Appendix 5

Noise Monitoring Reports

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Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending June 2014

Report Number Q54 630.01053-R1

6 August 2014

Donaldson Coal Pty Ltd
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Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending June 2014

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Appendix A – Location Map

Appendix B – Equipment Register

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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	***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 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.*

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

1. *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 referred to in Table 5, see plan in Appendix 3* (attached to this report as **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

1. 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
	LAeq(period)		
All privately-owned land	*55*	*45*	*40*

Cumulative Noise Criteria

1. 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
	LAeq(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

1. 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

2. 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^{o}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 program 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 six (6) focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine during the June 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
J	Parish Drive, Thornton
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 6 June 2014 and 25 March 2014 at each of the six (6) 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**.

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 and evening on Wednesday 18 June 2014 and during the night-time on Wednesday 18 June 2014 and Thursday 19 June 2014. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, integrating sound level meter (s/n: 3003729).

Results of the operator attended noise measurements are given in **Table 2** to **Table 7**.

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 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	
18/06/2014 11:53 W = 1 m/s W Temp = 18°C Cloud cover = 8/8	Daytime Ambient	76	69	52	35	54	M1 Traffic ~ 35 dBA Local Traffic ~ 49 to 76 dBA Birds ~ 40 to 59 dBA School kids ~ 40 to 42 dBA Trees in wind ~ 35 dBA Aircraft flyover ~ 44 to 46 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
18/06/2014 18:00 W = 0.2 m/s SE Temp = 12°C Cloud cover = 0/8	Evening Ambient	76	68	54	37	54	Local Traffic ~ 62 to 76 dBA Dist Traffic ~ 37 to 40 dBA cow~ 46 to 49 dBA Plane ~ 40 to 41 dBA Insects~ 35 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
18/06/2014 22:00 W = 1.2 m/s SSW Temp = 11°C Cloud cover = 0/8	Night-time Ambient	75	57	40	32	48	Insects ~ 33 dBA Distant Traffic ~ 36 to 48 dBA Local Traffic ~ 75 dBA Birds ~ 45 dBA Dog Barking ~ 34 to 36 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

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

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
18/06/2014 12:24 W = 1 m/s SW Temp = 18°C Cloud cover = 8/8	Daytime Ambient	80	69	59	47	58	Local Traffic ~ 47 to 80 dBA Birds ~ 55 dBA JRD Traffic ~ 52 to 70 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <37 dBA[1].					
18/06/2014 18:20 W = 0.3 m/s SE Temp = 12°C Cloud cover = 0/8	Evening Ambient	81	68	60	48	58	JRD Traffic ~ 59 to 71 dBA Local road Traffic ~ 81 dBA Aircraft 54 to 57 dBA Insects/frogs ~ 40 to 48 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <38 dBA[1].					
18/06/2014 22:21 W = 0.8 m/s SSW Temp = 11°C Cloud cover = 0/8	Night-time Ambient	79	70	57	43	57	JRD Traffic ~ 55 to 65 dBA Local road Traffic ~ 74 to 79 dBA Insects/frogs ~ 42 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <33 dBA[1].					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

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	
18/06/2014 14:01 W = 1.4 m/s SSE Temp = 19°C Cloud cover = 8/8	Daytime Ambient	98	55	44	34	62	Dog barking ~ 98 dBA Birds ~ 39 to 58 dBA Distant road traffic 33 to 35 dBA Aircraft flyover 39 to 55 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
18/06/2014 19:29 W = 0.4 m/s WNW Temp = 12°C Cloud cover = 0/8	Evening Ambient	58	51	48	40	45	Insects ~ 38 to 41 dBA Dog Barking ~ 44 to 46 dBA Dist Traffic ~ 43 to 58 dBA Aircraft ~48 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
18/06/2014 23:28 W = 0.7 m/s SSW Temp = 11°C Cloud cover = 0/8	Night-time Ambient	57	49	45	37	42	Distant Traffic ~ 44 to 56 dBA Aircraft ~46 dBA Donaldson mine not audible Abel mine Audible 34 to 35 dBA Constant rumble (CHP)
		Estimated Donaldson mine LAeq(15min) contribution <30 dBA[1] LA1(1min) contribution <30 dBA[1] Estimated Abel mine LAeq(15min) contribution 34 dBA LA1(1min) contribution 35 dBA					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

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	
18/06/2014 15:06 W = 1 m/s SSE Temp = 18°C Cloud cover = 8/8	Daytime Ambient	65	59	55	44	52	Dist Traffic ~ 44 dBA Birds ~ 545to 57 dBA Local Traffic ~ 60 to 61 dBA dog barking 54 to 62 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <34 dBA[1].					
18/06/2014 20:18 W = 0.5 m/s WNW Temp = 11°C Cloud cover = 0/8	Evening Ambient	70	51	46	41	46	Dlst Traffic ~ 44 to 46 dBA Birds ~ 50 to 51 dBA Dog Barking ~ 44 dBA Insect/frogs 43 dBA Train horn 49 dBA Train passby 48 dBA Operator 70 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <31 dBA[1].					
19/06/2014 12:17am W = 1 m/s SSW Temp = 11°C Cloud cover = 0/8	Night-time Ambient	52	45	43	39	41	Dist Traffic ~ 38 to 40 dBA local Road traffic 45 dBA Insect/frogs 42-43 dBA Train horn 52 dBA Train passby 45 to46 dBA Donaldson not audible Abel mine Audible 34 to 35 dBA Constant rumble (CHP)
		Estimated Donaldson mine LAeq(15min) contribution <30 dBA[1] LA1(1min) contribution <30 dBA[1] Estimated Abel mine LAeq(15min) contribution 34 dBA LA1(1min) contribution 35 dBA					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

Table 6 Location J, Parish Drive, Thornton

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
18/06/2014 15:39 W = 0.5 m/s SE Temp = 18°C Cloud cover = 8/8	Daytime Ambient	59	48	41	37	40	Distant Road traffic 37-38 dBA Local Traffic ~ 40 dBA dog barking ~ 46 to 59 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
18/06/2014 20:41 W = 0.4 m/s W Temp = 11°C Cloud cover = 0/8	Evening Ambient	53	48	46	39	43	Distant Road traffic 37-53 dBA Donaldson and Abel mines not audible
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
19/06/2014 12:41am W = 1 m/s SSW Temp = 10°C Cloud cover = 0/8	Night-time Ambient	52	50	48	39	44	Dist Traffic ~ 39 to 40 dBA Watering system resident ~ 39 to 46 dBA Dog Barking ~ 41 dBA Donaldson and Abel mines not audible. Locomotive passby 49 to 52 Lmax
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1]. LA1(1min) contribution <30 dBA[1]					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

Table 7 Location L, 17 Killshanny 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	
18/06/2014 14:35 W = 1 m/s SE Temp = 18°C Cloud cover = 8/8	Daytime Ambient	71	62	47	37	49	Birds ~ 48 to 49 dBA Local Traffic ~ 48 to 71 dBA dog barking ~ 47 dBA Nearby construction ~ 40 to 41 dBA Donaldson and Abel mines not audible.
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
18/06/2014 19:56 W = 0.4 m/s WNW Temp = 12°C Cloud cover = 0/8	Evening Ambient	65	54	42	38	44	Distant Traffic ~ 38-42dBA Dog Barking ~ 41 to 45 dBA Birds ~ 40 to 41 dBA Local Traffic ~ 42 to 65 dBA Insects ~ 40 to 41 dBA Donaldson and Abel mines not audible.
		Estimated Donaldson and Abel mines LAeq(15min) contribution <30 dBA[1].					
18/06/2014 23:57 W = 0.6 m/s SSW Temp = 10°C Cloud cover = 0/8	Night-time Ambient	72	52	38	35	44	Dist Traffic ~ 39 to 57 dBA Local Traffic ~ 40 to 72 dBA Insects ~ 34 to 35 dBA Dog Barking ~ 40 to 42 dBA Birds 52 dBA Donaldson not audible Abel mine Audible 34 to 35 dBA Constant rumble (CHP)
		Estimated Donaldson mine LAeq(15min) contribution <30 dBA LA1(1min) contribution <30 dBA Estimated Abel mine LAeq(15min) contribution 34 dBA LA1(1min) contribution 35 dBA					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

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 observed to be faintly audible at times at Location G, I and L during the night-time period.

4.3 Compliance Assessment and Discussion of Results

4.3.1 Operations

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

Table 8 Compliance Noise Assessment – Operations

Location	Estimated Abel LAeq(15minute) Contribution			Consent Conditions LAeq(15minute)			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
D – Black Hill School, Black Hill	<30	<30	<30	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
F – Black Hill Road, Black Hill	<37	<38	<33	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
G – Buchanan Road, Buchanan	<30	<30	34	35	35	35	Yes[1,2]	Yes[1,2]	Yes
I – Lord Howe Drive, Ashtonfield	<34	<31	34	36	36	36	Yes[1,2]	Yes[1,2]	Yes
L – Kilshanny Ave, Ashtonfield	<30	<30	34	40	40	40	Yes[1,2]	Yes[1,2]	Yes

1 – Abel operations inaudible/not measurable.
2 – Estimated contribution equals LA90 minus 10 dBA.

Table 8 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 9**.

Table 9 Compliance Noise Assessment – Sleep Disturbance

Location	Estimated Abel LA1(1minute) Contribution	Consent Conditions LA1(1minute)	Compliance
D – Black Hill School, Black Hill	<30	45	Yes
F – Black Hill Road, Black Hill	<33	45	Yes
G – Buchanan Road, Buchanan	35	45	Yes
I – Lord Howe Drive, Ashtonfield	35	45	Yes
L – Kilshanny Ave, Ashtonfield	35	47	Yes

Table 9 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 6 June 2014 and 25 June 2014 at each of the six (6) monitoring locations given in **Table 10**.

Table 10 Noise Logger and Noise Monitoring Locations

Location	Noise Logger Serial Number	Date of Logging
D – Black Hill School, Black Hill	ARL EL- 316 16-306-047	06/06/2014-16/06/2014
F – Black Hill Road, Black Hill	ARL EL- 316 16-203-531	18/06/2014-25/06/2014
G – Buchanan Road, Buchanan	ARL EL- 316 16-306-039	06/06/2014-18/06/2014
I – Lord Howe Drive, Ashtonfield	ARL EL- 316 16-207-042	06/06/2014-19/06/2014
L – Kilshanny Ave, Kilshanny	ARL EL- 316 16-203-509	18/06/2014-25/06/2014
J – Parish Drive, Thornton	ARL EL- 316 16-301-473	18/06/2014-25/06/2014

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices C1** to **C6**. A summary of the results of the unattended continuous noise monitoring is given in **Table 11**.

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 11 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	59	49	33	51
	Evening	53	41	33	43
	ENCM Daytime	57	47	33	49
	Night	46	39	31	42
F Lot 684 Black Hill Road, Black Hill	Daytime	71	60	45	60
	Evening	63	55	43	55
	ENCM Daytime	69	58	44	58
	Night	62	53	40	53
G 156 Buchanan Road, Buchanan	Daytime	48	44	34	44
	Evening	46	43	34	40
	ENCM Daytime	47	44	34	42
	Night	41	37	30	37
I 49 Magnetic Drive, Ashtonfield	Daytime	61	56	42	55
	Evening	50	49	40	48
	ENCM Daytime	58	54	41	53
	Night	47	45	37	47
L 17 Kilshanny Ave, Ashtonfield	Daytime	63	50	34	54
	Evening	59	45	35	49
	ENCM Daytime	61	48	35	52
	Night	48	43	32	47
J 220 Parish Drive, Thornton	Daytime	52	49	41	54
	Evening	52	48	41	52
	ENCM Daytime	52	49	41	53
	Night	47	44	32	49

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 L_{A90} Noise Levels

The long term ambient L_{A90} 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

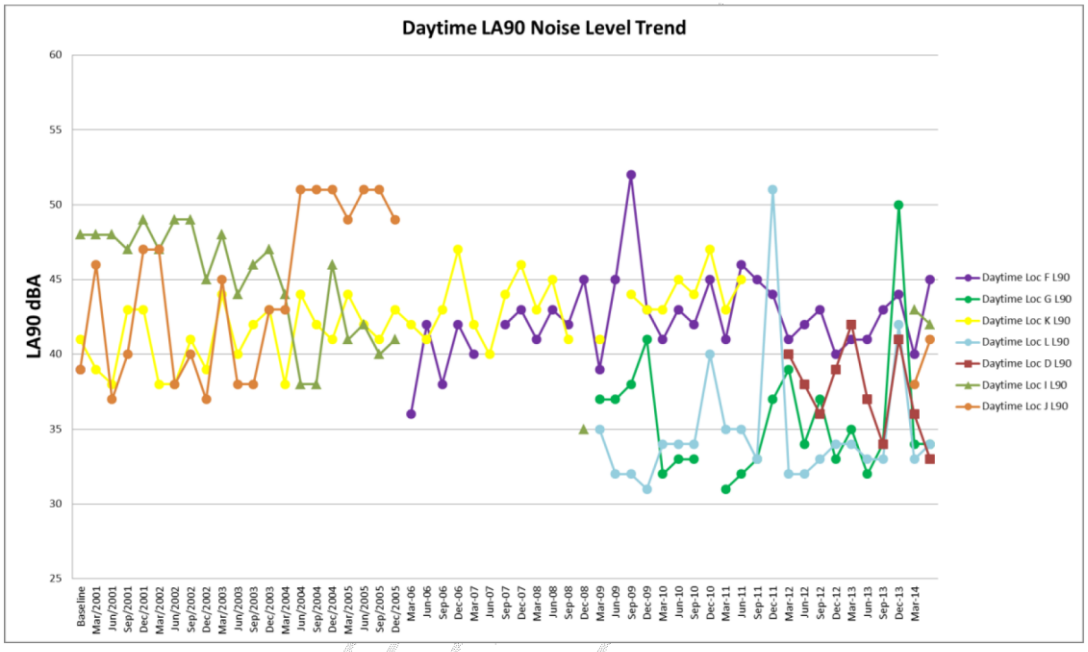


Figure 2 Long term Evening L_{A90} Noise Levels

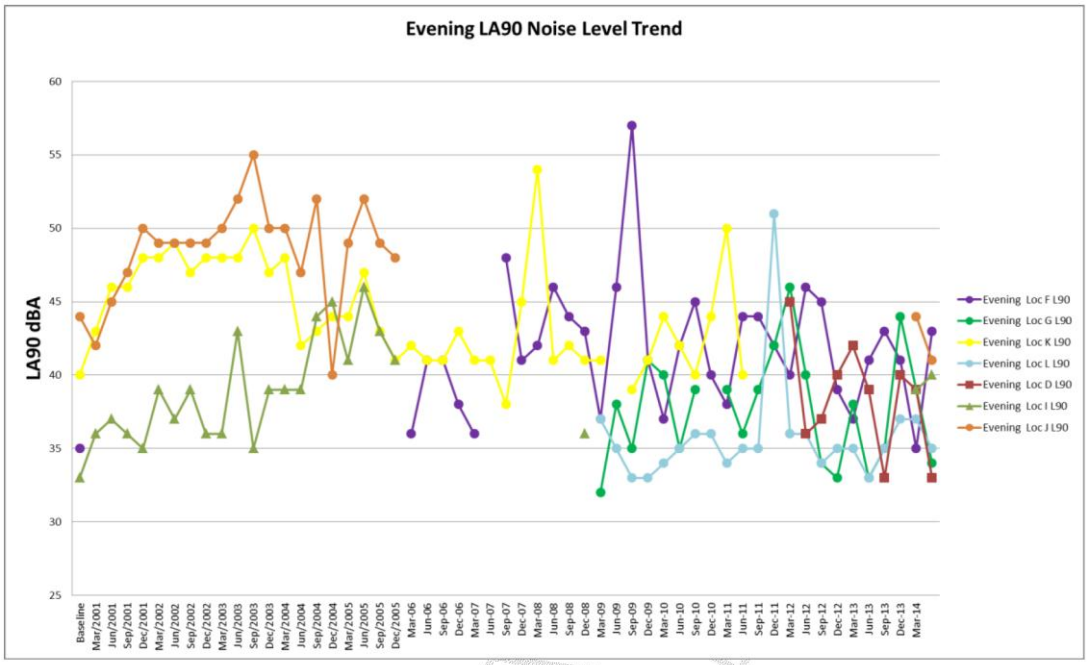
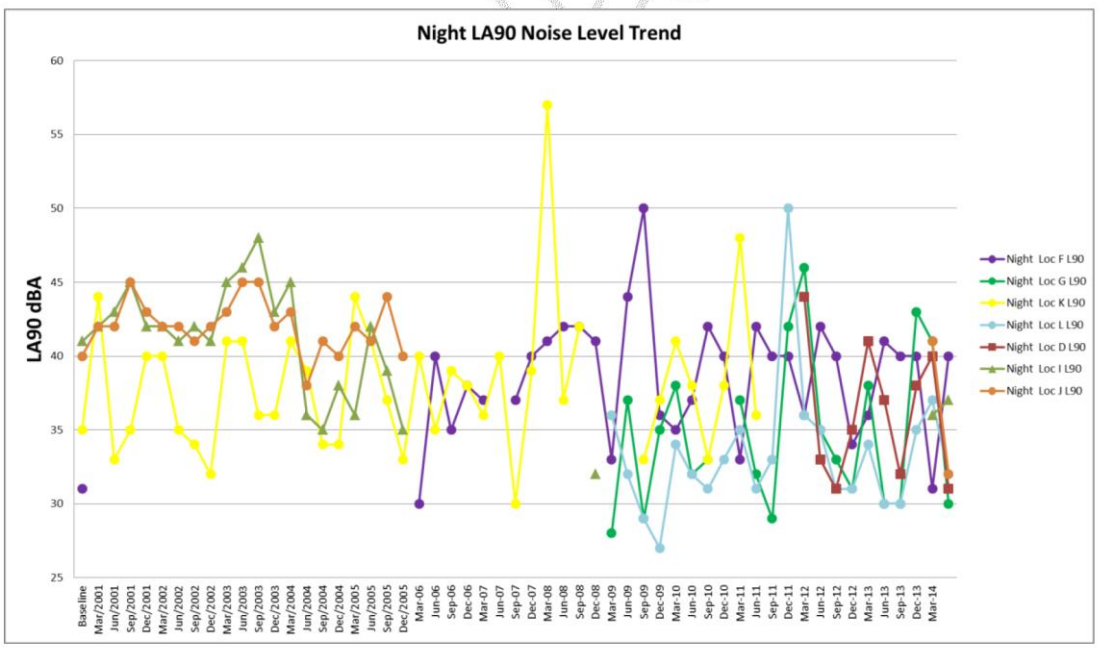


Figure 3 Long term Night-time L_{A90} Noise Levels



Baseline

The summary of results in **Table 12** shows the ambient L_{A90} noise levels recorded for the quarter ending June 2014 compared to the levels recorded during the baseline monitoring process (ie. Prior to commencement of mining operation at Donaldson).

Table 12 LA90 Results Comparison – Baseline

Monitoring Location	Period	Long term Night-time LA90 Noise Levels		Difference dB
		Baseline	June 2014	
D Black Hill School, Black Hill	Day	N/A[1]	33	N/A[1]
	Evening	N/A[1]	33	N/A[1]
	Night	N/A[1]	31	N/A[1]
F Lot 684 Black Hill Road, Black Hill	Day	39	45	6
	Evening	35	43	8
	Night	31	40	9
G 156 Buchanan Road, Buchanan	Day	N/A[1]	34	N/A[1]
	Evening	N/A[1]	34	N/A[1]
	Night	N/A[1]	30	N/A[1]
I 49 Magnetic Drive, Ashtonfield	Day	48	42	-6
	Evening	33	40	7
	Night	41	37	-4
L 17 Kilshanny Ave, Ashtonfield	Day	N/A[1]	34	N/A[1]
	Evening	N/A[1]	35	N/A[1]
	Night	N/A[1]	32	N/A[1]
J 220 Parish Drive, Thornton	Day	39	41	2
	Evening	44	41	-3
	Night	40	32	-8

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.

1. No data was available during baseline measurements, no comparisons can be made.

Previous Quarter (March 2014)

The summary of results in **Table 13** shows the ambient L_{A90} noise levels recorded for current monitoring period compared with the previous monitoring period.

Table 13 LA90 Results Comparison – Previous Quarter (March 2014)

Monitoring Location	Period	Long term Night-time L_{A90} Noise Levels		Difference dB
		March 2014	June 2014	
D Black Hill School, Black Hill	Day	36	33	-3
	Evening	39	33	-6
	Night	40	31	-9
F Lot 684 Black Hill Road, Black Hill	Day	40	45	5
	Evening	35	43	8
	Night	31	40	9
G 156 Buchanan Road, Buchanan	Day	34	34	0
	Evening	39	34	-5
	Night	41	30	-11
I 49 Magnetic Drive, Ashtonfield	Day	43	42	-1
	Evening	39	40	1
	Night	36	37	1
L 17 Kilshanny Ave, Ashtonfield	Day	33	34	1
	Evening	37	35	-2
	Night	37	32	-5
J 220 Parish Drive, Thornton	Day	38	41	3
	Evening	44	41	-3
	Night	41	32	-9

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.

Coinciding Period Last Year (June 2013)

The summary of results in **Table 14** shows the ambient L_{A90} noise levels recorded for current monitoring period compared with the coinciding monitoring period last year.

Table 14 LA90 Results Comparison – Coinciding Period Last Year (June 2013)

Monitoring Location	Period	Long term Night-time L_{A90} Noise Levels		Difference dB
		June 2013	June 2014	
D Black Hill School, Black Hill	Day	37	33	-4
	Evening	39	33	-6
	Night	37	31	-6
F Lot 684 Black Hill Road, Black Hill	Day	41	45	4
	Evening	41	43	2
	Night	41	40	-1
G 156 Buchanan Road, Buchanan	Day	32	34	2
	Evening	33	34	1
	Night	30	30	0
I 49 Magnetic Drive, Ashtonfield	Day	N/A[1]	42	N/A[1]
	Evening	N/A[1]	40	N/A[1]
	Night	N/A[1]	37	N/A[1]
L 17 Kilshanny Ave, Ashtonfield	Day	33	34	1
	Evening	33	35	2
	Night	30	32	2
J 220 Parish Drive, Thornton	Day	N/A[1]	41	N/A[1]
	Evening	N/A[1]	41	N/A[1]
	Night	N/A[1]	32	N/A[1]

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.

1. No data was recorded at Location I and J during the quarter, no comparisons 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

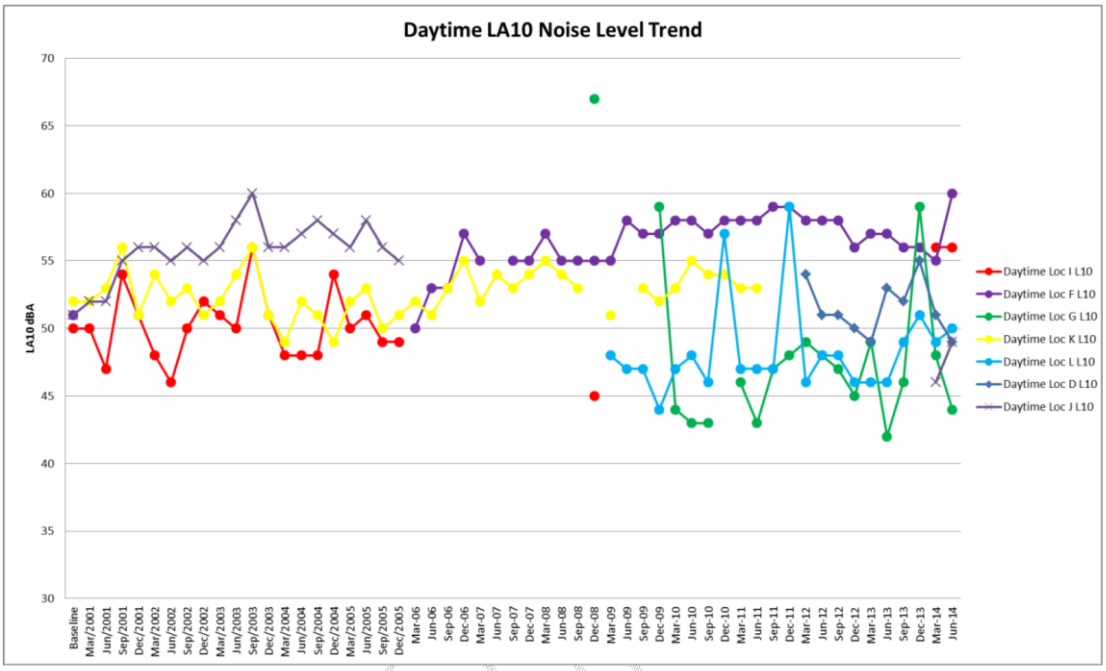


Figure 5 Long term Evening L_{A10} Noise Levels

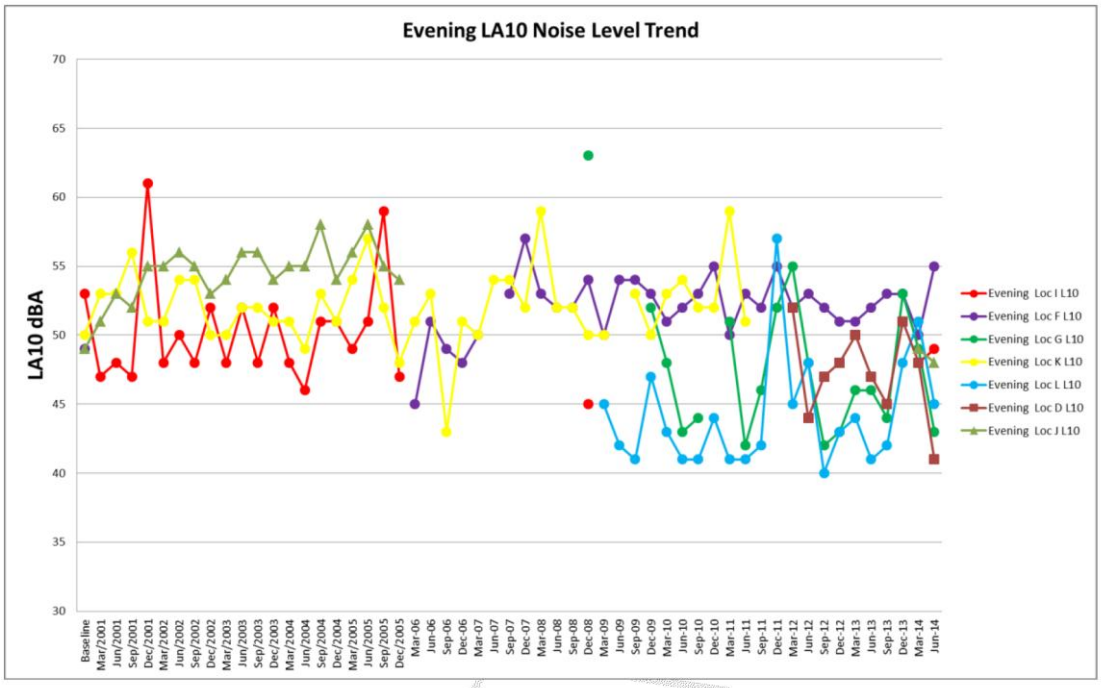
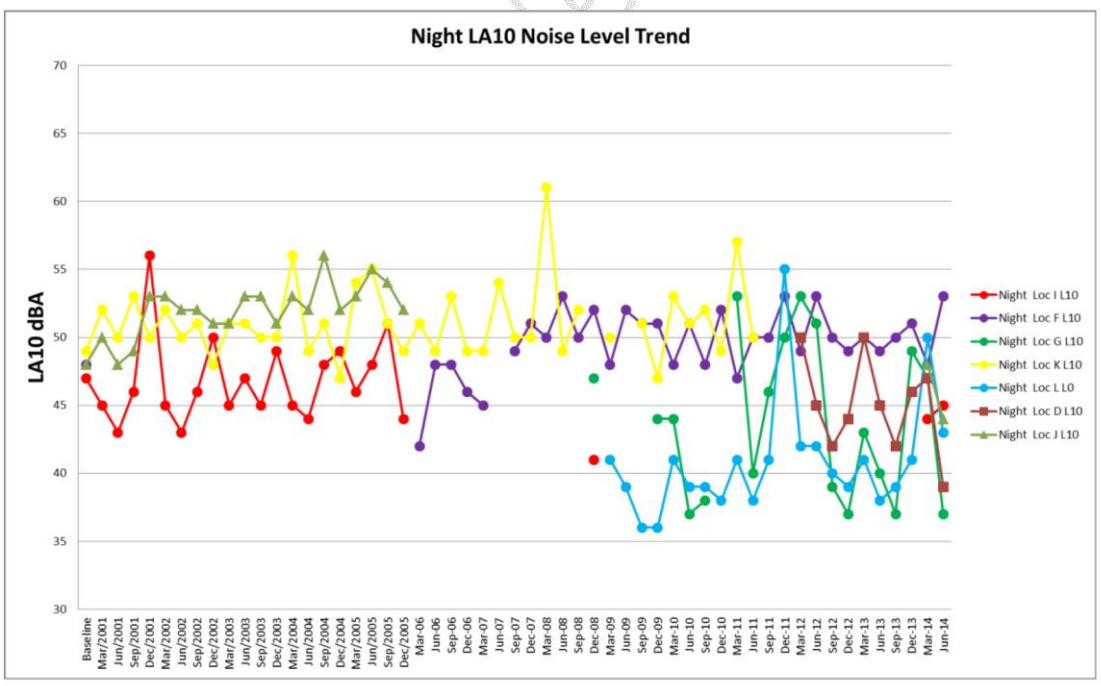


Figure 6 Long term Night-time L_{A10} Noise Levels



Baseline

The summary of results in **Table 15** shows the ambient L_{A10} noise levels recorded for the quarter ending June 2014 compared to the levels recorded during the baseline monitoring process.

Table 15 LA10 Results Comparison – Baseline

Monitoring Location	Period	Long term Night-time LA10 Noise Levels		Difference dB
		Baseline	June 2014	
D Black Hill School, Black Hill	Day	N/A[1]	49	N/A[1]
	Evening	N/A[1]	41	N/A[1]
	Night	N/A[1]	39	N/A[1]
F Lot 684 Black Hill Road, Black Hill	Day	51	60	9
	Evening	49	55	6
	Night	48	53	5
G 156 Buchanan Road, Buchanan	Day	N/A[1]	44	N/A[1]
	Evening	N/A[1]	43	N/A[1]
	Night	N/A[1]	37	N/A[1]
I 49 Magnetic Drive, Ashtonfield	Day	50	56	6
	Evening	53	49	-4
	Night	47	45	-2
L 17 Kilshanny Ave, Ashtonfield	Day	N/A[1]	50	N/A[1]
	Evening	N/A[1]	45	N/A[1]
	Night	N/A[1]	43	N/A[1]
J 220 Parish Drive, Thornton	Day	51	49	-2
	Evening	49	48	-1
	Night	48	44	-4

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.

1. No data was available during baseline measurements, no comparisons can be made.

Previous Quarter (March 2014)

The summary of results in **Table 16** shows the ambient L_{A10} noise levels recorded for current monitoring period compared with the previous monitoring period.

Table 16 LA10 Results Comparison – Previous Quarter (March 2014)

Monitoring Location	Period	Long term Night-time LA10 Noise Levels		Difference dB
		March 2014	June 2014	
D Black Hill School, Black Hill	Day	51	49	-2
	Evening	48	41	-7
	Night	47	39	-8
F Lot 684 Black Hill Road, Black Hill	Day	55	60	5
	Evening	50	55	5
	Night	48	53	5
G 156 Buchanan Road, Buchanan	Day	48	44	-4
	Evening	49	43	-6
	Night	47	37	-10
I 49 Magnetic Drive, Ashtonfield	Day	56	56	0
	Evening	48	49	1
	Night	44	45	1
L 17 Kilshanny Ave, Ashtonfield	Day	49	50	1
	Evening	51	45	-6
	Night	50	43	-7
J 220 Parish Drive, Thornton	Day	46	49	3
	Evening	49	48	-1
	Night	48	44	-4

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.

Coinciding Period Last Year (June 2013)

The summary of results in **Table 17** shows the ambient L_{A10} noise levels recorded for current monitoring period compared with the coinciding monitoring period last year.

Table 17 LA10 Results Comparison – Coinciding Period Last Year (June 2013)

Monitoring Location	Period	Long term Night-time L_{A10} Noise Levels		Difference dB
		June 2013	June 2014	
D Black Hill School, Black Hill	Day	53	49	-4
	Evening	47	41	-6
	Night	45	39	-6
F Lot 684 Black Hill Road, Black Hill	Day	57	60	3
	Evening	52	55	3
	Night	49	53	4
G 156 Buchanan Road, Buchanan	Day	42	44	2
	Evening	46	43	-3
	Night	40	37	-3
I 49 Magnetic Drive, Ashtonfield	Day	N/A[1]	56	N/A[1]
	Evening	N/A[1]	49	N/A[1]
	Night	N/A[1]	45	N/A[1]
L 17 Kilshanny Ave, Ashtonfield	Day	46	50	4
	Evening	41	45	4
	Night	38	43	5
J 220 Parish Drive, Thornton	Day	N/A[1]	49	N/A[1]
	Evening	N/A[1]	48	N/A[1]
	Night	N/A[1]	44	N/A[1]

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.

1. No data was recorded at Location I and J during the quarter, no comparisons 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 train loading times during the noise monitoring period are presented in **Table 18**. Only 6 trains during the day time were recorded to have passed the monitoring location J. No trains were loaded during the evening and night-time period during the noise monitoring at Location J.

Table 18 Coal Train Loading Operations Log

Date	Coal Train Loading Time
18/06/2014	Nil Trains
19/06/2014	BF 194 : 10.05 am - 14.00 pm BF 224 : 14.10 pm - 17.10 pm
20/06/2014	DS 182 : 09.00 am - 11.45 am DS 948 : 14.00 pm - 16.55 pm
21/06/2014	DS 974 : 09.40 am - 12.20 pm DS 926 : 12.30 pm - 15.02 pm
22/06/2014	Nil Trains
23/06/2014	Nil Trains
24/06/2014	Nil Trains
25/06/2014	Nil Trains

The measured $L_{Aeq(period)}$ noise level for each period from rail traffic at Location J are presented in **Table 19**.

Table 19 Rail Noise Impact Monitoring Results

Location	Date	Period	Measured LAeq(Period)	Criteria LAeq(Period)	Compliance
Location J	19/06/2014	Day	48	55	Yes
	20/06/2014		49		Yes
	21/06/2014		45		Yes
	N/A	Evening	n/a[1]	45	n/a[1]
	N/A	Night	n/a[1]	40	n/a[1]

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.

1. No trains were loaded during this time period.

The results contained in **Table 19** show that compliance with the rail noise criteria was achieved during the June 2014 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.

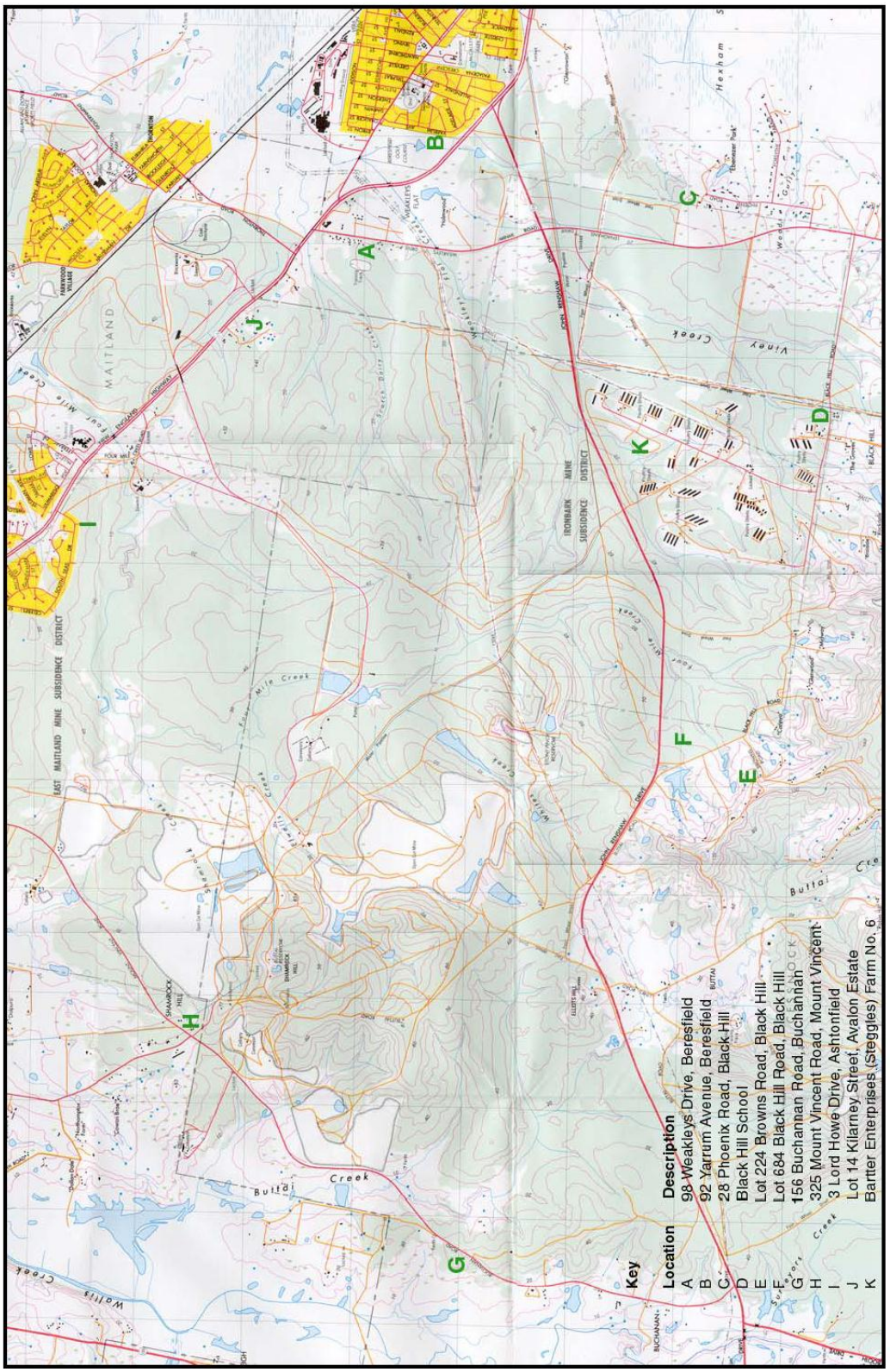
The results of the operator-attended noise measurements conducted at five (5) focus locations surrounding the mine site are included in **Table 2** to **Table 7**.

