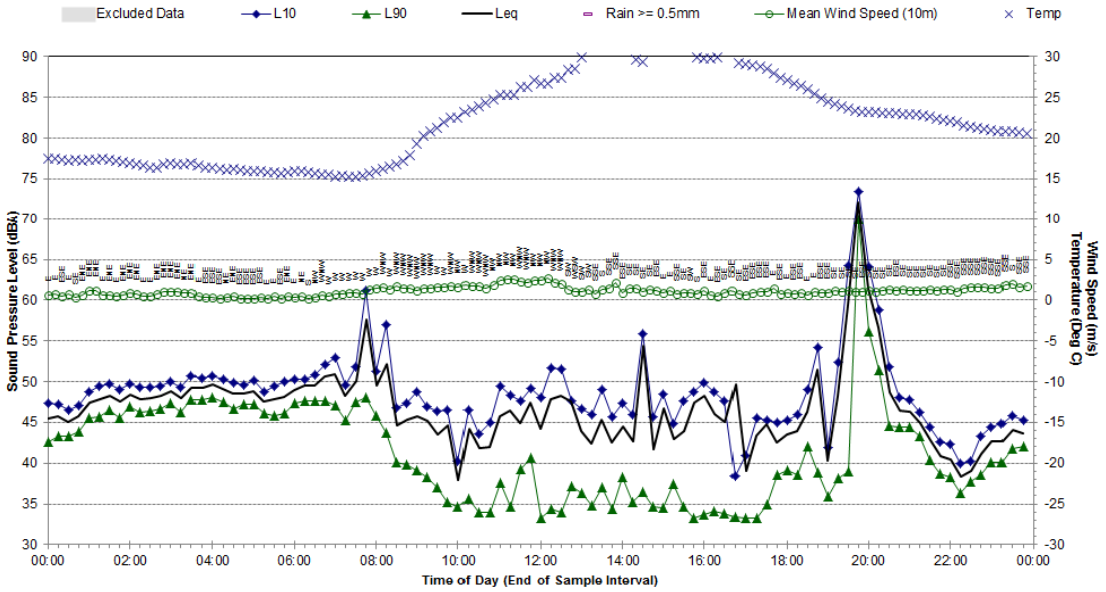
Appendix C3
Statistical Ambient Noise Levels – Location G Page 1 of 5