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 G, I and L during the night-time monitoring period. Abel portal operations 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 (June 2014), the baseline monitoring period, the last monitoring period (March 2014), and the coinciding monitoring period from last year (June 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

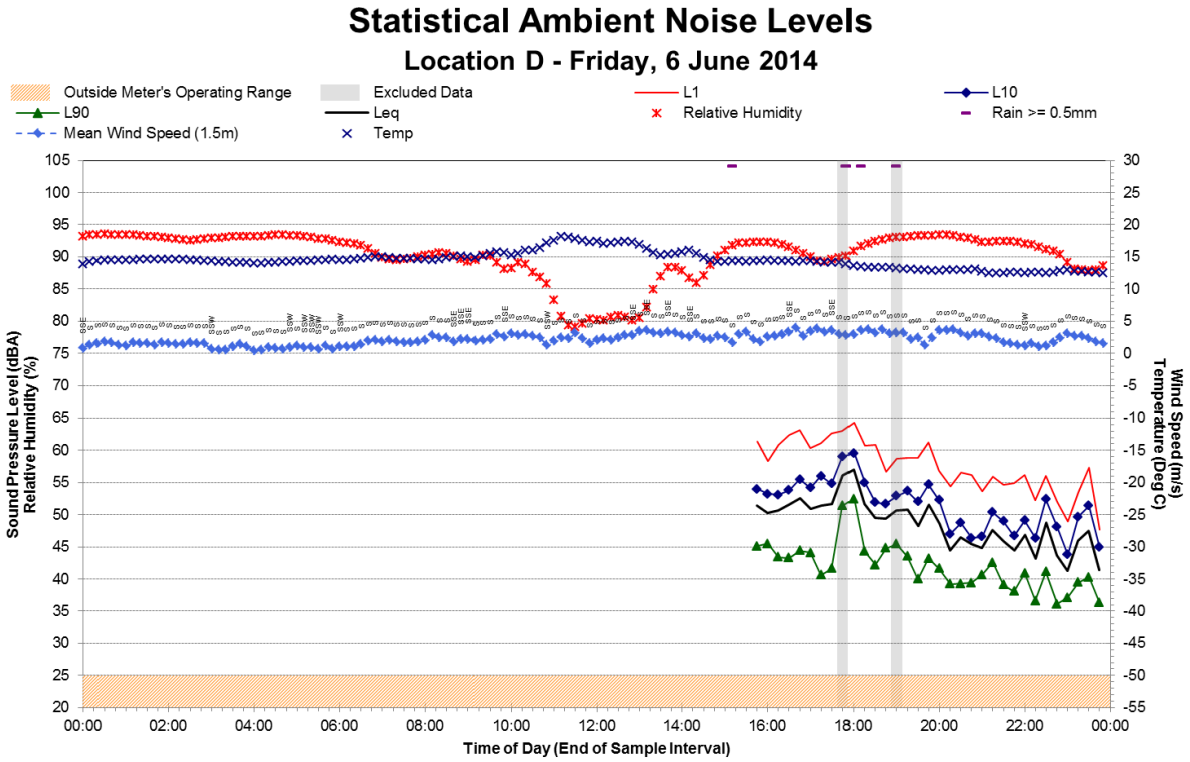
Report 630.01053
Page 1 of 1

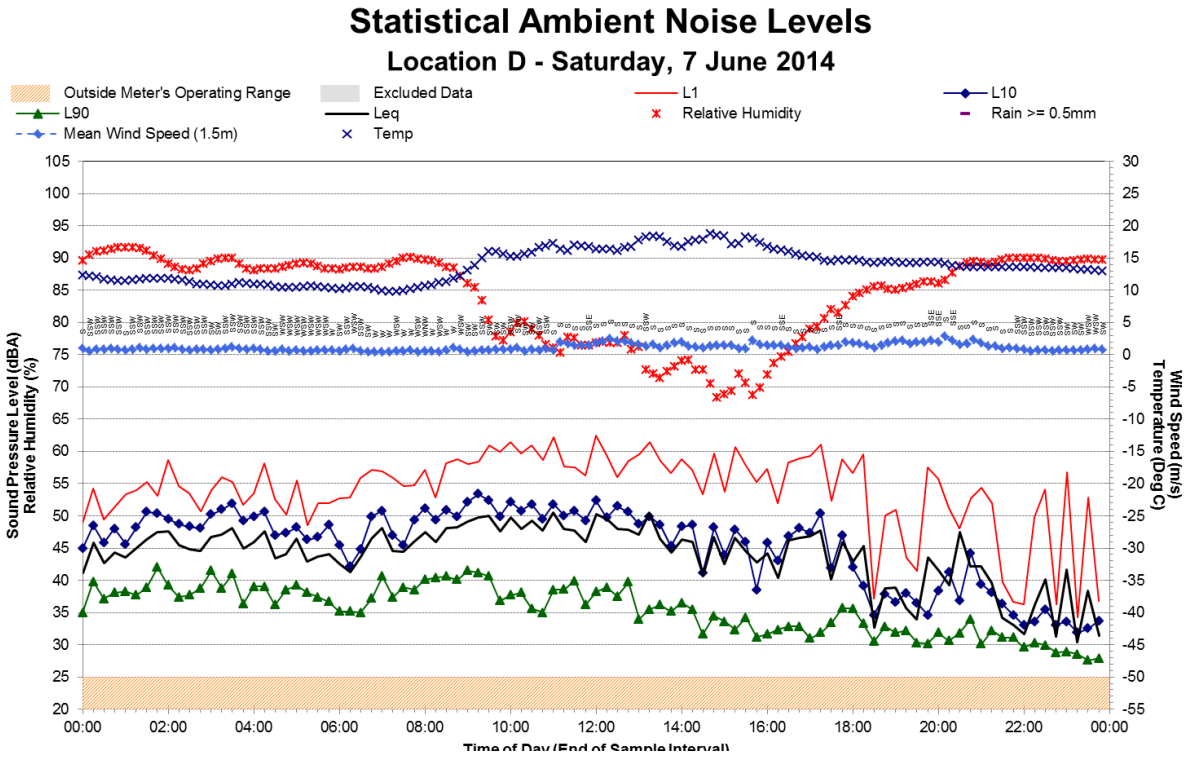
Equipment Register

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 C2

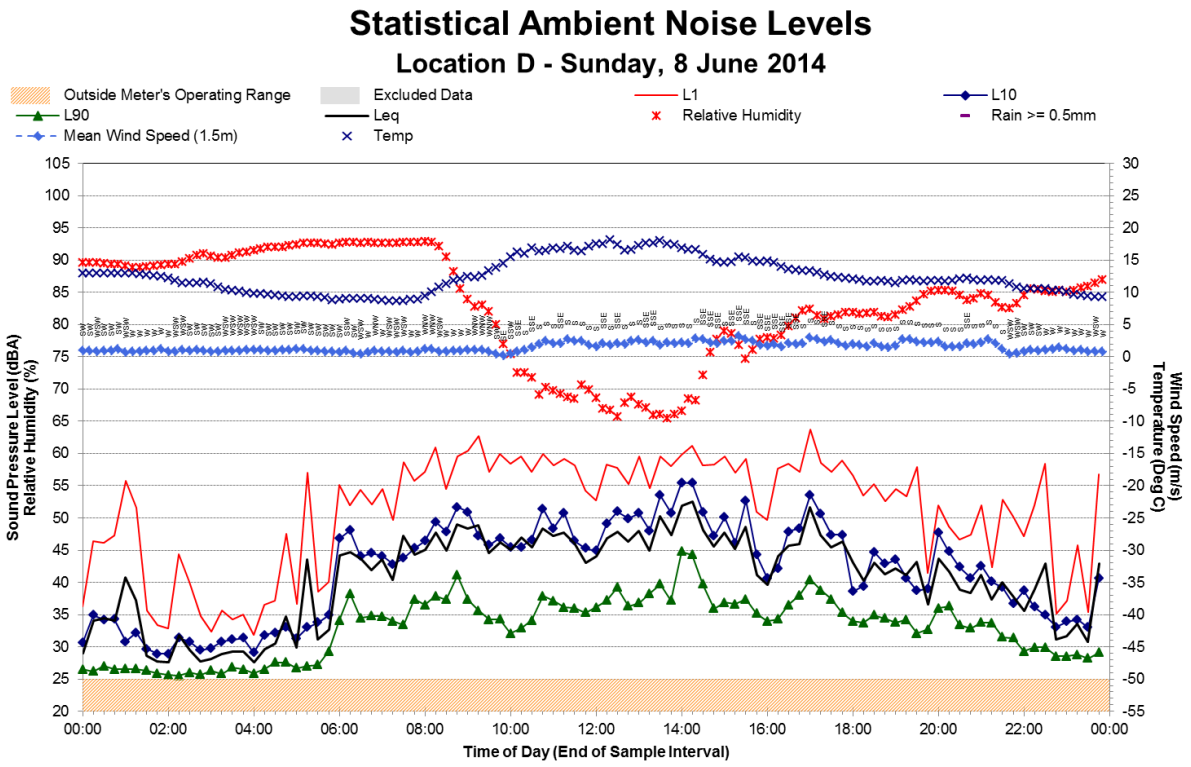
Statistical Ambient Noise Levels – Location F Page 1 of 10

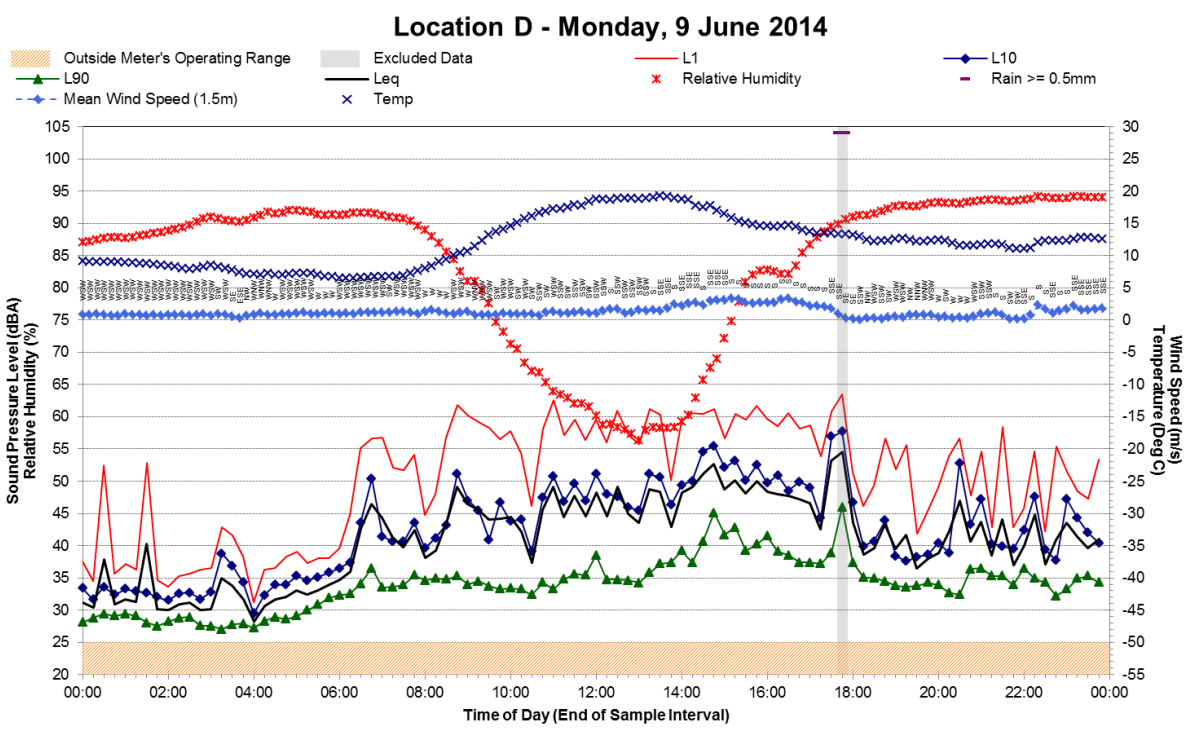




Appendix C2

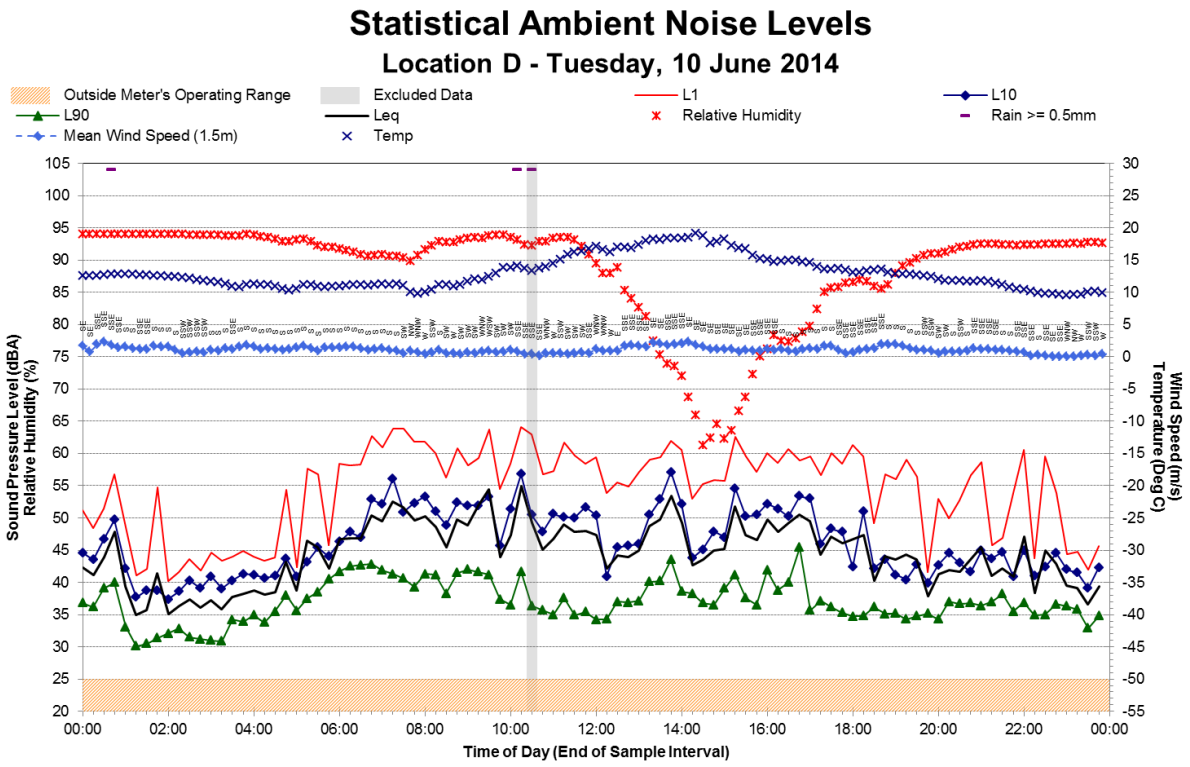
Statistical Ambient Noise Levels – Location F Page 2 of 10

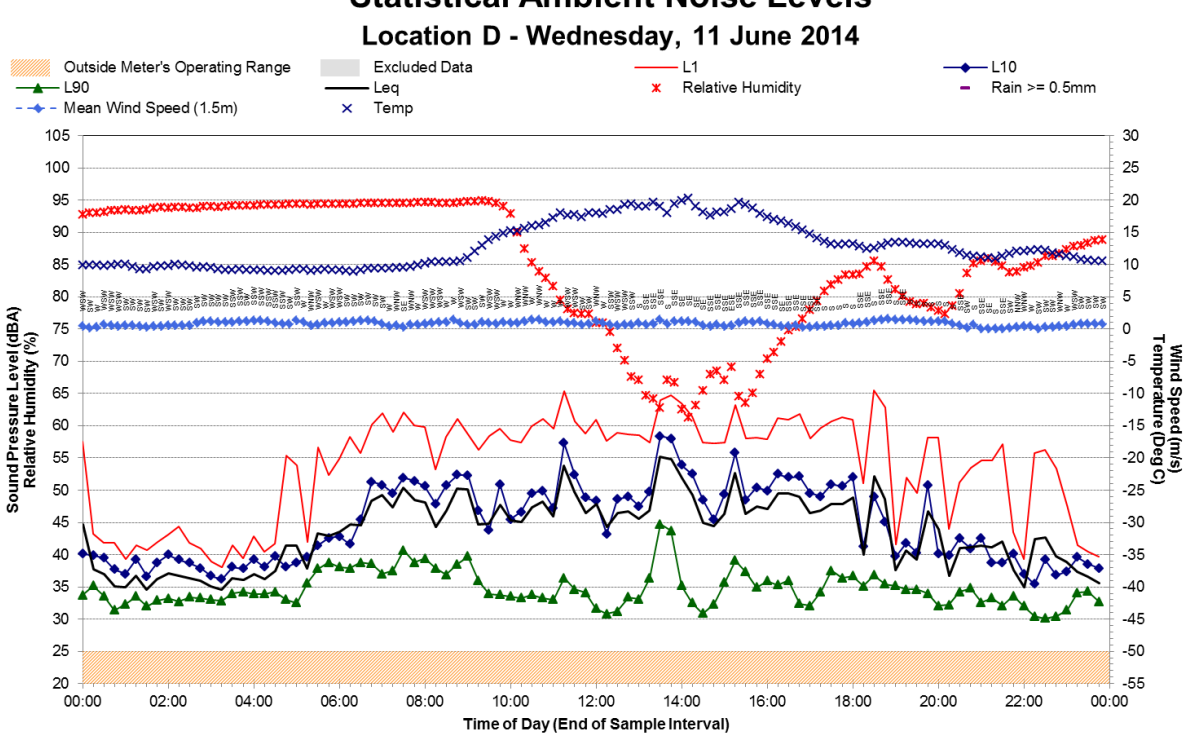




Appendix C2

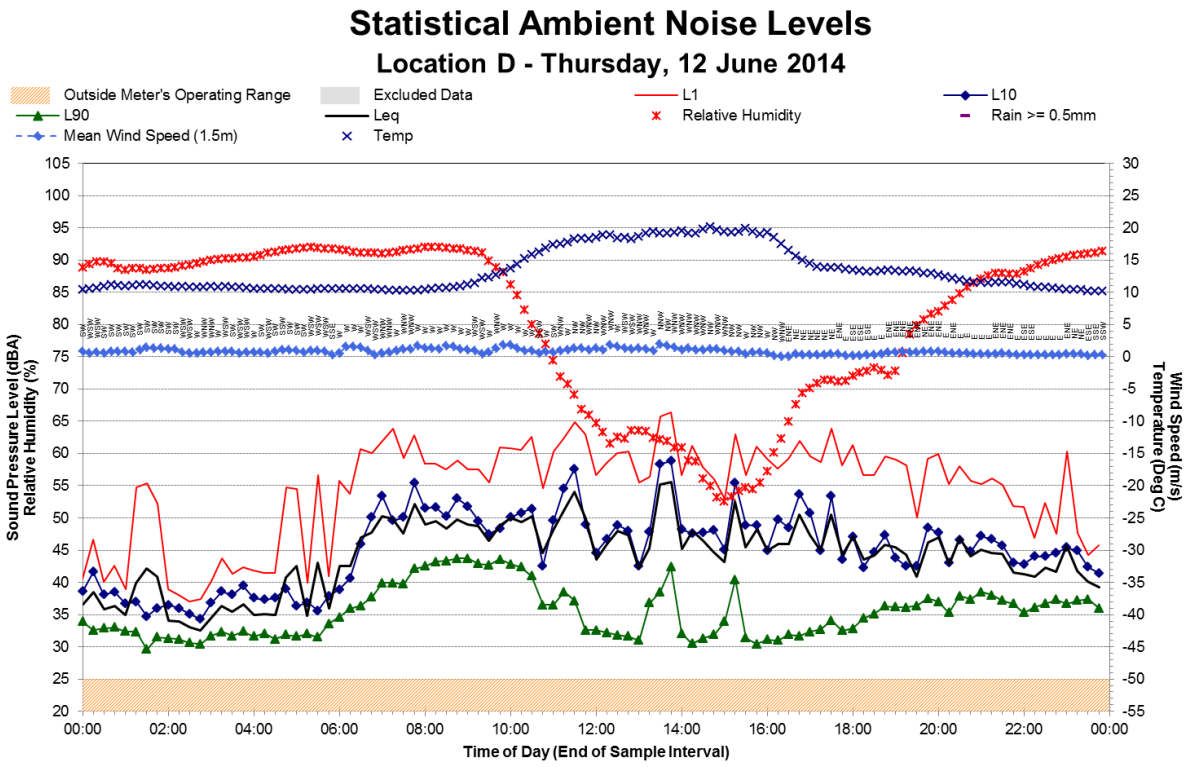
Statistical Ambient Noise Levels – Location F Page 3 of 10