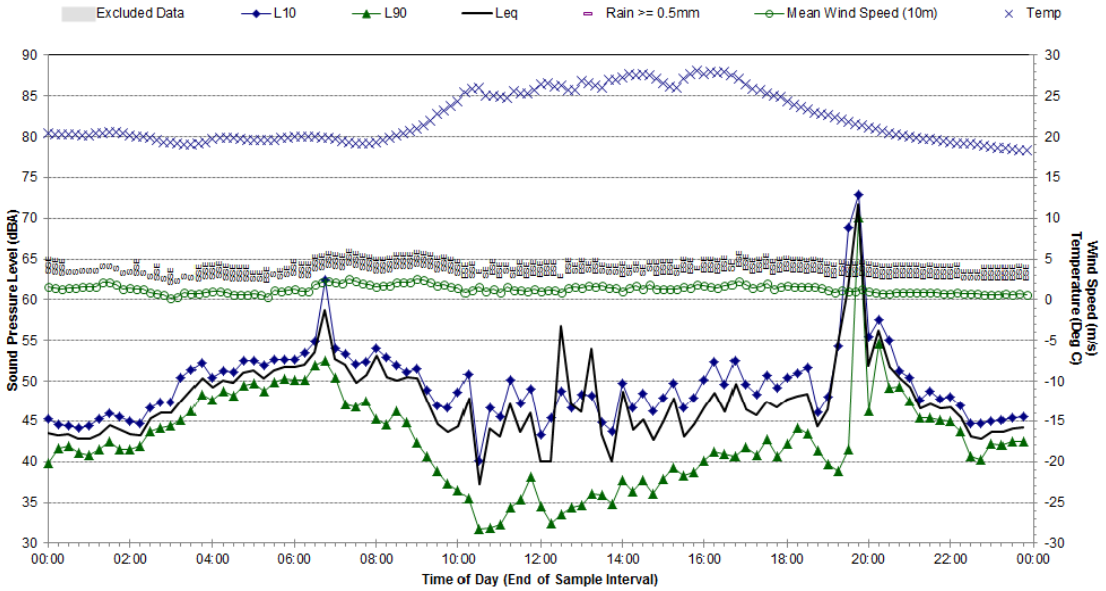


Appendix C3
Statistical Ambient Noise Levels – Location G Page 2 of 5

Statistical Ambient Noise Levels
Location G - Wednesday, 12 March 2014

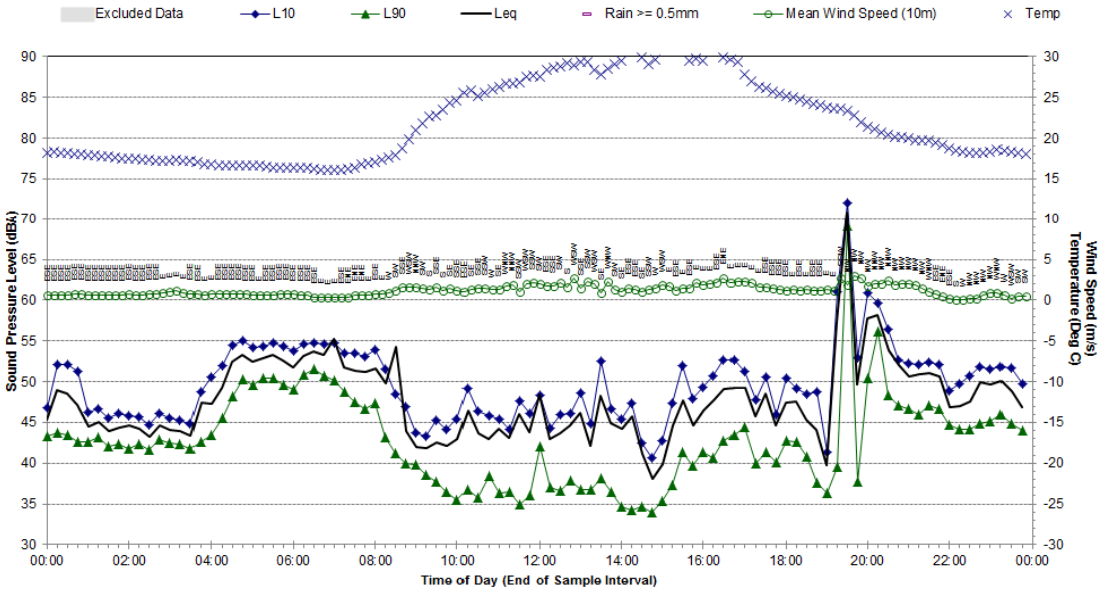


Statistical Ambient Noise Levels
Location G - Thursday, 13 March 2014

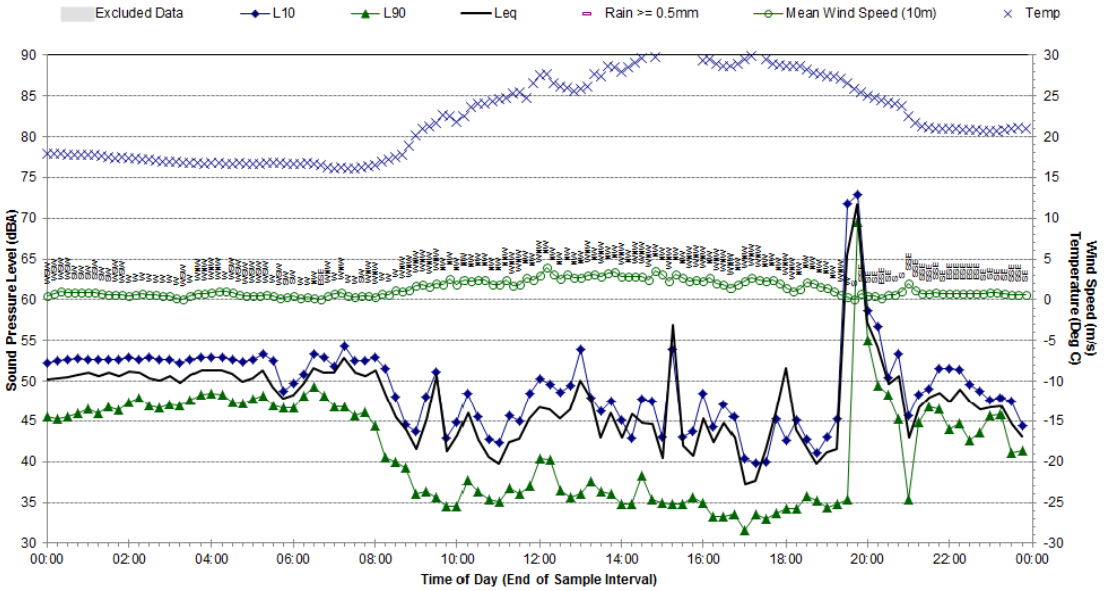


Appendix C3
Statistical Ambient Noise Levels – Location G Page 3 of 5

Statistical Ambient Noise Levels
Location G - Friday, 14 March 2014

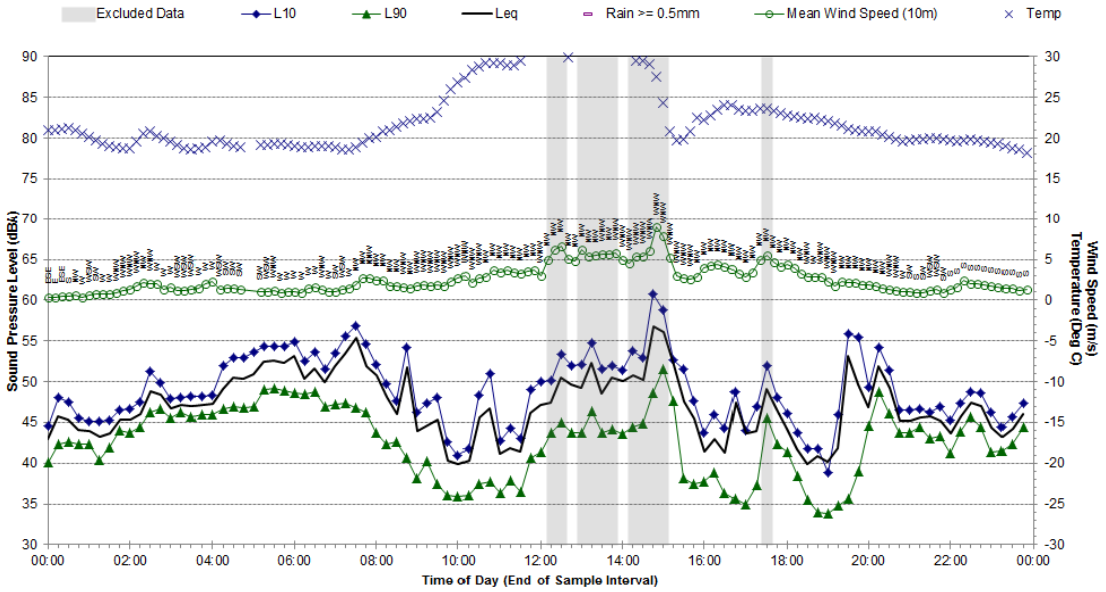


Statistical Ambient Noise Levels
Location G - Saturday, 15 March 2014

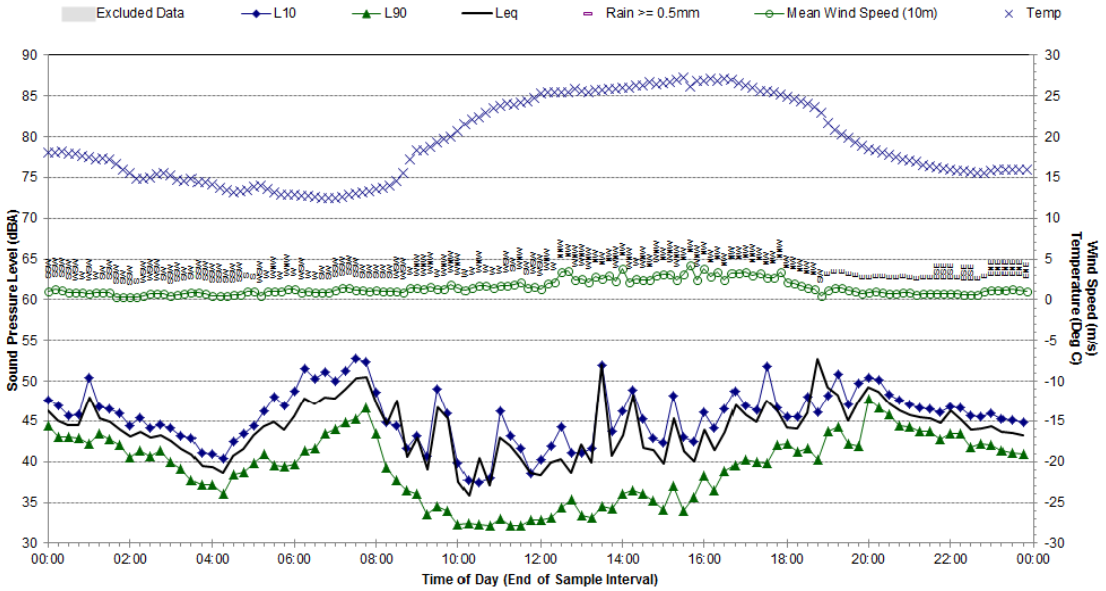


Appendix C3
Statistical Ambient Noise Levels – Location G Page 4 of 5

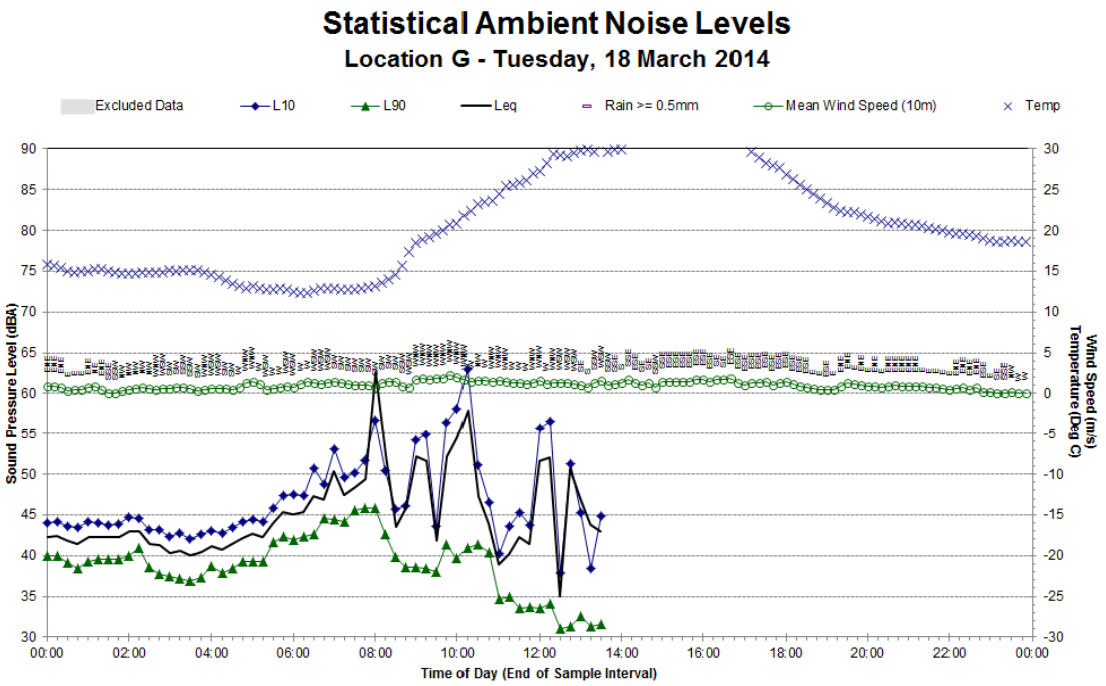
Statistical Ambient Noise Levels
Location G - Sunday, 16 March 2014