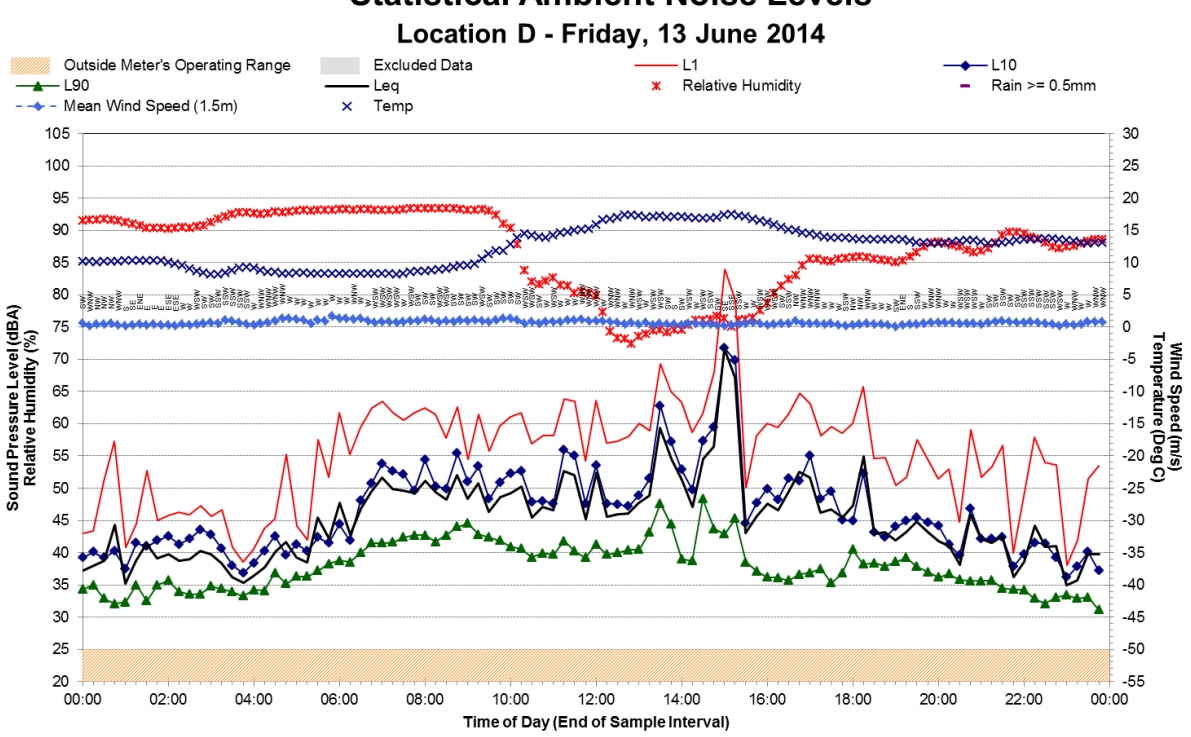




Appendix C2

Statistical Ambient Noise Levels – Location F Page 4 of 10



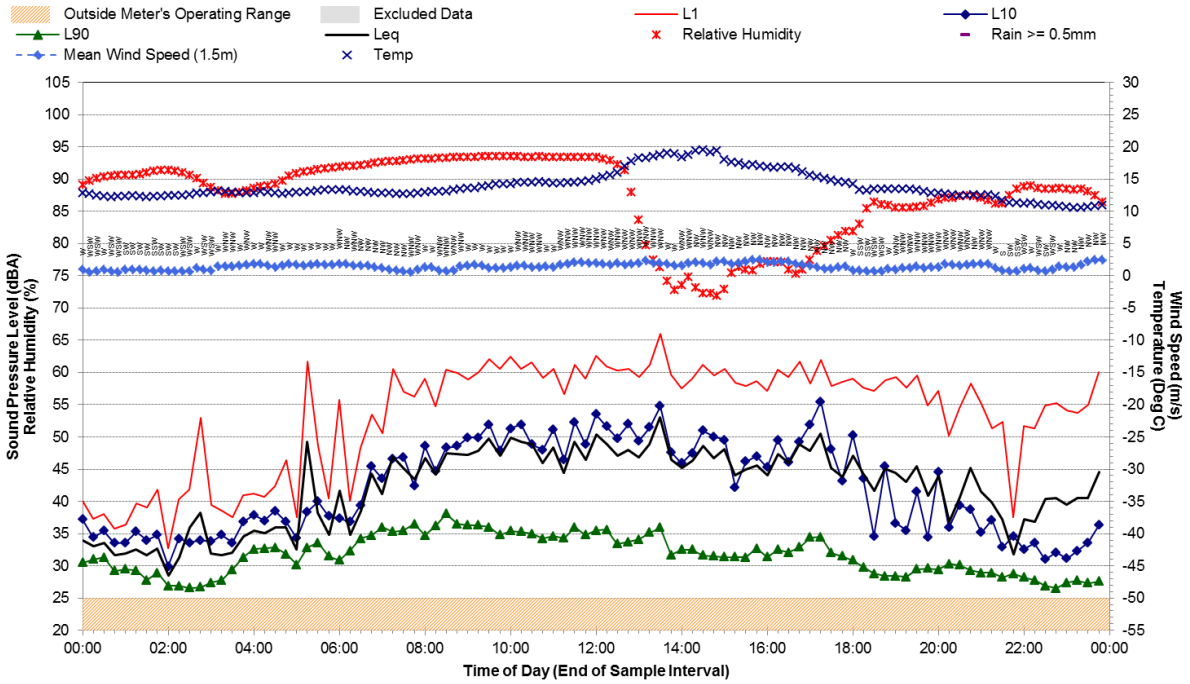


Appendix C2

Statistical Ambient Noise Levels – Location F Page 5 of 10

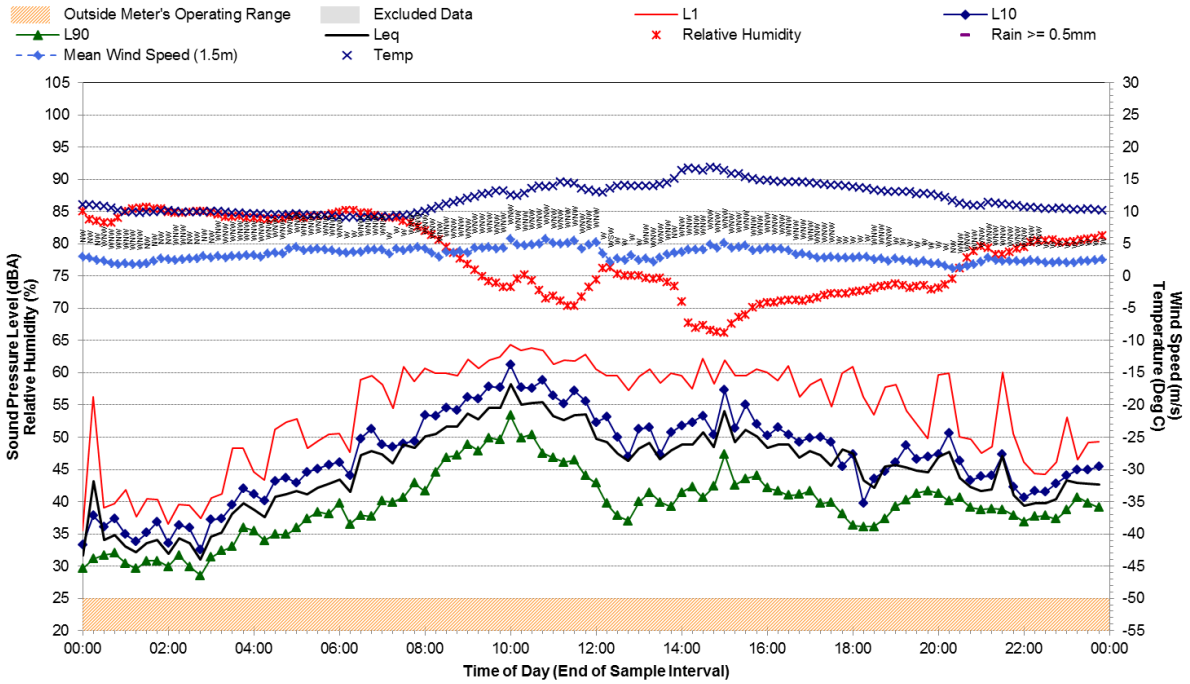
Statistical Ambient Noise Levels

Location D - Saturday, 14 June 2014



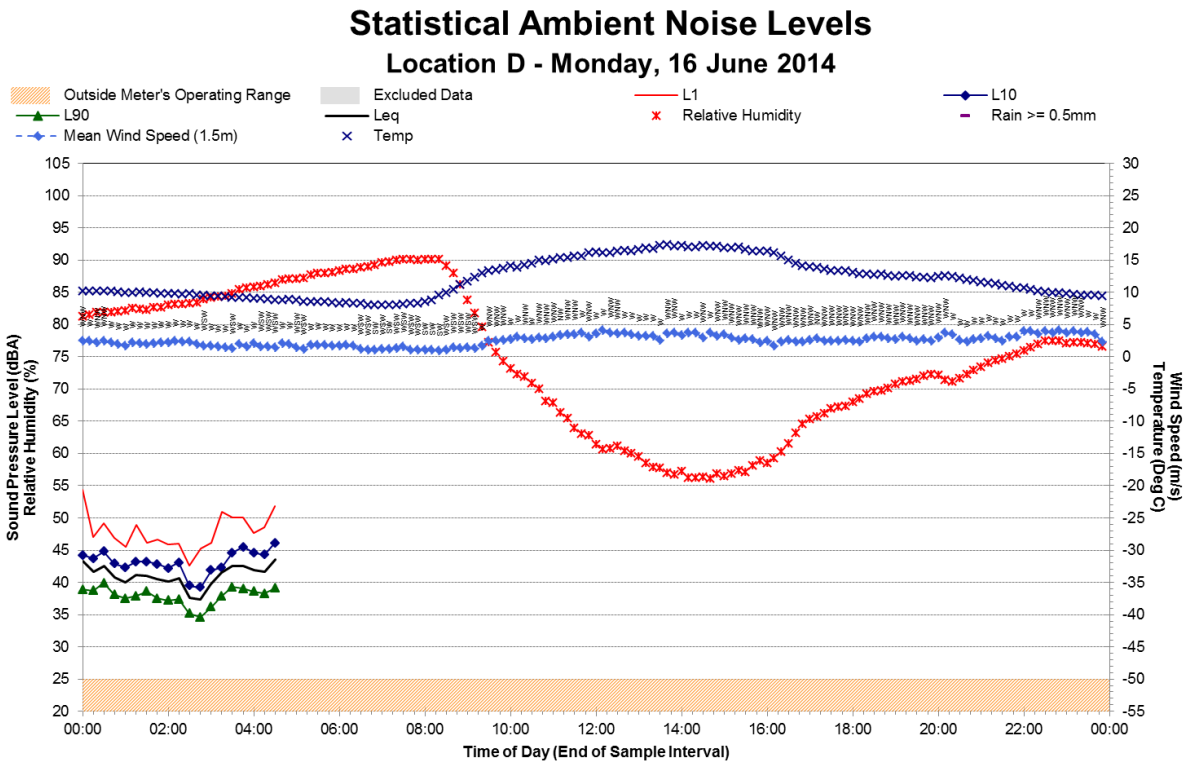
Statistical Ambient Noise Levels

Location D - Sunday, 15 June 2014



Appendix C2

Statistical Ambient Noise Levels – Location F Page 6 of 10

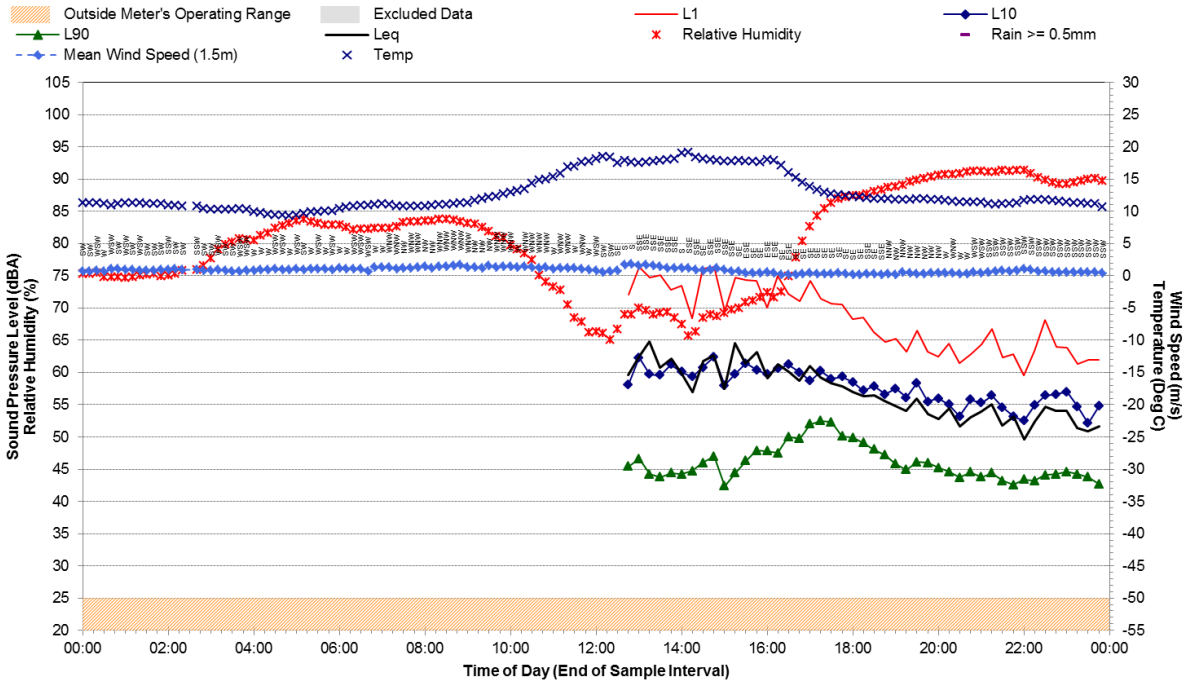


Appendix C2

Statistical Ambient Noise Levels – Location F Page 7 of 10

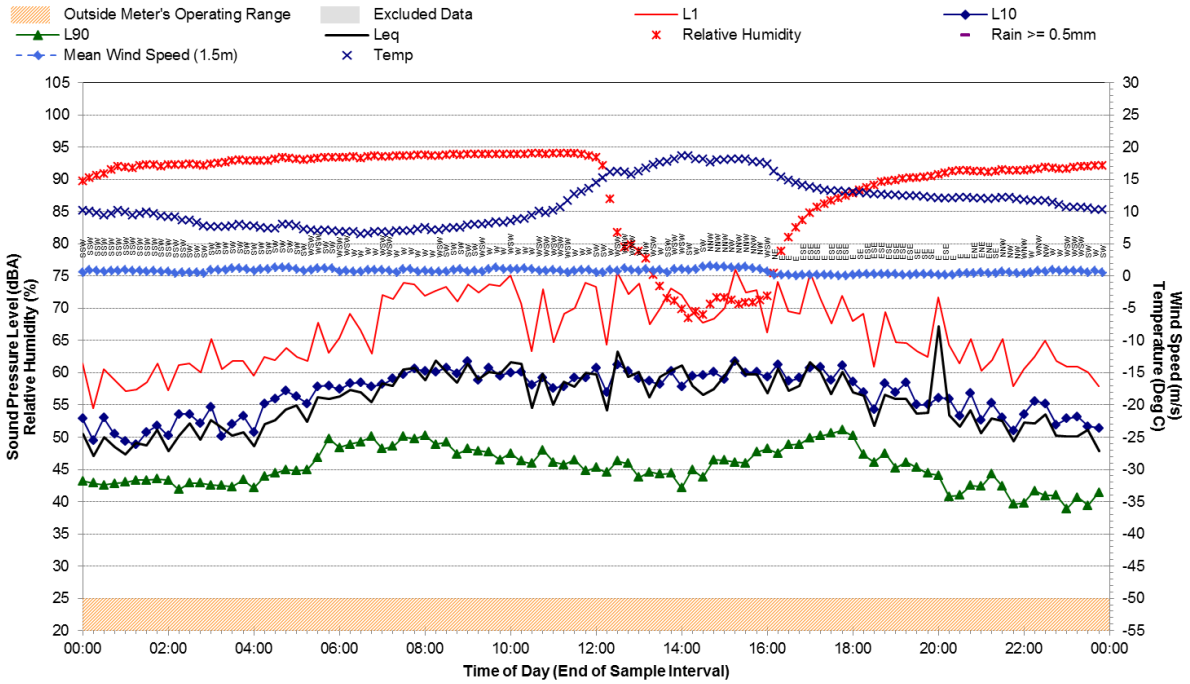
Statistical Ambient Noise Levels

Location F - Wednesday, 18 June 2014



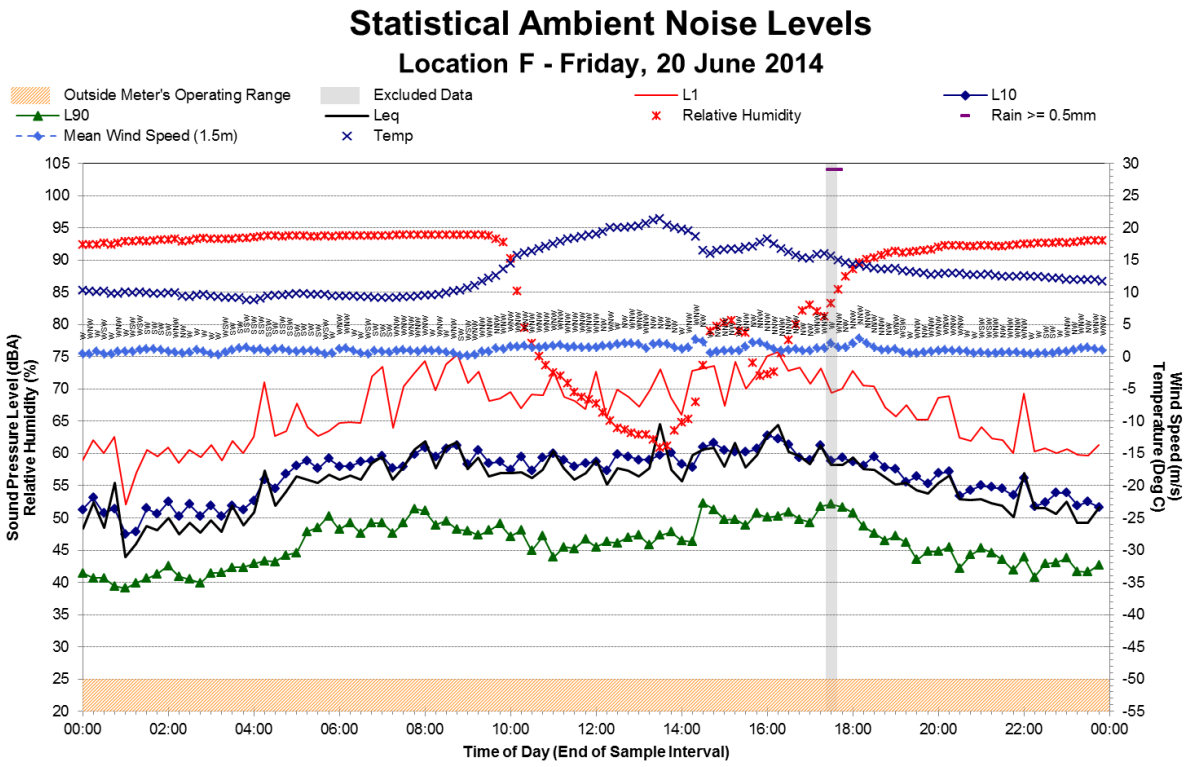
Statistical Ambient Noise Levels

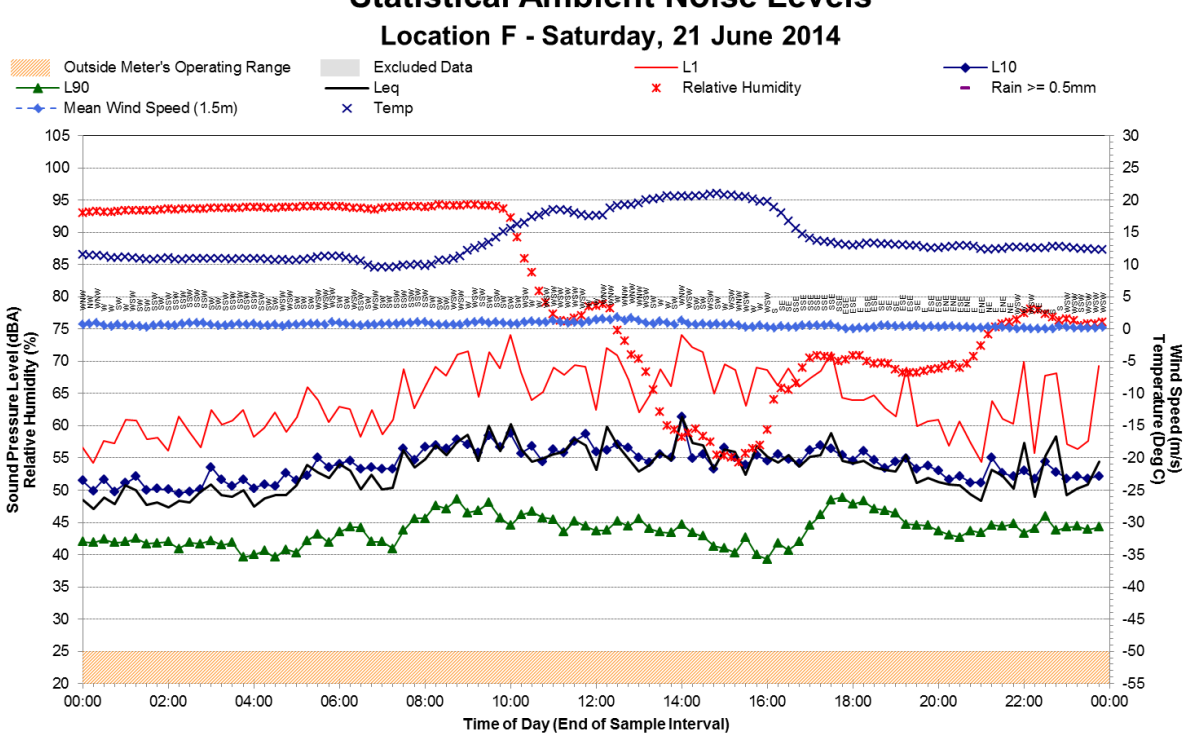
Location F - Thursday, 19 June 2014



Appendix C2

Statistical Ambient Noise Levels – Location F Page 8 of 10



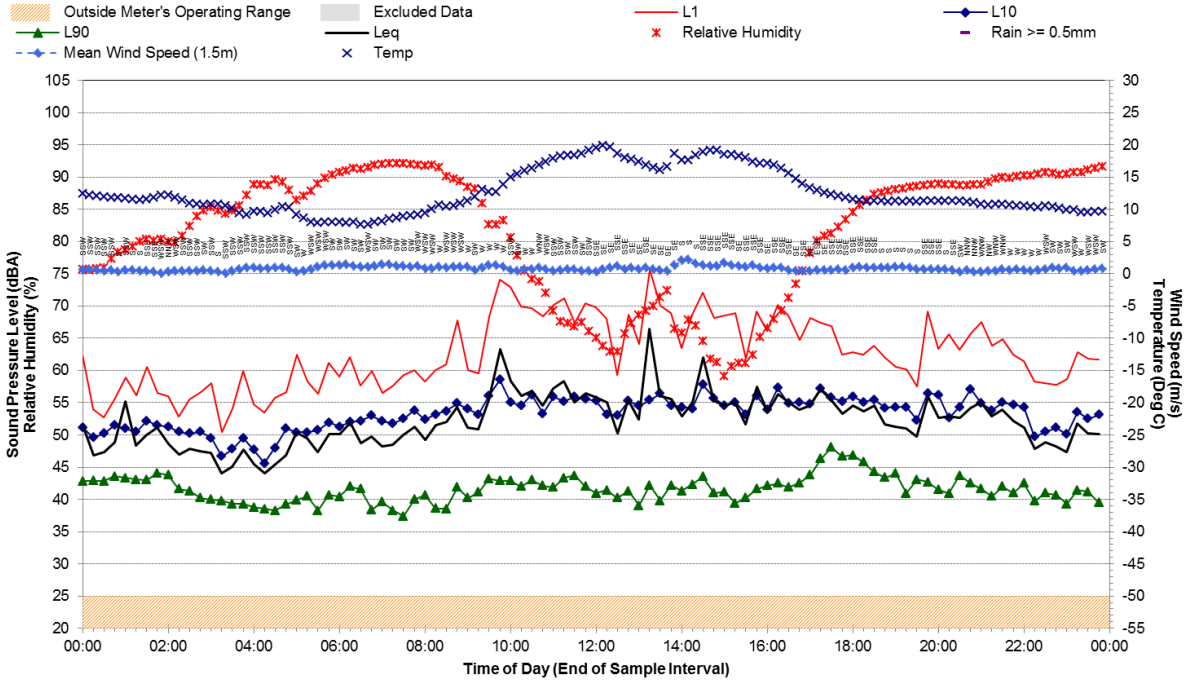


Appendix C2

Statistical Ambient Noise Levels – Location F Page 9 of 10

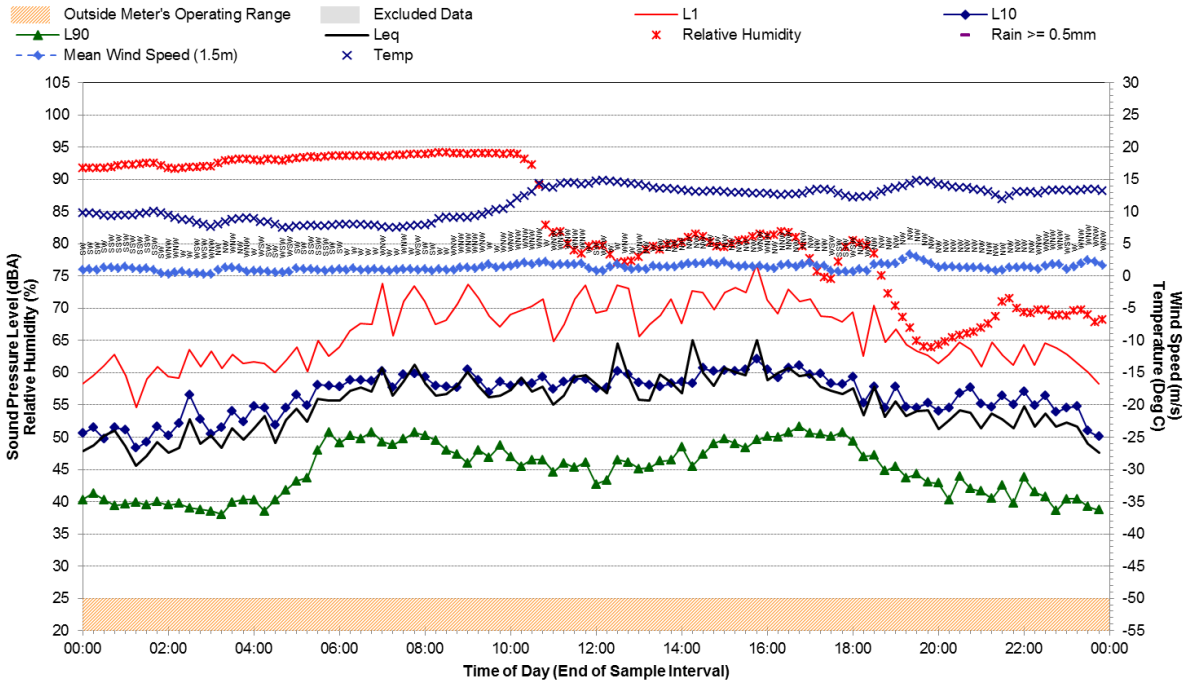
Statistical Ambient Noise Levels

Location F - Sunday, 22 June 2014



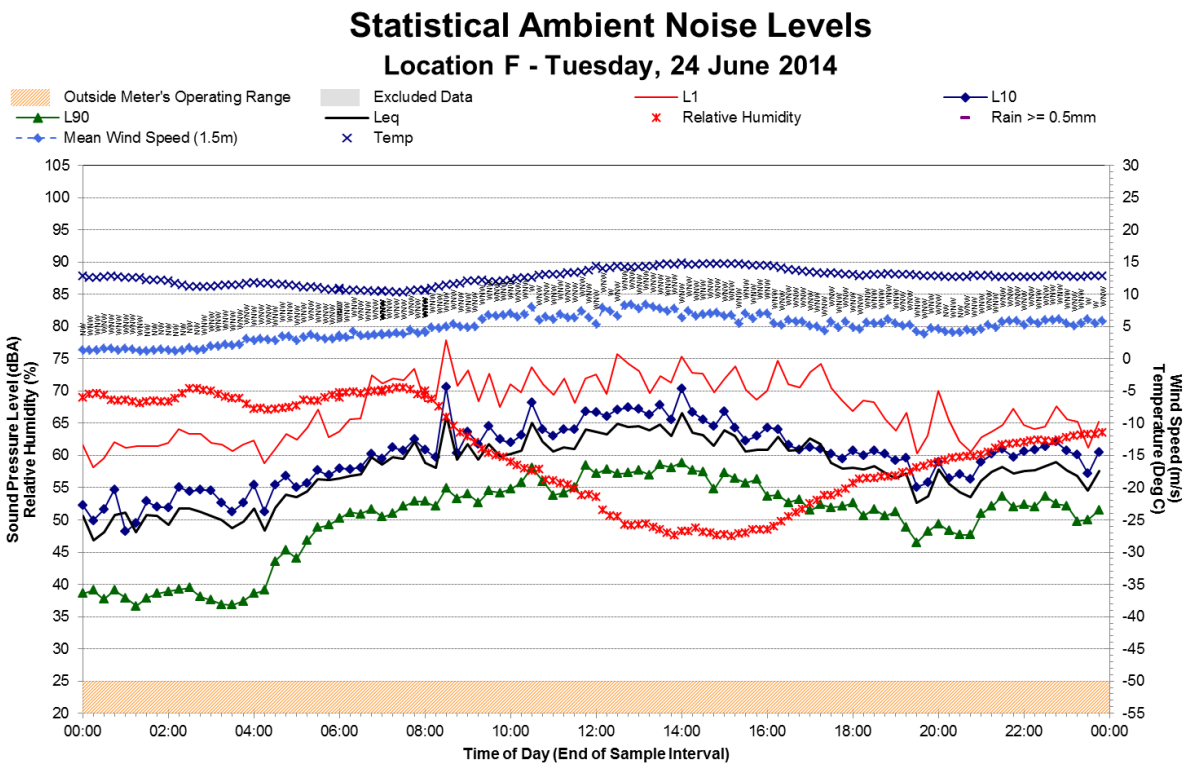
Statistical Ambient Noise Levels

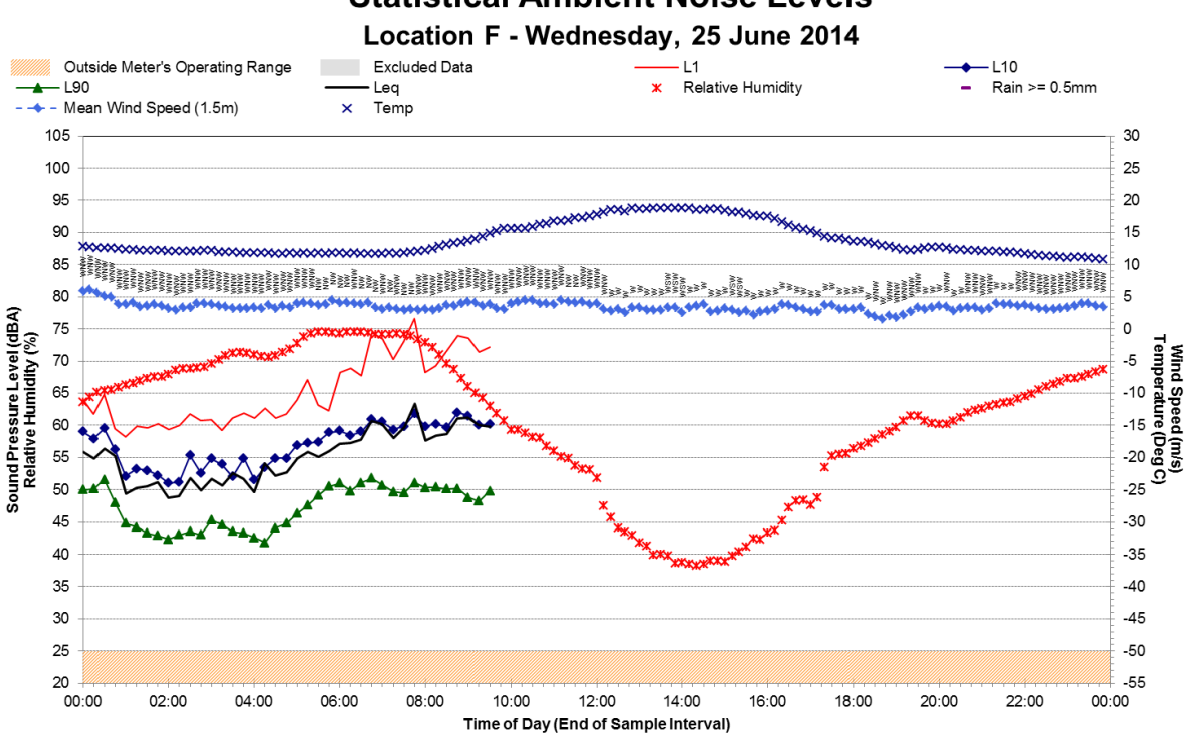
Location F - Monday, 23 June 2014



Appendix C2

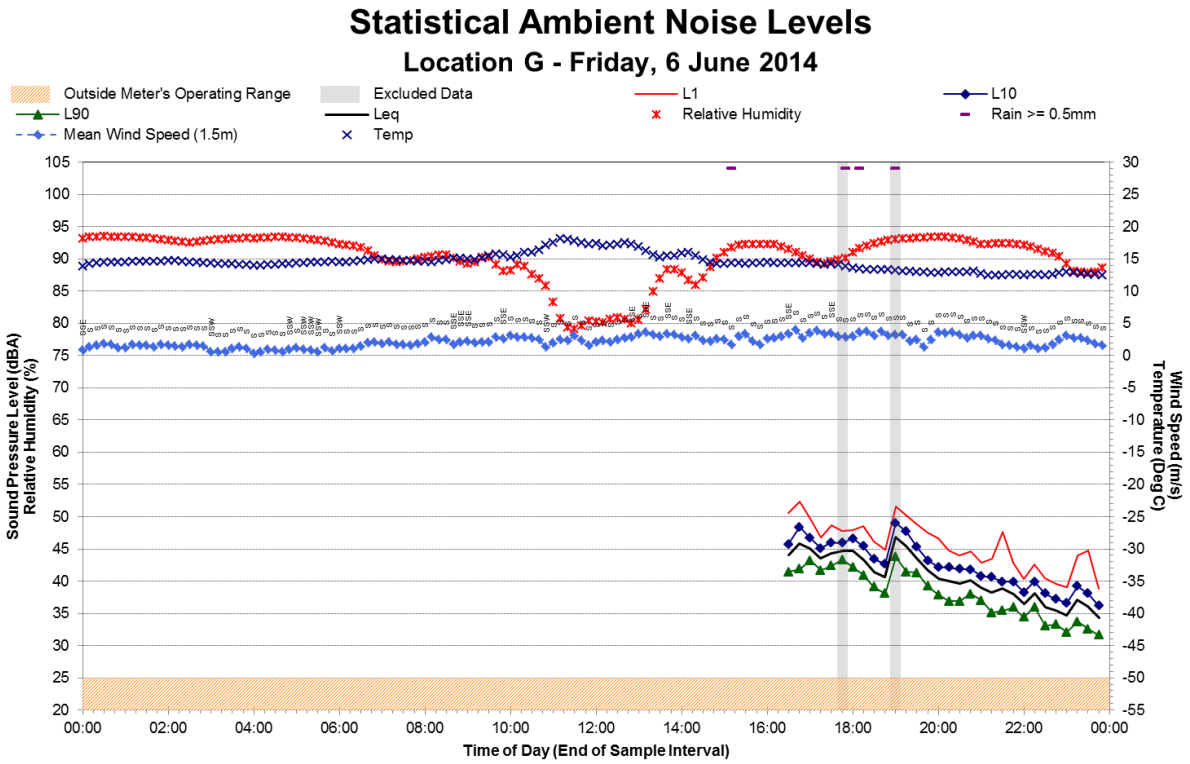
Statistical Ambient Noise Levels – Location F Page 10 of 10

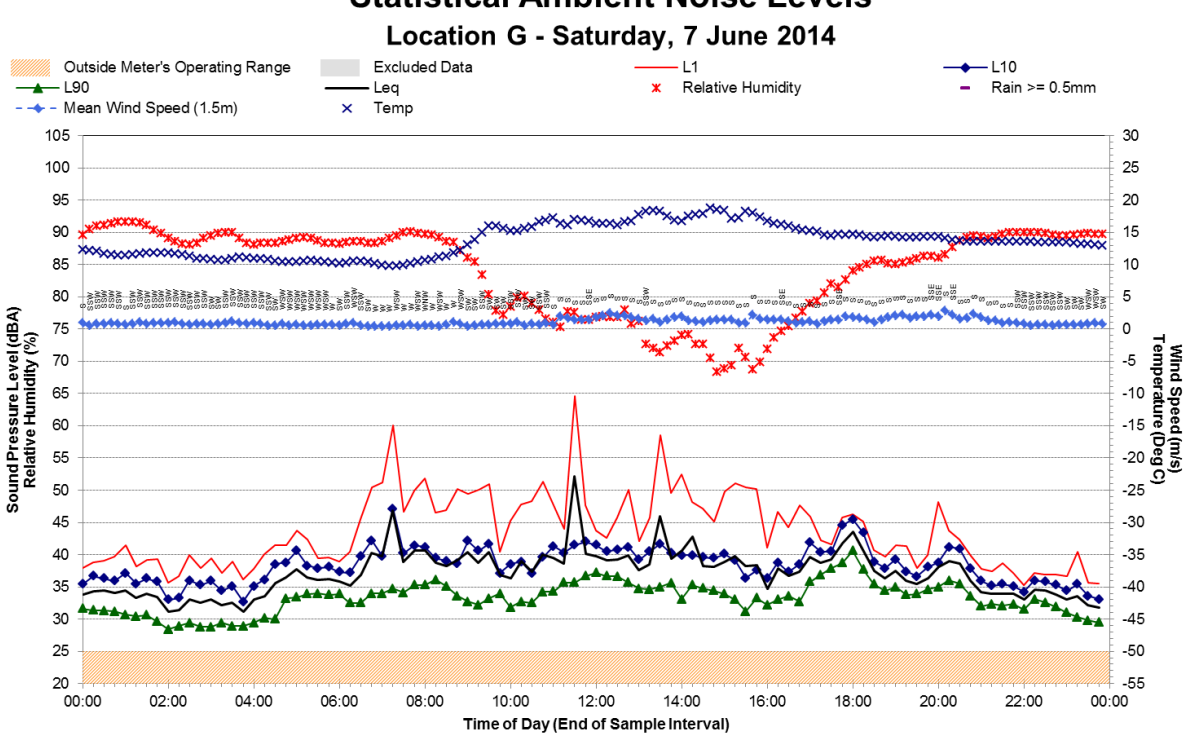




Appendix C3

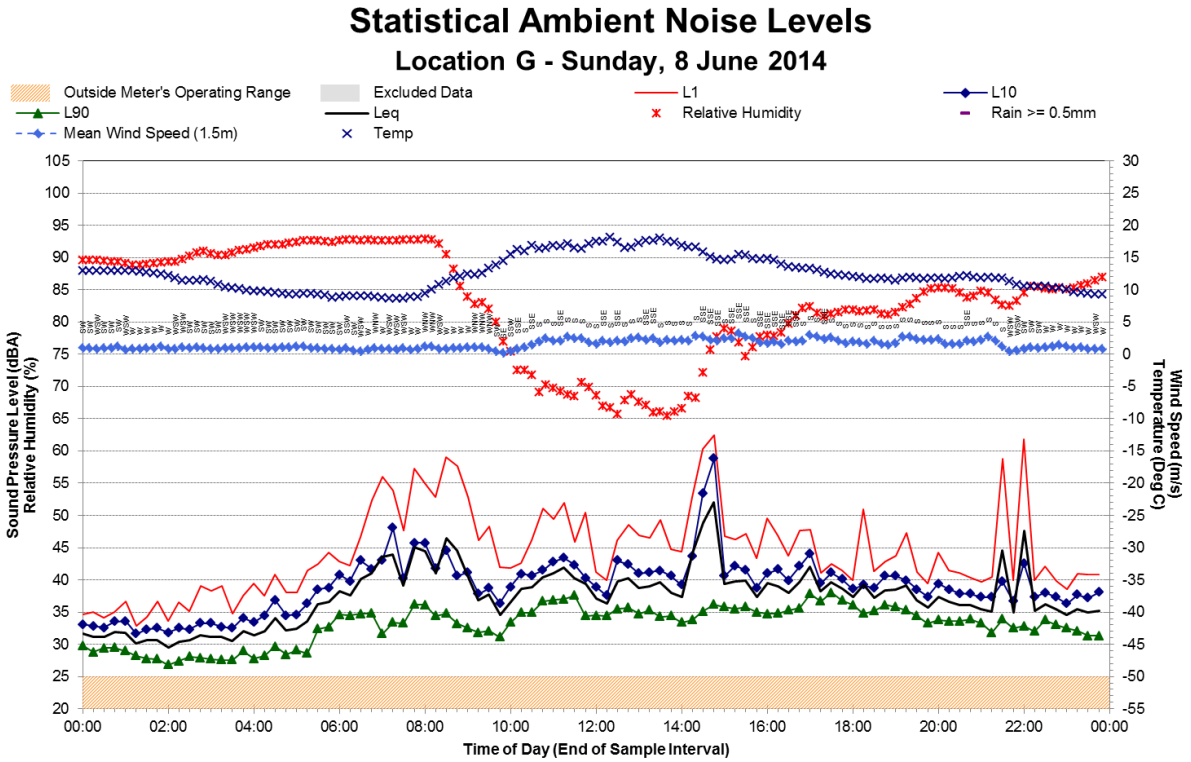
Statistical Ambient Noise Levels – Location G Page 1 of 7

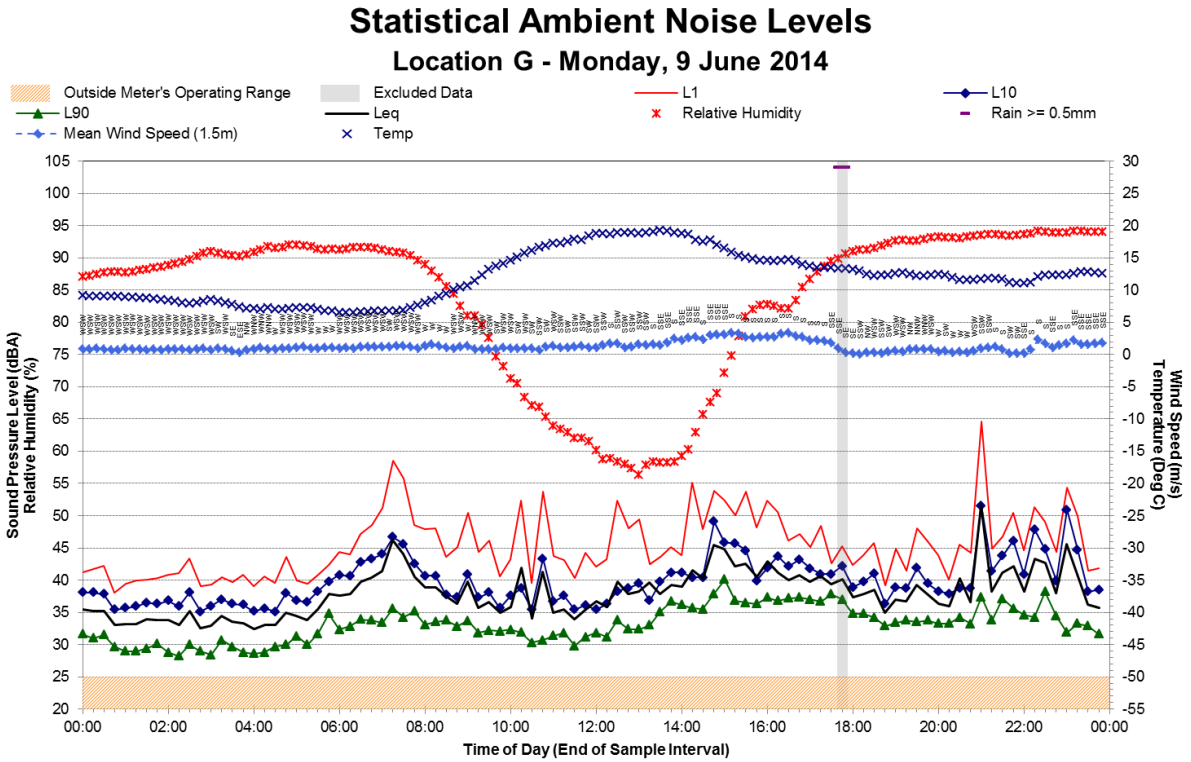




Appendix C3

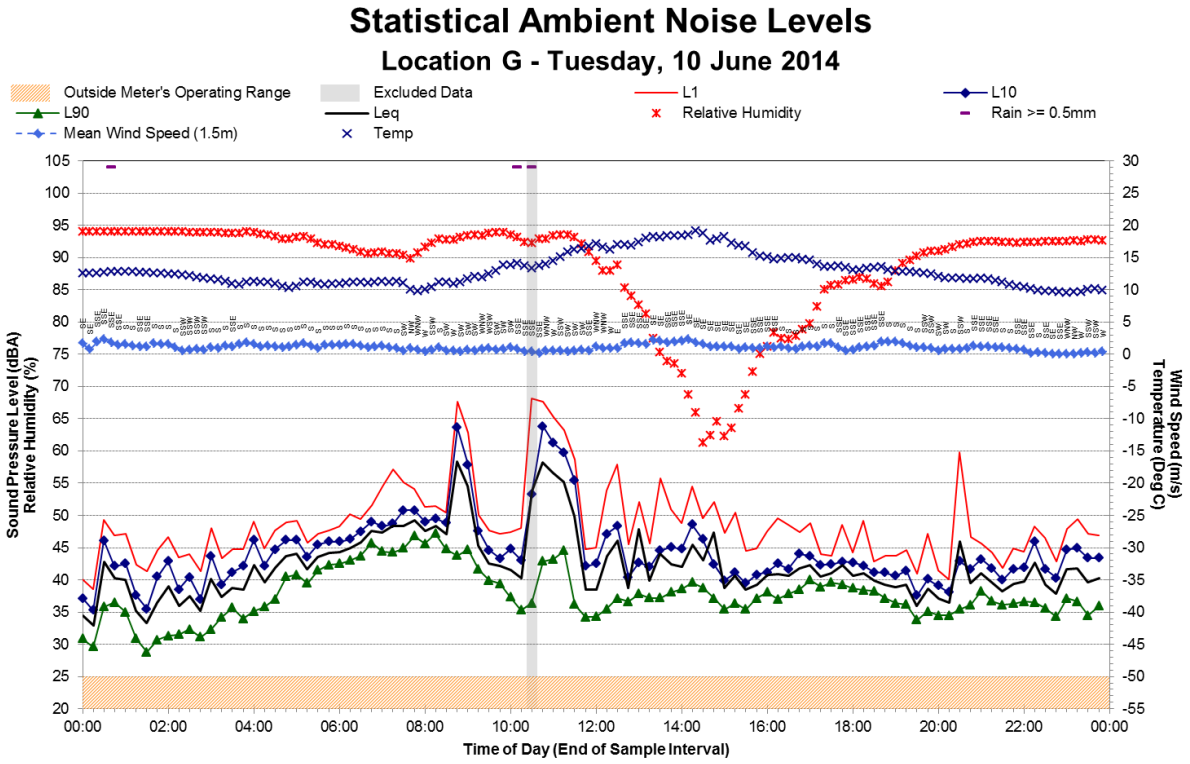
Statistical Ambient Noise Levels – Location G Page 2 of 7

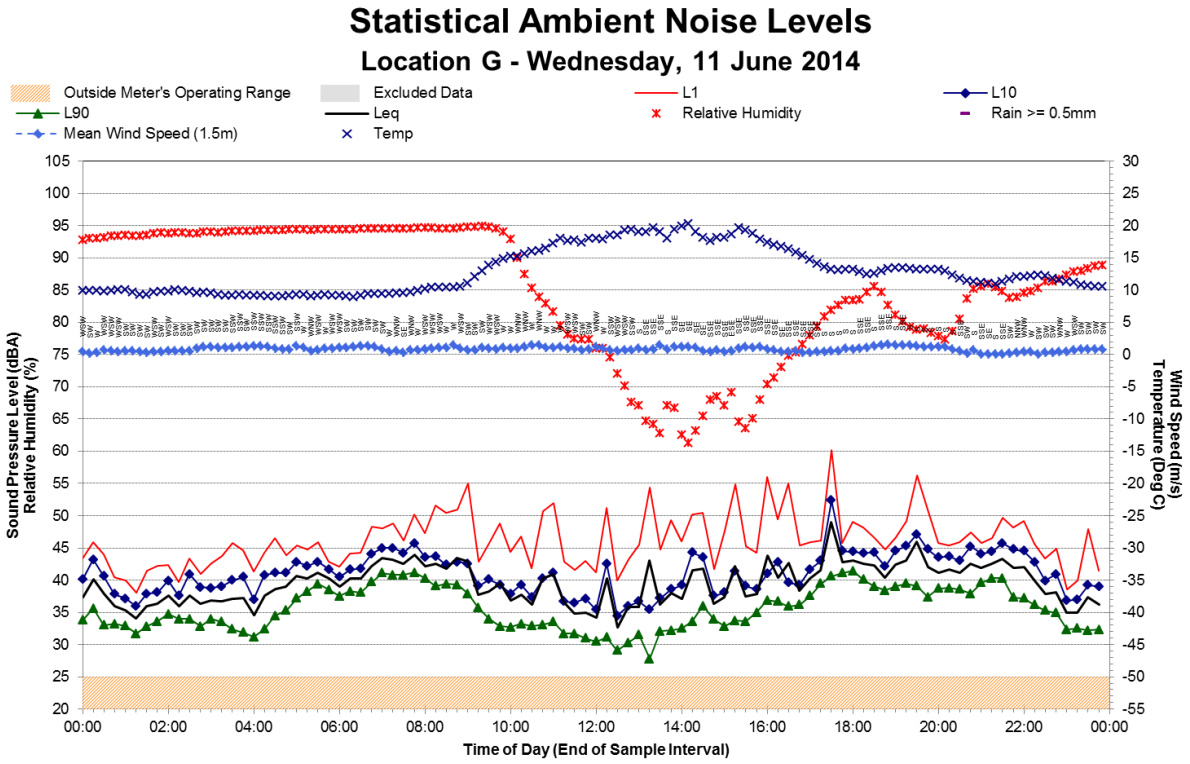




Appendix C3

Statistical Ambient Noise Levels – Location G Page 3 of 7



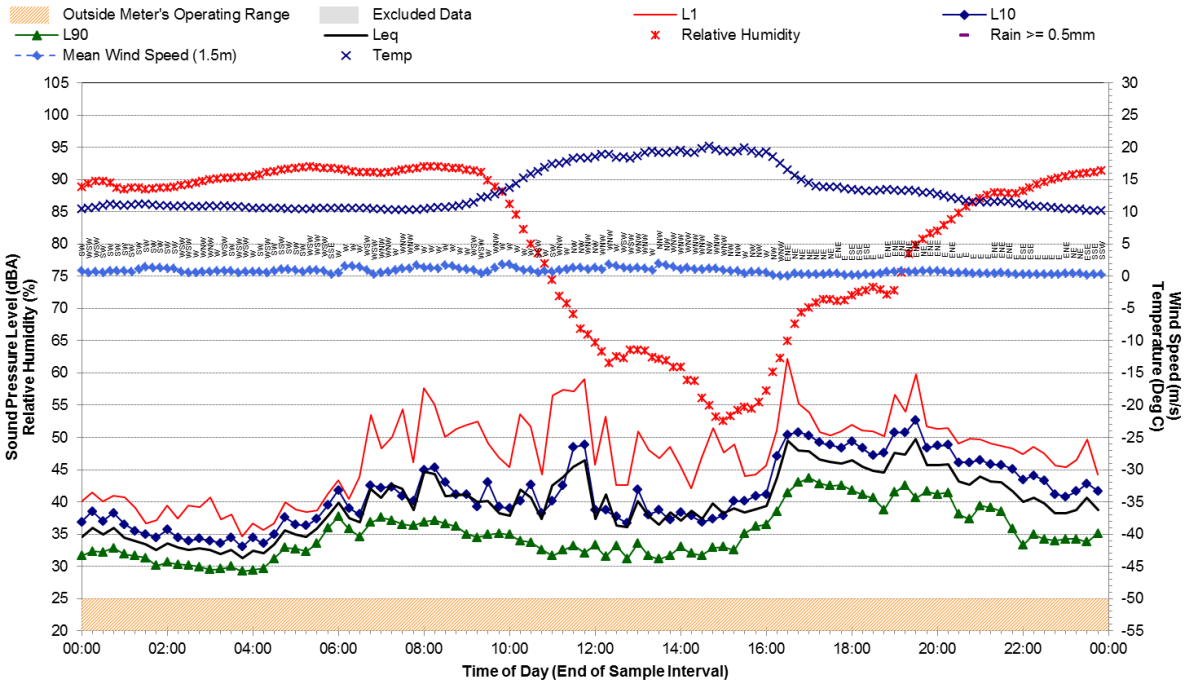


Appendix C3

Statistical Ambient Noise Levels – Location G Page 4 of 7

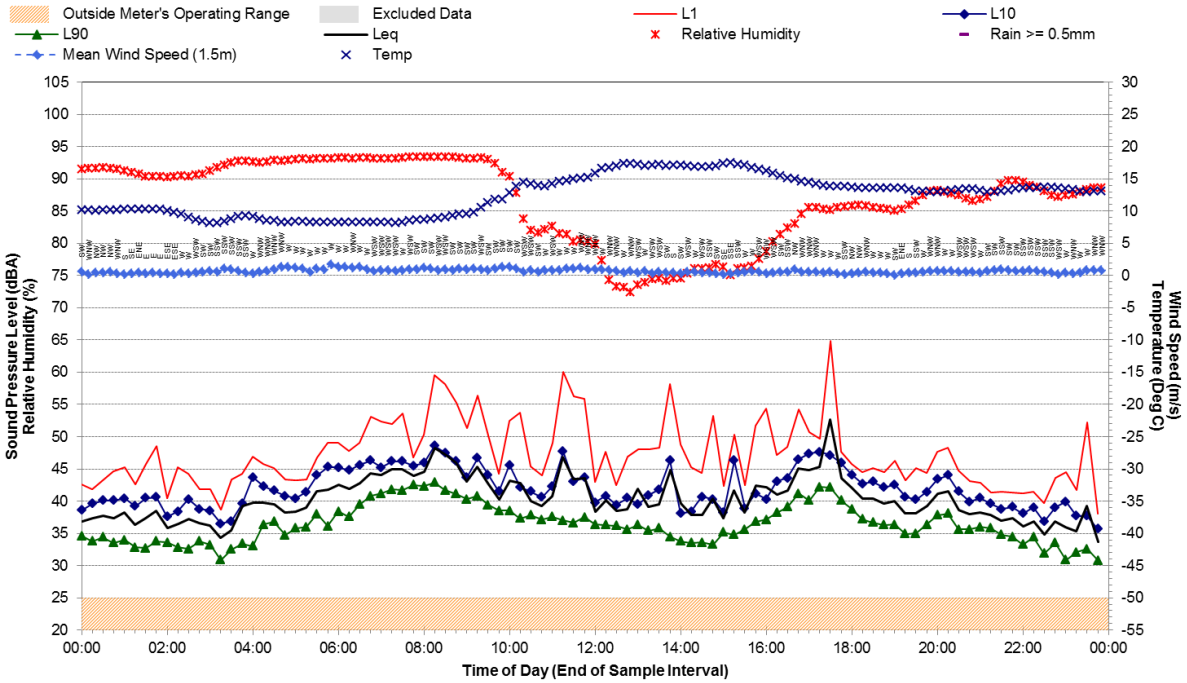
Statistical Ambient Noise Levels

Location G - Thursday, 12 June 2014



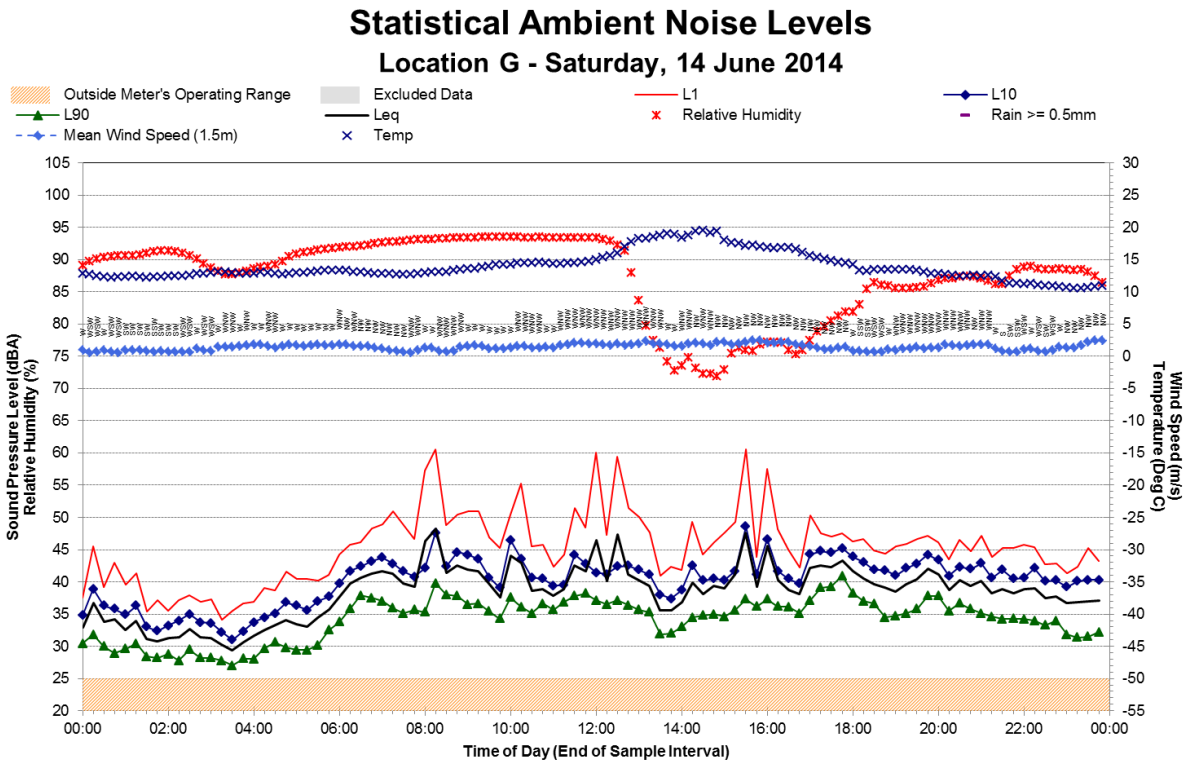
Statistical Ambient Noise Levels

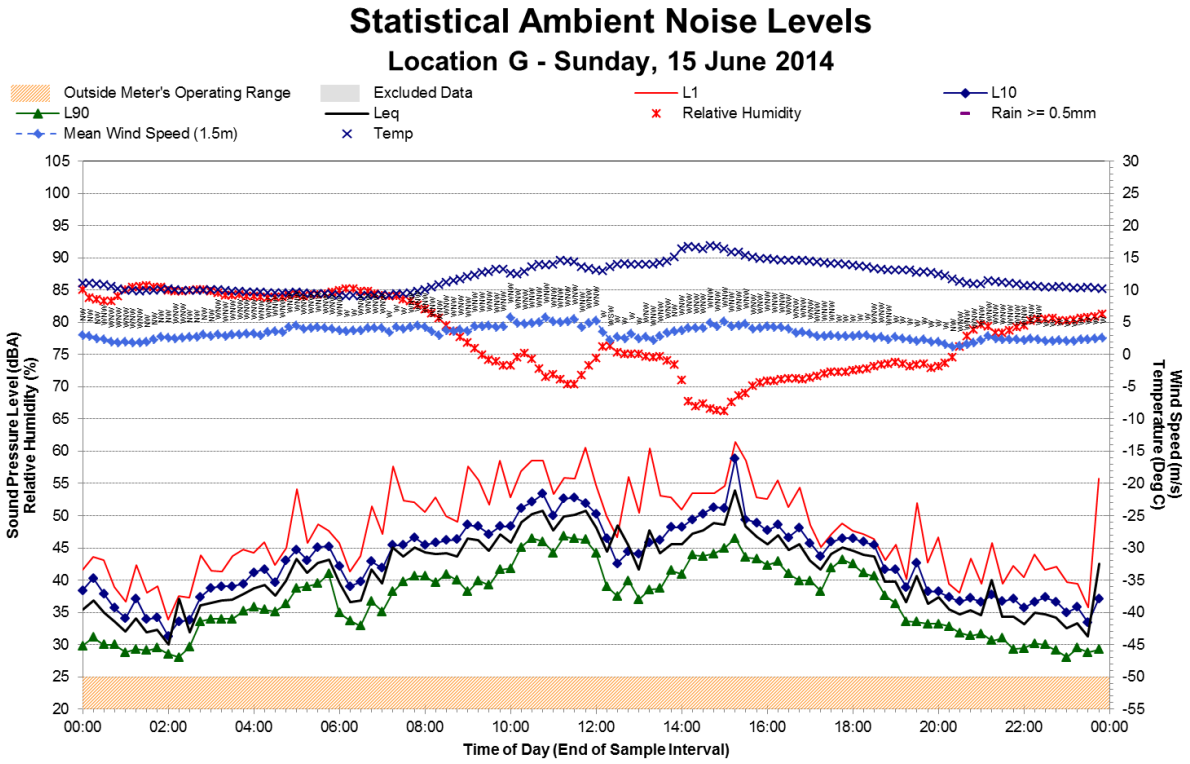
Location G - Friday, 13 June 2014



Appendix C3

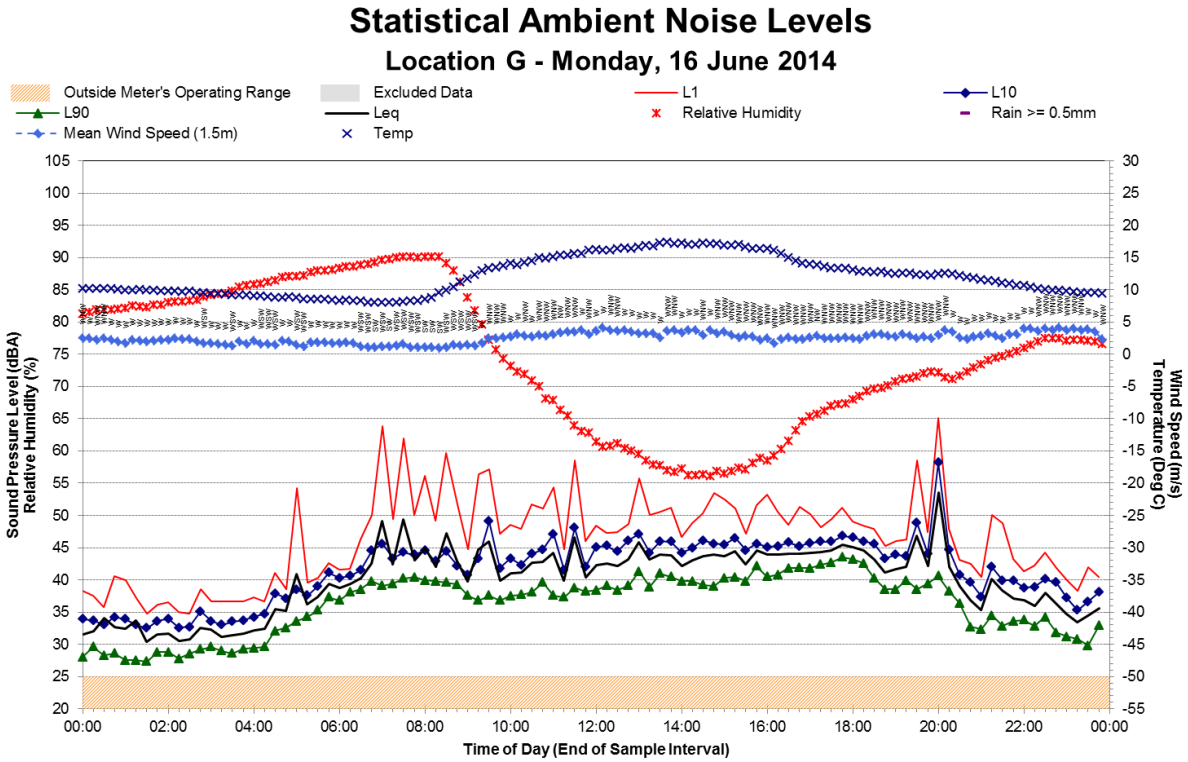
Statistical Ambient Noise Levels – Location G Page 5 of 7

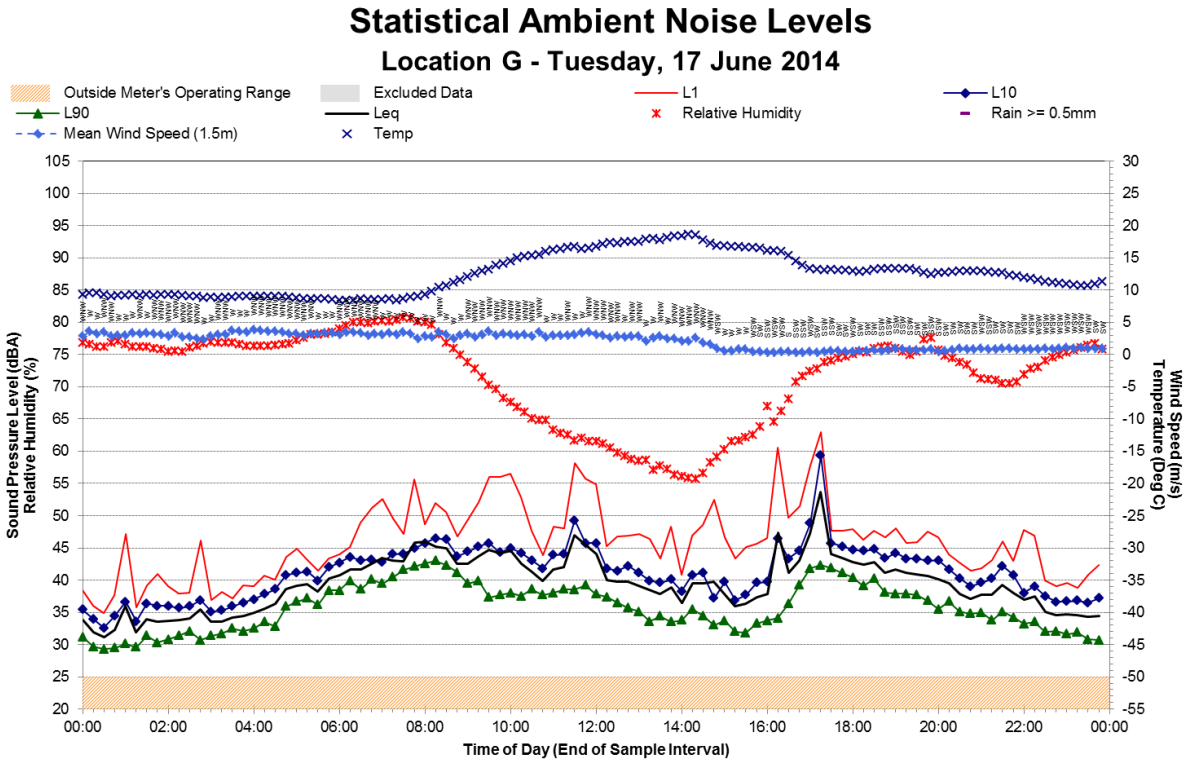




Appendix C3

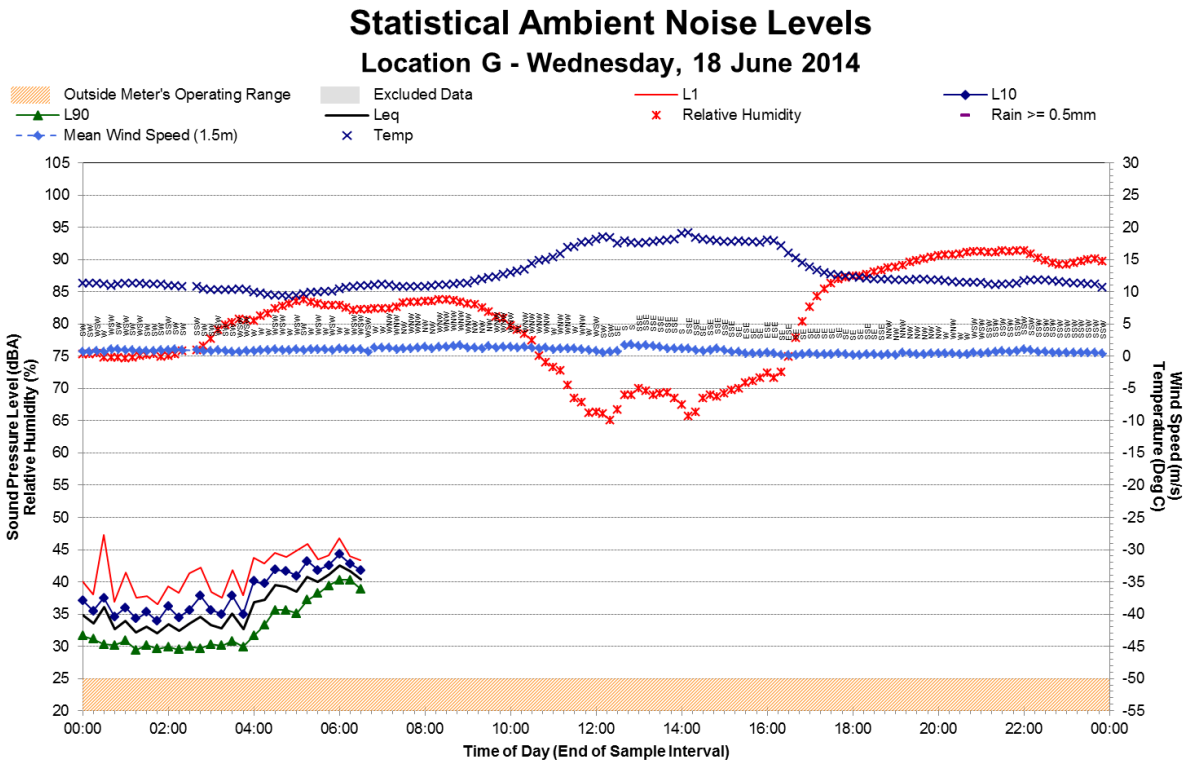
Statistical Ambient Noise Levels – Location G Page 6 of 7