Statistical Ambient Noise Levels
Location G - Monday, 17 March 2014



Appendix C3
Statistical Ambient Noise Levels – Location G Page 5 of 5

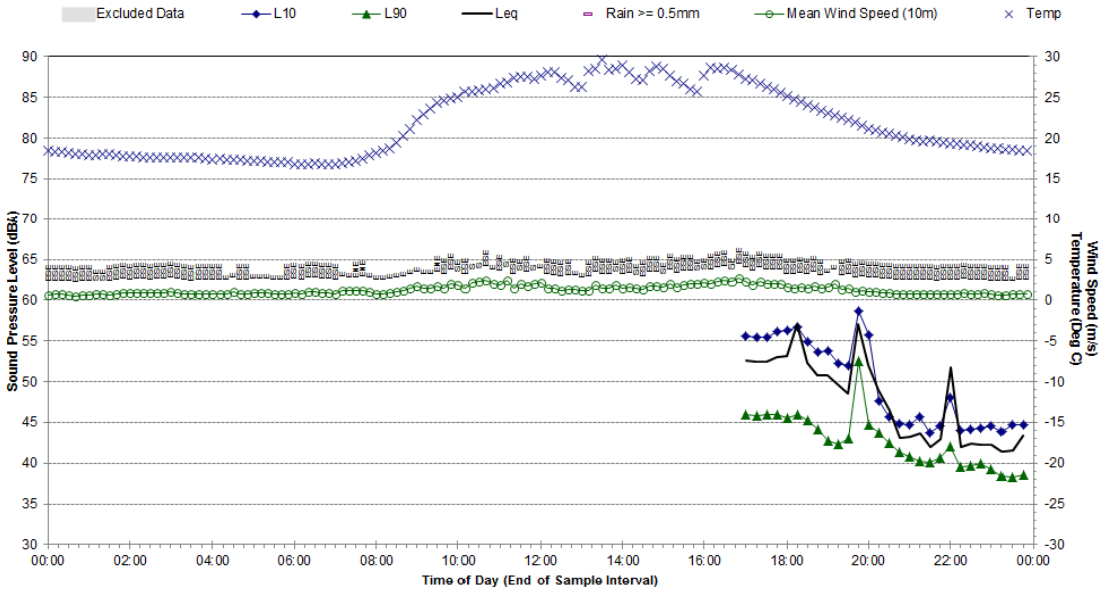


Appendix C4

Statistical Ambient Noise Levels – Location I Page 1 of 5

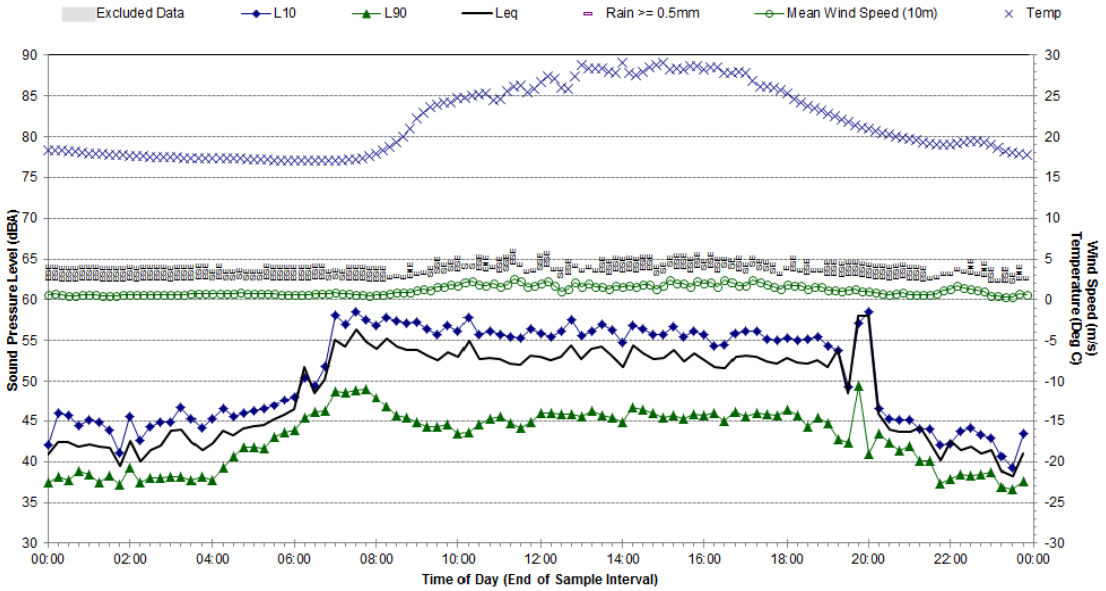
Statistical Ambient Noise Levels

Location I - Monday, 10 March 2014



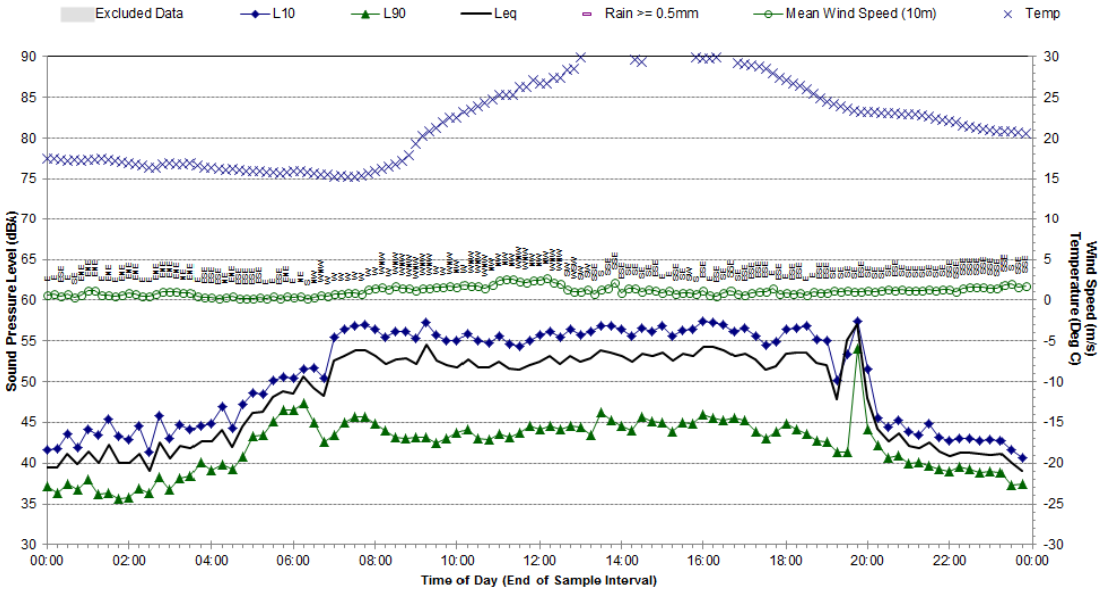
Statistical Ambient Noise Levels

Location I - Tuesday, 11 March 2014

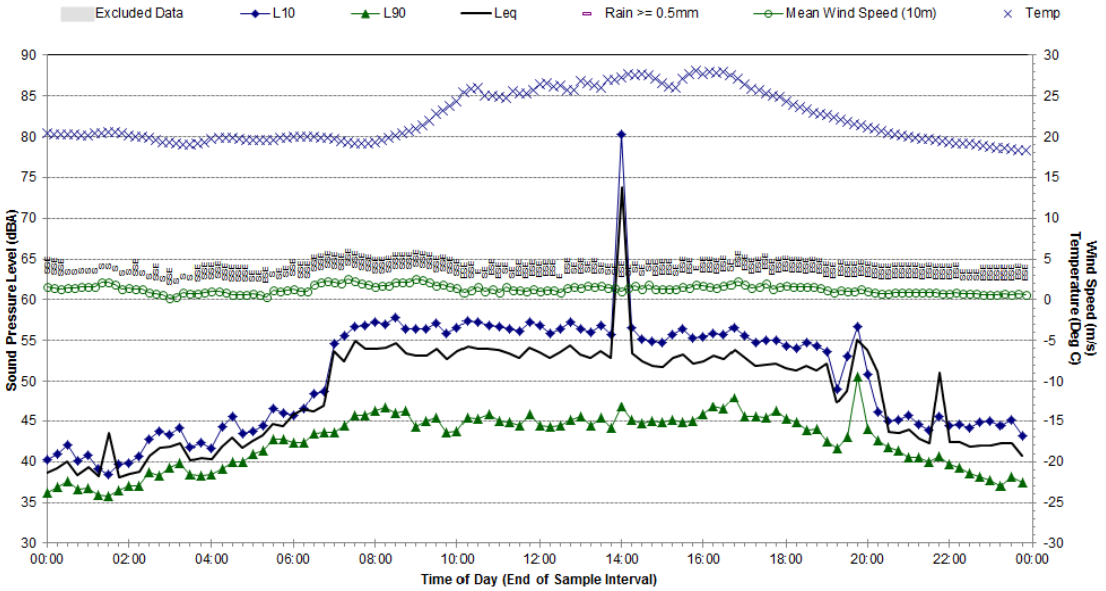


Appendix C4
Statistical Ambient Noise Levels – Location I Page 2 of 5

Statistical Ambient Noise Levels
Location I - Wednesday, 12 March 2014

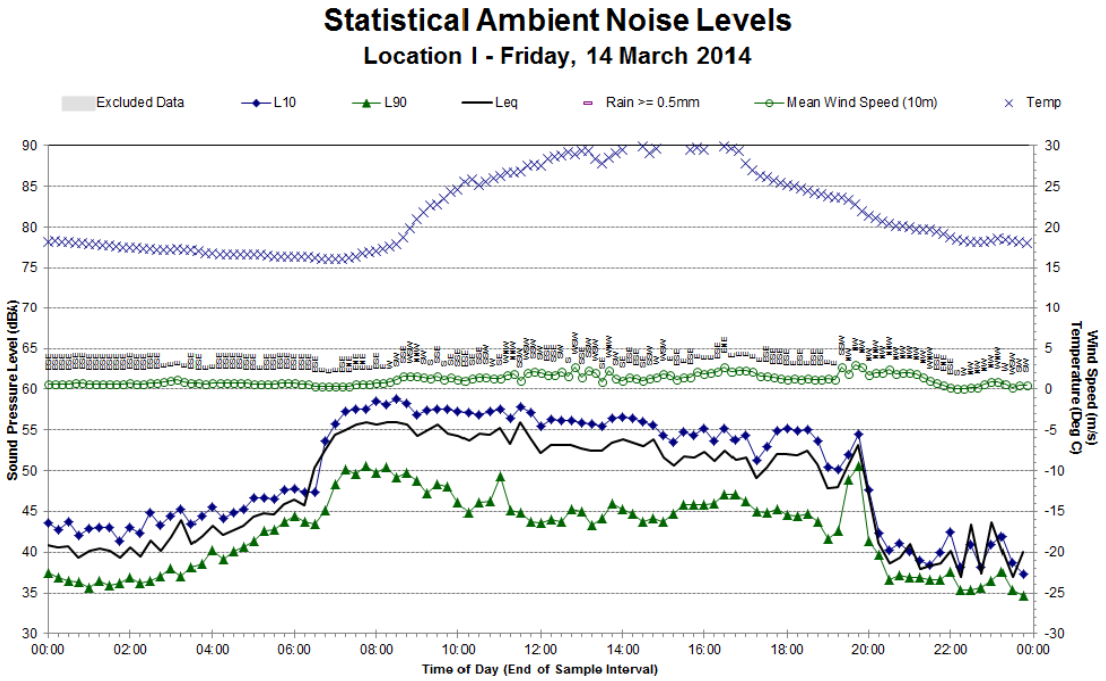


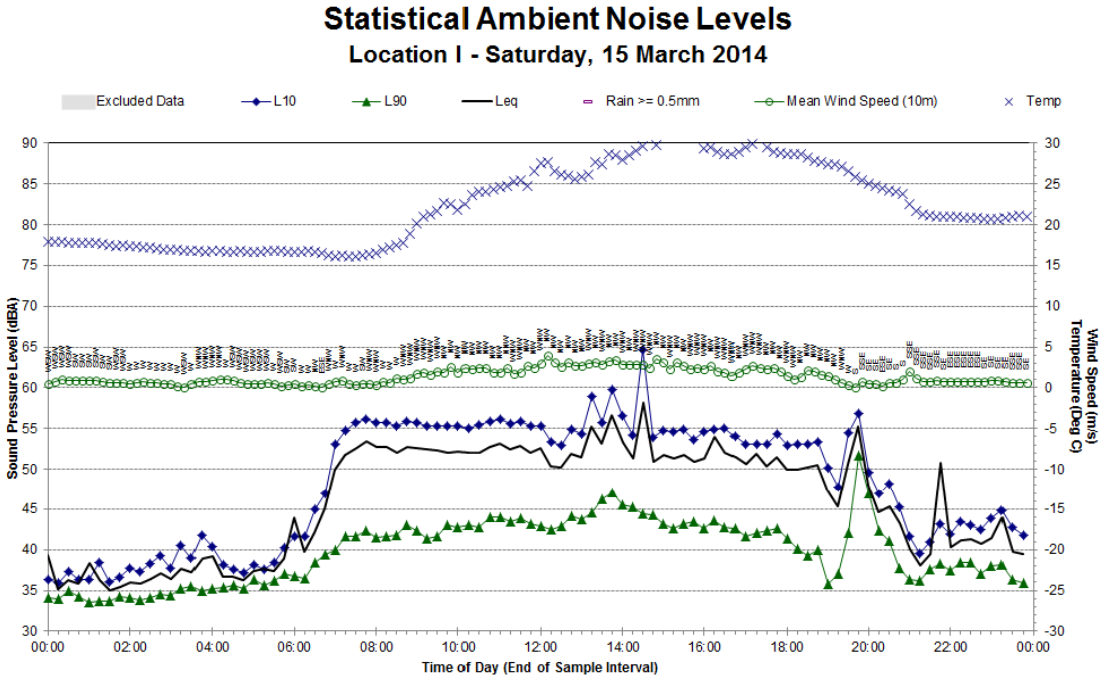
Statistical Ambient Noise Levels
Location I - Thursday, 13 March 2014



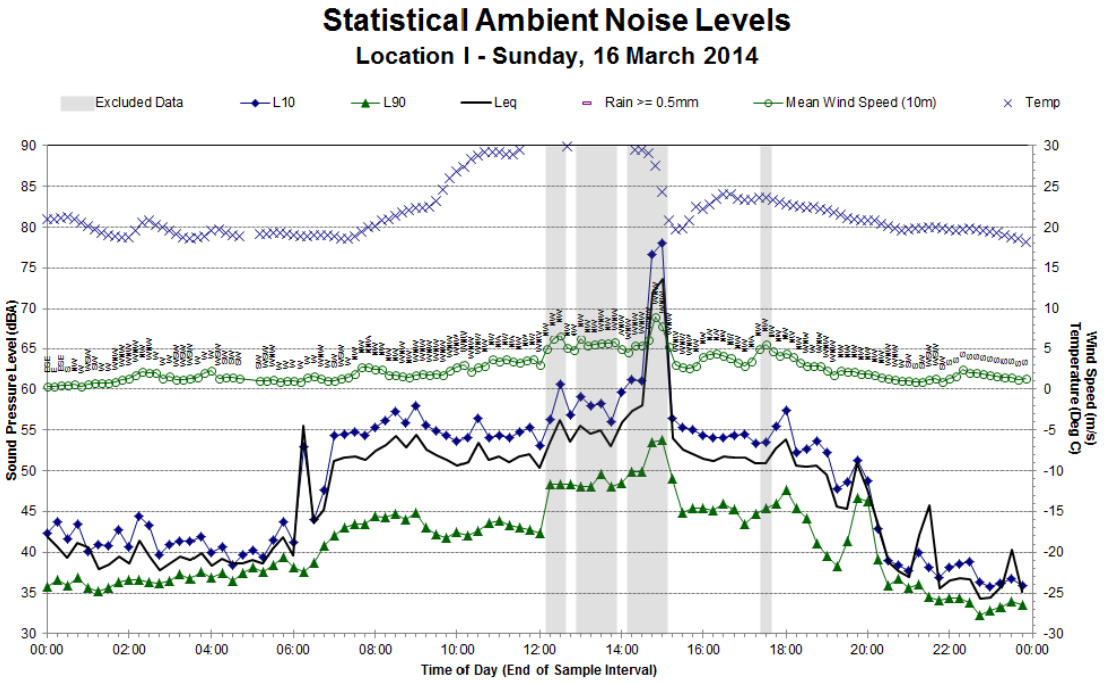
Appendix C4

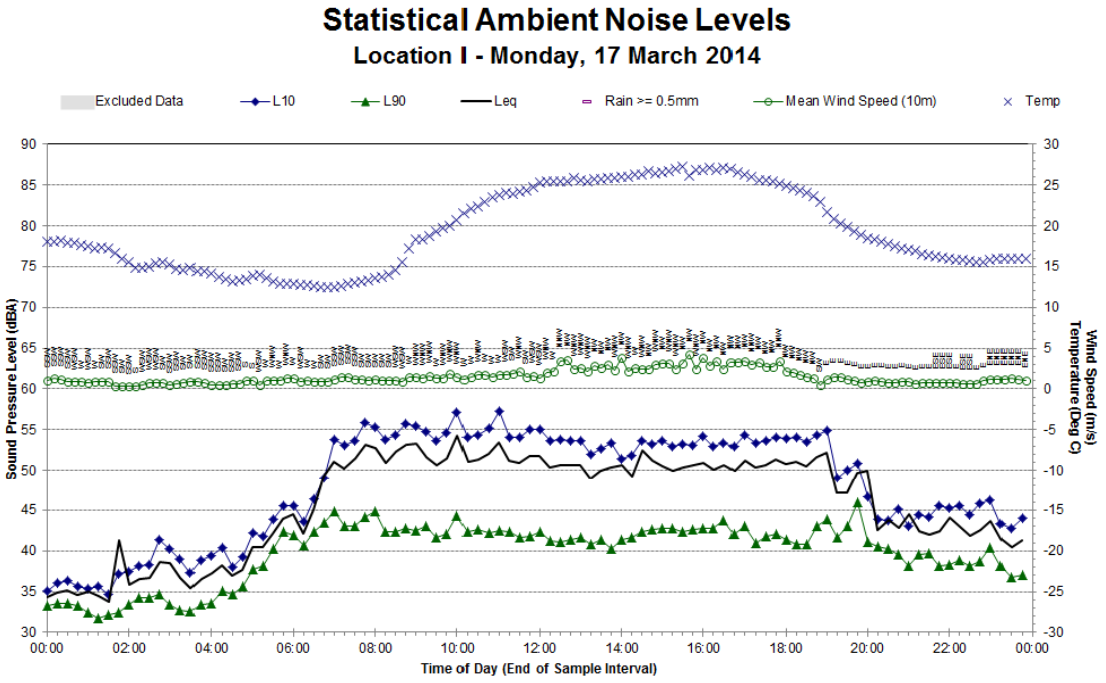
Statistical Ambient Noise Levels – Location I Page 3 of 5





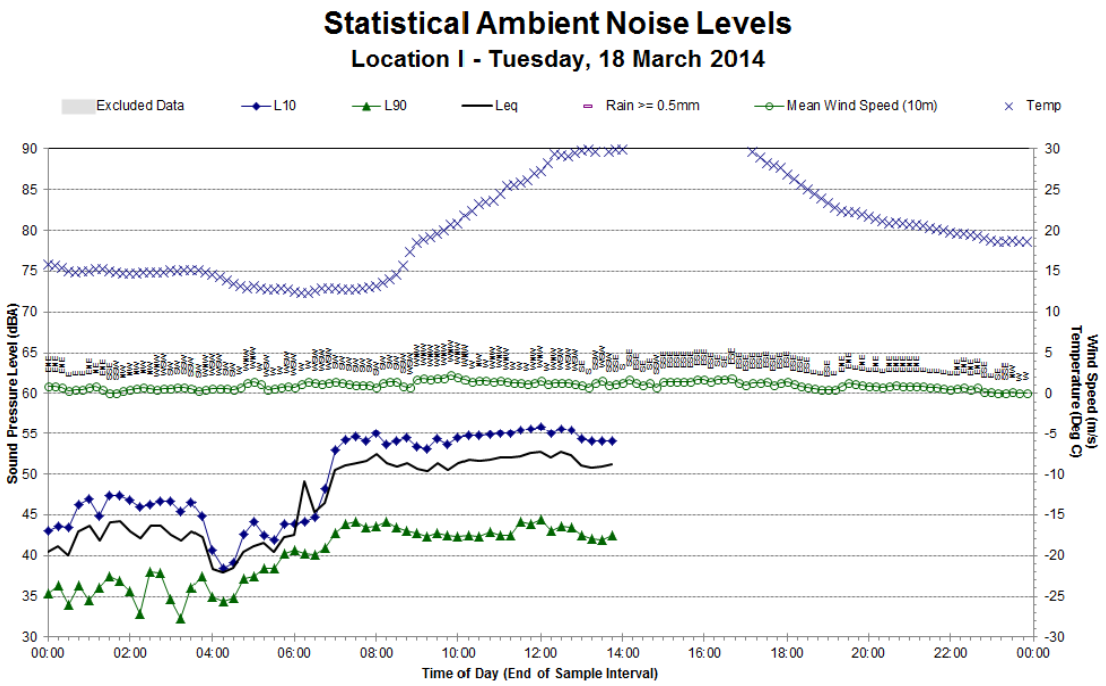
Appendix C4
Statistical Ambient Noise Levels – Location I Page 4 of 5