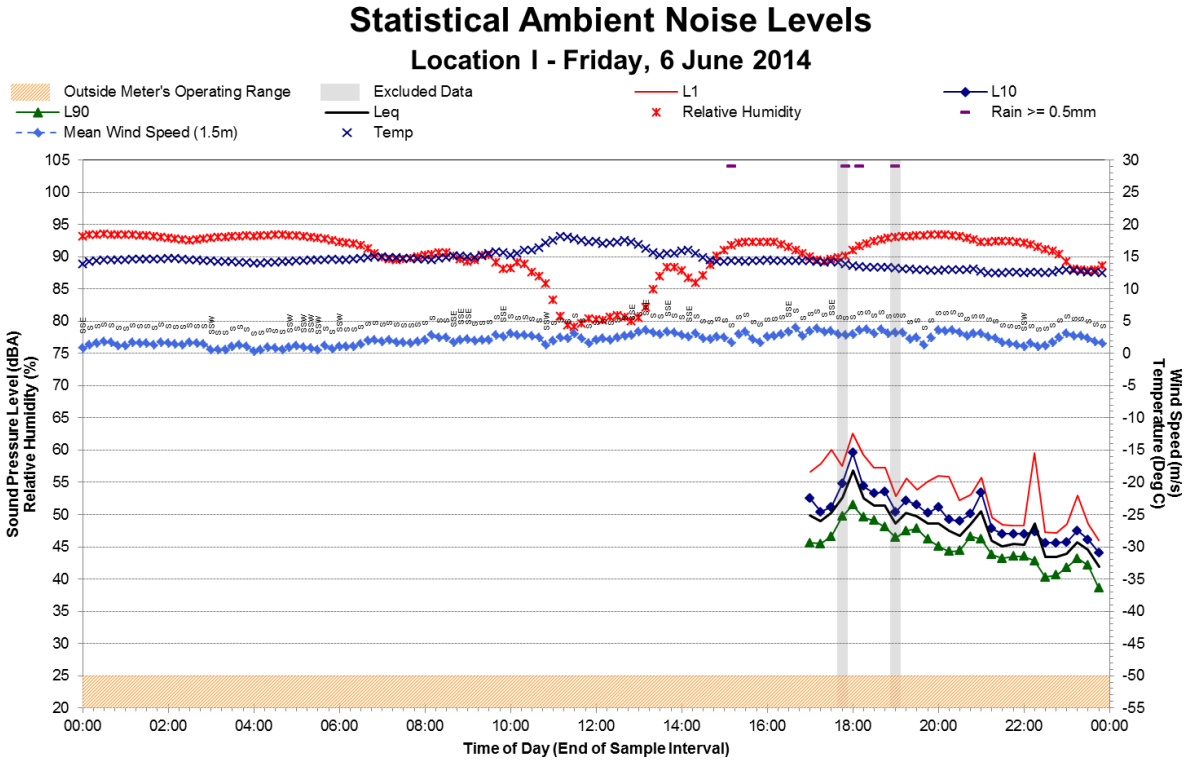
Appendix C3

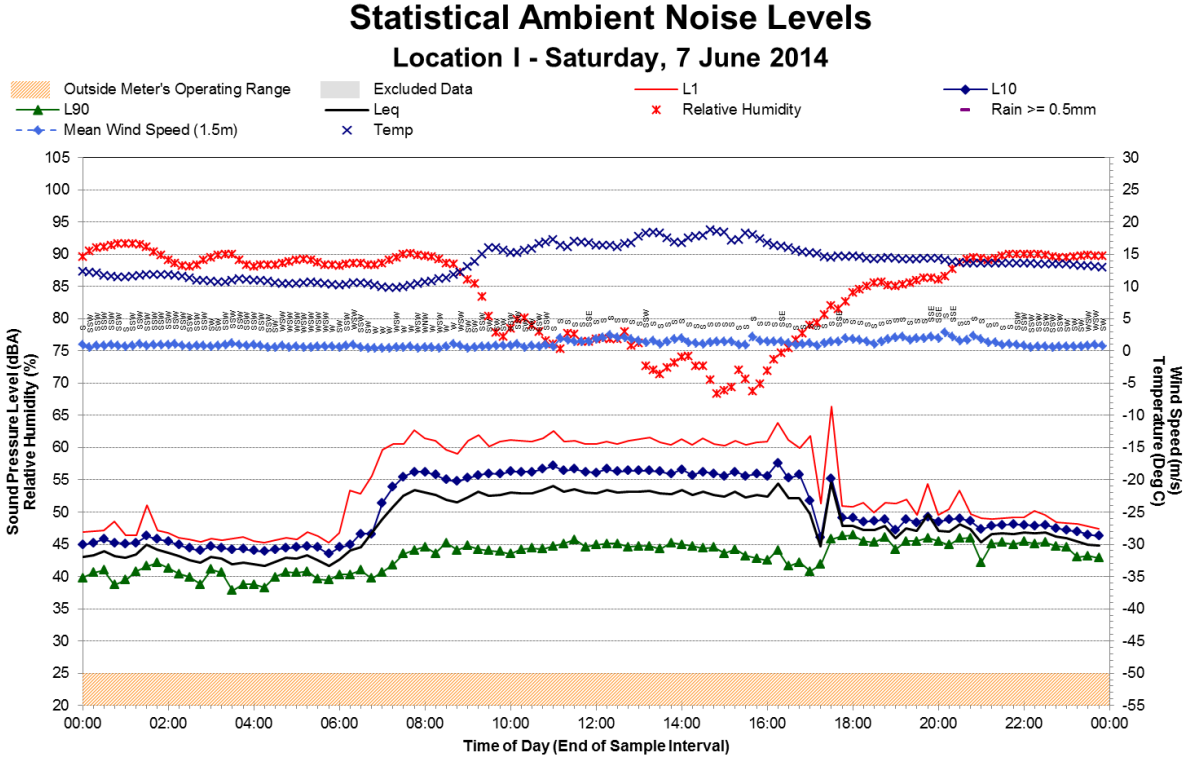
Statistical Ambient Noise Levels – Location G Page 7 of 7



Appendix C4

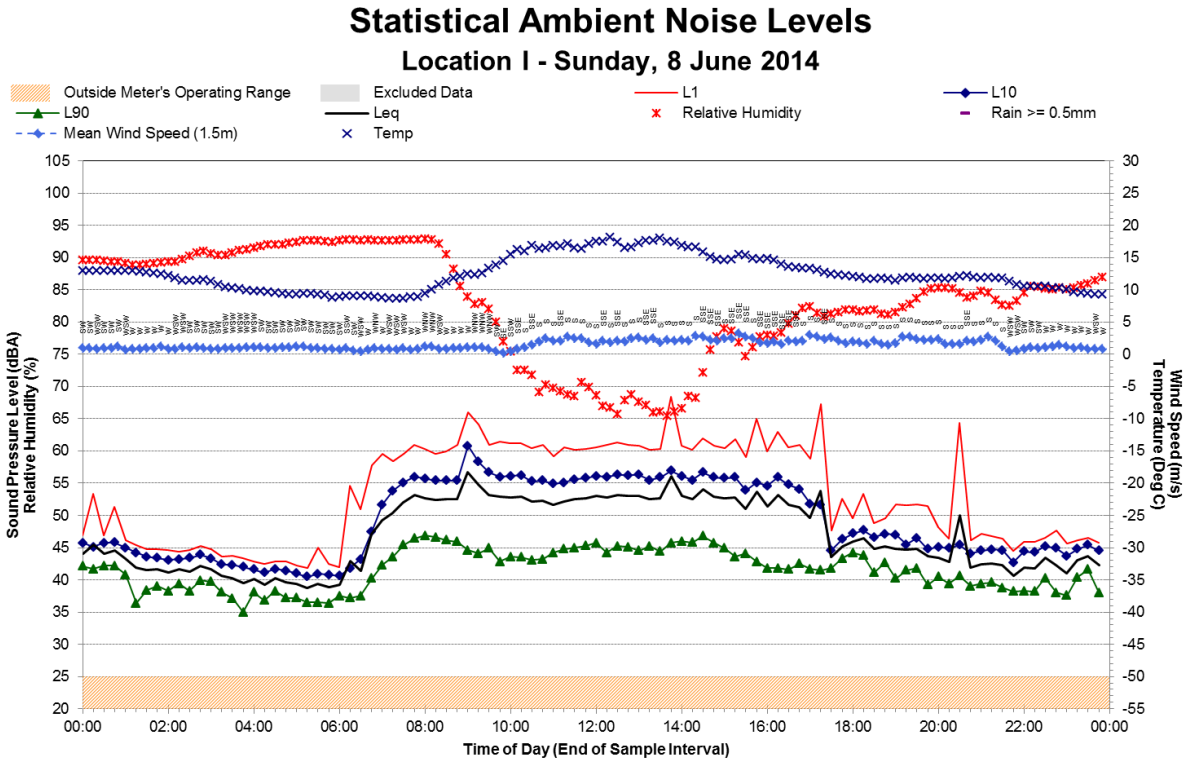
Statistical Ambient Noise Levels – Location I Page 1 of 7

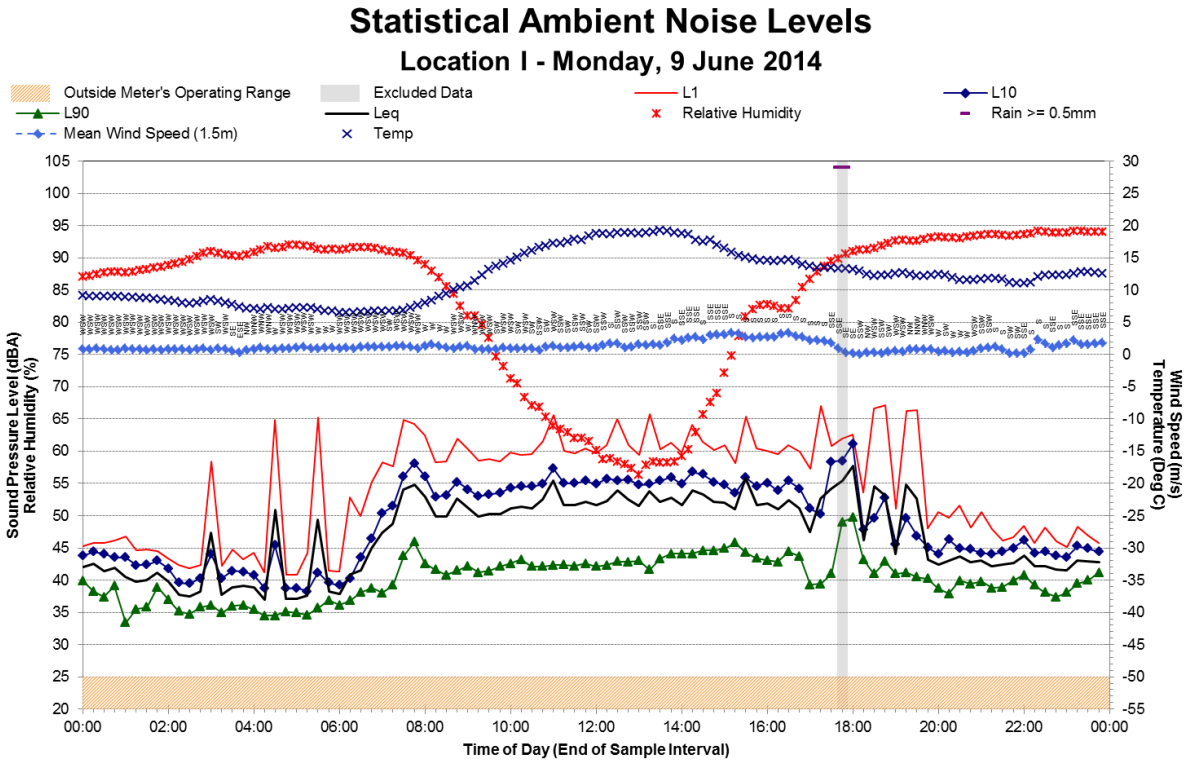




Appendix C4

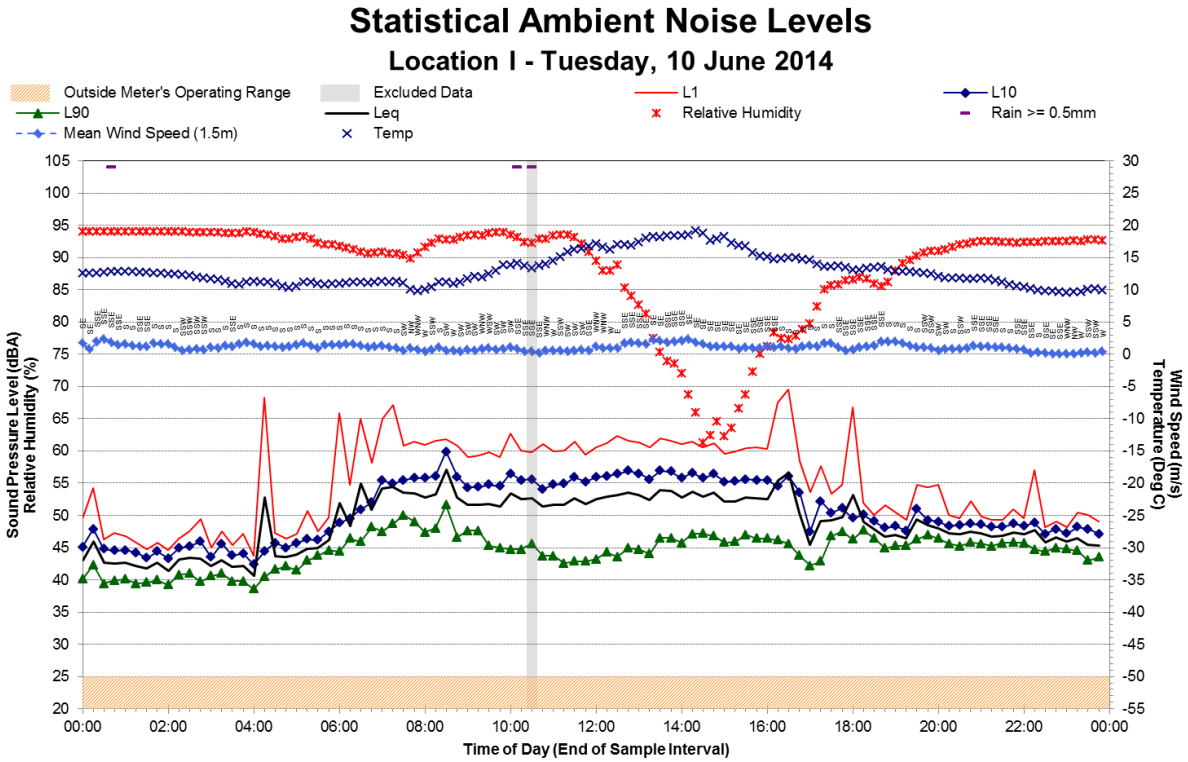
Statistical Ambient Noise Levels – Location I Page 2 of 7

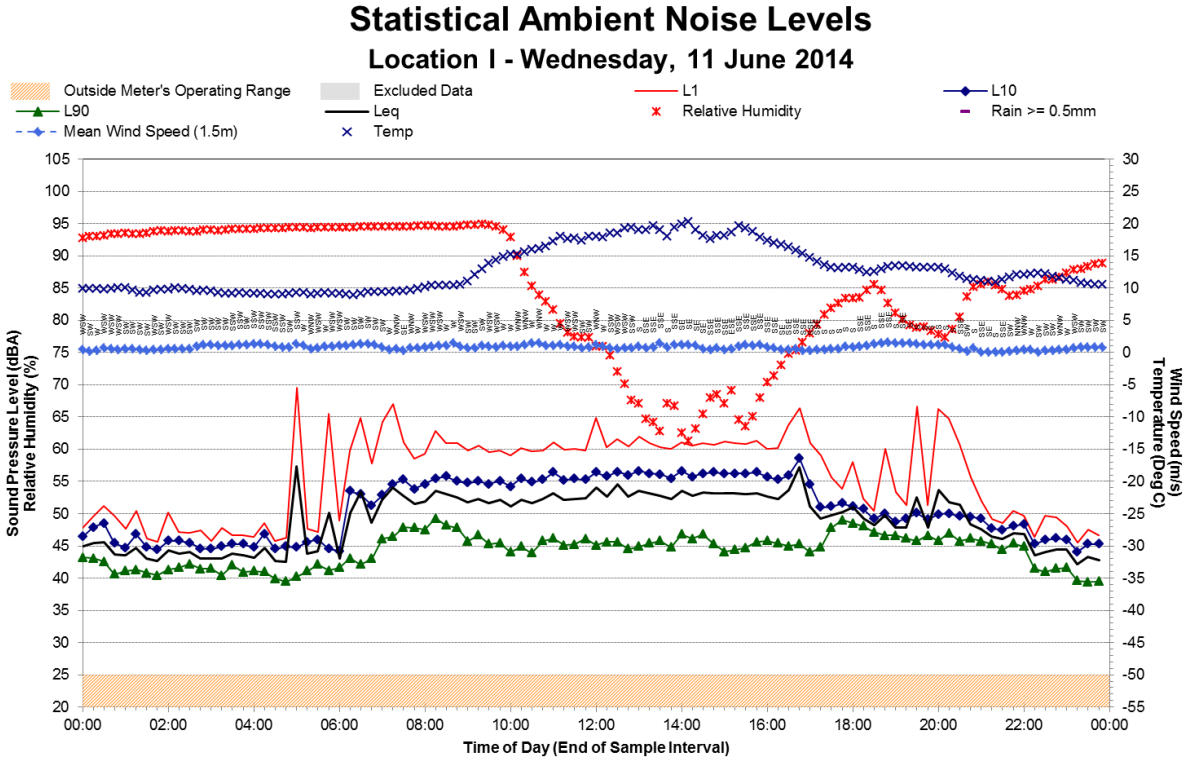




Appendix C4

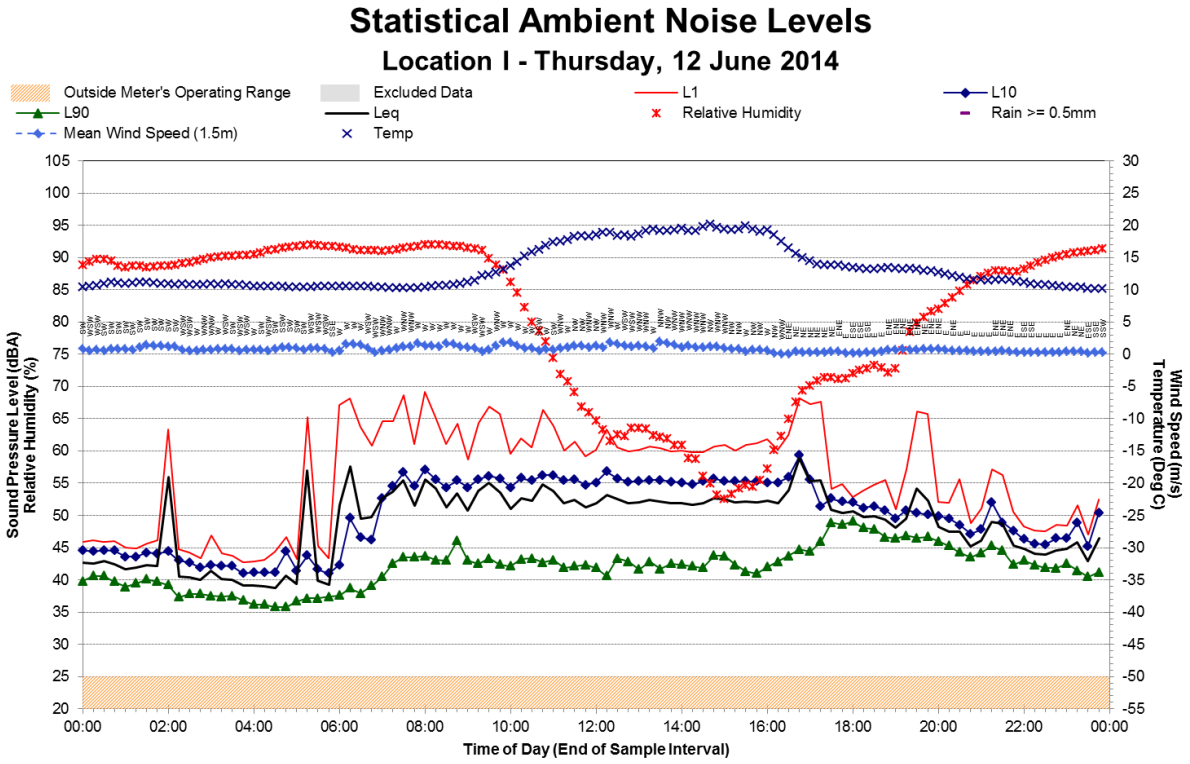
Statistical Ambient Noise Levels – Location I Page 3 of 7

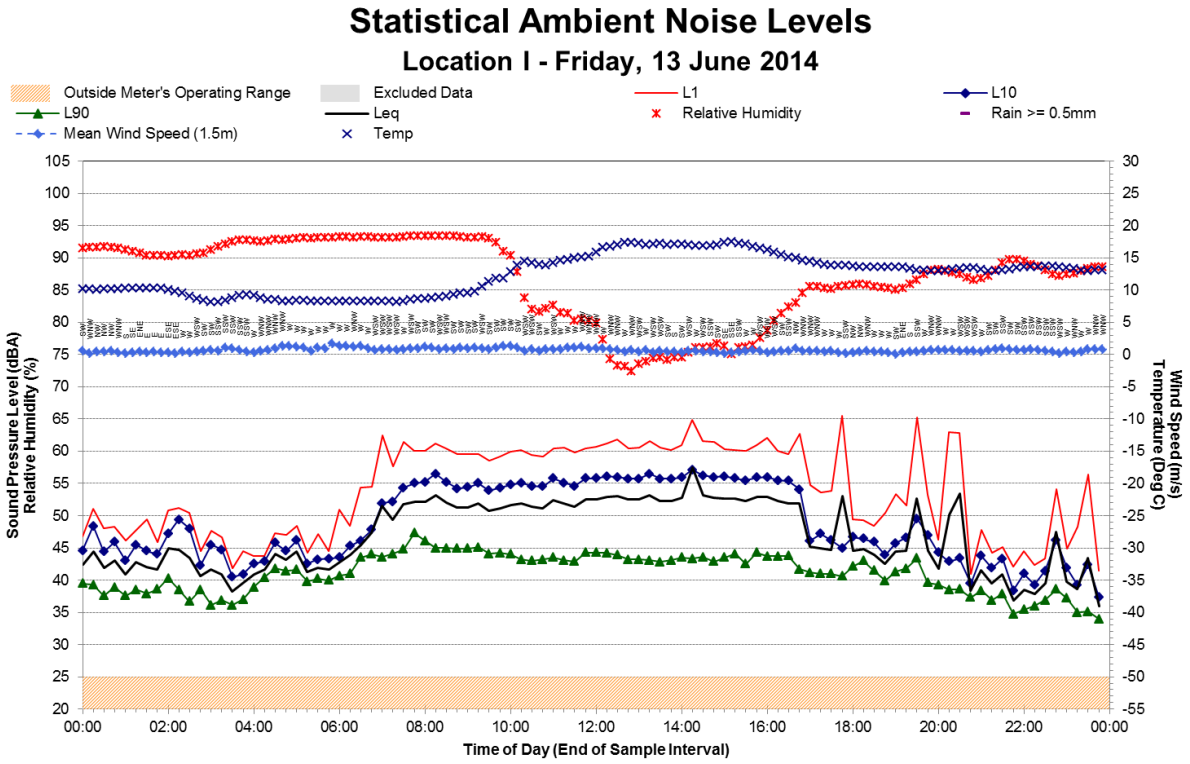




Appendix C4

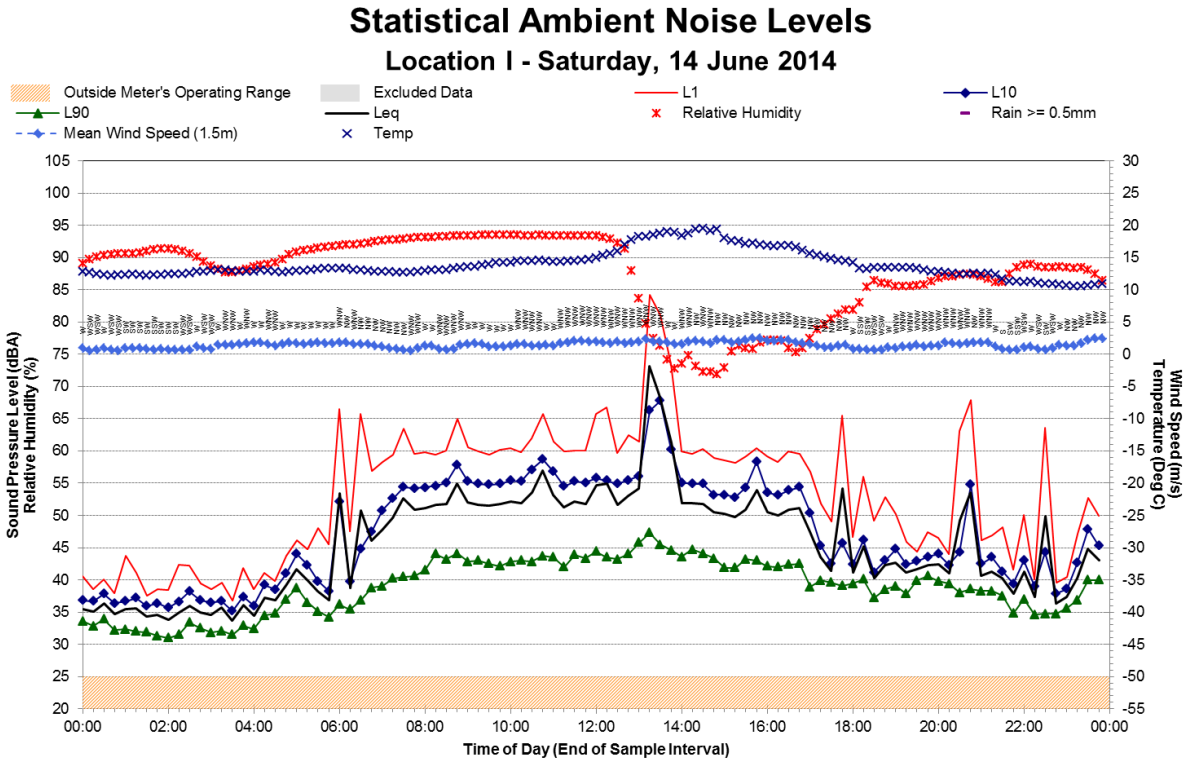
Statistical Ambient Noise Levels – Location I Page 4 of 7

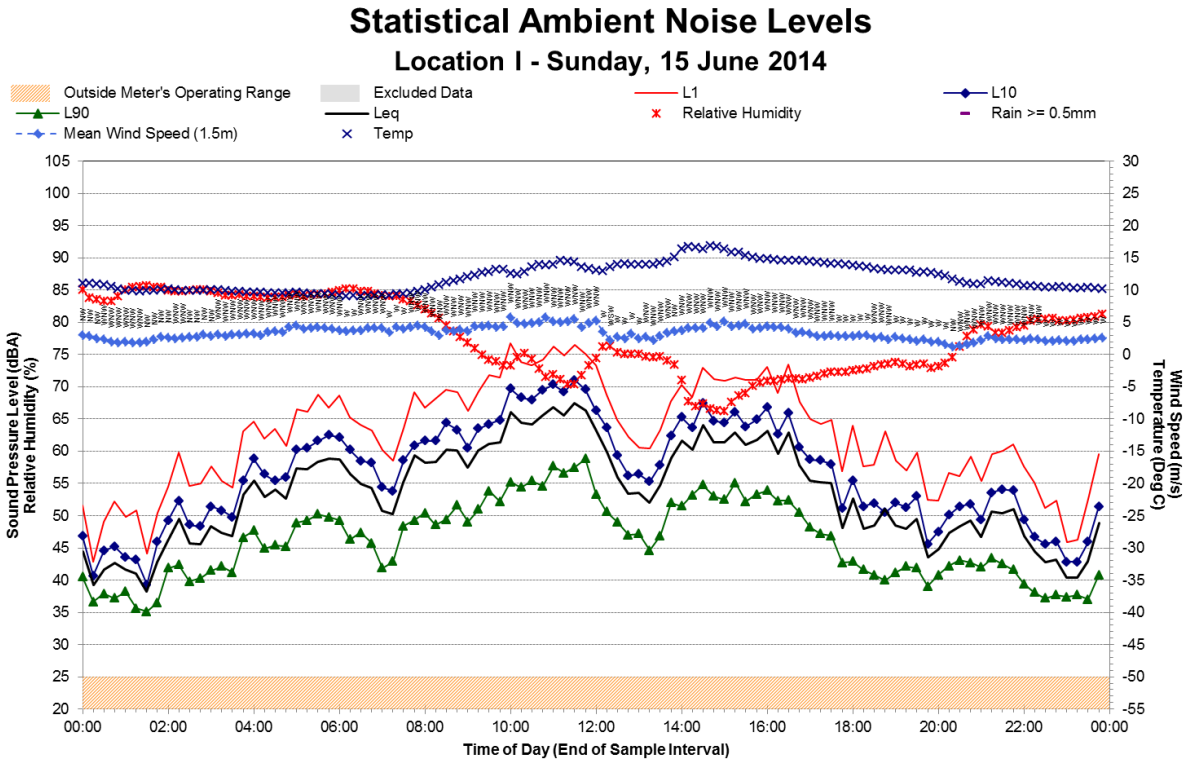




Appendix C4

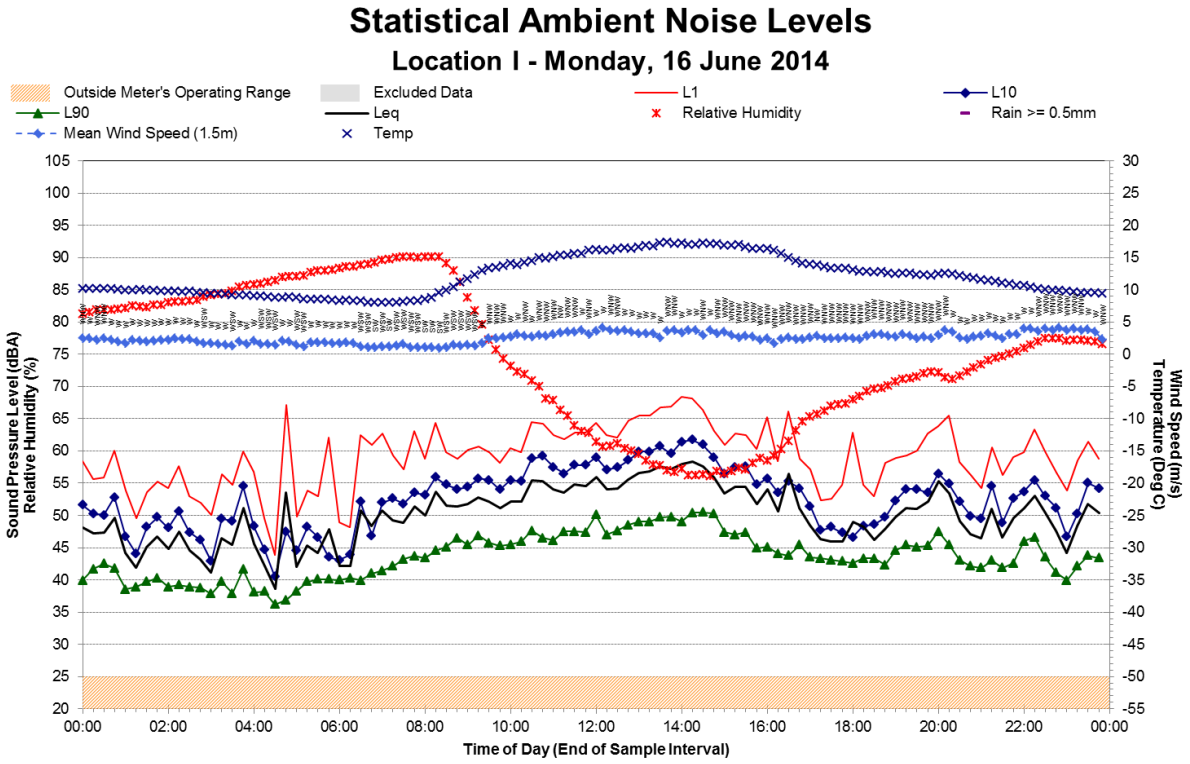
Statistical Ambient Noise Levels – Location I Page 5 of 7

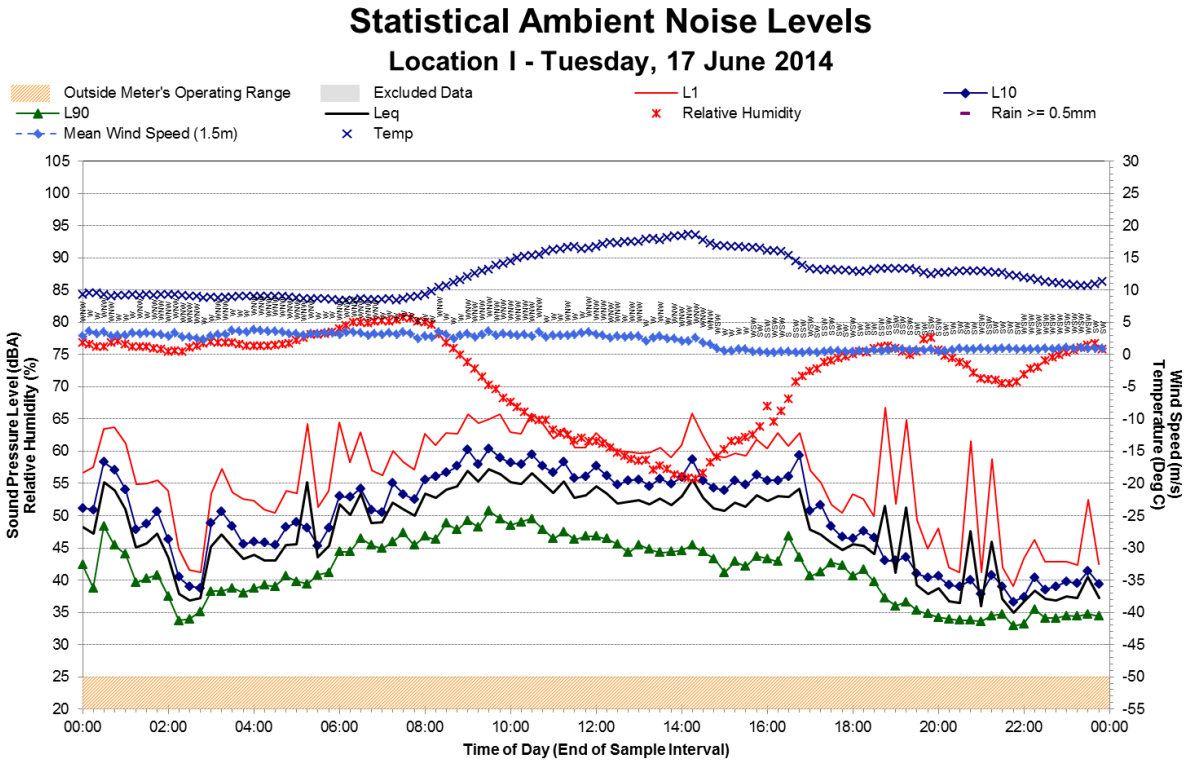




Appendix C4

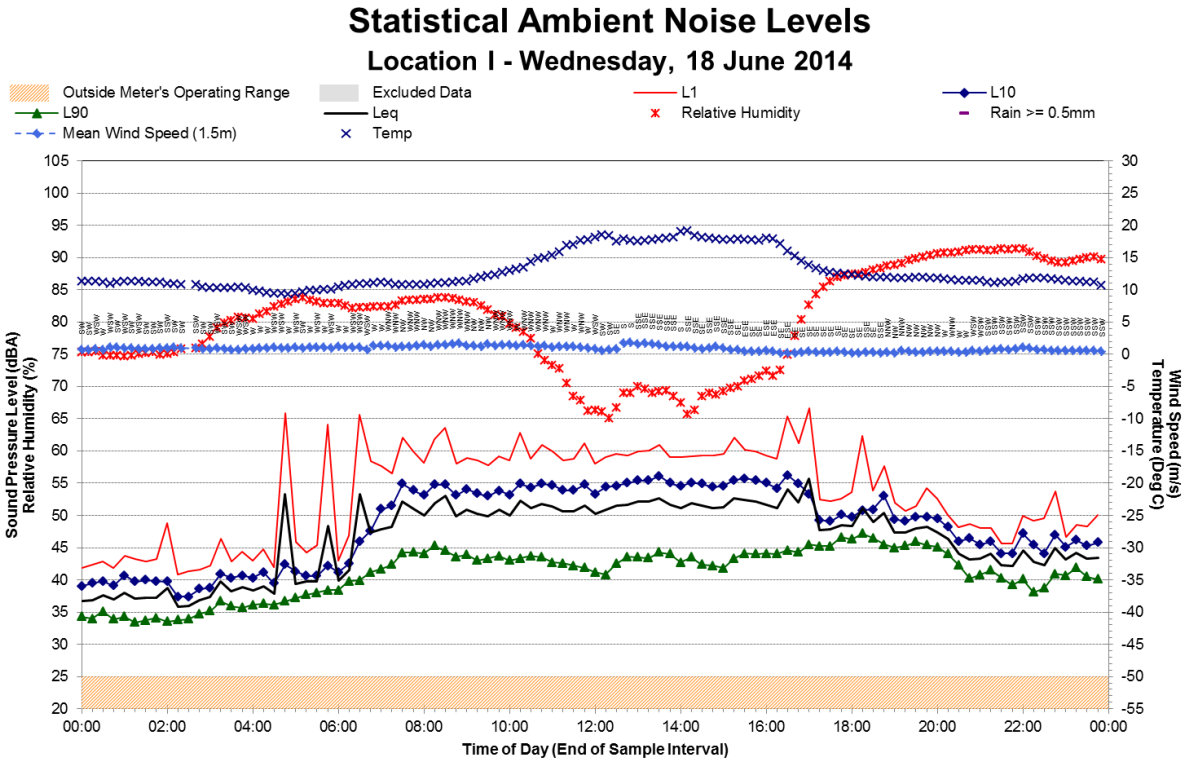
Statistical Ambient Noise Levels – Location I Page 6 of 7

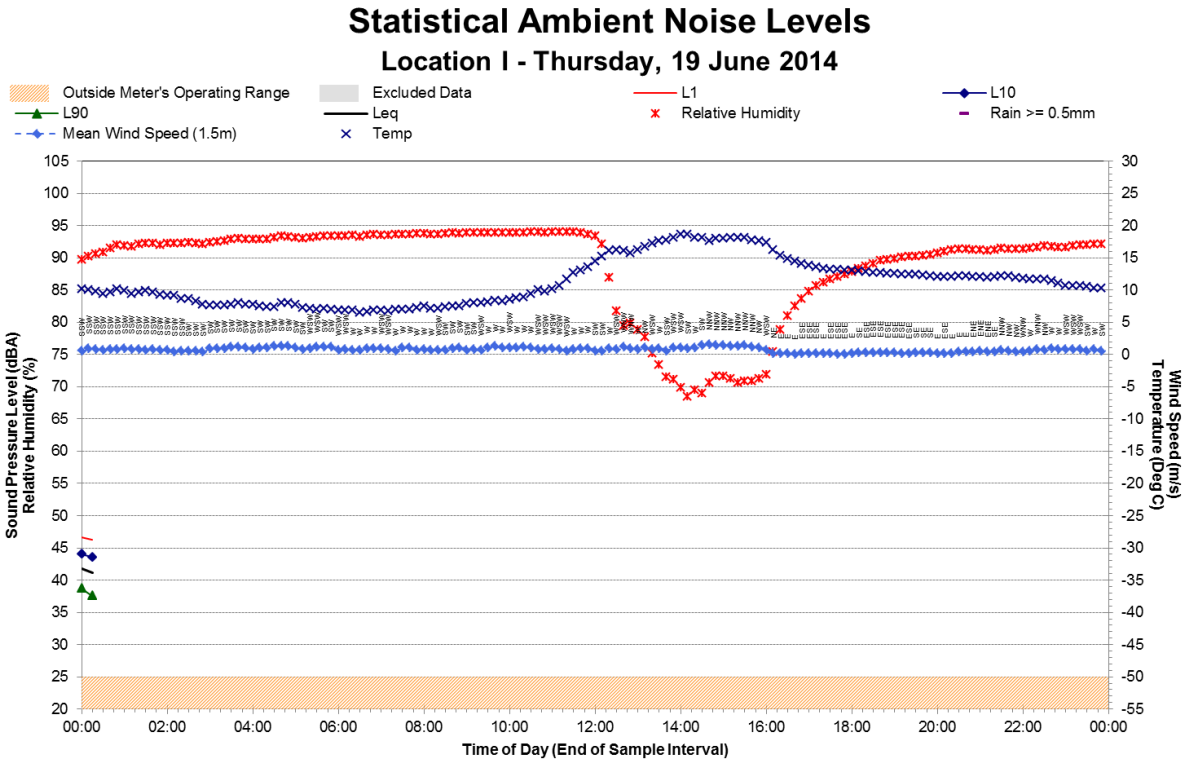




Appendix C4

Statistical Ambient Noise Levels – Location I Page 7 of 7



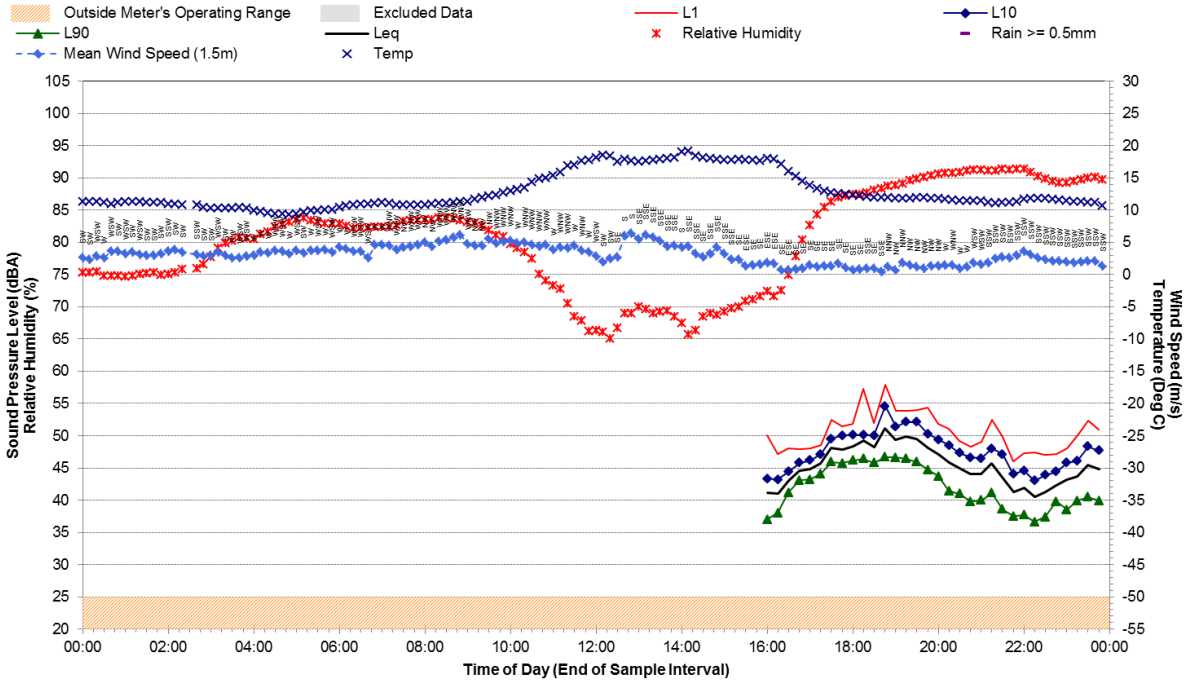


Appendix C5

Statistical Ambient Noise Levels – Location J Page 1 of 4

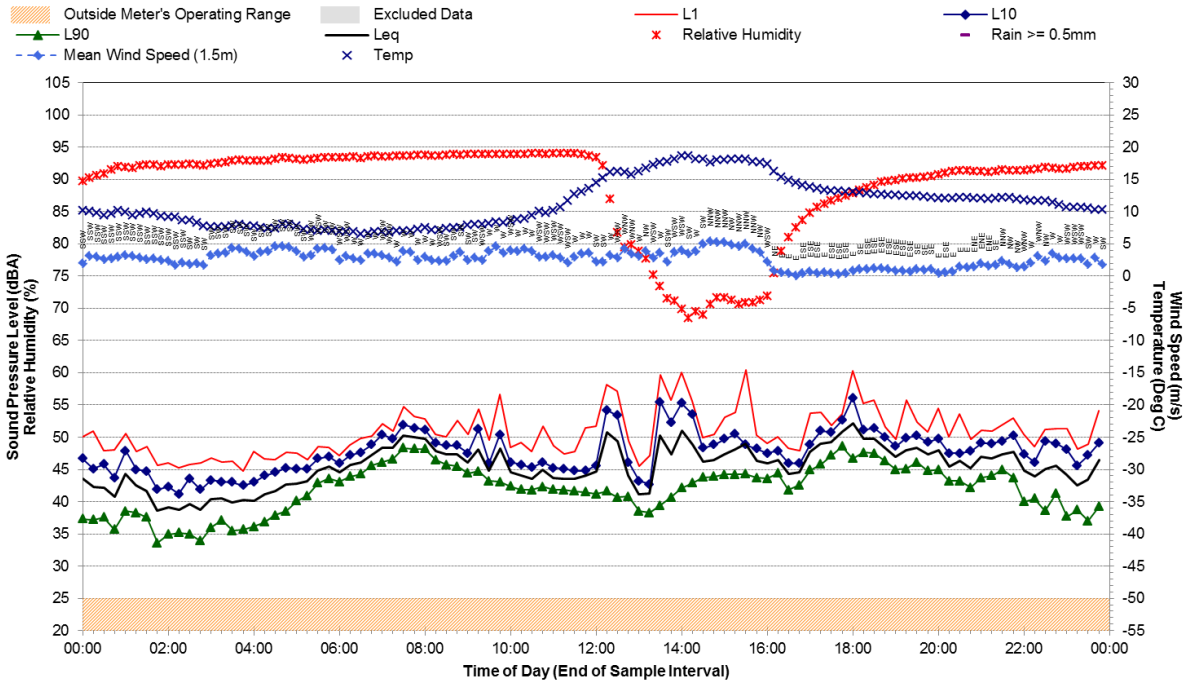
Statistical Ambient Noise Levels

Location J - Wednesday, 18 June 2014



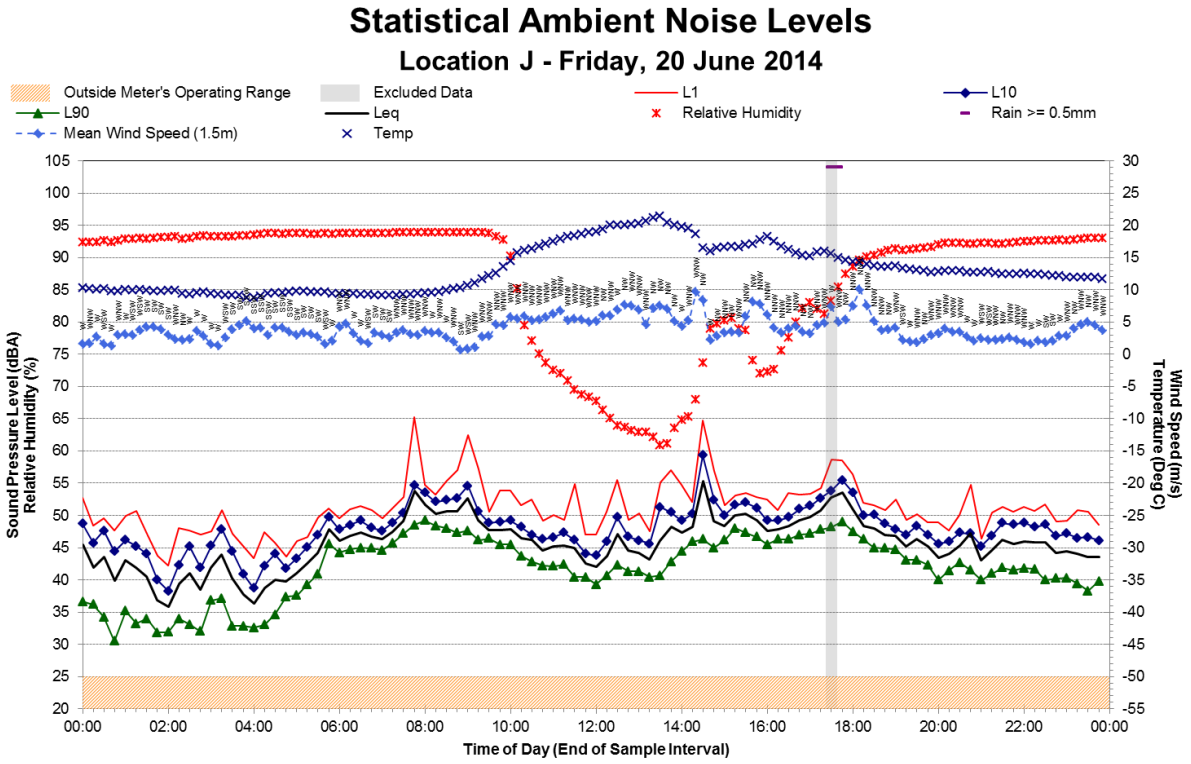
Statistical Ambient Noise Levels

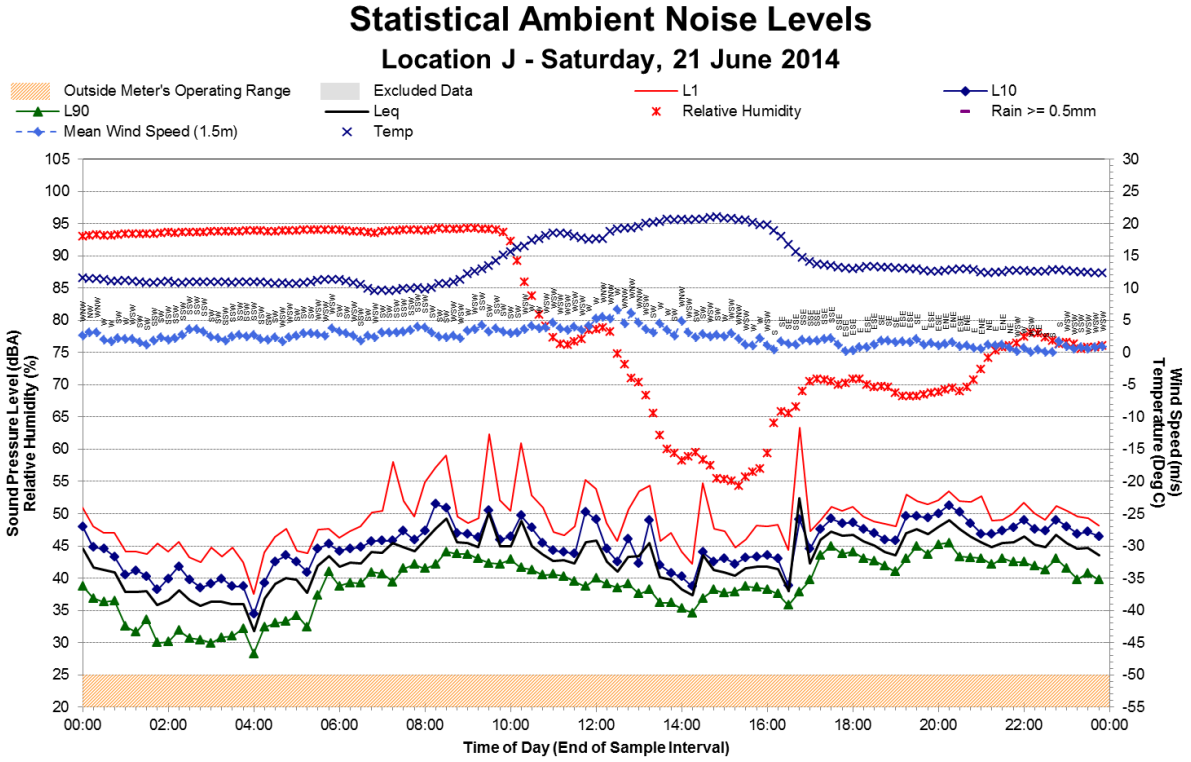
Location J - Thursday, 19 June 2014



Appendix C5

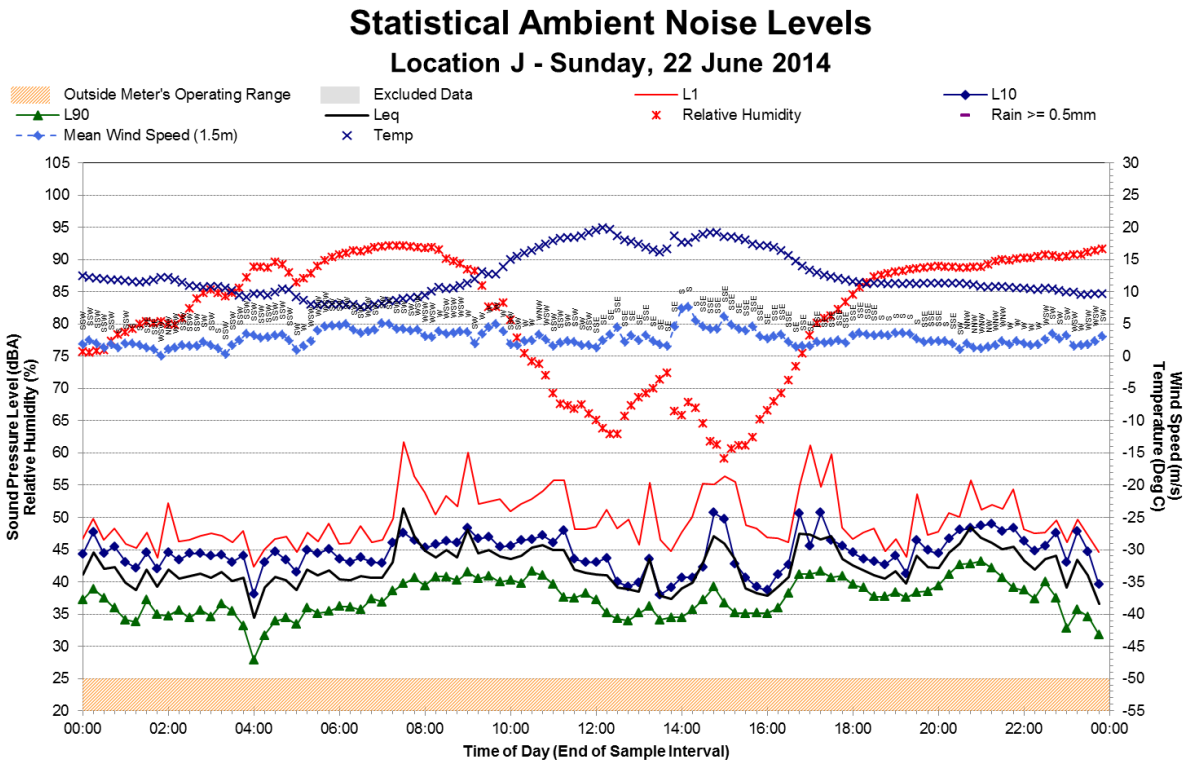
Statistical Ambient Noise Levels – Location J Page 2 of 4

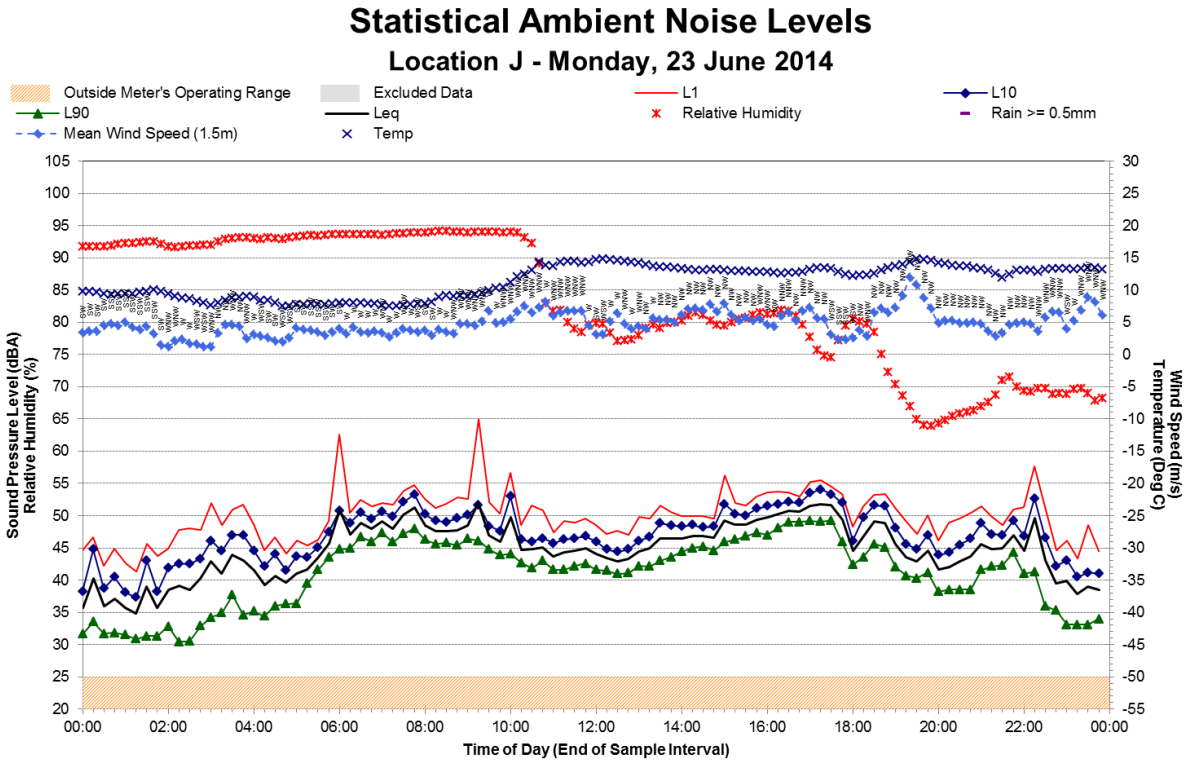




Appendix C5

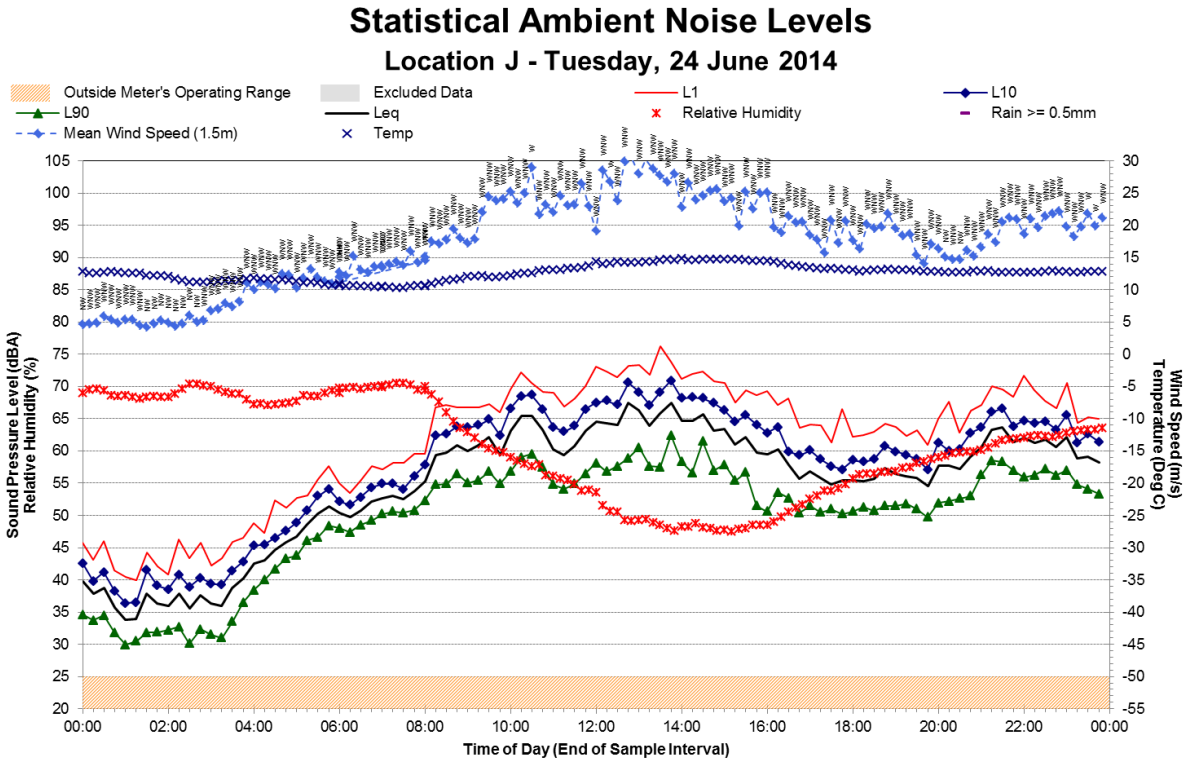
Statistical Ambient Noise Levels – Location J Page 3 of 4

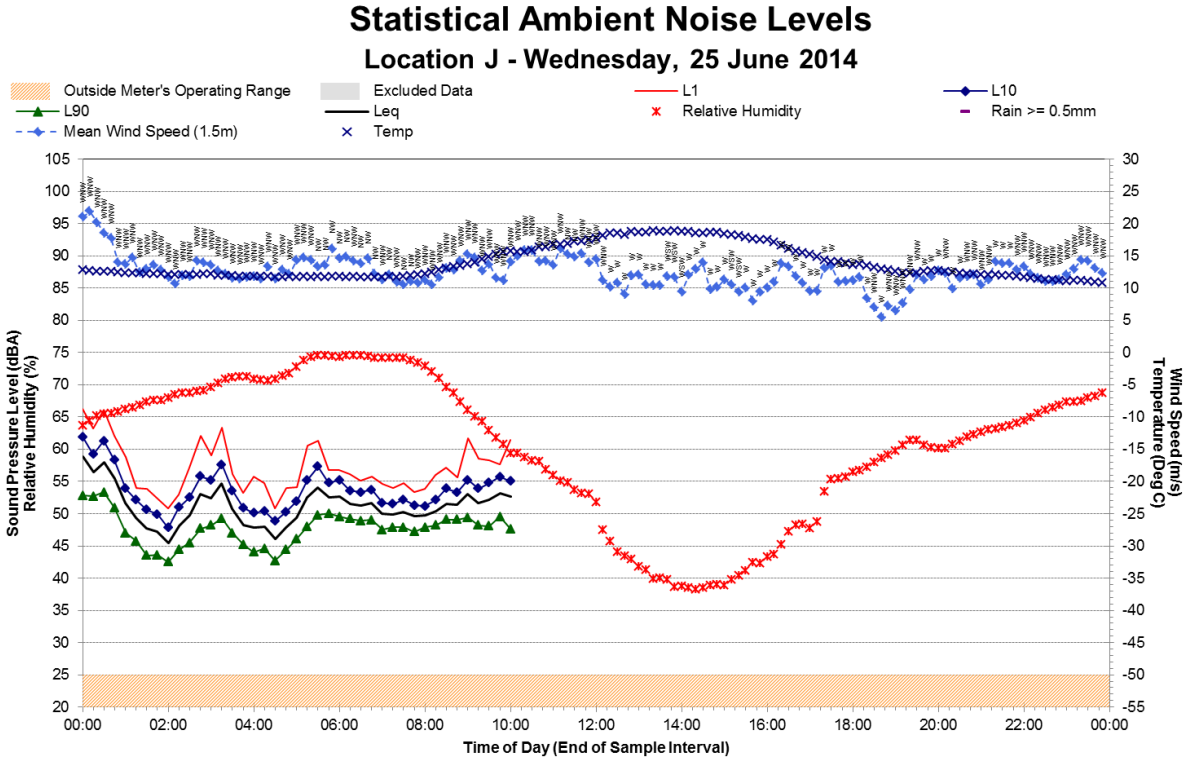




Appendix C5

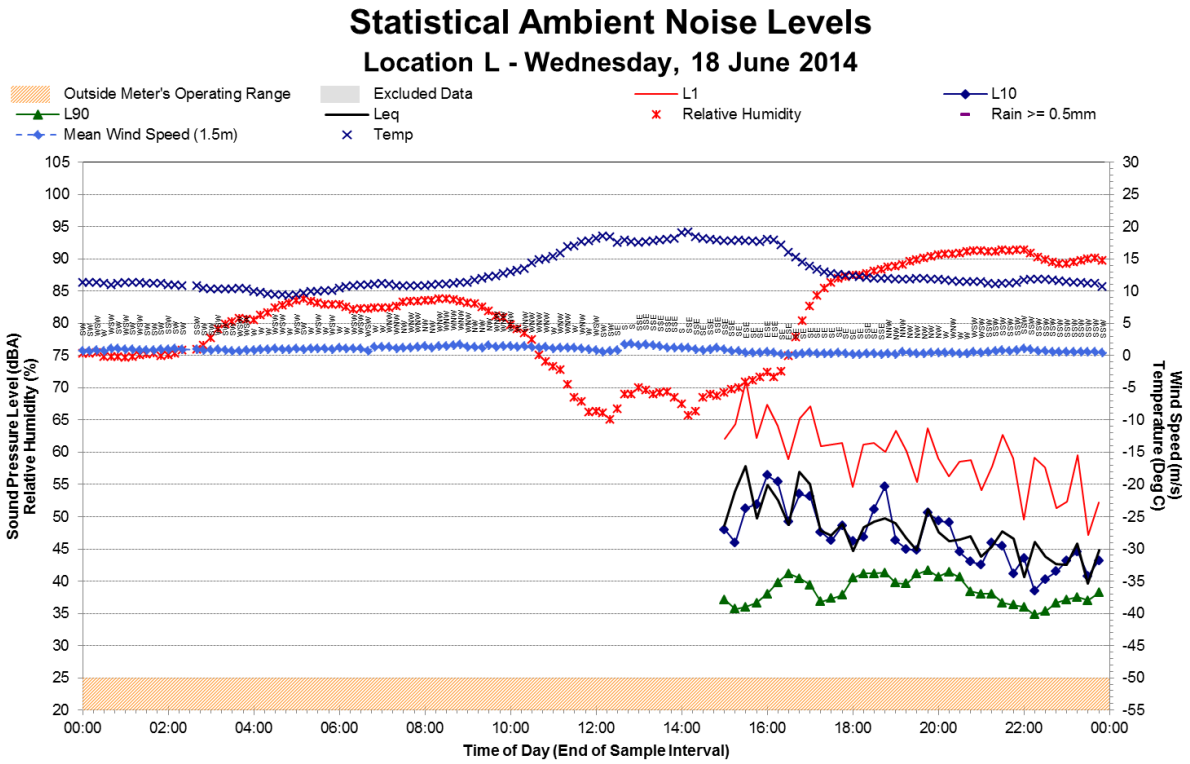
Statistical Ambient Noise Levels – Location J Page 4 of 4

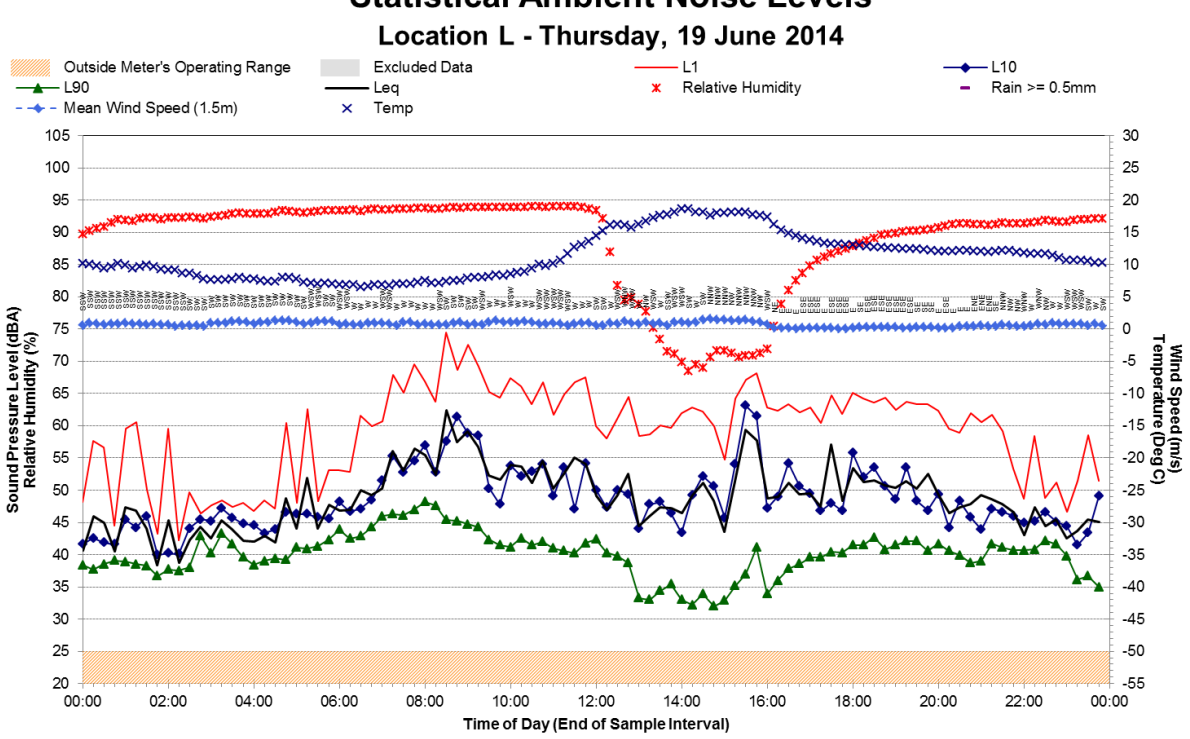




Appendix C6

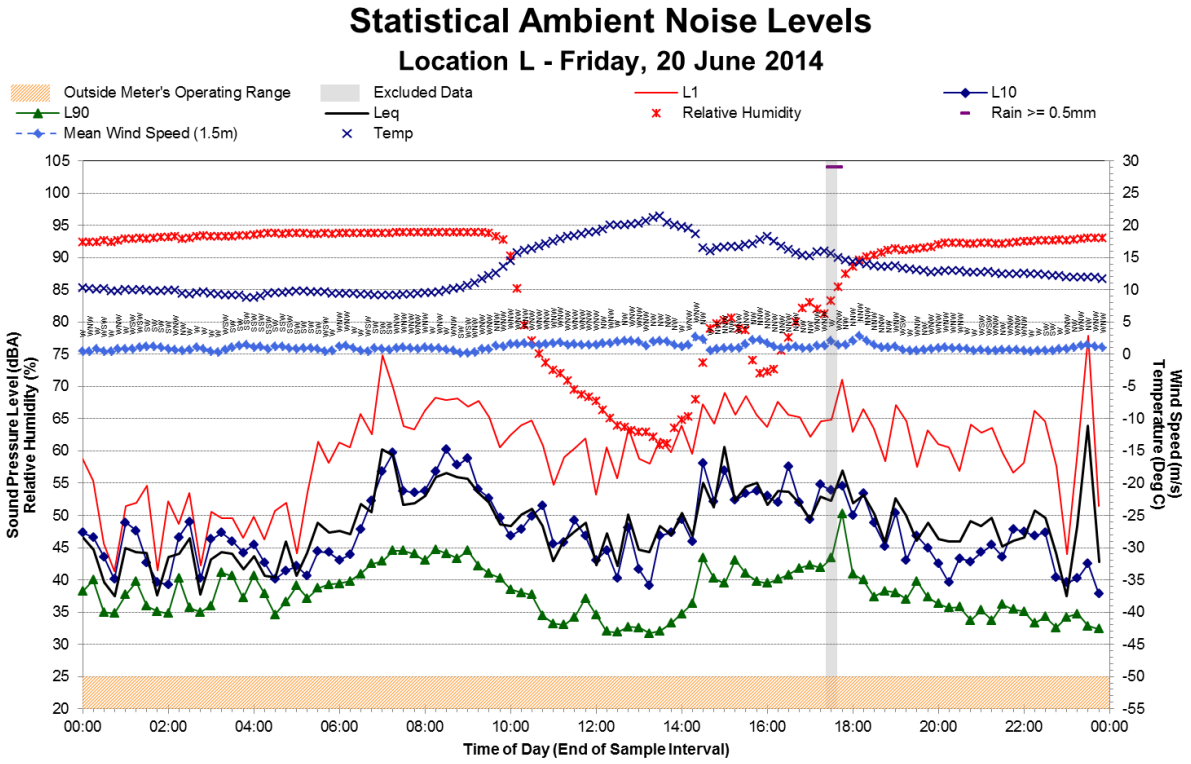
Statistical Ambient Noise Levels – Location L Page 1 of 4

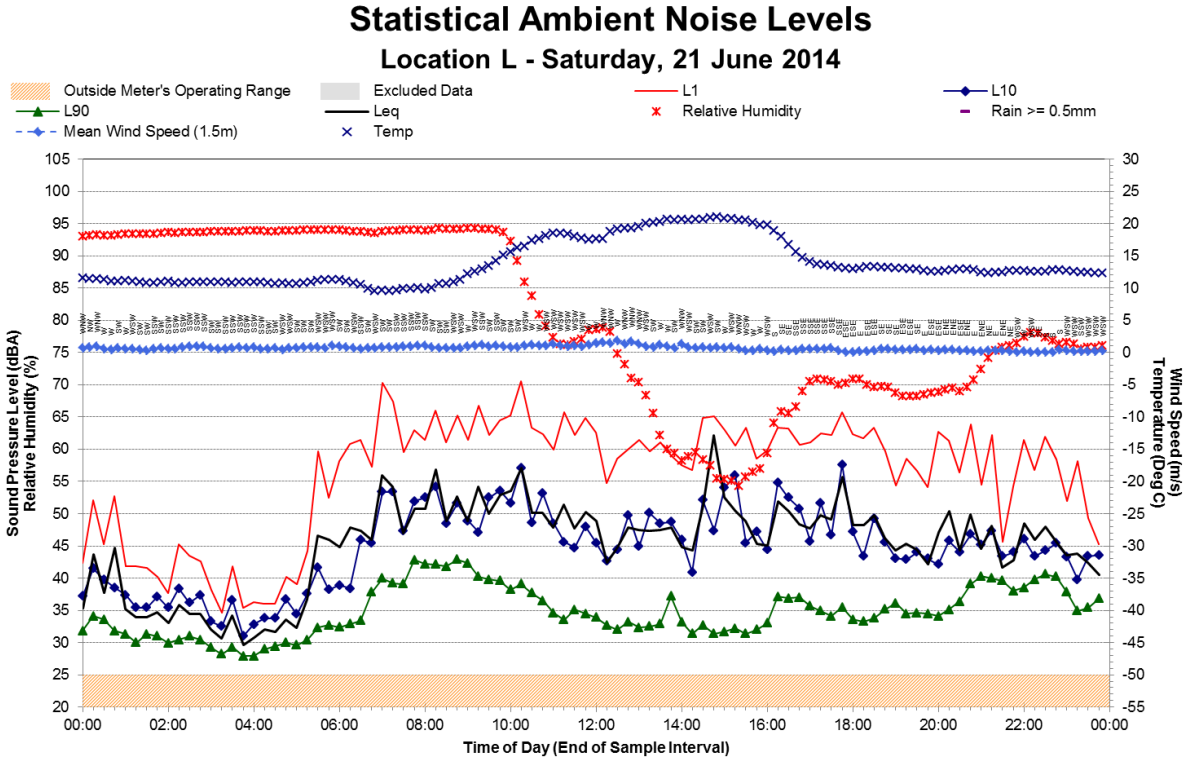




Appendix C6

Statistical Ambient Noise Levels – Location L Page 2 of 4





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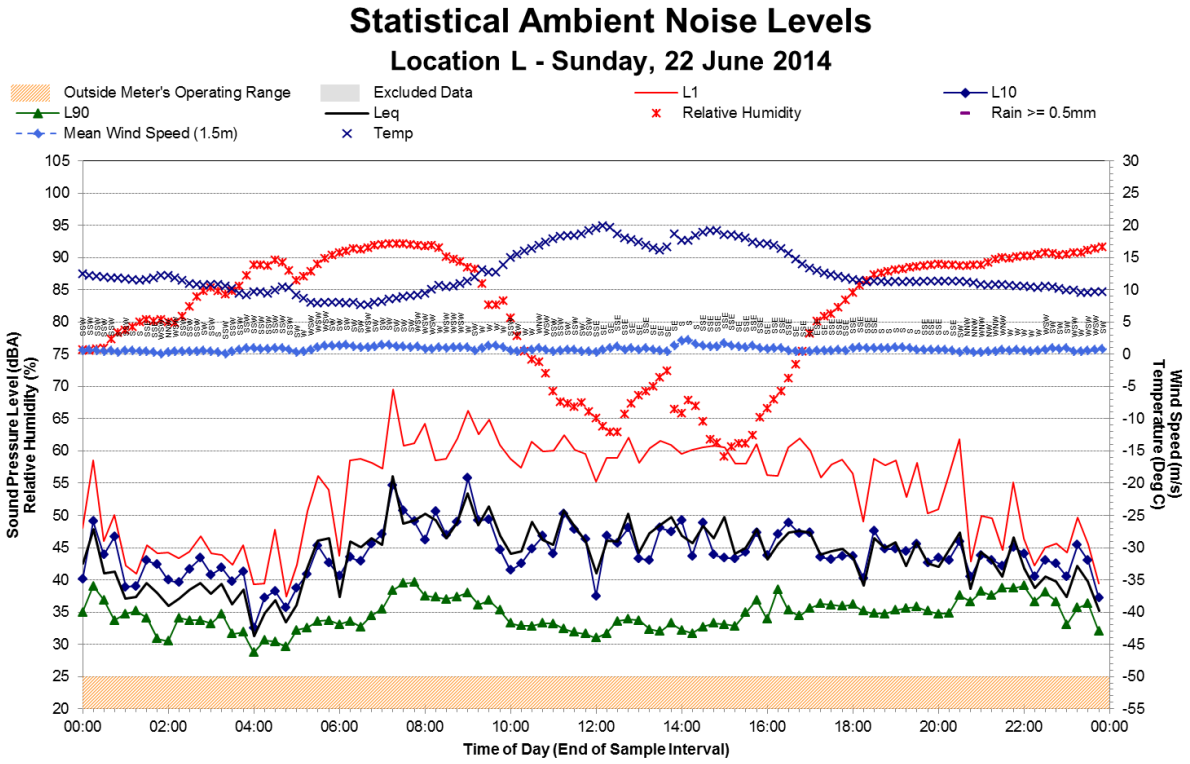

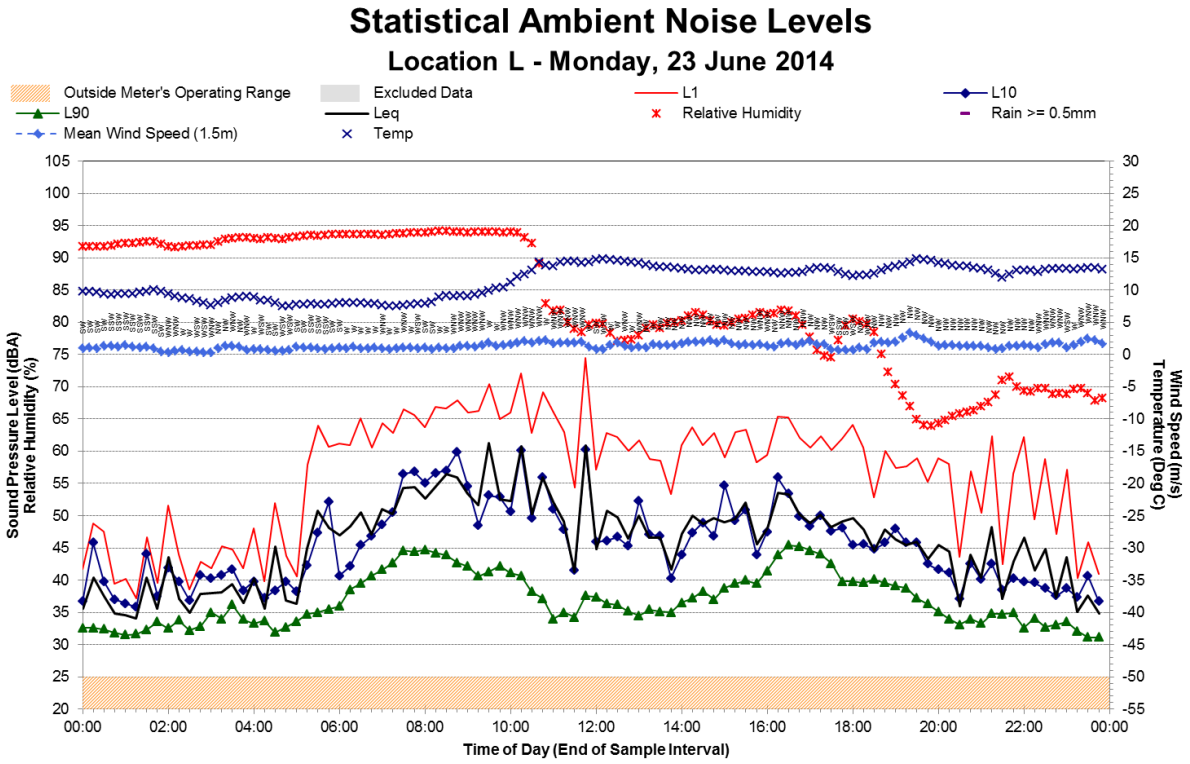

Appendix C6

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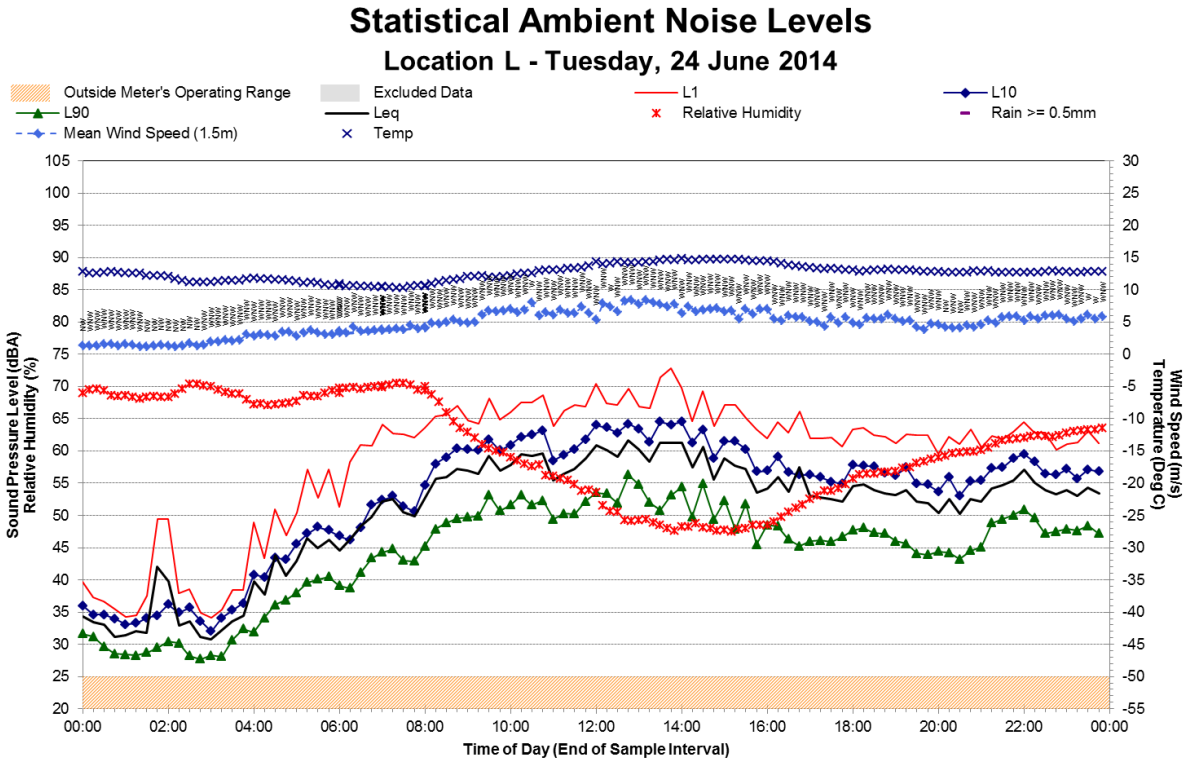

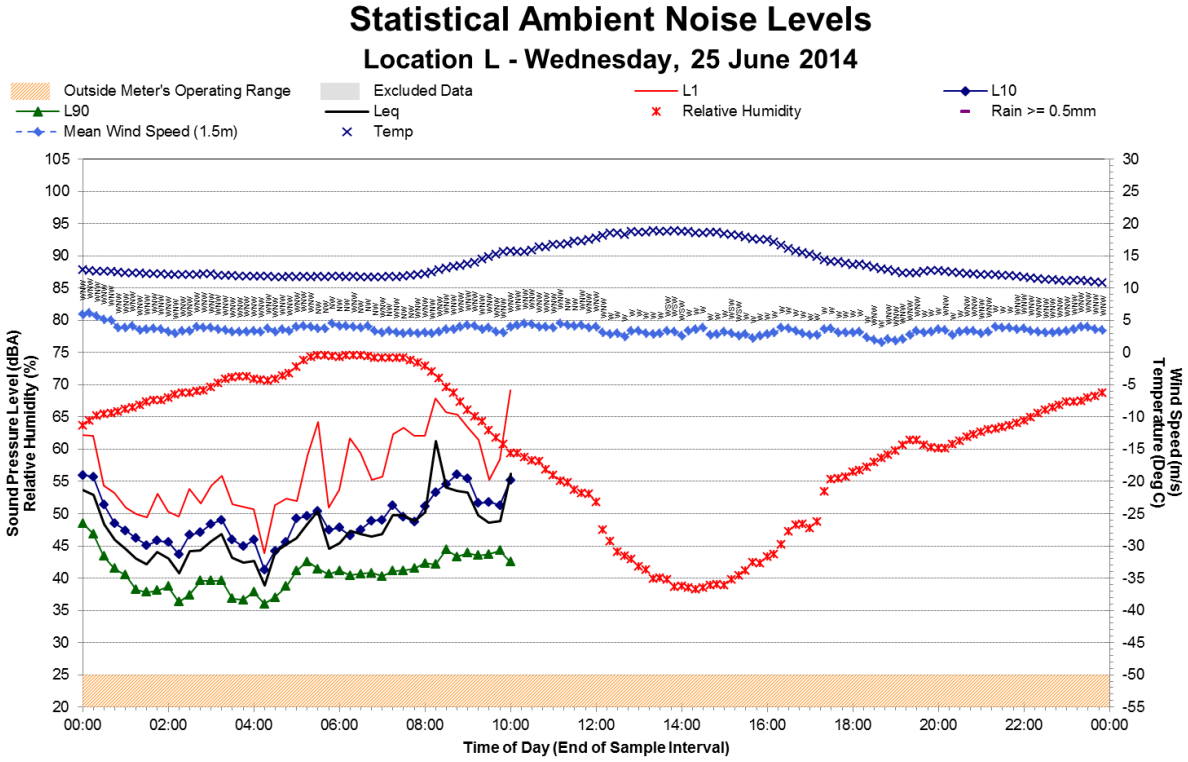

Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending September 2014

Report Number Q55 630.01053-R1

26 November 2014

Donaldson Coal Pty Ltd
PO Box 675
Green Hills 2320

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Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending September 2014

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APPENDIX

Appendix A – Location Map

Appendix B – Statistical Ambient Noise Levels Graphs

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 six (6) 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	*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 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.*

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

1. *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 referred to in Table 5, see plan in Appendix 3* (attached to this report as **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

1. *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*
		LAeq(period)	
All privately-owned land	*55*	*45*	*40*

Cumulative Noise Criteria

1. *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
		LAeq(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

1. *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

2. 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 NOISE MONITORING 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 program 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 six (6) focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1**.

It is relevant to note that Donaldson Open Cut Mine has ceased production and all major earthworks on the site have been finalised. Therefore, compliance noise monitoring for the Donaldson Open Cut Mine are no longer required.

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
J	Parish Drive, Thornton
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 15 September 2014 and 30 September 2014 at each of the six (6) 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 six (6) 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.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Noise Monitoring

Operator attended noise measurements were conducted during the daytime on Monday 15 September 2014 and Tuesday 23 September 2014, evening on Monday 22 September 2014 and Monday 29 September 2014 and during the night-time on Monday 22 September 2014 and Tuesday 30 September 2014. All operator attended noise surveys were conducted using a Brüel & Kjær 2270 Type 1, integrating sound level meter (s/n: 3003729).