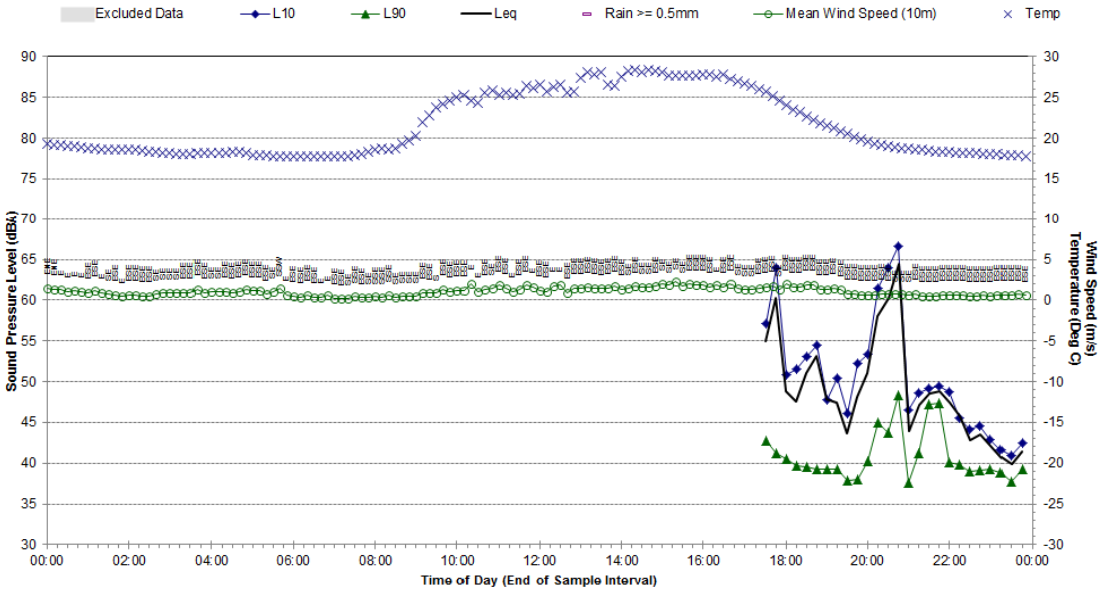
Appendix C4

Statistical Ambient Noise Levels – Location I Page 5 of 5

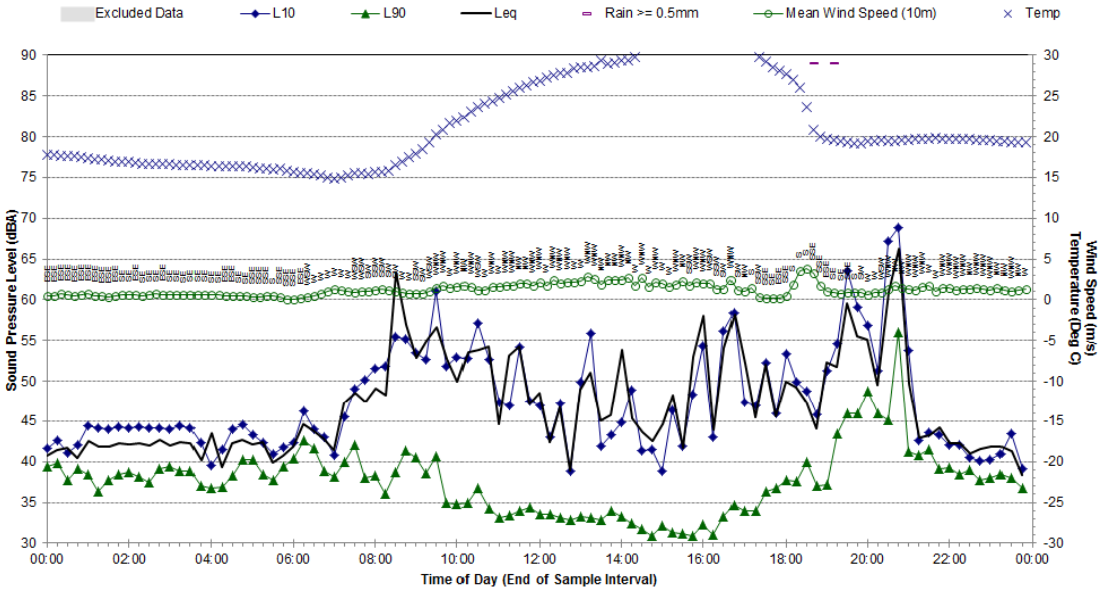


Appendix C5
Statistical Ambient Noise Levels – Location L Page 1 of 5

Statistical Ambient Noise Levels
Location L - Tuesday, 4 March 2014

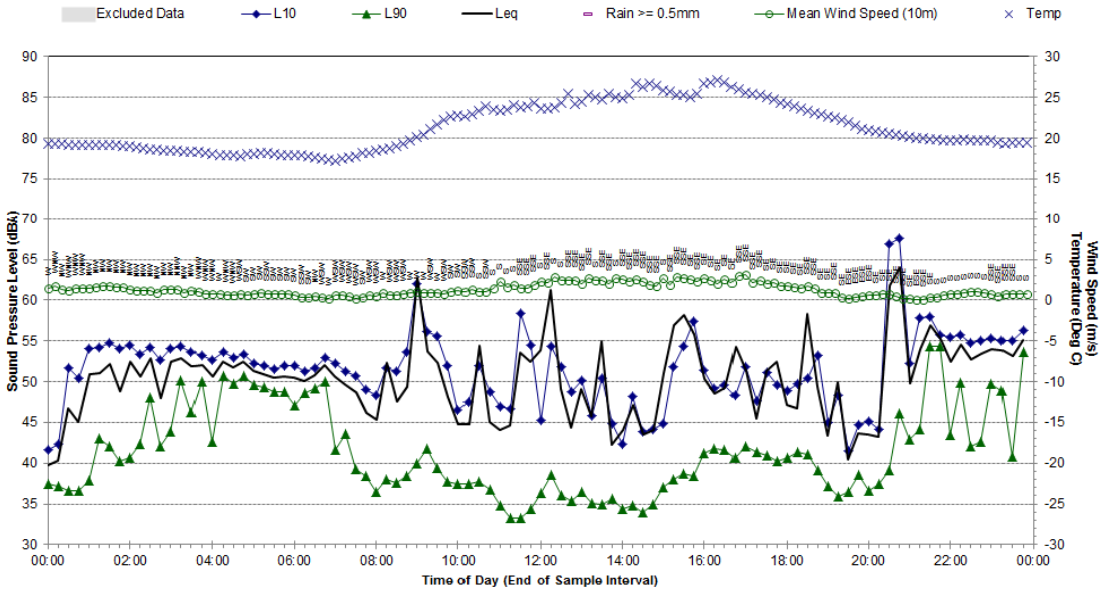


Statistical Ambient Noise Levels
Location L - Wednesday, 5 March 2014

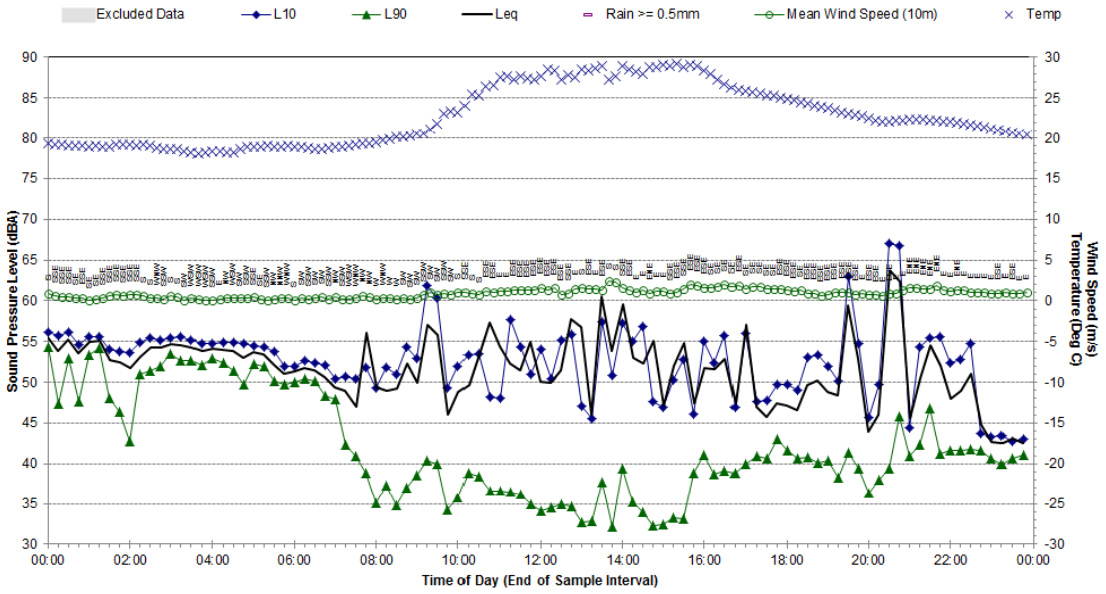


Appendix C5
Statistical Ambient Noise Levels – Location L Page 2 of 5

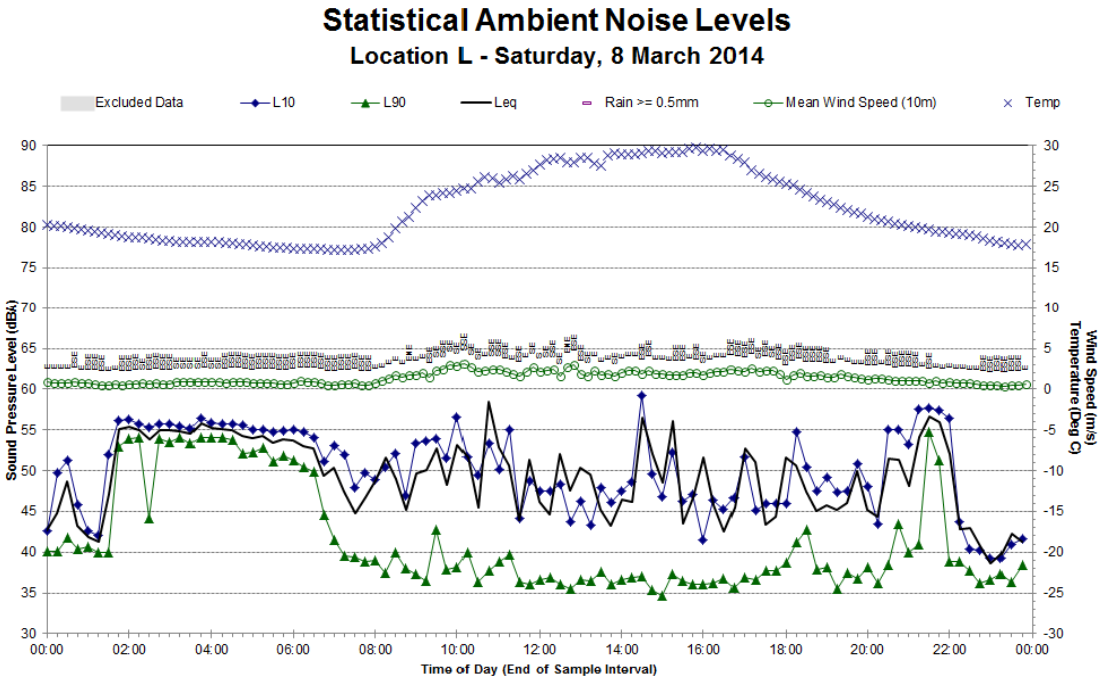
Statistical Ambient Noise Levels
Location L - Thursday, 6 March 2014