Results of the operator attended noise measurements are given in **Table 2** to **Table 7**.

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.

Mine noise at all monitoring locations during various periods was 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.

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	
15/09/2014 10:23am W = 1.1 m/s WSW Temp = 19.5°C Cloud cover = 4/8	Daytime Ambient	69	63	47	33	49	M1 Traffic ~ 35 dBA Local Traffic ~ 44 to 69 dBA Birds ~ 38 to 62 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <30 dBA[1].					
22/09/2014 18:00pm W = 0.8 m/s ESE Temp = 14.7°C Cloud cover = 0/8	Evening Ambient	73	68	55	43	55	Local Traffic ~ 56 to 73 dBA Dist Traffic ~ 43 to 46 dBA Insects~ 46 to 49 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <33 dBA[1].					
22/09/2014 22:00pm W = 0.2 m/s ESE Temp = 11.8°C Cloud cover = 0/8	Night-time Ambient	73	63	47	41	50	Insects ~ 42 to 46 dBA Distant Traffic ~ 40 to 49 dBA Local Traffic ~ 50 to 73 dBA Birds ~ 57 to 60 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <31 dBA[1].					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

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	
15/09/2014 10:50am W = 2.4 m/s NW Temp = 21°C Cloud cover = 4/8	Daytime Ambient	80	69	58	44	58	Local Traffic ~ 59 to 80 dBA Birds ~ 60 to 63 dBA JRD Traffic ~ 53 to 67 dBA Aircraft flyover 52 to 58 dBA Insects 43 to 49 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <34 dBA[1].					
22/09/2014 18:40pm W = 0.3 m/s ENE Temp = 12°C Cloud cover = 0/8	Evening Ambient	74	66	59	51	56	JRD Traffic ~ 56 to 74 dBA Insects/frogs ~ 52 to 54 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <41 dBA[1].					
22/09/2014 22:21pm W = 0.3 m/s E Temp = 11°C Cloud cover = 0/8	Night-time Ambient	70	64	57	53	56	JRD Traffic ~ 59 to 70 dBA Insects/frogs ~ 54 to 55 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <43 dBA[1].					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

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	
15/09/2014 12:18pm W = 1.8 m/s WSW Temp = 22.6°C Cloud cover = 3/8	Daytime Ambient	64	55	49	34	46	Birds ~ 36 to 52 dBA Distant road traffic 38 to 40 dBA Aircraft flyover 40 to 64 dBA Abel mine audible
		Estimated Abel mine LAeq(15min) contribution 32 dBA.					
22/09/2014 19:44pm W = 0.3 m/s ESE Temp = 12°C Cloud cover = 0/8	Evening Ambient	53	50	46	41	44	Insects ~ 40 to 43 dBA Dist Traffic ~ 51 to 53 dBA Abel mine audible CHP 34 to 35 Constant rumble (CHP) Bloomfield mine Haul trucks 45 to 48 dBA
		Estimated Abel mine LAeq(15min) contribution 34 dBA.					
22/09/2014 23:25pm W = 0.4 m/s ENE Temp = 11°C Cloud cover = 0/8	Night-time Ambient	50	45	40	34	38	Distant Traffic ~ 37 to 50 dBA Insects 34 to 35 Abel mine Audible 34 to 35 dBA Constant rumble (CHP) Bloomfield mine Dozer tracks 35 to 38 dBA
		Estimated Abel mine LAeq(15min) contribution 34 dBA LA1(1min) contribution 35 dBA					

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	
23/09/2014 12:15pm W = 1.4 m/s ESE Temp = 23°C Cloud cover = 1/8	Daytime Ambient	72	66	56	46	55	Nearby residential Construction 57 to 66 dBA Dist Traffic ~ 40 to 43 dBA Birds ~ 52 to 62 dBA Local Traffic ~ 60 to 72 dBA Trees in wind 48 to 50 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <36 dBA[1].					
29/09/2014 18:52pm W = 0.2 m/s ESE Temp = 22°C Cloud cover = 0/8	Evening Ambient	67	56	49	46	49	DIst Traffic ~ 50 to 54 dBA Dog Barking ~ 48 to 49 dBA Insect/frogs 48 to 49 dBA Local Road traffic 56 to 67 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <36 dBA[1].					
30/09/2014 22:21pm W = 1.6 m/s WNW Temp = 22°C Cloud cover = 0/8	Night-time Ambient	52	49	47	44	46	Dist Traffic ~ 44 to 48 dBA Insect/frogs 47-52 dBA Abel mine Audible 34 to 35 dBA Constant rumble (CHP)
		Estimated Abel mine LAeq(15min) contribution 34 dBA LA1(1min) contribution 35 dBA					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

Table 6 Location J, Parish Drive, Thornton

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	
23/09/2014 12:46pm W = 1.6 m/s SE Temp = 22°C Cloud cover = 1/8	Daytime Ambient	57	51	46	41	44	Distant Road traffic 45-46 dBA Local Traffic ~ 50 to 57 dBA trees in wind ~ 44 to 45 dBA Birds 45 to 56 dBA Train Horn 48 to 51 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <31 dBA[1].					
29/09/2014 19:16pm W = 1.4 m/s WNW Temp = 22°C Cloud cover = 0/8	Evening Ambient	51	49	45	40	43	Distant Road traffic 42-46 dBA Insects 39 to 40 dBA Dogs barking 51 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <30 dBA[1].					
30/09/2014 22:44pm W = 2.1 m/s WNW Temp = 22°C Cloud cover = 0/8	Night-time Ambient	49	44	42	34	39	Dist Traffic ~ 39 to 43 dBA insects ~ 30 to 35 dBA Birds 40 dBA Abel mine not audible.
		Estimated Abel mine LAeq(15min) contribution <30 dBA[1]. LA1(1min) contribution <30 dBA[1]					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

Table 7 Location L, 17 Killshanny 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	
23/09/2014 11:49am W = 2.9 m/s WSW Temp = 21.5°C Cloud cover = 1/8	Daytime Ambient	70	55	42	34	45	Birds ~ 35 to 57 dBA Trees in wind 37 to 38 dBA Distan road traffic 34 dBA Local Traffic ~ 48 to 71 dBA dog barking ~ 53 to 57 dBA Abel mine audible 32 to 33 dBA Constant rumble (CHP)
		Estimated Abel mine LAeq(15min) contribution 32 dBA.					
29/09/2014 18:31pm W = 1.9 m/s NW Temp = 24°C Cloud cover = 0/8	Evening Ambient	78	67	50	41	54	Dog Barking ~ 50 to 64 dBA Local Traffic ~ 67 to 78 dBA Insects ~ 48 to 49 dBA Abel mine not audible.
		Estimated Abel mine LAeq(15min) contribution <31 dBA[1].					
30/09/2014 22:00pm W = 2 m/s WNW Temp = 22°C Cloud cover = 0/8	Night-time Ambient	74	59	47	41	49	Dist Traffic ~ 45 to 50 dBA Local Traffic ~ 45 to 74 dBA Insects ~ 36 to 46 dBA Aircraft flyover ~ 46 to 55 dBA Abel mine not Audible
		Estimated Abel mine LAeq(15min) contribution <31 dBA[1] LA1(1min) contribution <31 dBA[1]					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

4.2 Operator Attended Noise Monitoring Summary

4.2.1 Donaldson Mine

Donaldson Open Cut Mine has ceased production and all major earthworks on the site have been finalised. Therefore, compliance noise monitoring for the Donaldson Open Cut Mine is no longer required.

4.2.2 Abel Coal Mine

Noise generated by local and distant traffic was a significant contributor to ambient 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 times at Location G, I and L.

4.3 Compliance Assessment and Discussion of Results

4.3.1 Operations

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

Table 8 Compliance Noise Assessment – Operations

Location	Estimated Abel LAeq(15minute) Contribution			Consent Conditions LAeq(15minute)			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
D – Black Hill School, Black Hill	<30	<33	<31	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
F – Black Hill Road, Black Hill	<34	<41	<43	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
G – Buchanan Road, Buchanan	32	34	34	35	35	35	Yes	Yes	Yes
I – Lord Howe Drive, Ashtonfield	<36	<36	34	36	36	36	Yes[1,2]	Yes[1,2]	Yes
J – Parish Drive, Thornton	<31	<30	<30	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
L – Kilshanny Ave, Ashtonfield	32	<31	<31	40	40	40	Yes	Yes[1,2]	Yes[1,2]

1 – Abel operations inaudible/not measurable.
2 – Estimated contribution equals LA90 minus 10 dBA.

Results presented in **Table 8** indicate that compliance with the relevant consent conditions was achieved at all noise monitoring locations during all periods.

4.3.2 Sleep Disturbance

Results of the sleep disturbance compliance assessment are given in **Table 9**.

Table 9 Compliance Noise Assessment – Sleep Disturbance

Location	Estimated Abel LA1(1minute) Contribution	Consent Conditions LA1(1minute)	Compliance
D – Black Hill School, Black Hill	<31	45	Yes
F – Black Hill Road, Black Hill	<43	45	Yes
G – Buchanan Road, Buchanan	34	45	Yes
I – Lord Howe Drive, Ashtonfield	34	45	Yes
J – Parish Drive, Thornton	<30	45	Yes
L – Kilshanny Ave, Ashtonfield	31	47	Yes

Results presented in **Table 9** indicate 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 15 September 2014 and 30 September 2014 at each of the six (6) monitoring locations given in **Table 10**.

Table 10 Noise Logger and Noise Monitoring Locations

Location	Noise Logger Serial Number	Date of Logging
D – Black Hill School, Black Hill	ARL EL- 316 16-306-039	15/09/2014-23/09/2014
F – Black Hill Road, Black Hill	ARL EL- 316 16-203-509	15/09/2014-23/09/2014
G – Buchanan Road, Buchanan	ARL EL- 316 16-203-531	15/09/2014-23/09/2014
I – Lord Howe Drive, Ashtonfield	ARL EL- 316 16-203-509	23/09/2014-29/09/2014
L – Kilshanny Ave, Kilshanny	ARL EL- 316 16-203-531	23/09/2014-28/09/2014
J – Parish Drive, Thornton	SVANTEK 957 23245	23/09/2014-30/09/2014

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices B**. A summary of the results of the unattended continuous noise monitoring is given in **Table 11**.

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 were 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 11 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	63	50	35	51
	Evening	55	45	36	49
	ENCM Daytime	60	48	36	50
	Night	49	41	31	47
F Lot 684 Black Hill Road, Black Hill	Daytime	70	58	43	58
	Evening	63	56	48	55
	ENCM Daytime	68	57	47	57
	Night	62	55	44	55
G 156 Buchanan Road, Buchanan	Daytime	51	45	33	45
	Evening	47	45	38	46
	ENCM Daytime	49	45	36	45
	Night	44	40	30	43
I 49 Magnetic Drive, Ashtonfield	Daytime	63	54	40	57
	Evening	54	51	45	51
	ENCM Daytime	60	53	43	55
	Night	53	49	36	49
L 17 Kilshanny Ave, Ashtonfield	Daytime	60	49	33	50
	Evening	56	44	36	46
	ENCM Daytime	59	47	35	49
	Night	47	41	30	42
J 220 Parish Drive, Thornton	Daytime	53	48	39	50
	Evening	50	47	40	46
	ENCM Daytime	52	48	40	49
	Night	49	45	32	44

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.
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 L_{A90} Noise Levels

The long term ambient L_{A90} 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

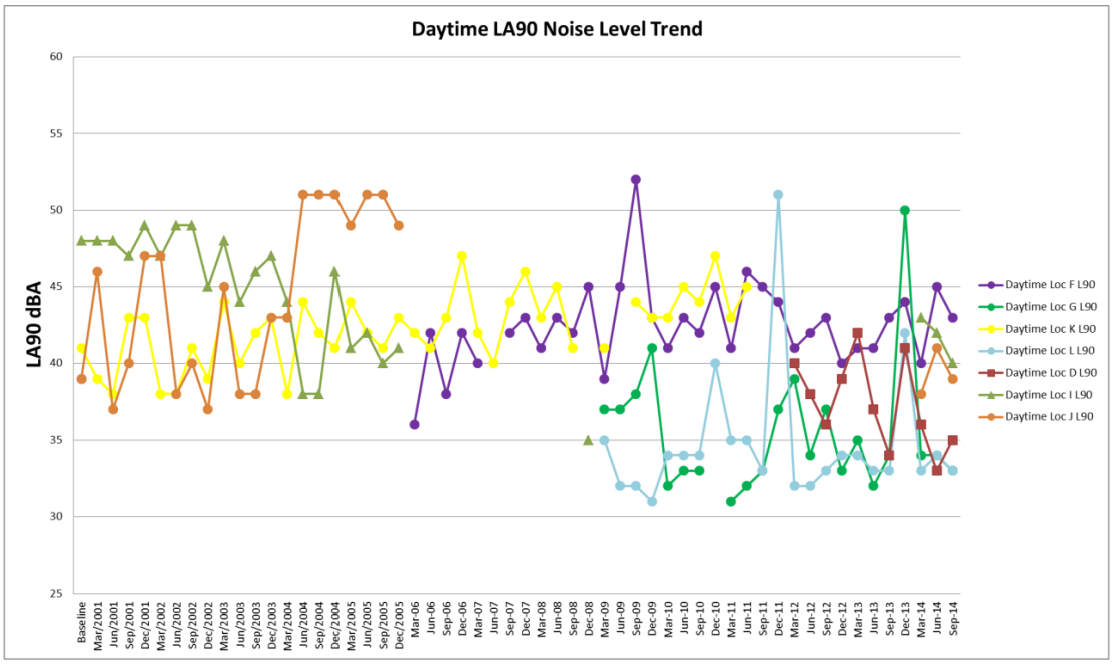


Figure 2 Long term Evening L_{A90} Noise Levels

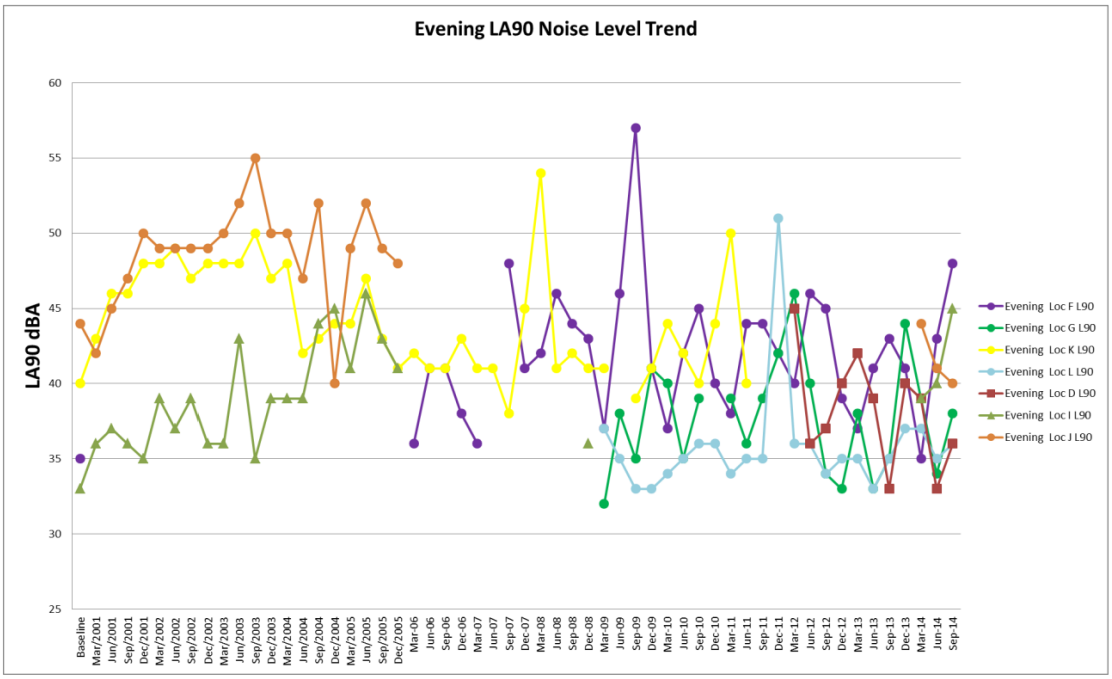
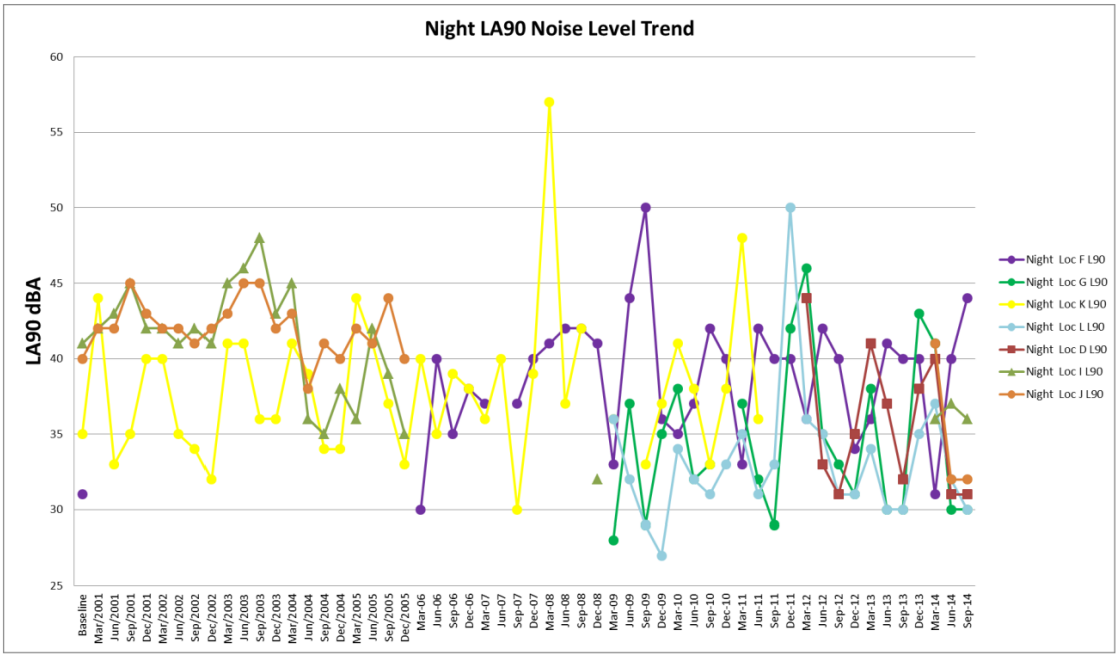


Figure 3 Long term Night-time L_{A90} Noise Levels



Baseline

The summary of results in **Table 12** shows the ambient L_{A90} noise levels recorded for the quarter ending September 2014 compared to the levels recorded during the baseline monitoring process (ie. Prior to commencement of mining operation at Donaldson).

Table 12 LA90 Results Comparison – Baseline

Monitoring Location	Period	Long term Night-time L_{A90} Noise Levels		Difference dB
		Baseline	September 2014	
D Black Hill School, Black Hill	Day	N/A[1]	35	N/A[1]
	Evening	N/A[1]	36	N/A[1]
	Night	N/A[1]	31	N/A[1]
F Lot 684 Black Hill Road, Black Hill	Day	39	43	4
	Evening	35	48	13
	Night	31	44	13
G 156 Buchanan Road, Buchanan	Day	N/A[1]	33	N/A[1]
	Evening	N/A[1]	38	N/A[1]
	Night	N/A[1]	30	N/A[1]
I 49 Magnetic Drive, Ashtonfield	Day	48	40	-8
	Evening	33	45	12
	Night	41	36	-5
L 17 Kilshanny Ave, Ashtonfield	Day	N/A[1]	33	N/A[1]
	Evening	N/A[1]	36	N/A[1]
	Night	N/A[1]	30	N/A[1]
J 220 Parish Drive, Thornton	Day	39	39	0
	Evening	44	40	-4
	Night	40	32	-8

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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..

1. No data was available during baseline measurements, no comparisons can be made.

Previous Quarter (June 2014)

Table 13 presents the ambient L_{A90} noise levels recorded for the current monitoring period compared to those measured in the previous monitoring period.

Table 13 LA90 Results Comparison – Previous Quarter (June 2014)

Monitoring Location	Period	Long term Night-time L_{A90} Noise Levels		Difference dB
		June 2014	September 2014	
D Black Hill School, Black Hill	Day	33	35	2
	Evening	33	36	3
	Night	31	31	0
F Lot 684 Black Hill Road, Black Hill	Day	45	43	-2
	Evening	43	48	5
	Night	40	44	4
G 156 Buchanan Road, Buchanan	Day	34	33	-1
	Evening	34	38	4
	Night	30	30	0
I 49 Magnetic Drive, Ashtonfield	Day	42	40	-2
	Evening	40	45	5
	Night	37	36	-1
L 17 Kilshanny Ave, Ashtonfield	Day	34	33	-1
	Evening	35	36	1
	Night	32	30	-2
J 220 Parish Drive, Thornton	Day	41	39	-2
	Evening	41	40	-1
	Night	32	32	0

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

Coinciding Period Last Year (September 2013)

Table 14 presents the ambient LA90 noise levels recorded for the current monitoring period compared to those measured during the coinciding monitoring period last year.

Table 14 LA90 Results Comparison – Coinciding Period Last Year (September 2013)

Monitoring Location	Period	Long term Night-time LA90 Noise Levels		Difference dB
		September 2013	September 2014	
D Black Hill School, Black Hill	Day	34	35	1
	Evening	33	36	3
	Night	32	31	-1
F Lot 684 Black Hill Road, Black Hill	Day	43	43	0
	Evening	43	48	5
	Night	40	44	4
G 156 Buchanan Road, Buchanan	Day	34	33	-1
	Evening	35	38	3
	Night	30	30	0
I 49 Magnetic Drive, Ashtonfield	Day	N/A[1]	40	N/A[1]
	Evening	N/A[1]	45	N/A[1]
	Night	N/A[1]	36	N/A[1]
L 17 Kilshanny Ave, Ashtonfield	Day	33	33	0
	Evening	35	36	1
	Night	30	30	0
J 220 Parish Drive, Thornton	Day	N/A[1]	39	N/A[1]
	Evening	N/A[1]	40	N/A[1]
	Night	N/A[1]	32	N/A[1]

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No data was recorded at Location I and J during the quarter, no comparisons can be made.

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

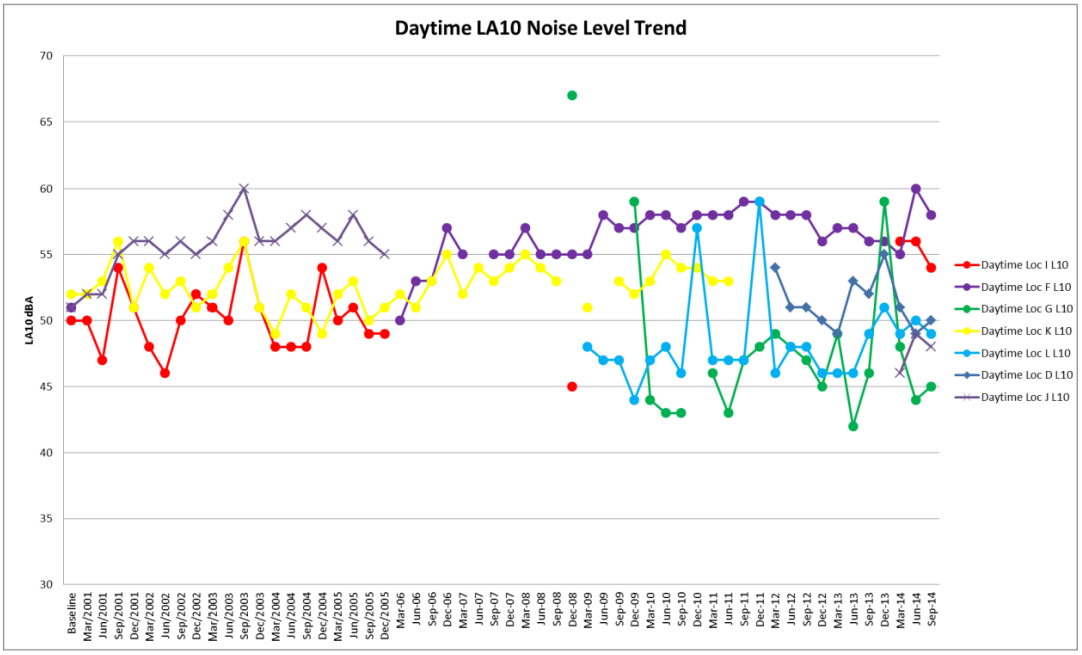


Figure 5 Long term Evening L_{A10} Noise Levels

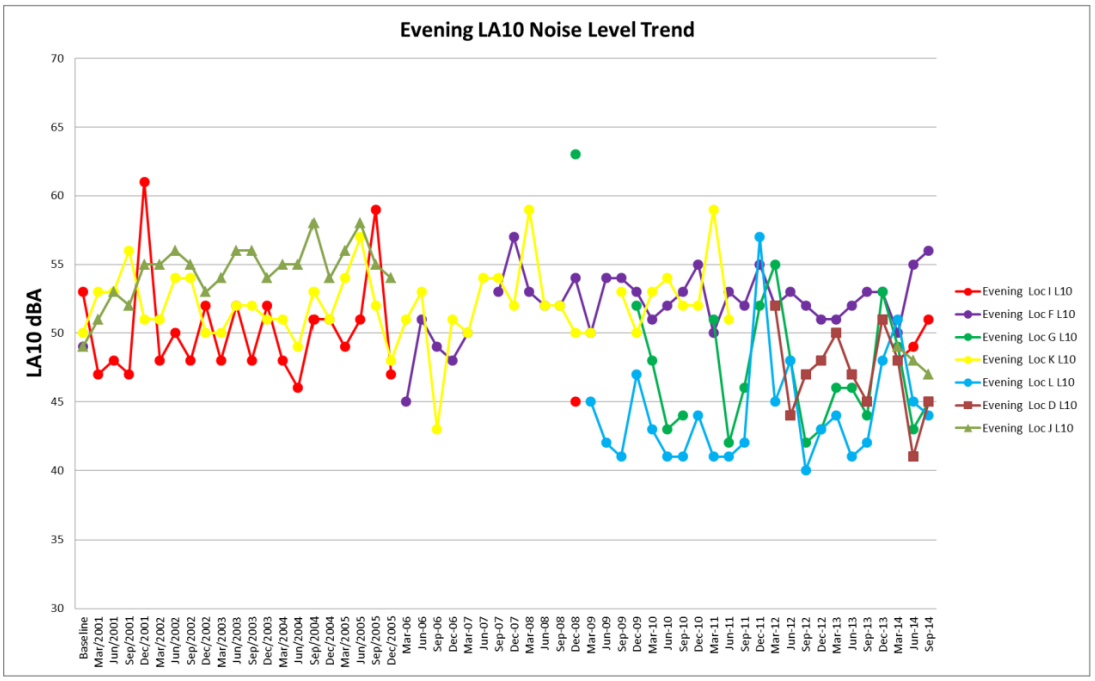
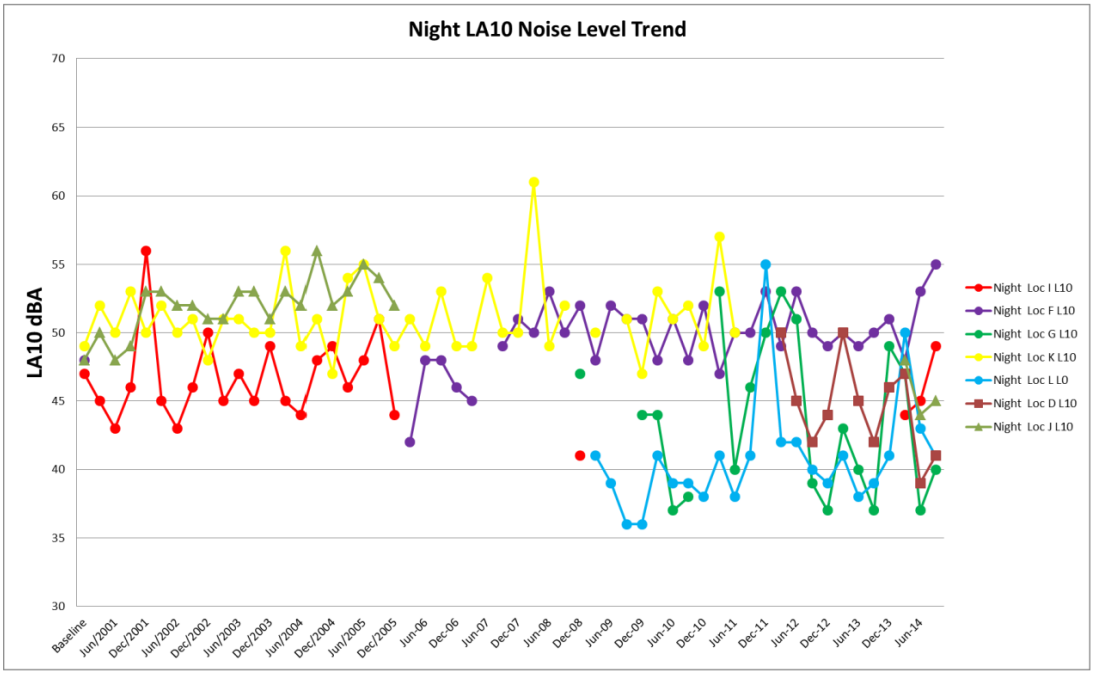


Figure 6 Long term Night-time L_{A10} Noise Levels



Baseline

Table 15 presents the ambient L_{A10} noise levels recorded for the quarter ending September 2014 compared to the levels recorded during the baseline monitoring period.

Table 15 LA10 Results Comparison – Baseline

Monitoring Location	Period	Long term Night-time L_{A10} Noise Levels		Difference dB
		Baseline	September 2014	
D Black Hill School, Black Hill	Day	N/A[1]	50	N/A[1]
	Evening	N/A[1]	45	N/A[1]
	Night	N/A[1]	41	N/A[1]
F Lot 684 Black Hill Road, Black Hill	Day	51	58	7
	Evening	49	56	7
	Night	48	55	7
G 156 Buchanan Road, Buchanan	Day	N/A[1]	45	N/A[1]
	Evening	N/A[1]	45	N/A[1]
	Night	N/A[1]	40	N/A[1]
I 49 Magnetic Drive, Ashtonfield	Day	50	54	4
	Evening	53	51	-2
	Night	47	49	2
L 17 Kilshanny Ave, Ashtonfield	Day	N/A[1]	49	N/A[1]
	Evening	N/A[1]	44	N/A[1]
	Night	N/A[1]	41	N/A[1]
J 220 Parish Drive, Thornton	Day	51	48	-3
	Evening	49	47	-2
	Night	48	45	-3

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No data was available during baseline measurements, no comparisons can be made.

Previous Quarter (June 2014)

Table 16 presents the ambient L_{A10} noise levels recorded for the current monitoring period compared to those measured during the previous monitoring period.

Table 16 LA10 Results Comparison – Previous Quarter (June 2014)

Monitoring Location	Period	Long term Night-time L_{A10} Noise Levels		Difference dB
		June 2014	September 2014	
D Black Hill School, Black Hill	Day	49	50	1
	Evening	41	45	4
	Night	39	41	2
F Lot 684 Black Hill Road, Black Hill	Day	60	58	-2
	Evening	55	56	1
	Night	53	55	2
G 156 Buchanan Road, Buchanan	Day	44	45	1
	Evening	43	45	2
	Night	37	40	3
I 49 Magnetic Drive, Ashtonfield	Day	56	54	-2
	Evening	49	51	2
	Night	45	49	4
L 17 Kilshanny Ave, Ashtonfield	Day	50	49	-1
	Evening	45	44	-1
	Night	43	41	-2
J 220 Parish Drive, Thornton	Day	49	48	-1
	Evening	48	47	-1
	Night	44	45	1

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

Coinciding Period Last Year (September 2013)

Table 17 presents the ambient L_{A10} noise levels recorded for the current monitoring period compared to those measured during the coinciding monitoring period last year.

Table 17 LA10 Results Comparison – Coinciding Period Last Year (September 2013)

Monitoring Location	Period	Long term Night-time L_{A10} Noise Levels		Difference dB
		September 2013	September 2014	
D Black Hill School, Black Hill	Day	52	50	-2
	Evening	45	45	0
	Night	42	41	-1
F Lot 684 Black Hill Road, Black Hill	Day	56	58	2
	Evening	53	56	3
	Night	50	55	5
G 156 Buchanan Road, Buchanan	Day	46	45	-1
	Evening	44	45	1
	Night	37	40	3
I 49 Magnetic Drive, Ashtonfield	Day	N/A[1]	54	N/A[1]
	Evening	N/A[1]	51	N/A[1]
	Night	N/A[1]	49	N/A[1]
L 17 Kilshanny Ave, Ashtonfield	Day	49	49	0
	Evening	42	44	2
	Night	39	41	2
J 220 Parish Drive, Thornton	Day	N/A[1]	48	N/A[1]
	Evening	N/A[1]	47	N/A[1]
	Night	N/A[1]	45	N/A[1]

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No data was recorded at Location I and J during the quarter, no comparisons 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 train loading times during the noise monitoring period are presented in **Table 18**. Only 4 trains during the day time and evening were recorded to have passed the monitoring location J during the monitoring period. No trains were loaded during the night-time period during the noise monitoring at Location J.

Table 18 Coal Train Loading Operations Log

Date	Coal Train Loading Time
23/09/2014	Nil Trains
24/09/2014	Nil Trains
25/09/2014	15:00pm to 20:00pm
26/09/2014	07:00am to 12:15pm 16:00pm to 21:00pm
27/09/2014	Nil Trains
28/09/2014	11:00am to 17:30pm
29/09/2014	Nil Trains
30/09/2014	Nil Trains

The measured $L_{Aeq(period)}$ noise level for each period from rail traffic at Location J are presented in **Table 19**.

Table 19 Rail Noise Impact Monitoring Results

Location	Date	Period	Measured $L_{Aeq(Period)}$	Criteria $L_{Aeq(Period)}$	Compliance
Location J	25/09/2014	Day	48	55	Yes
	26/09/2014		51		Yes
	28/09/2014		50		Yes
	25/09/2014	Evening	45	45	Yes
	26/09/2014		44		Yes
	N/A	Night	n/a[1]	40	n/a[1]

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No trains were loaded during this time period.

The results contained in **Table 19** show that compliance with the rail noise criteria was achieved during the September 2014 Quarter.

6 CONCLUSION

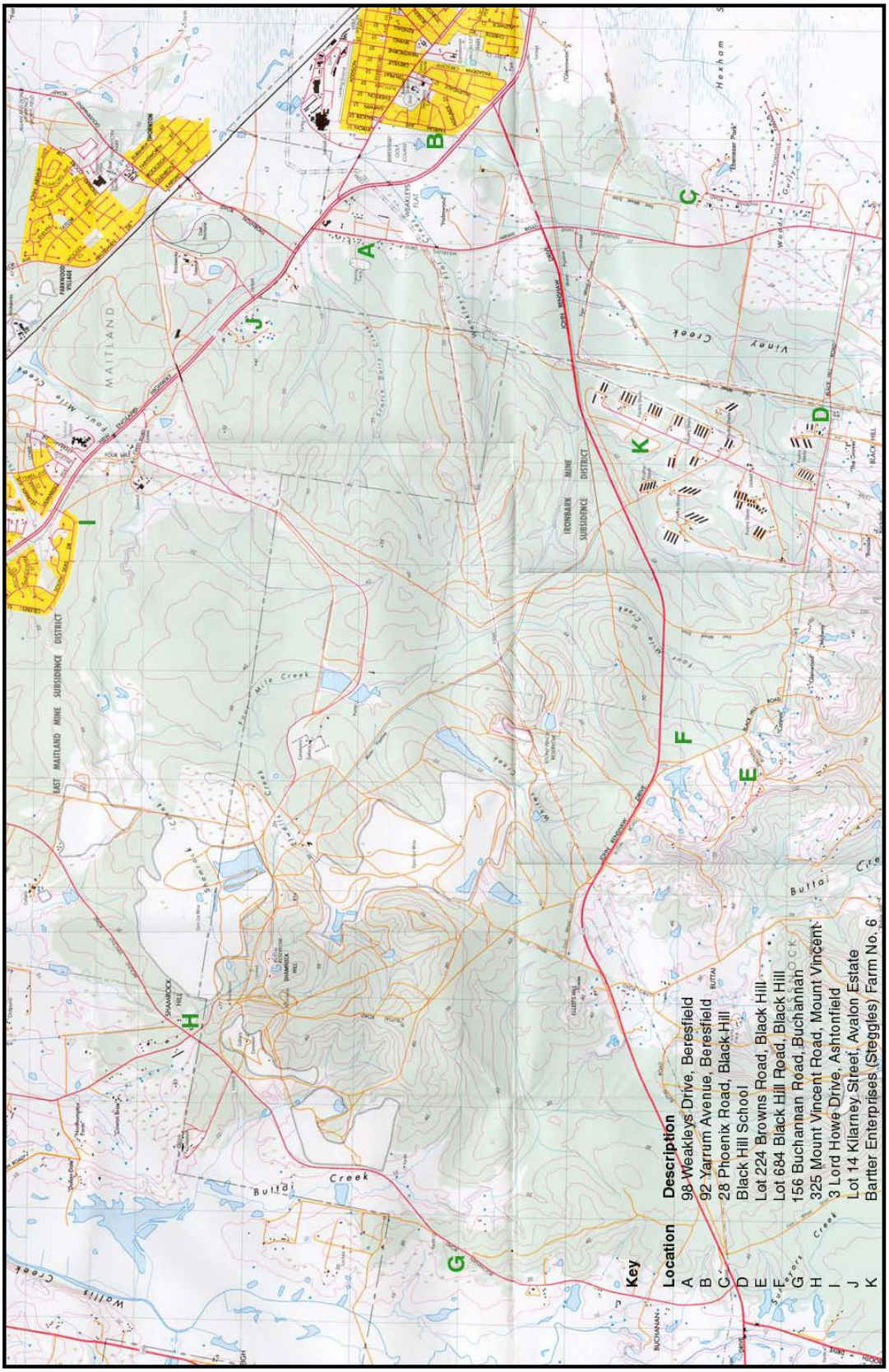
SLR was engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2007.

The results of the operator-attended noise measurements conducted at six (6) focus locations surrounding the mine site are included in **Table 2** to **Table 7**.

Abel Mine operations at the CHPP were only faintly audible at Location G during the evening and night-time, Location I during the night-time and Location L during the daytime. Abel portal operations were not observed to be audible at any other locations during the monitoring period. 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 2014), the baseline monitoring period, the last monitoring period (June 2014), and the coinciding monitoring period from last year (September 2013) has been conducted.

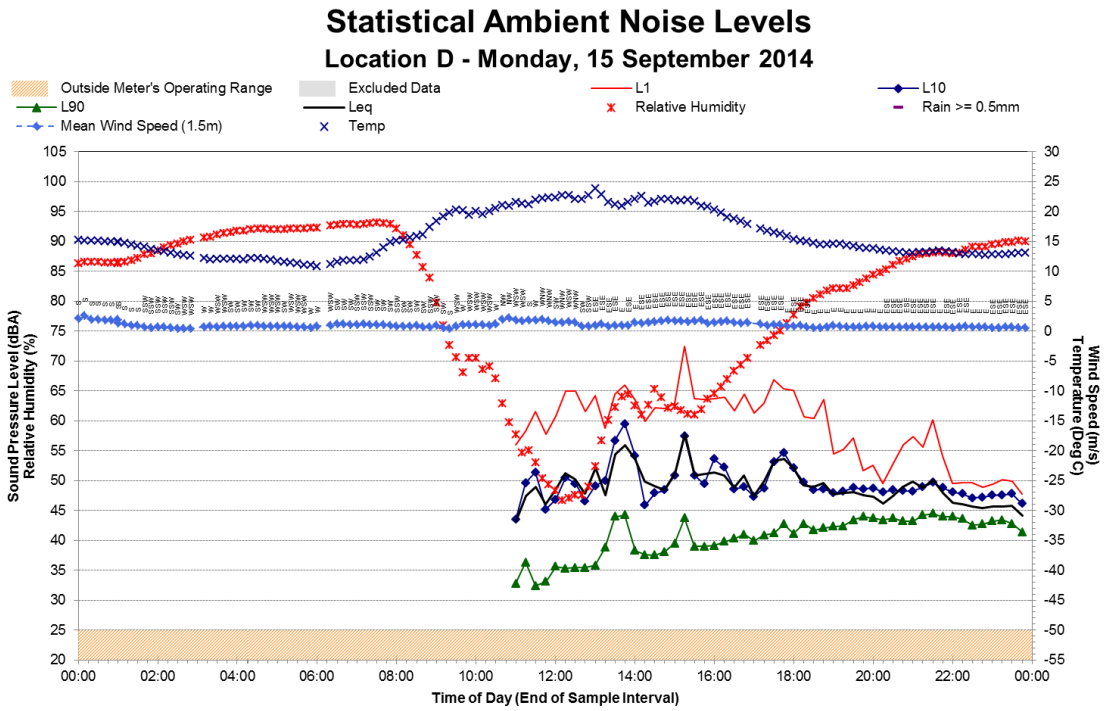
An assessment of the rail noise impact was also undertaken, determining compliance with the criteria stated in **Section 2.2**.

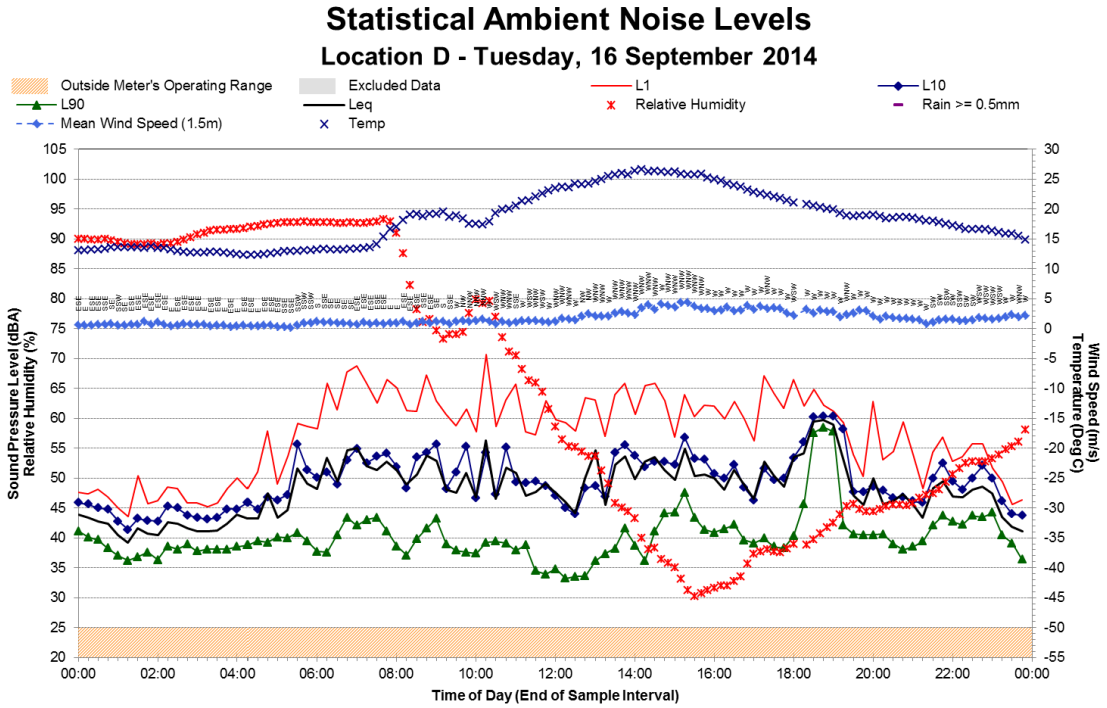


Appendix A – Page 1
Noise Monitoring Locations
Report 30-1053

Appendix B1

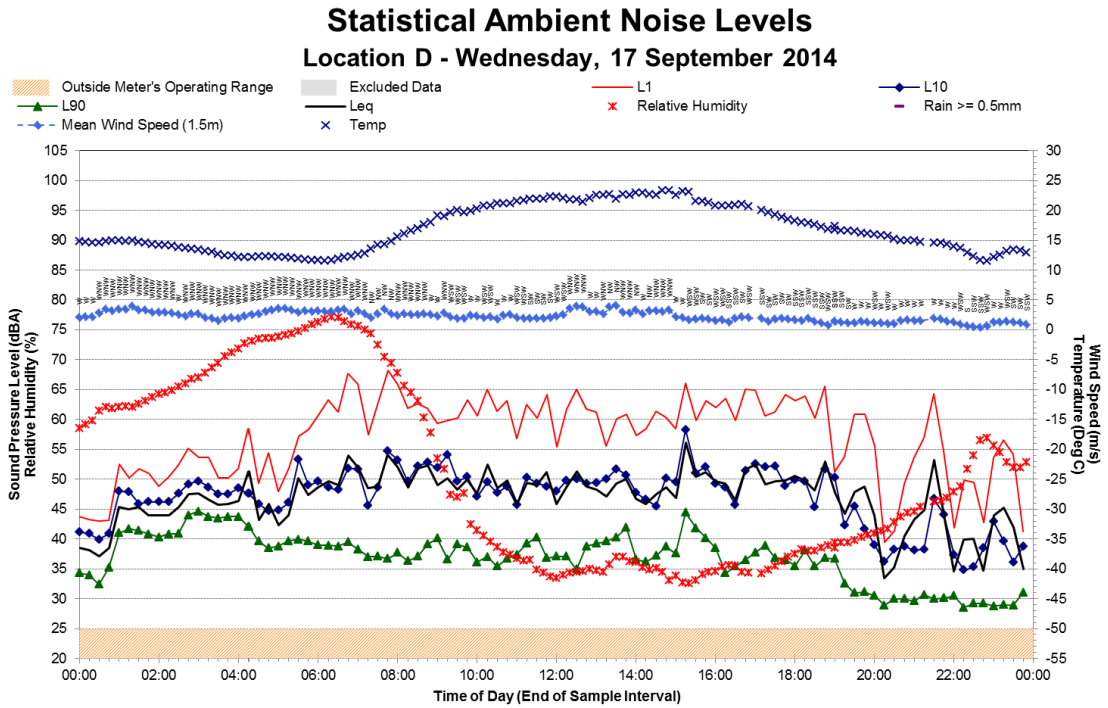
Statistical Ambient Noise Levels – Location D Page 1 of 5

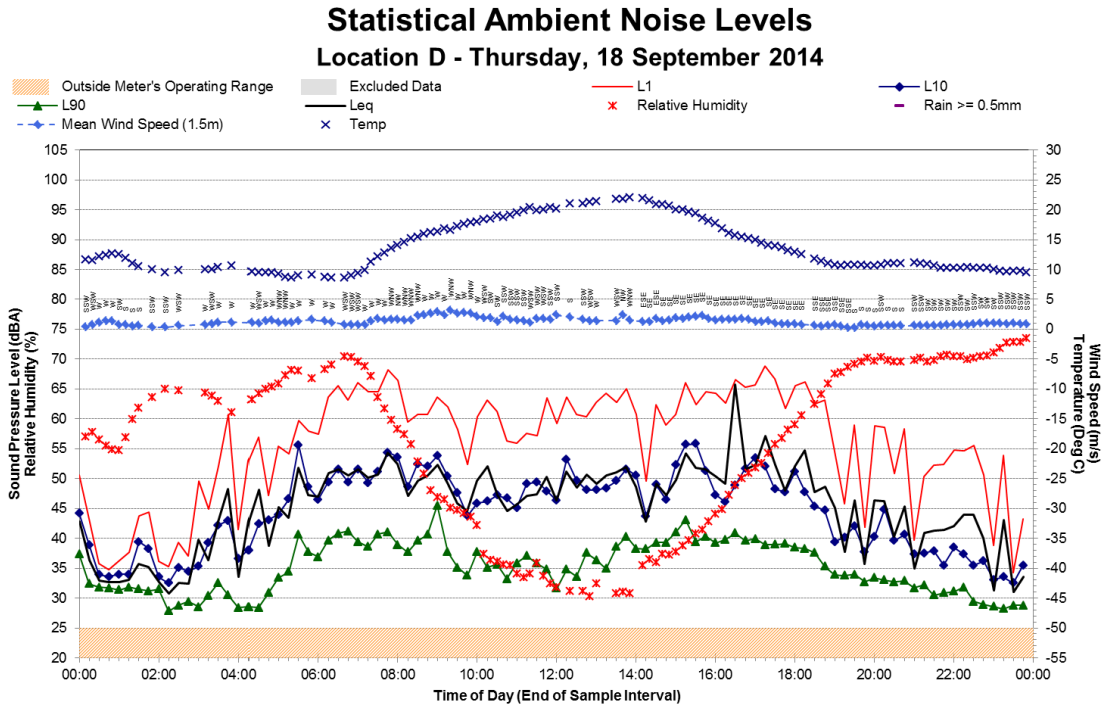




Appendix B1

Statistical Ambient Noise Levels – Location D Page 2 of 5





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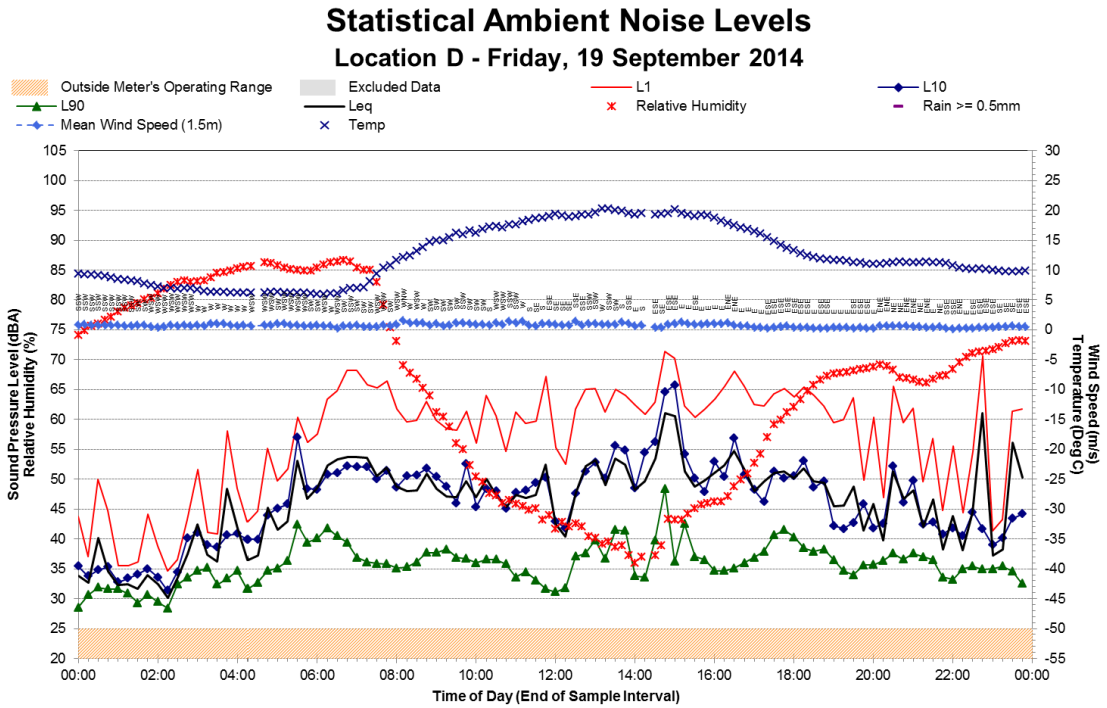

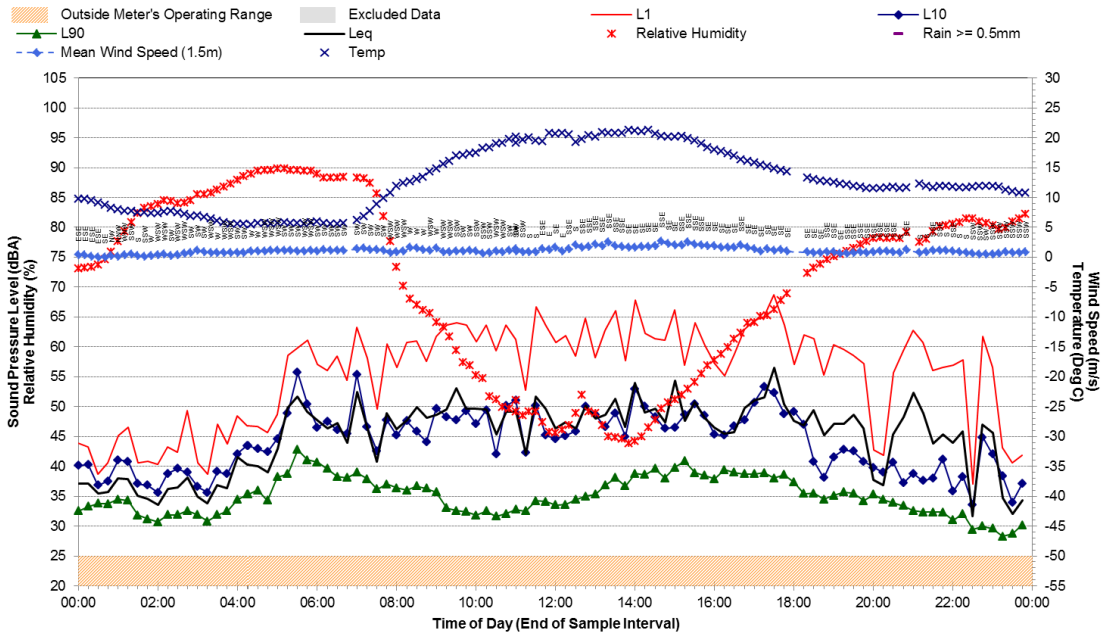

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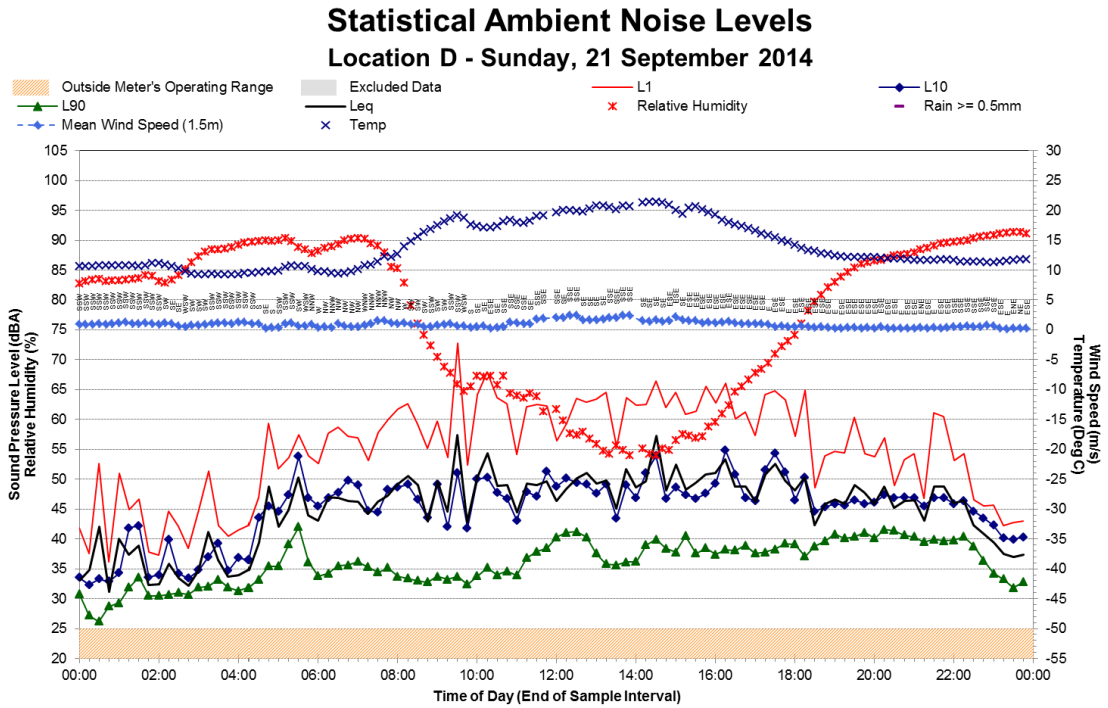

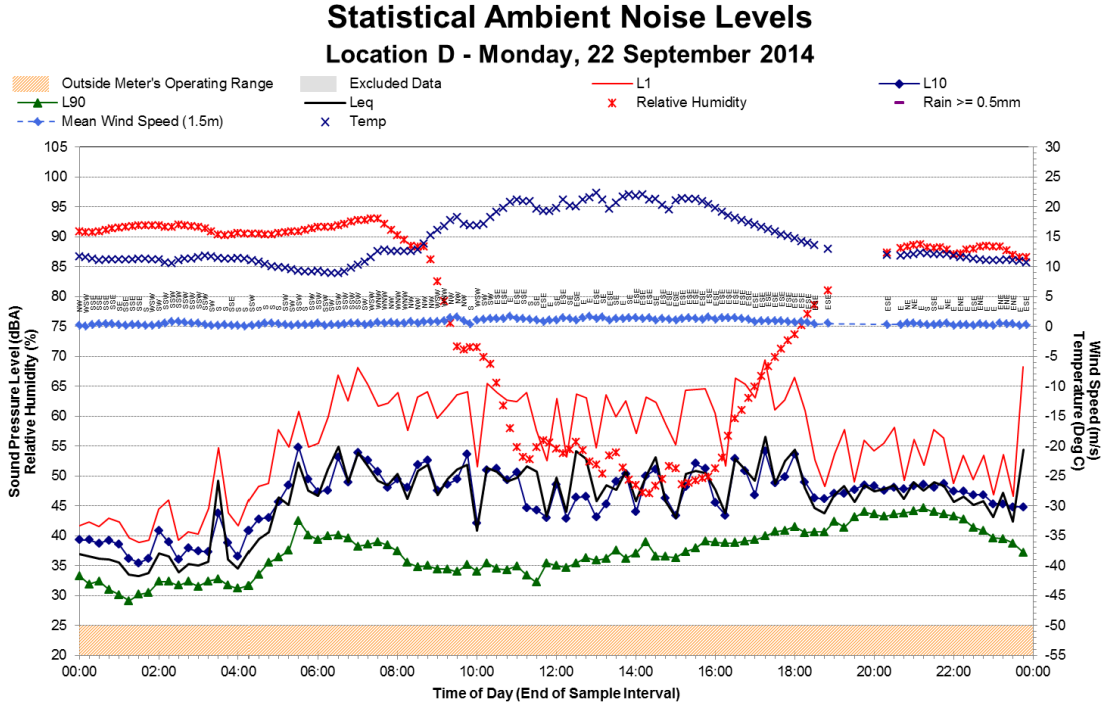

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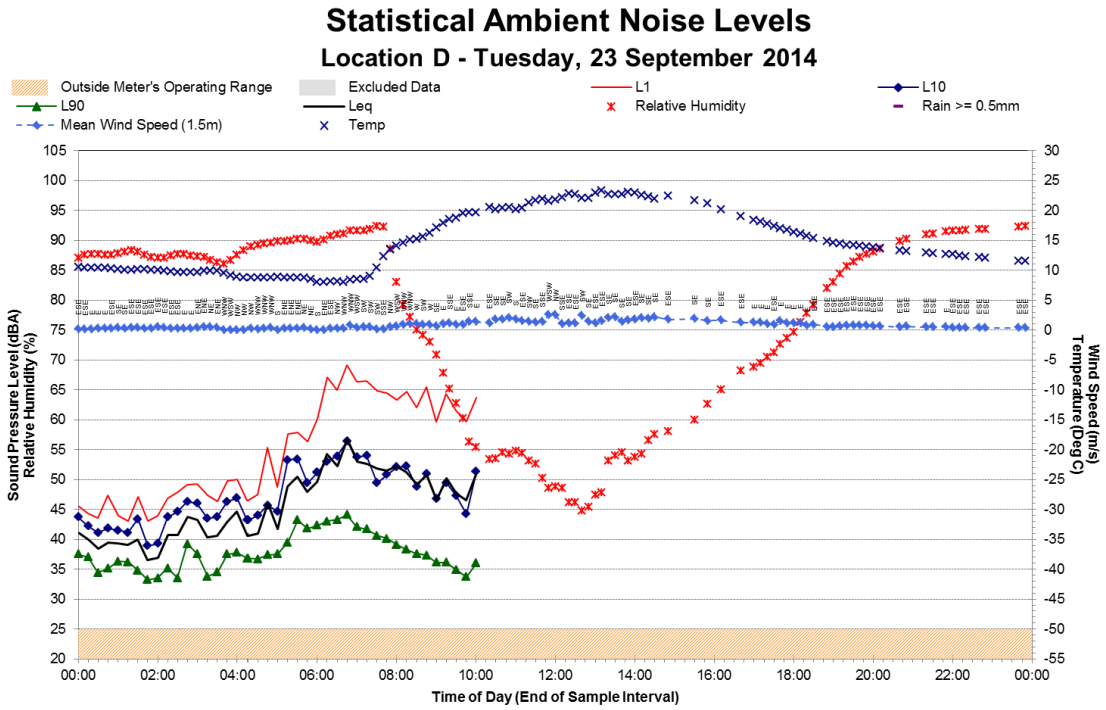

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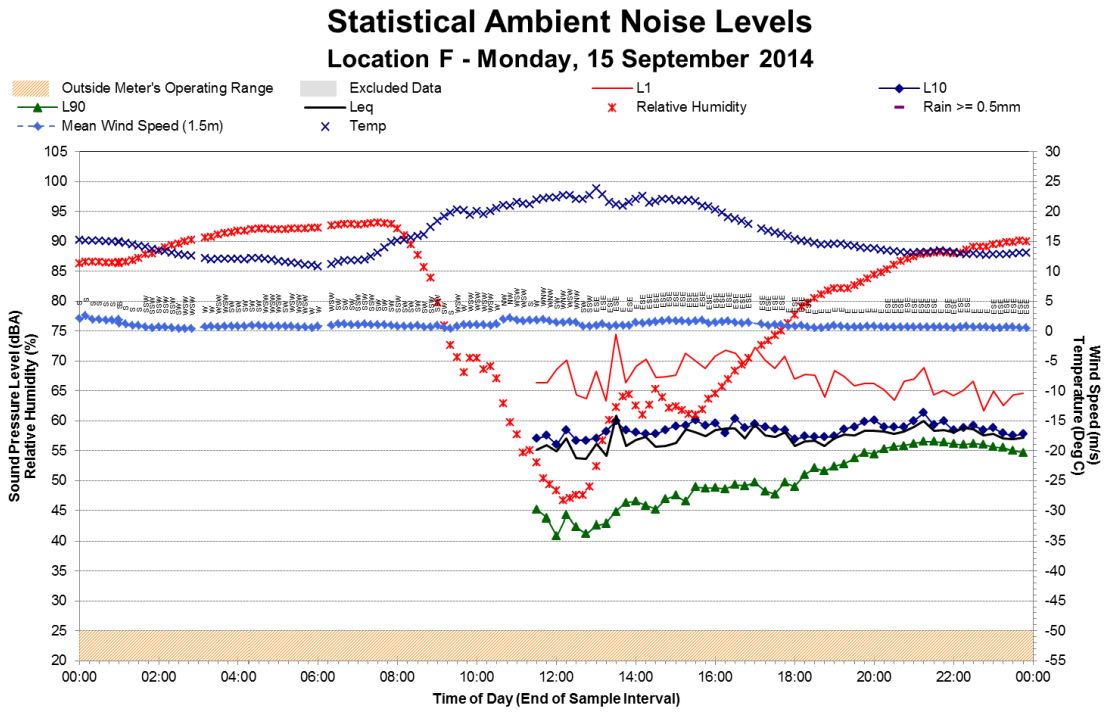

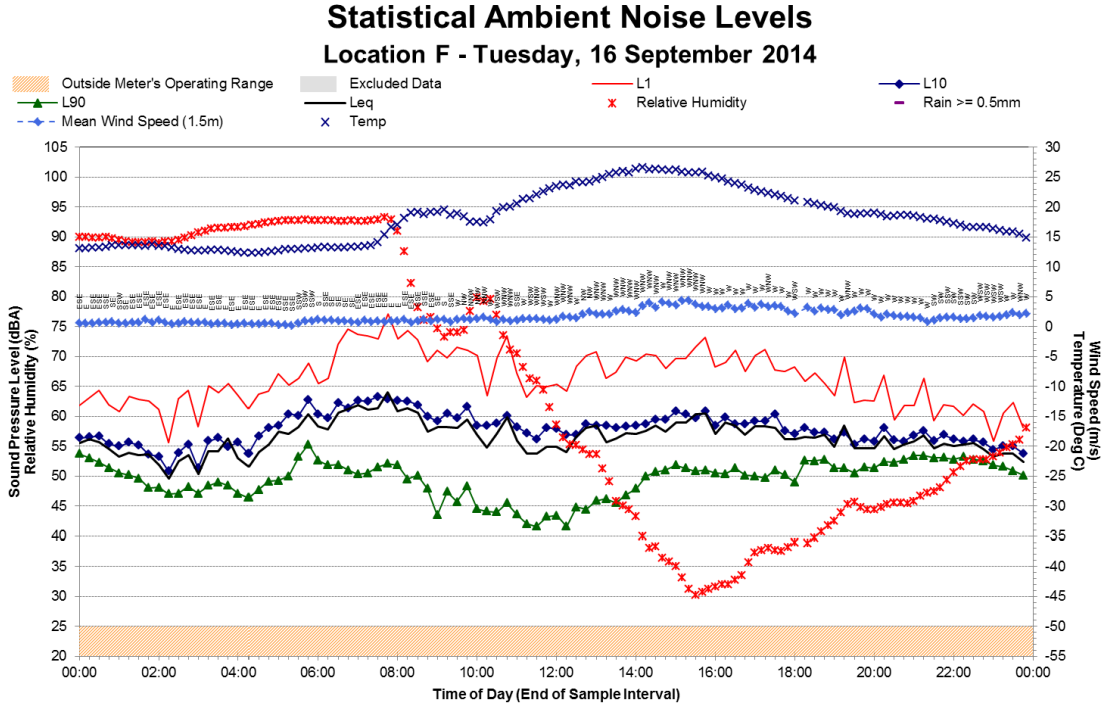

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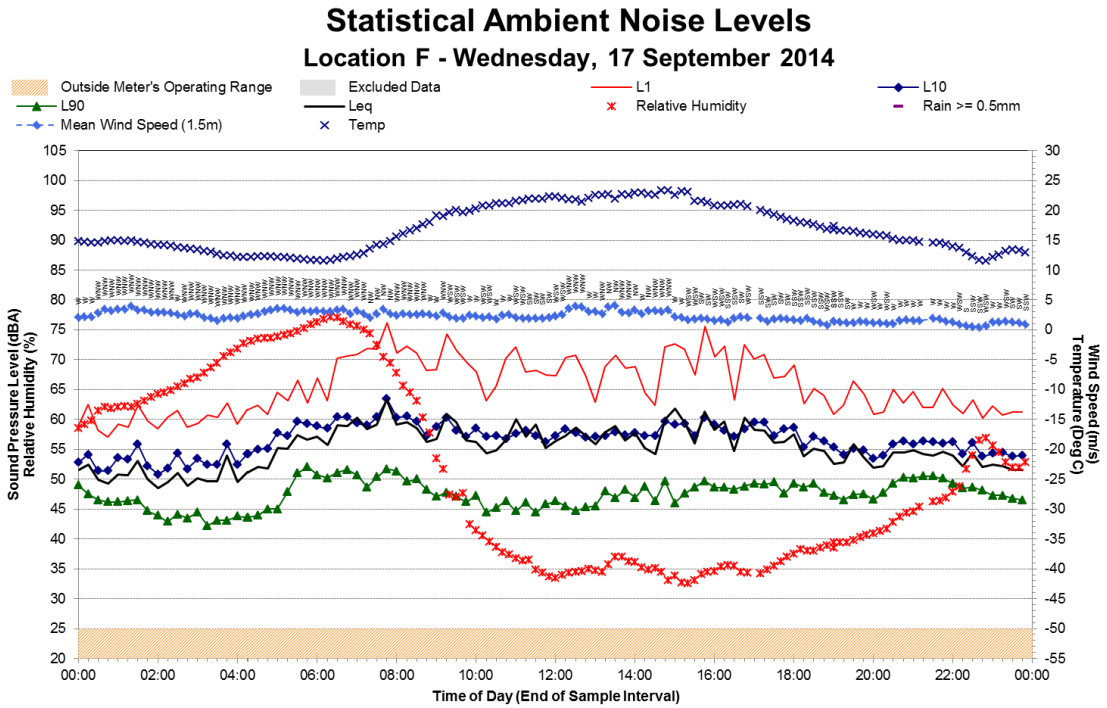

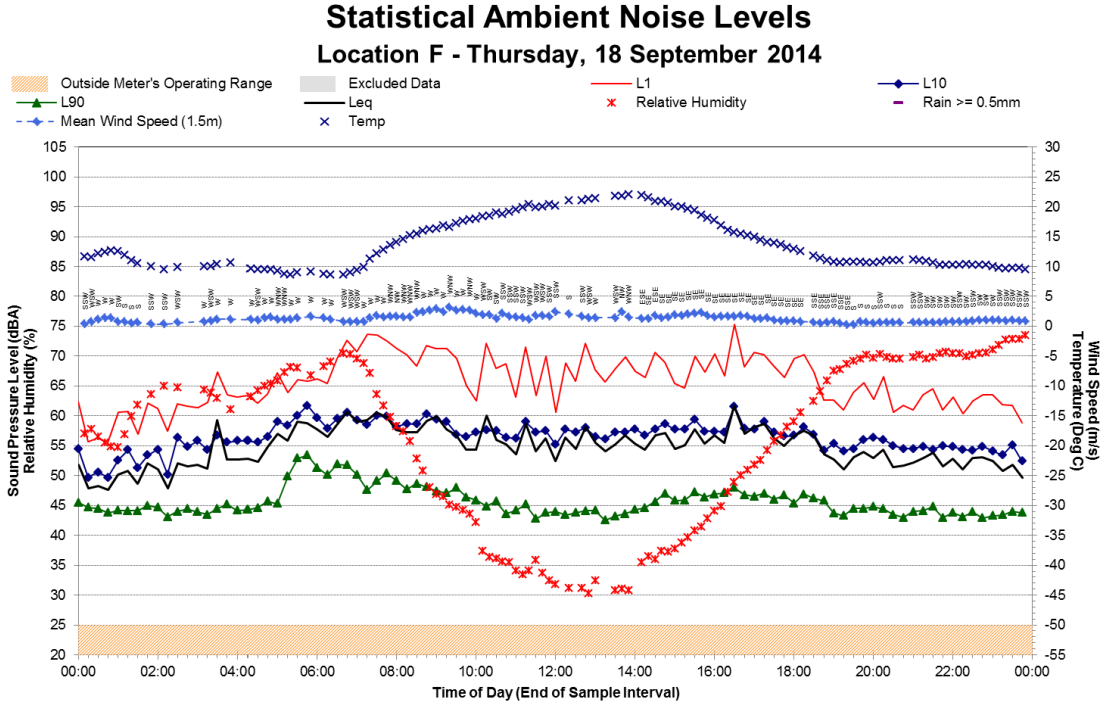

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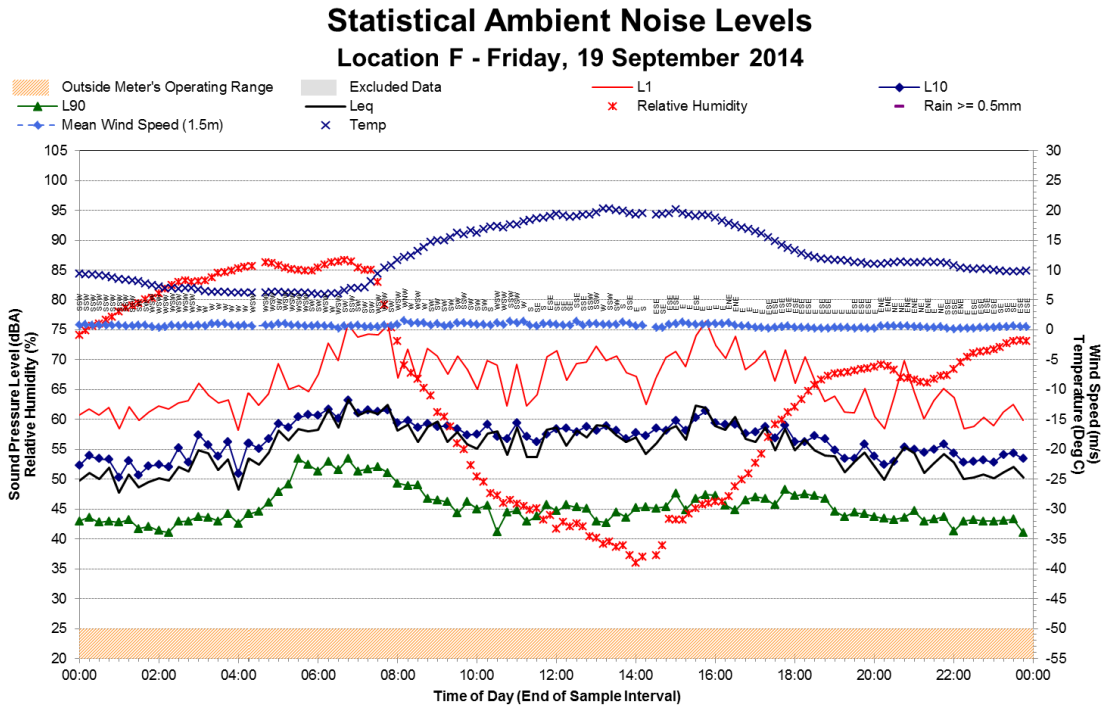

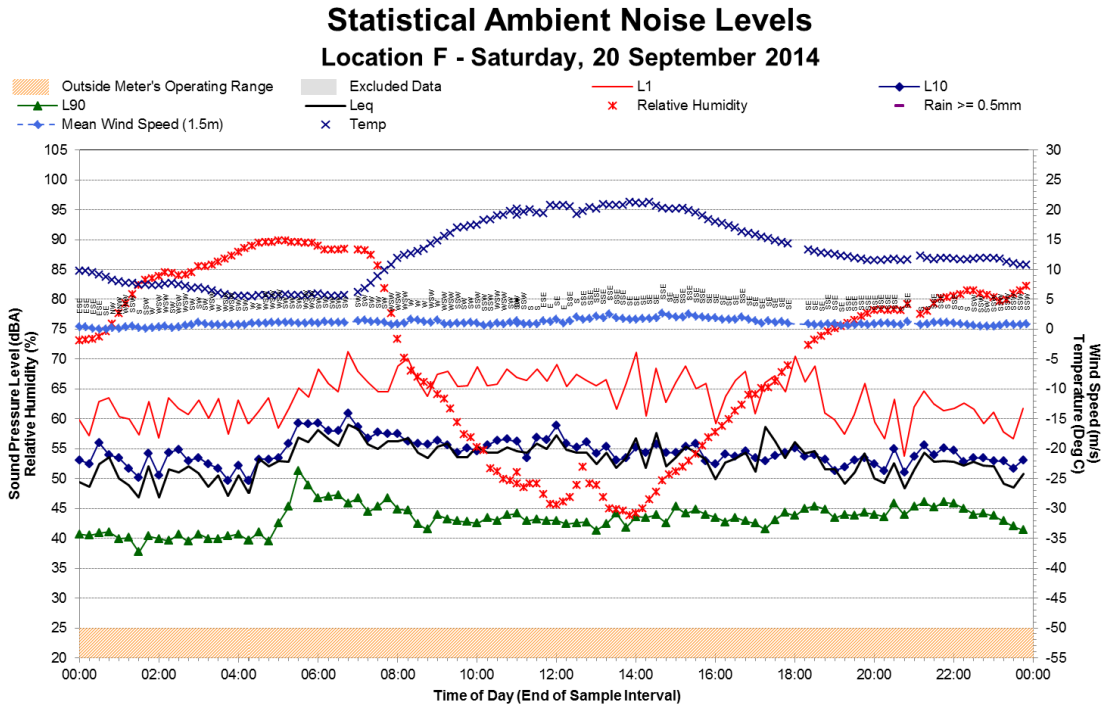

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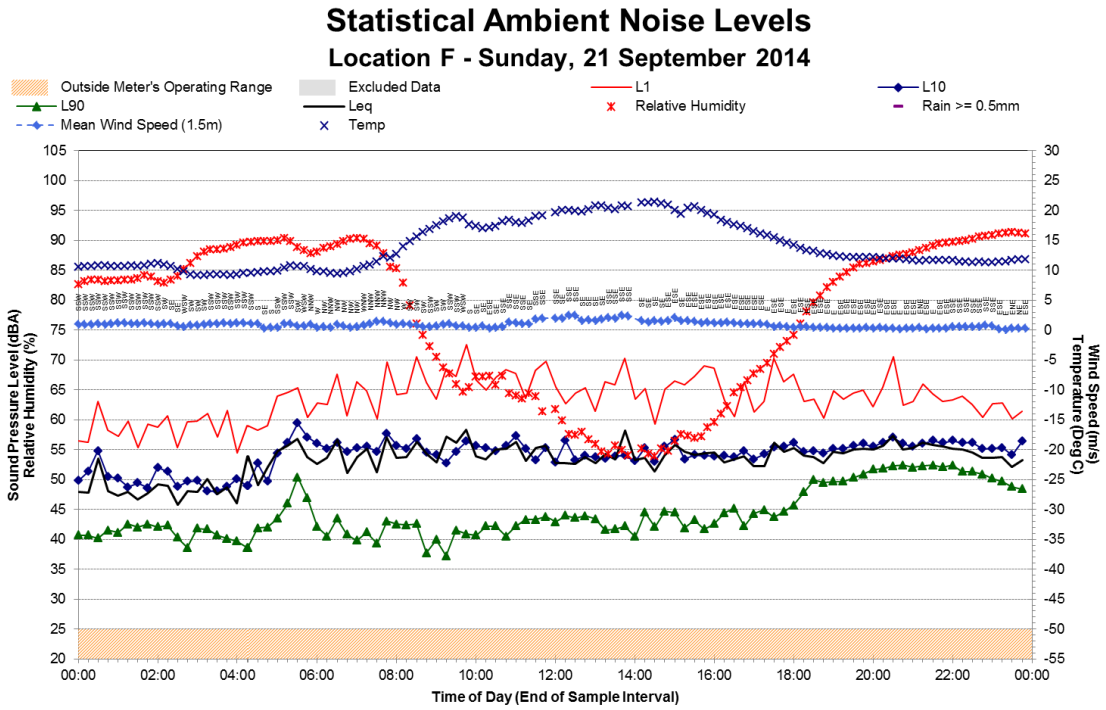

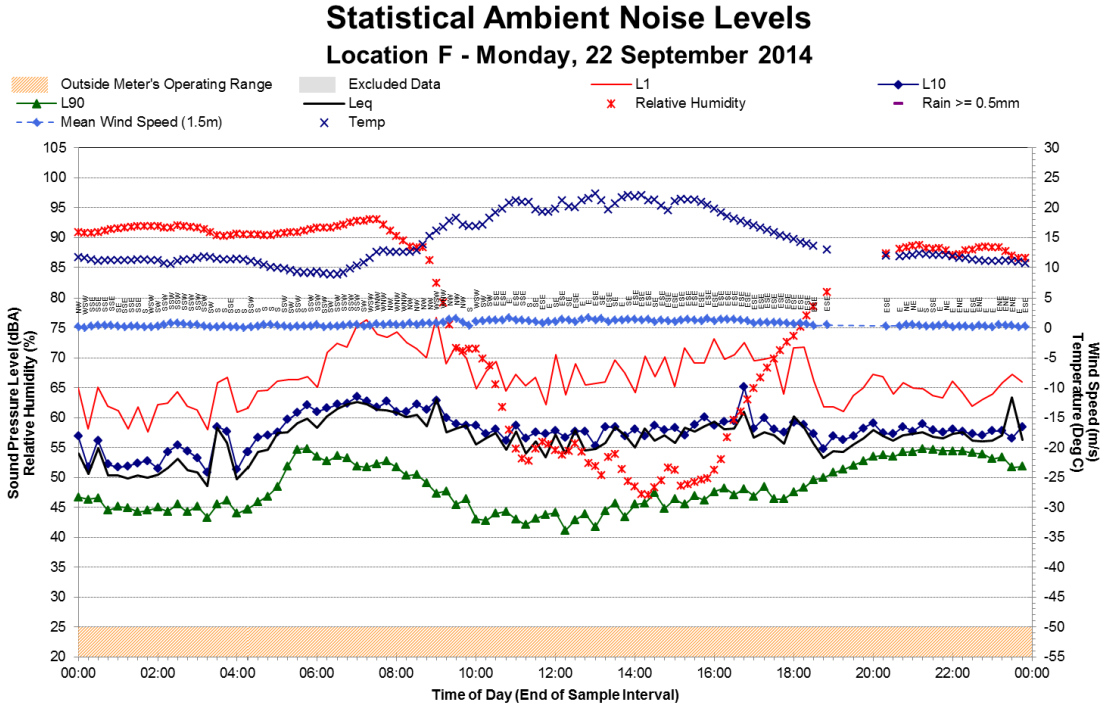

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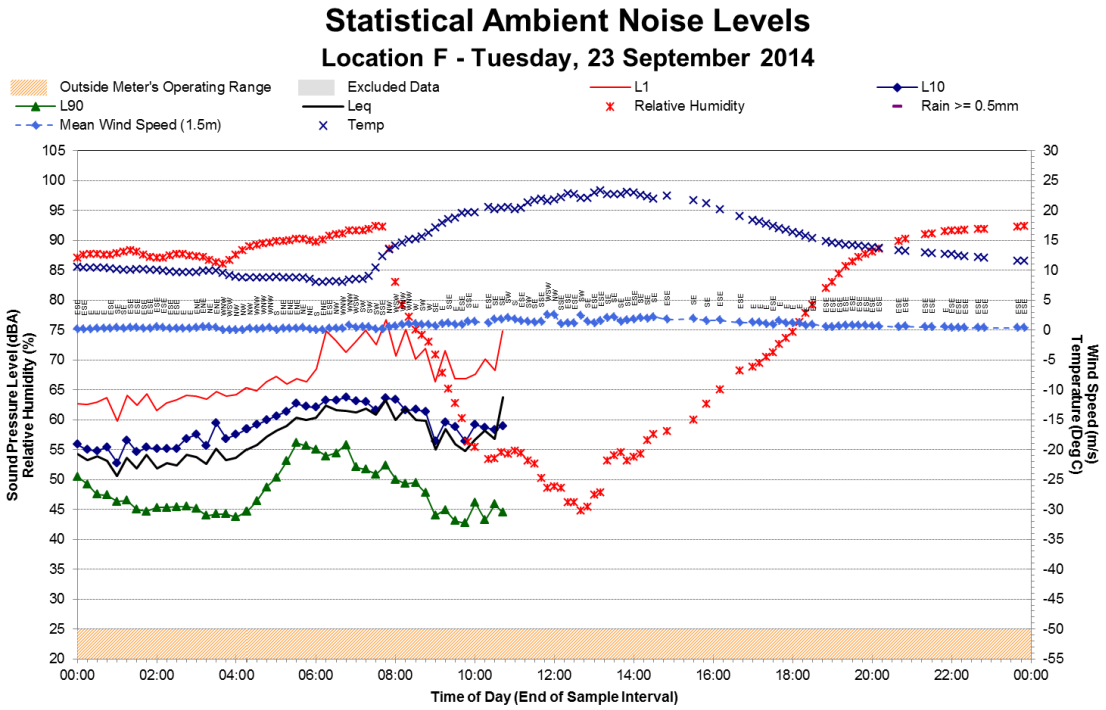

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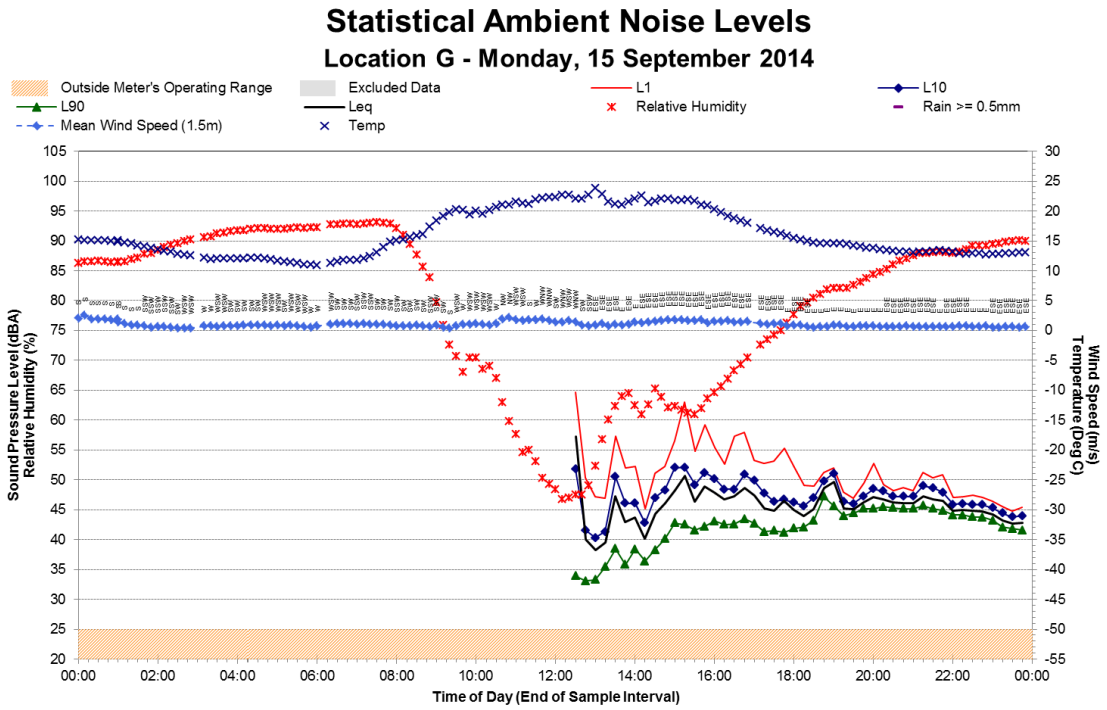