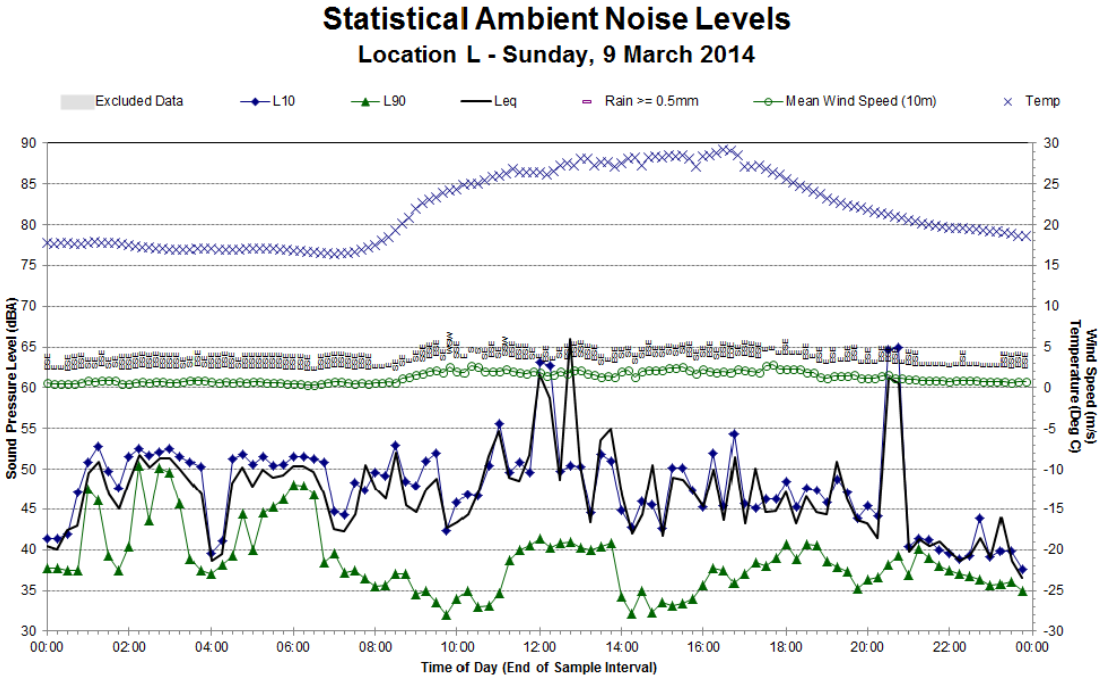


Statistical Ambient Noise Levels
Location L - Friday, 7 March 2014



Appendix C5
Statistical Ambient Noise Levels – Location L Page 3 of 5



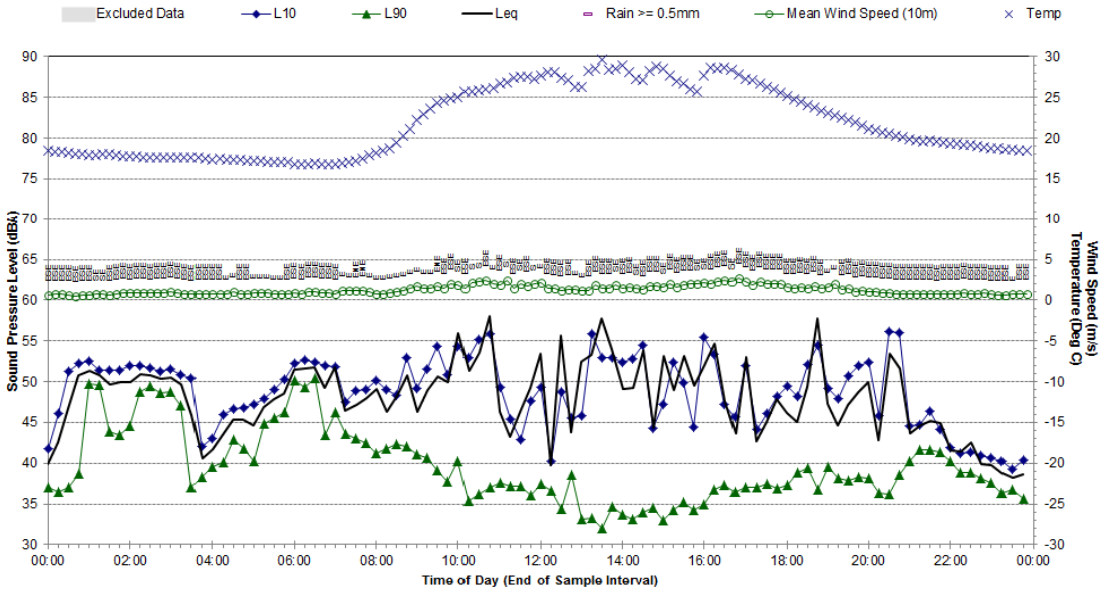


Appendix C5

Statistical Ambient Noise Levels – Location L Page 4 of 5

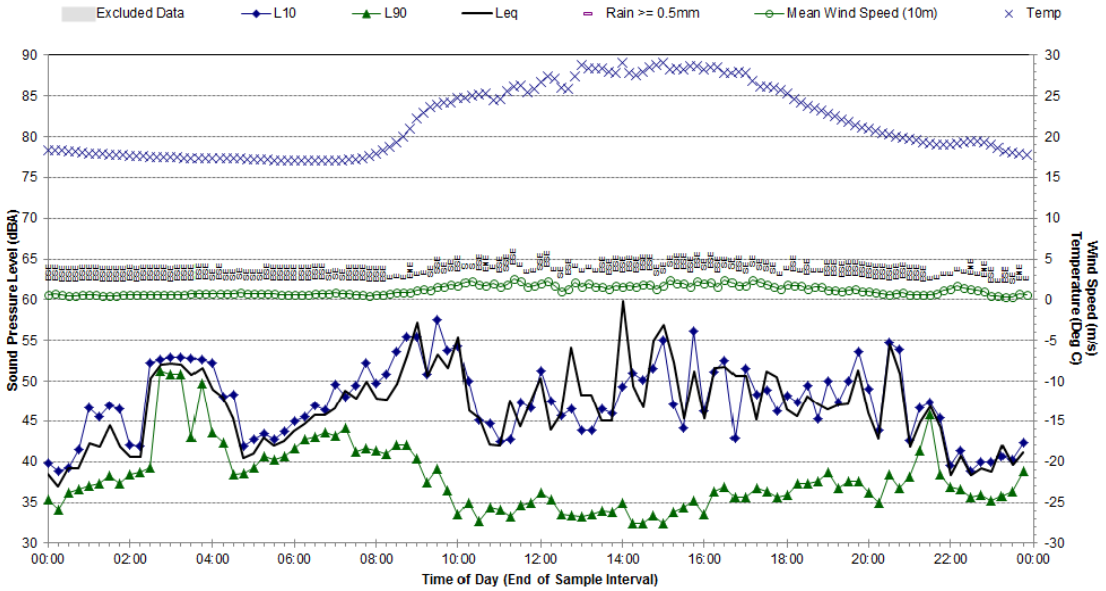
Statistical Ambient Noise Levels

Location L - Monday, 10 March 2014



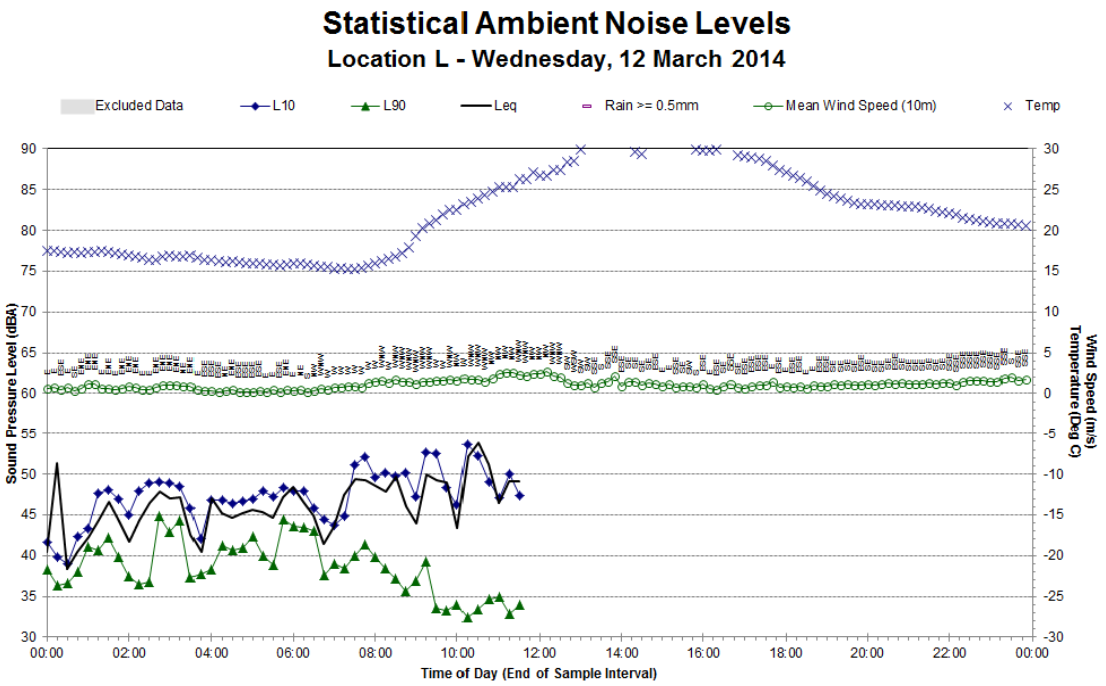
Statistical Ambient Noise Levels

Location L - Tuesday, 11 March 2014



Appendix C5

Statistical Ambient Noise Levels – Location L Page 5 of 5

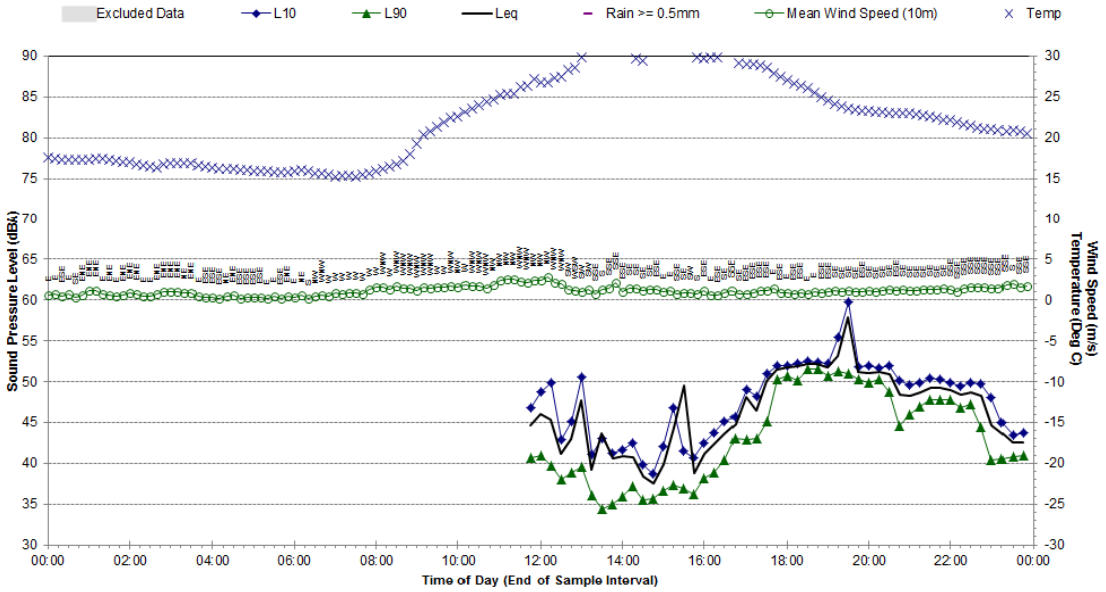


Appendix C6

Statistical Ambient Noise Levels – Location J Page 1 of 4

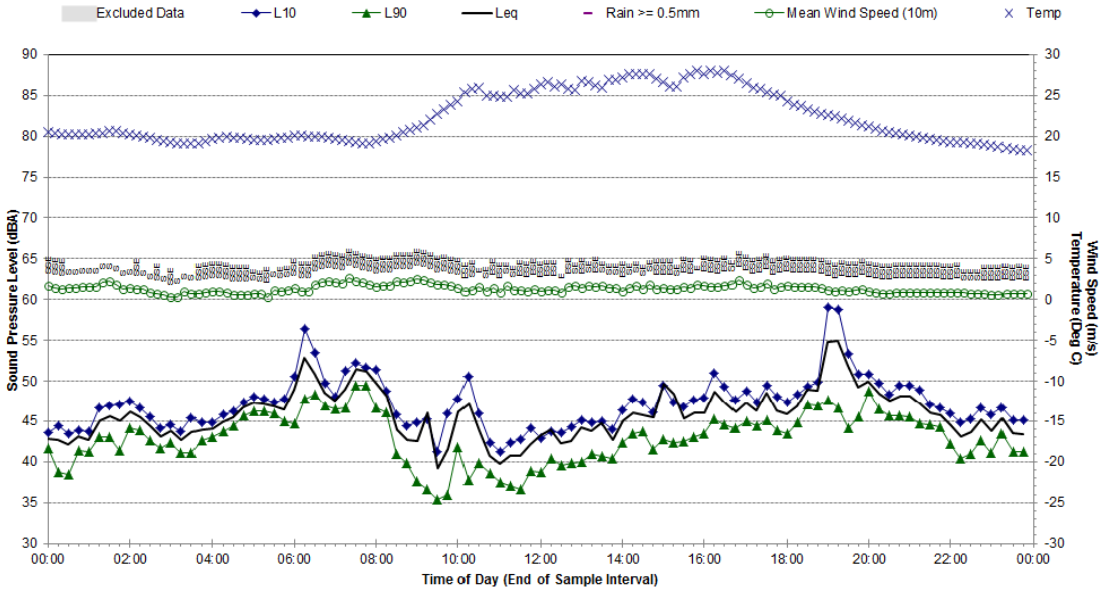
Statistical Ambient Noise Levels

Location J - Wednesday, 12 March 2014

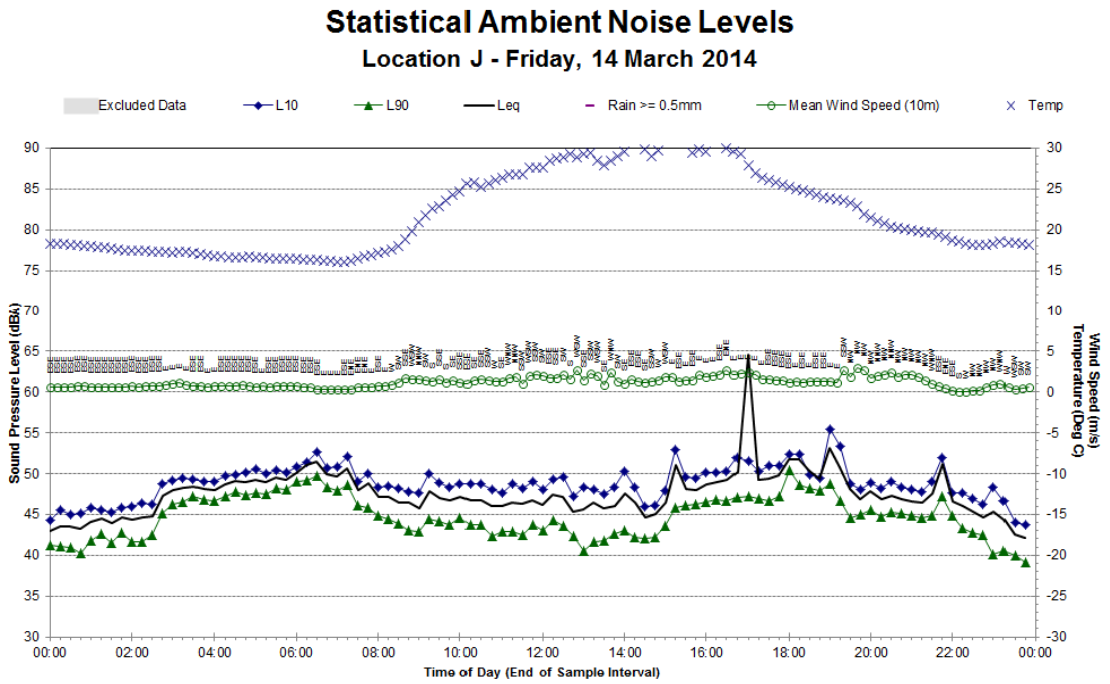


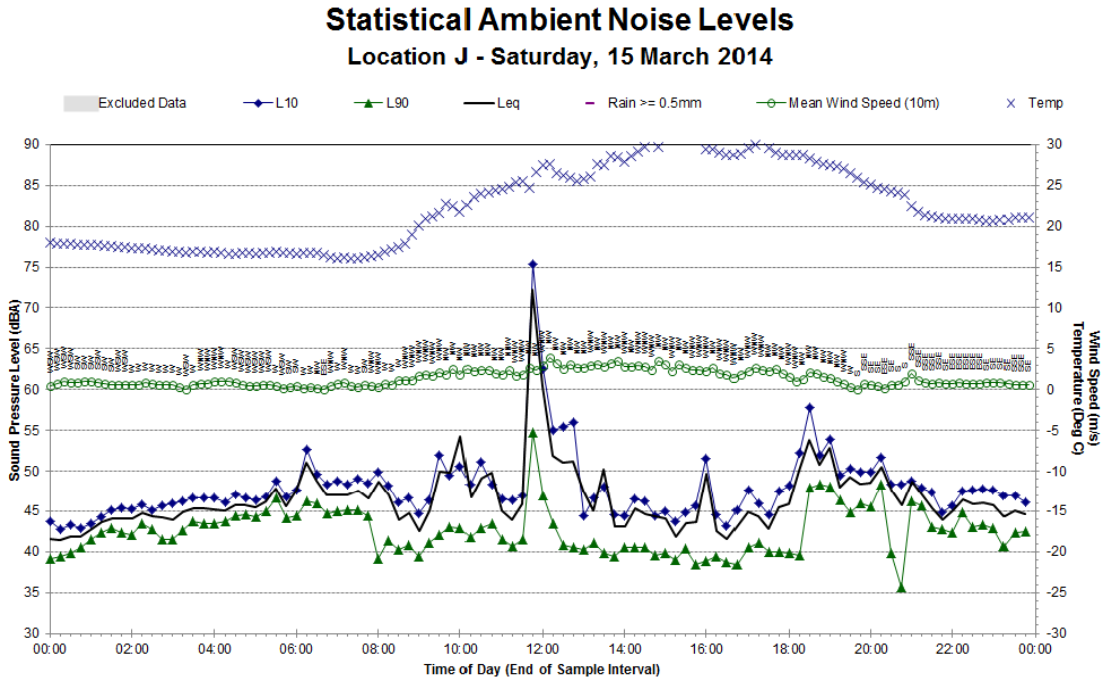
Statistical Ambient Noise Levels

Location J - Thursday, 13 March 2014



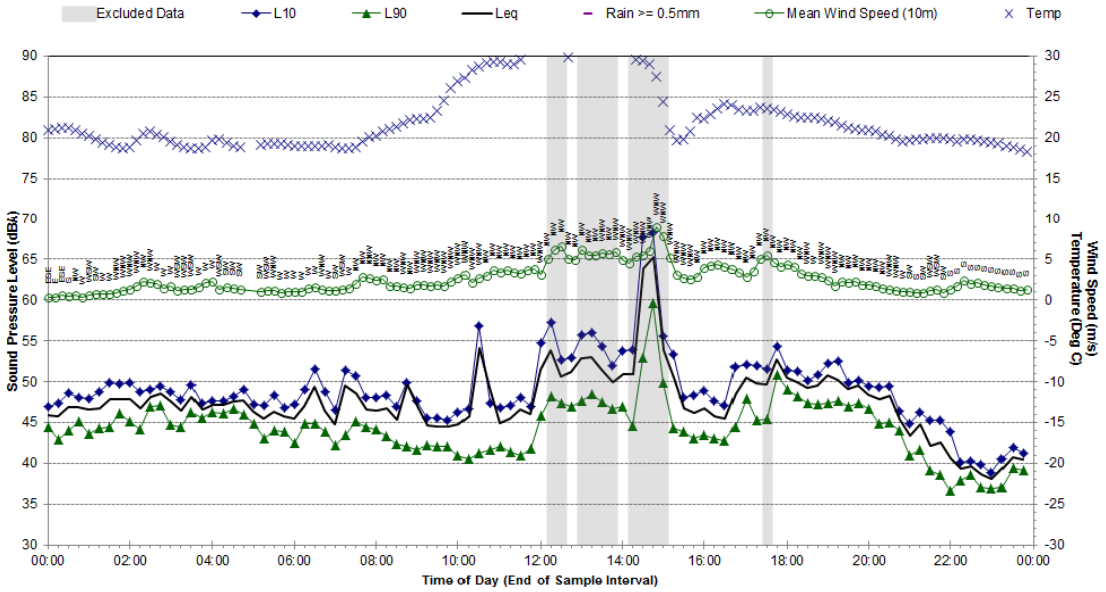
Appendix C6
Statistical Ambient Noise Levels – Location J Page 2 of 4



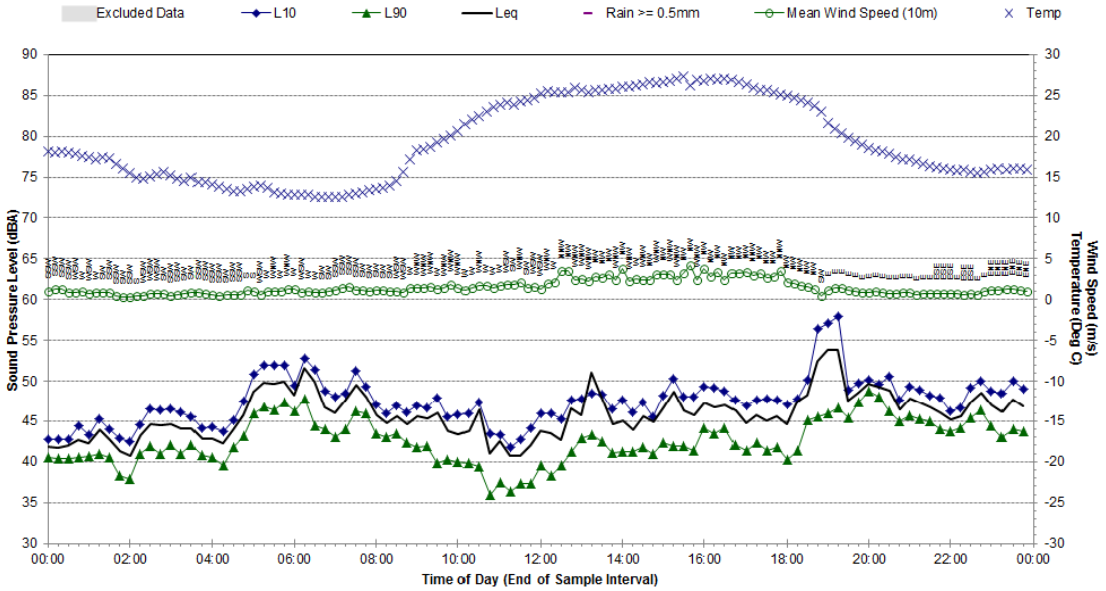


Appendix C6
Statistical Ambient Noise Levels – Location J Page 3 of 4

Statistical Ambient Noise Levels
Location J - Sunday, 16 March 2014

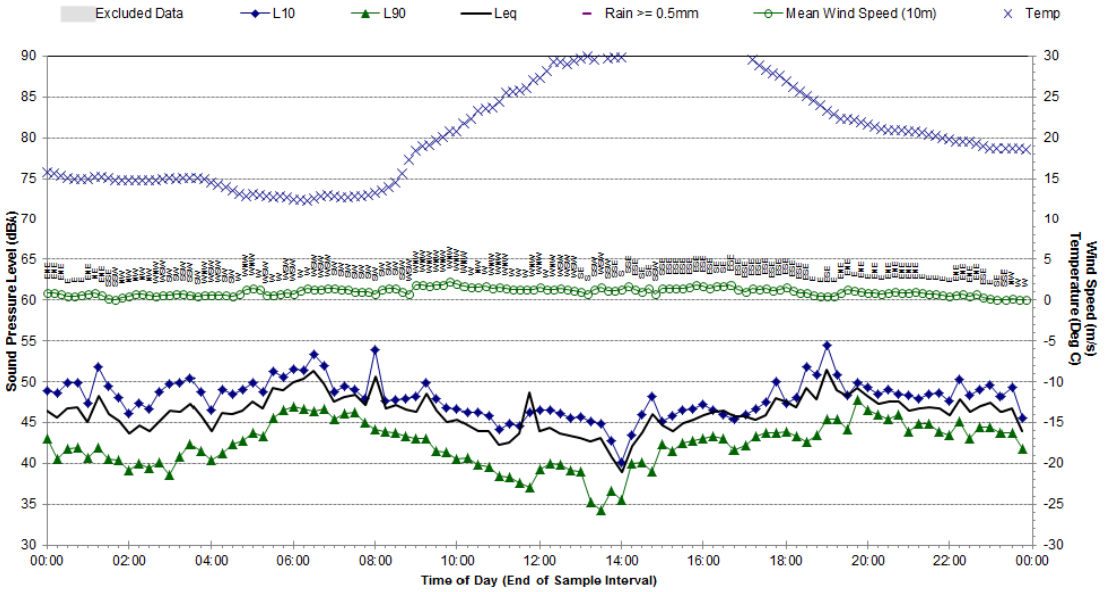


Statistical Ambient Noise Levels
Location J - Monday, 17 March 2014

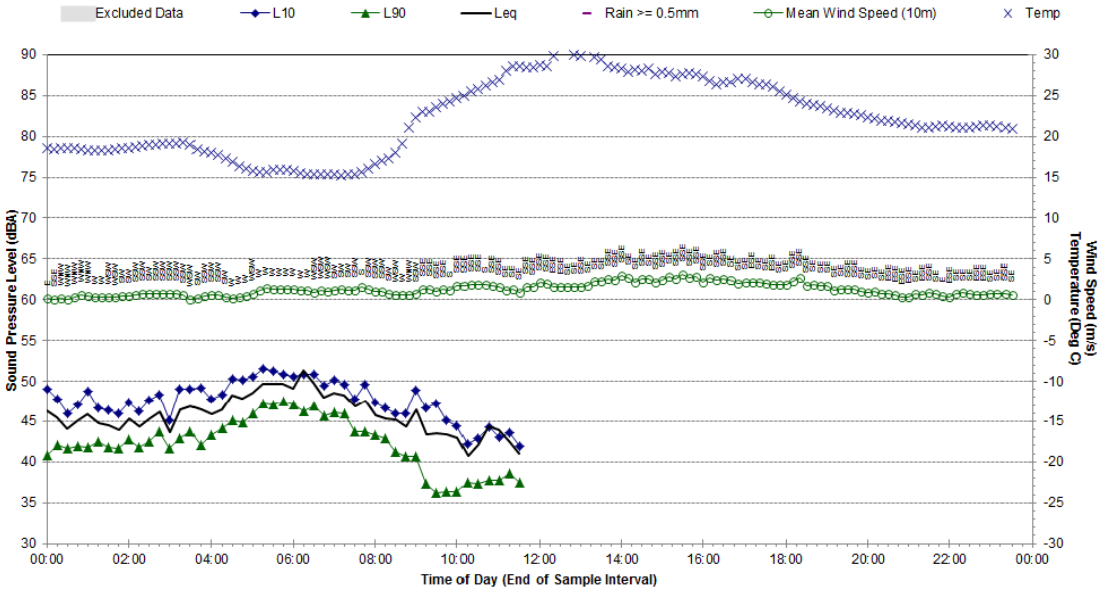


Appendix C6
Statistical Ambient Noise Levels – Location J Page 4 of 4

Statistical Ambient Noise Levels
Location J - Tuesday, 18 March 2014



Statistical Ambient Noise Levels
Location J - Wednesday, 19 March 2014



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