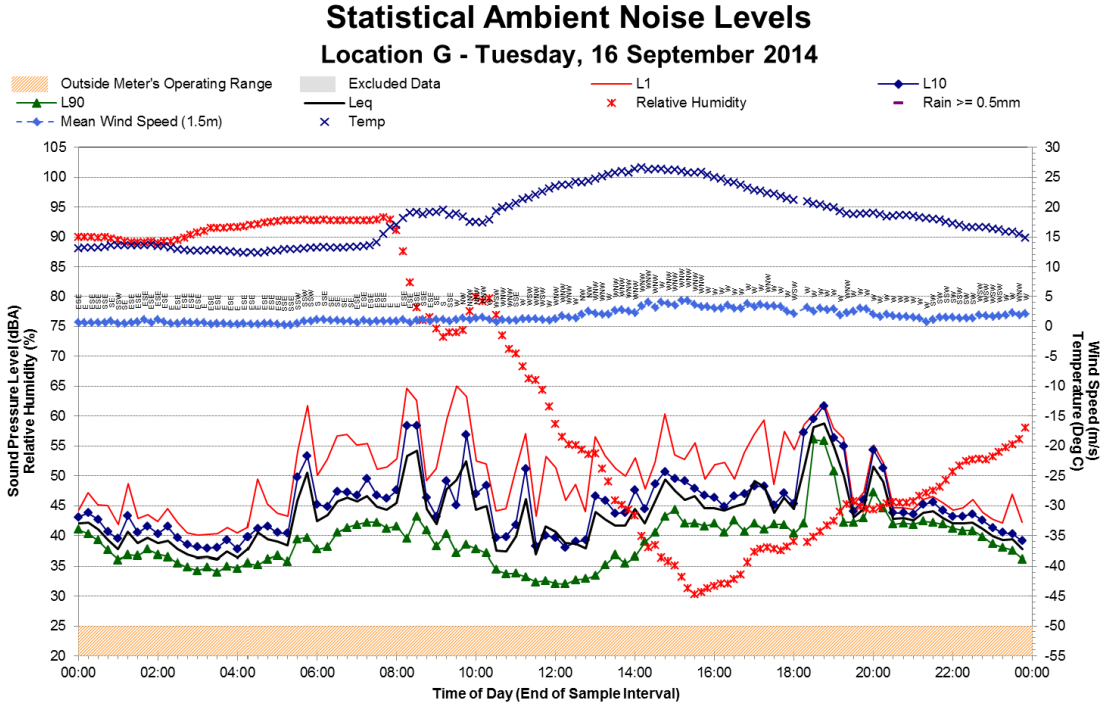

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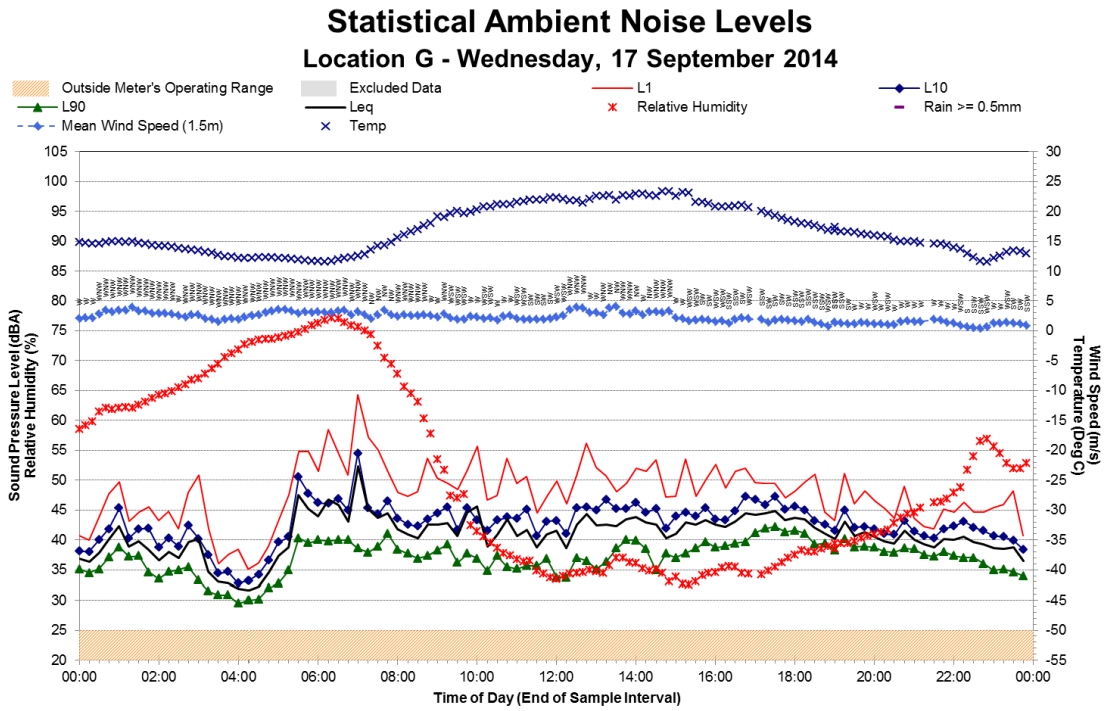

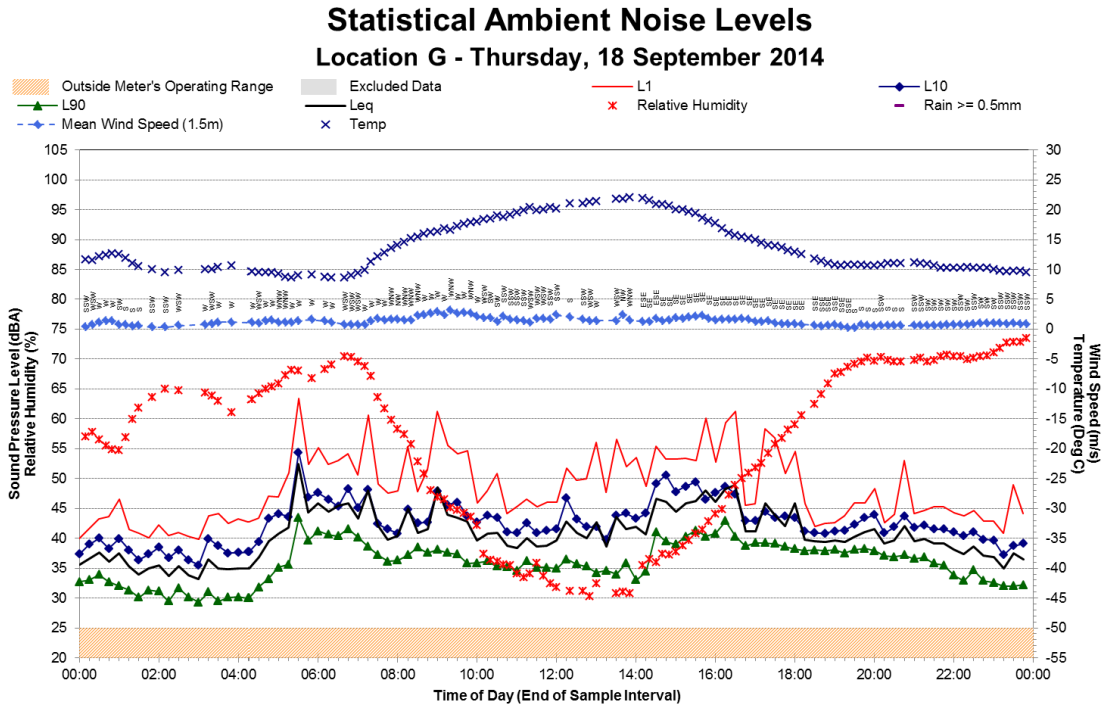

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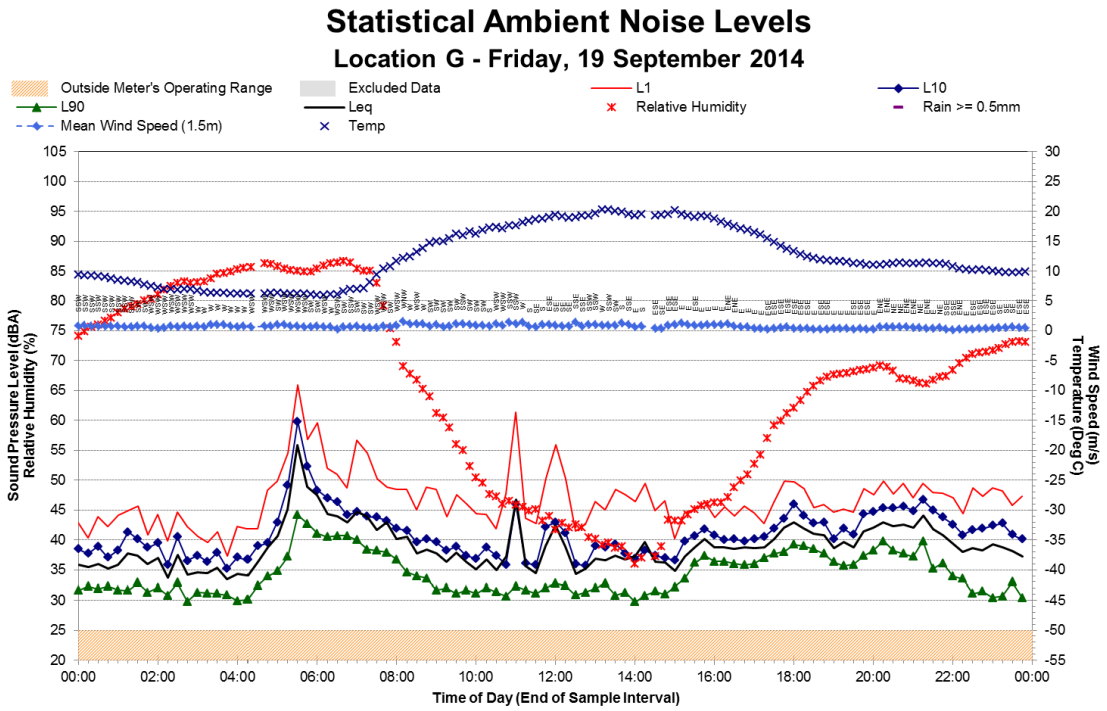

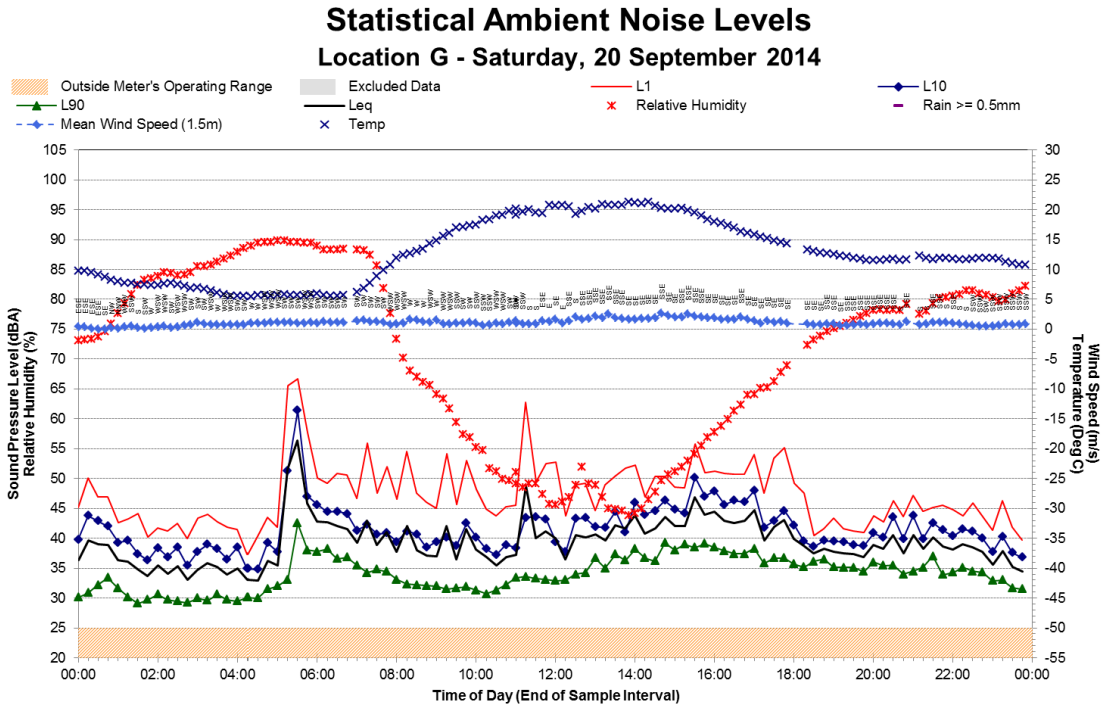

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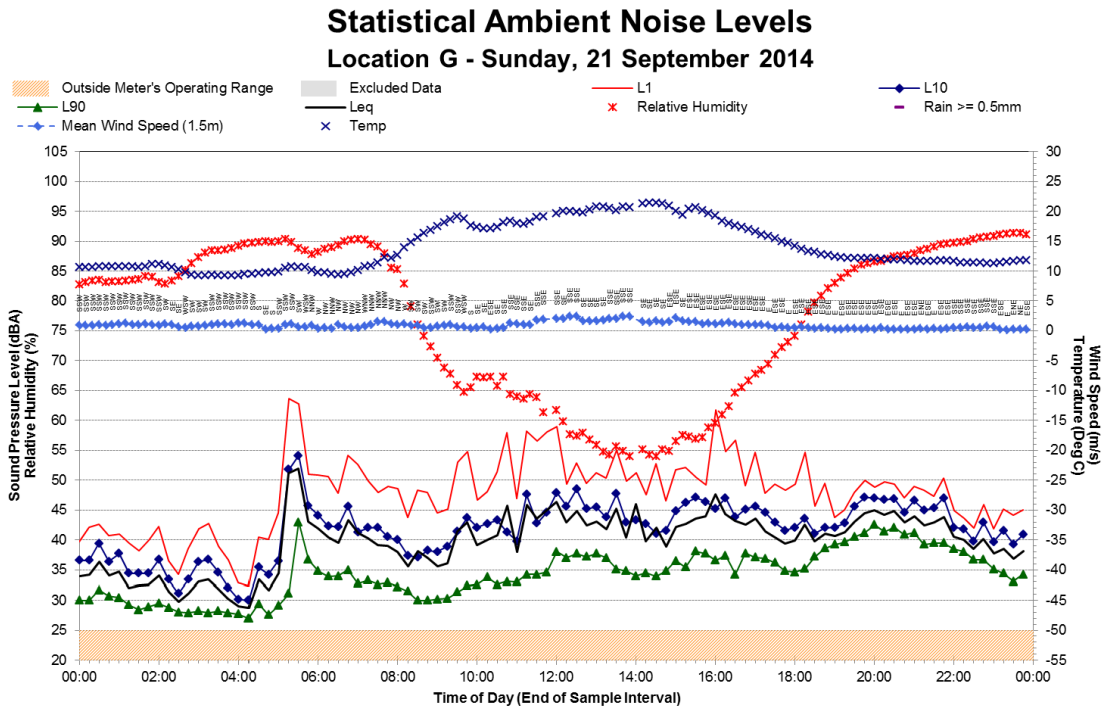

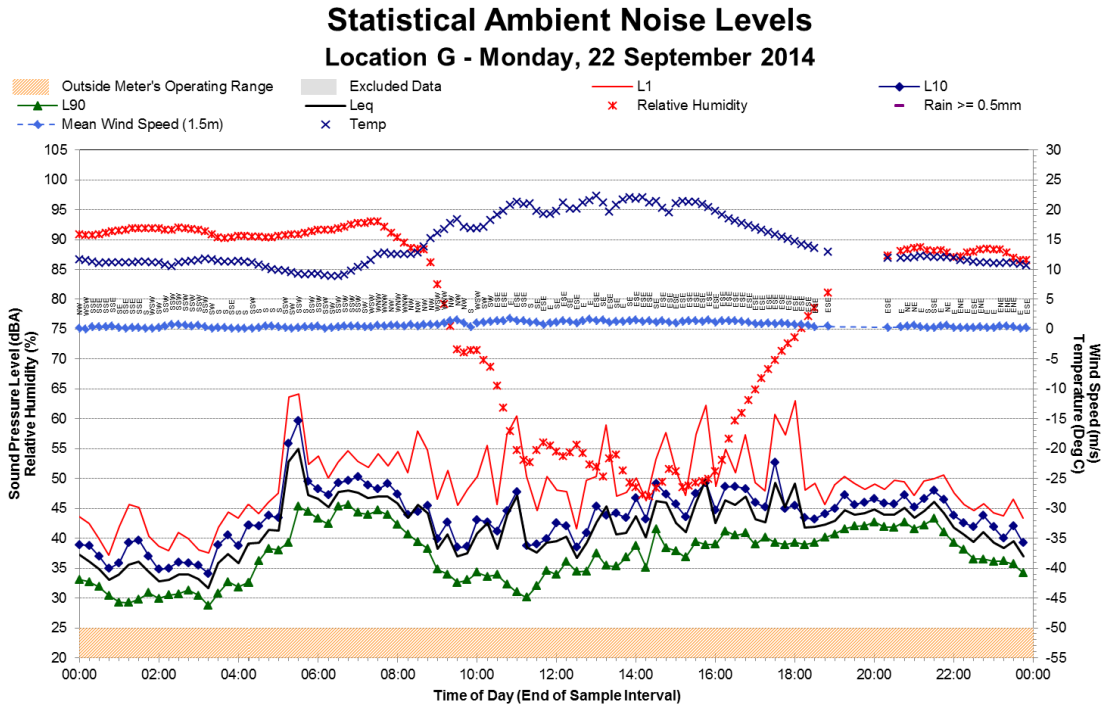

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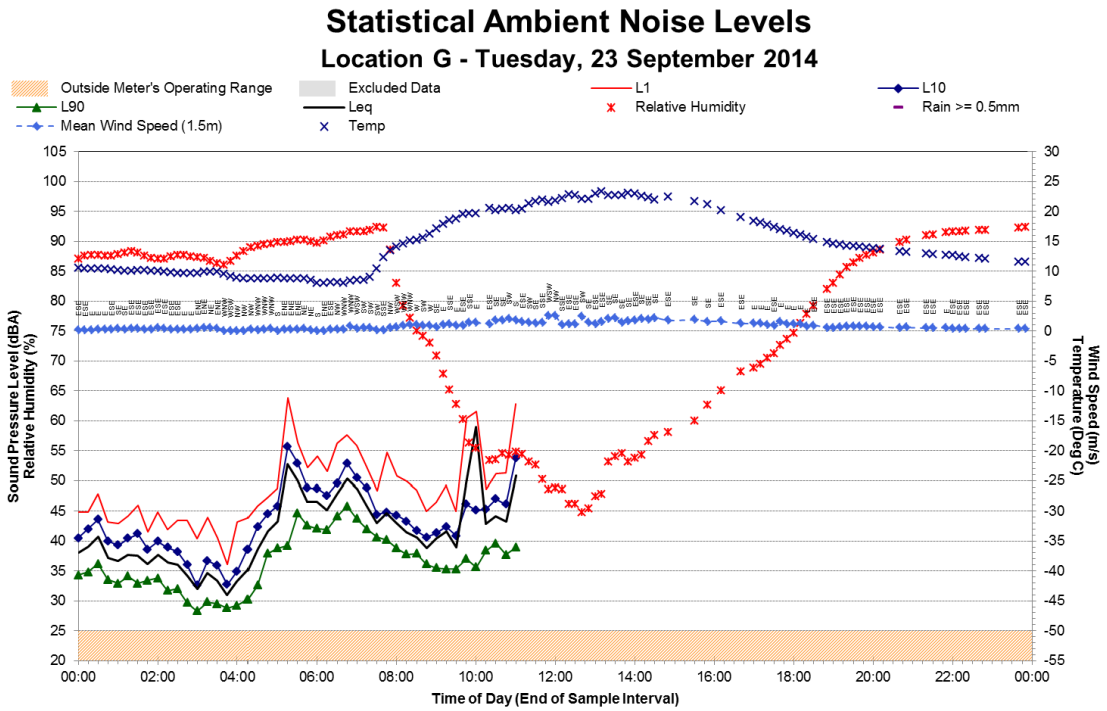

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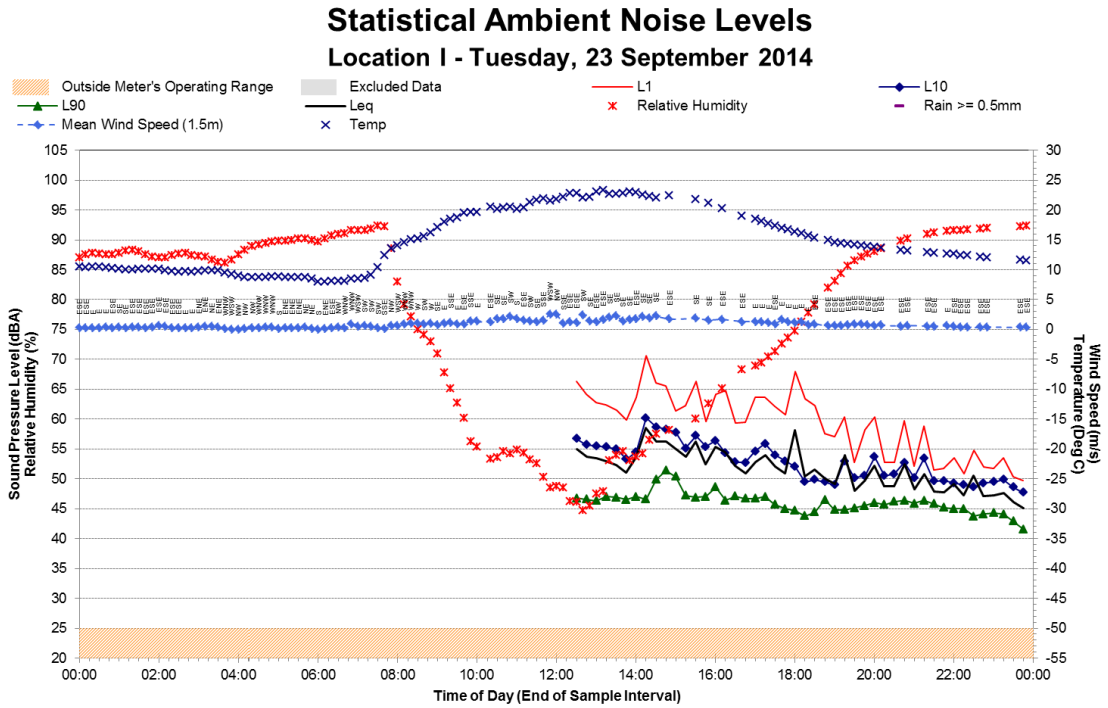

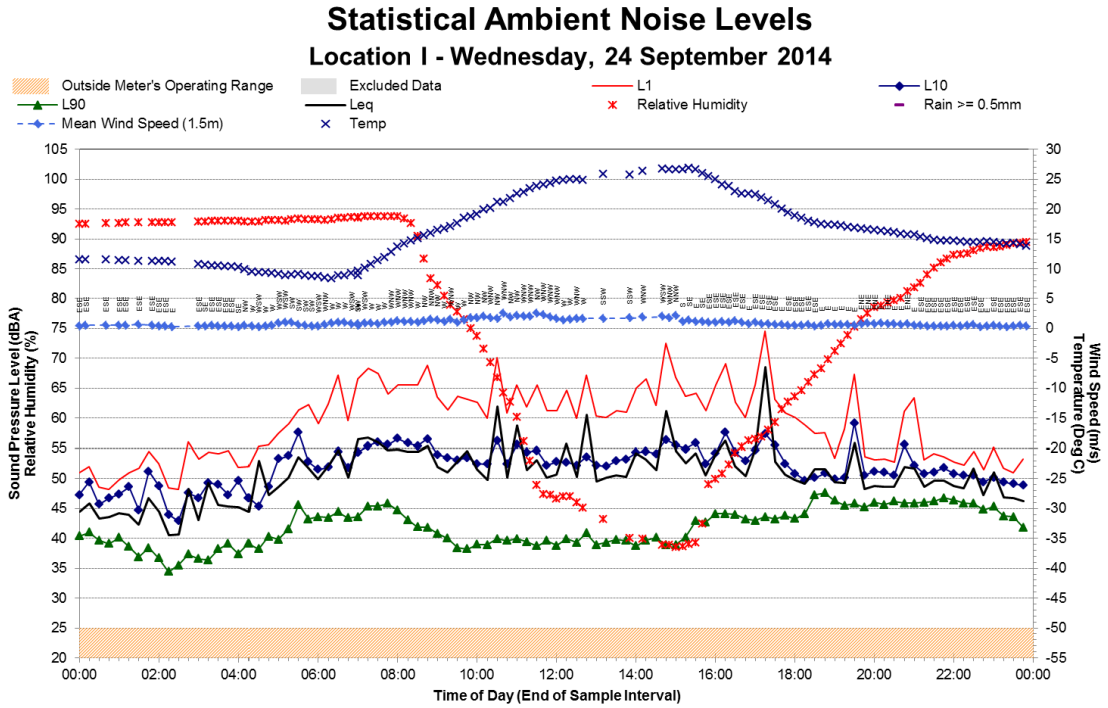

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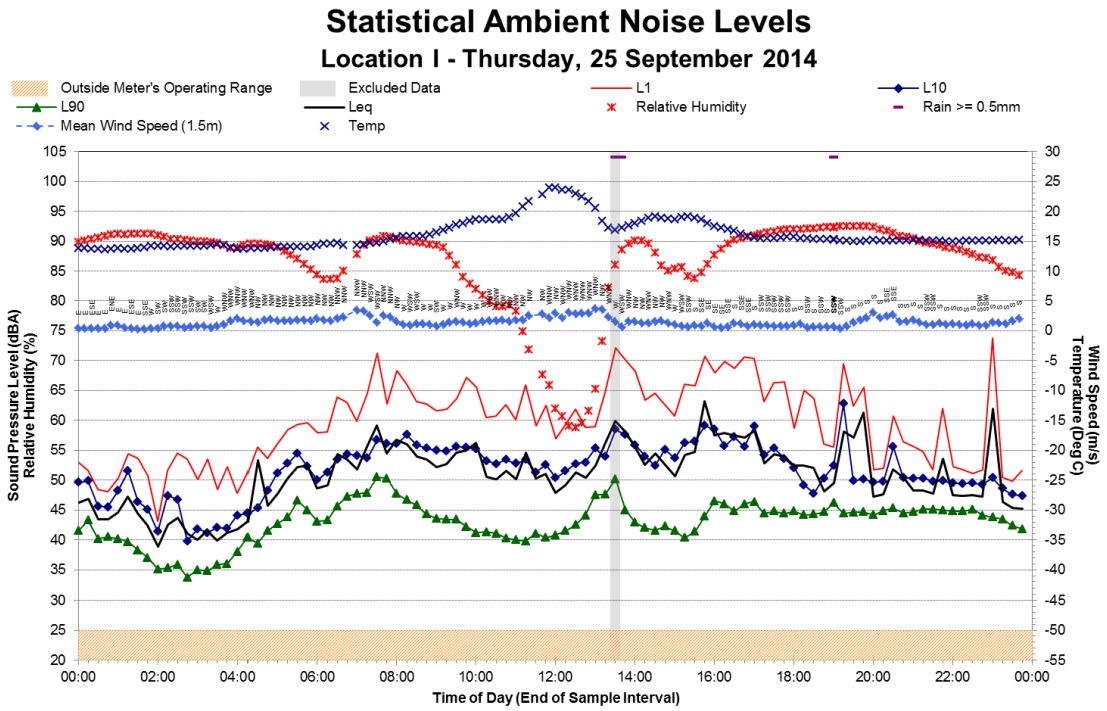

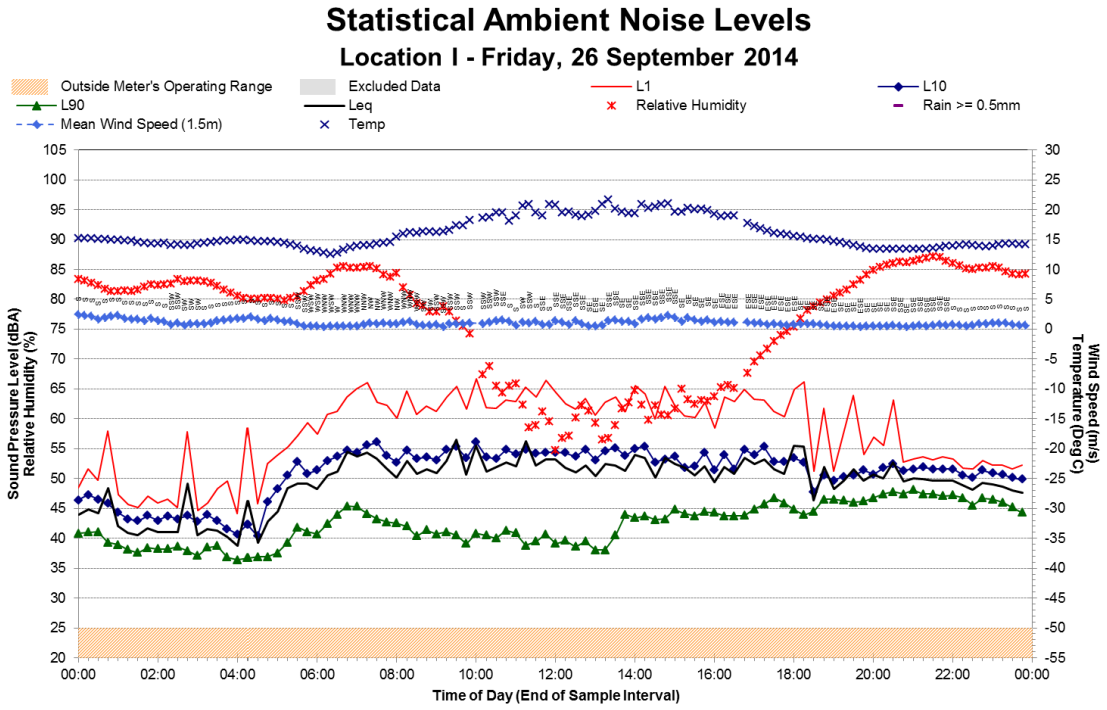

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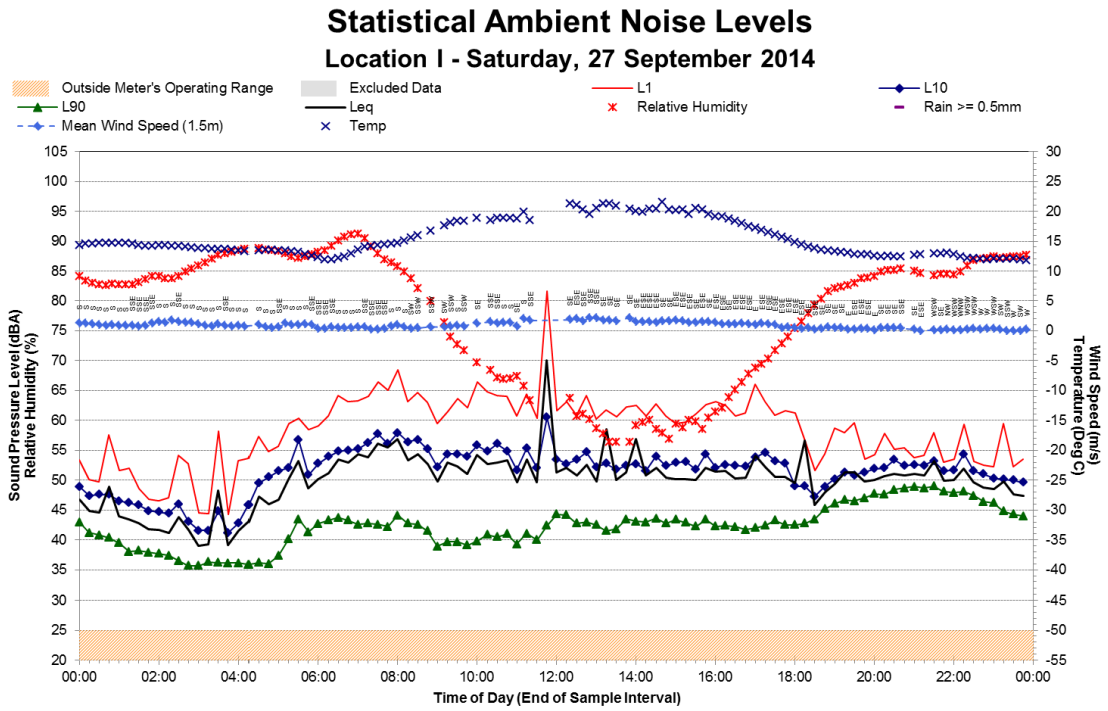

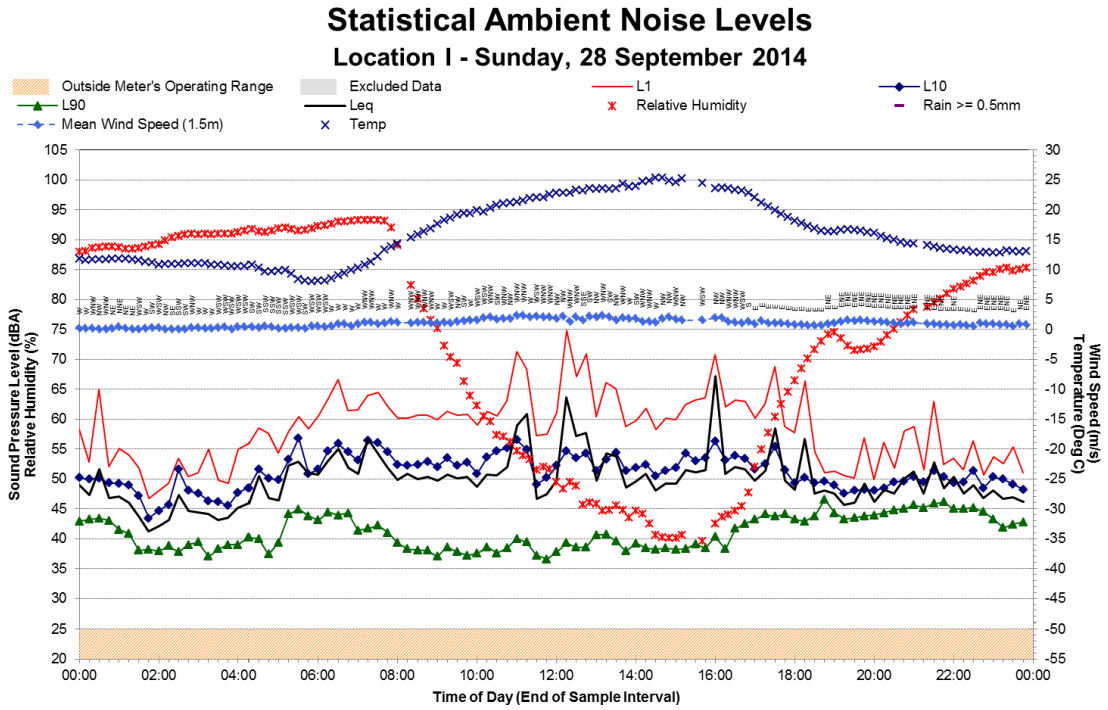

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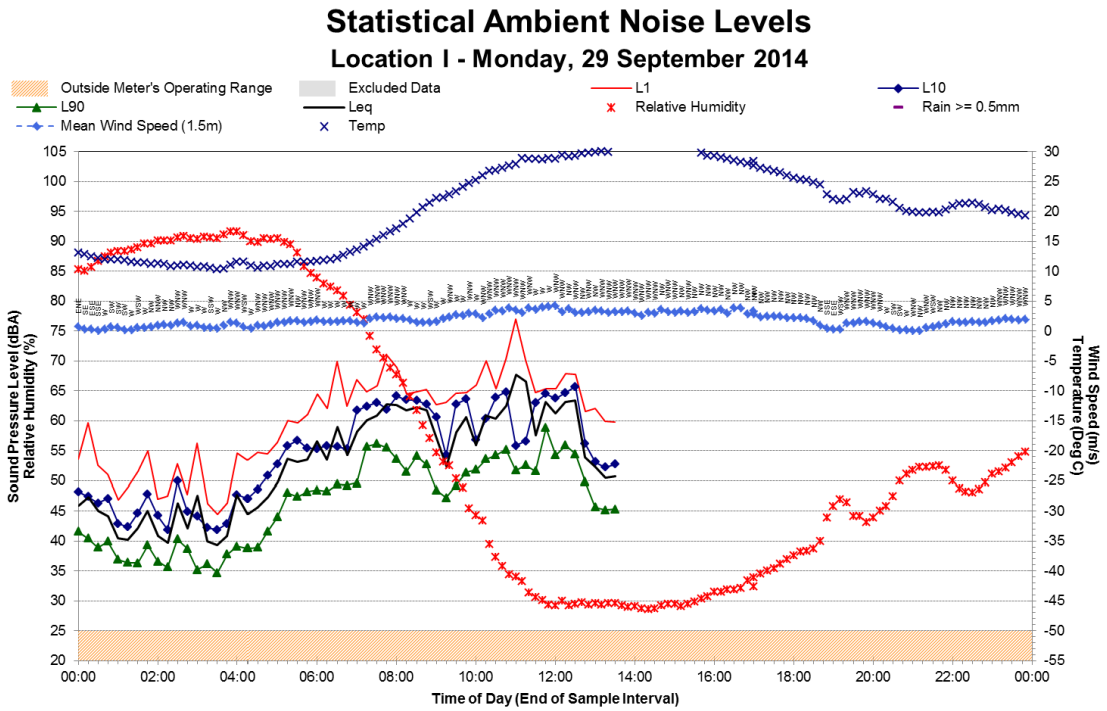

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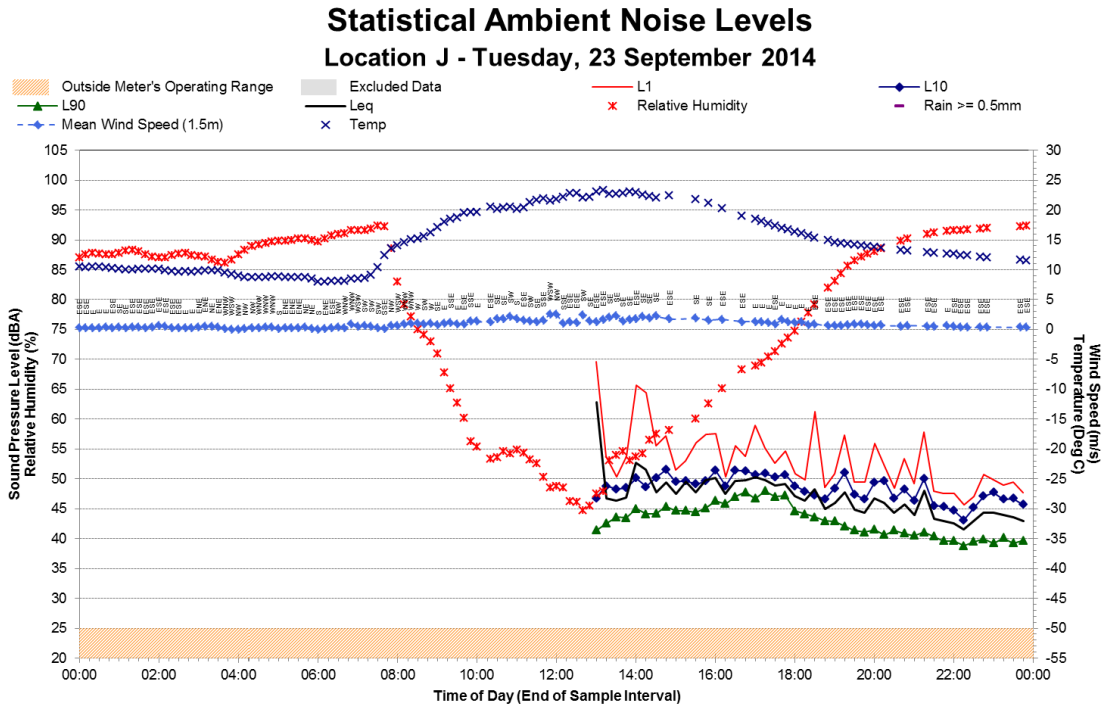

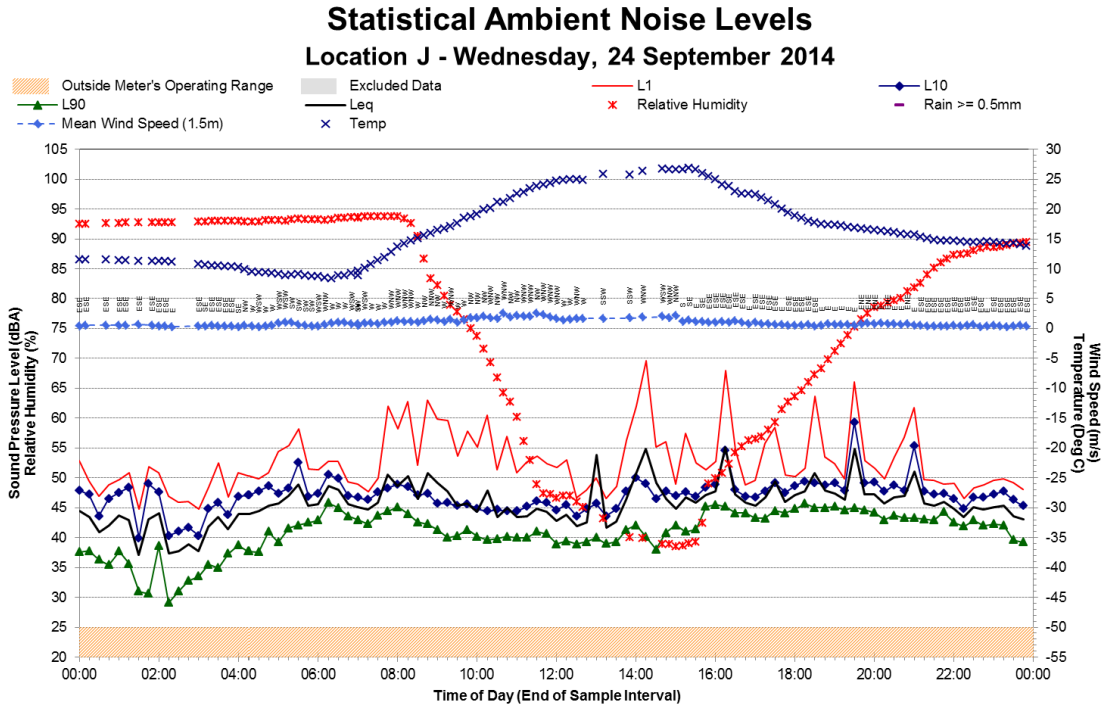

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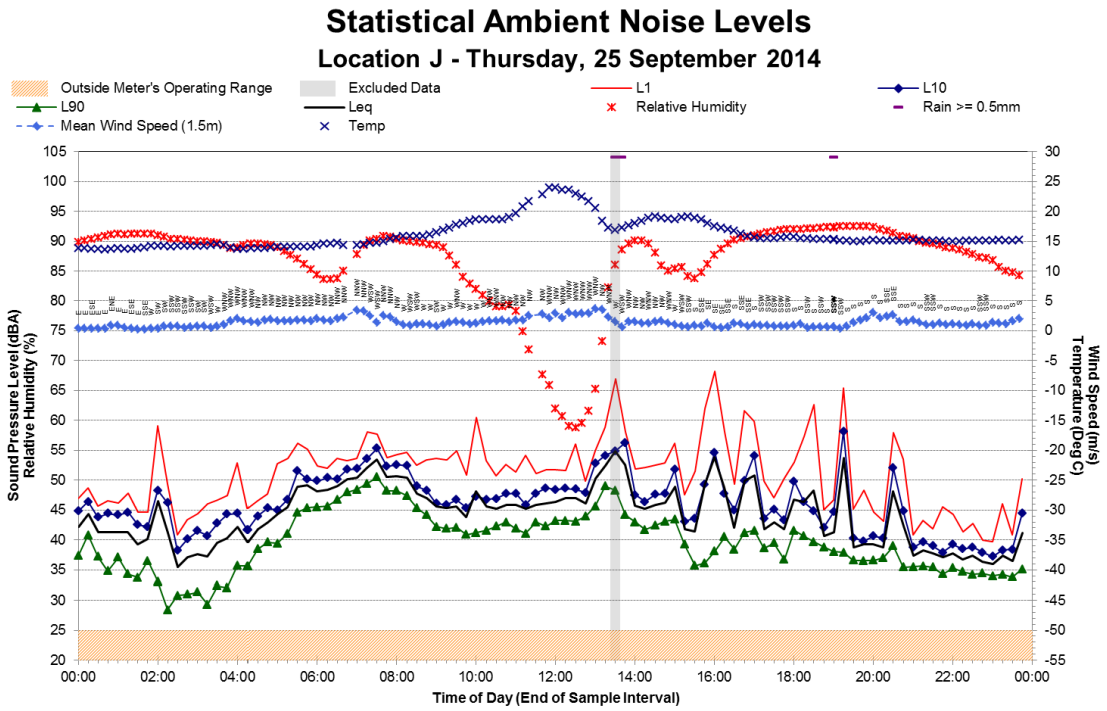

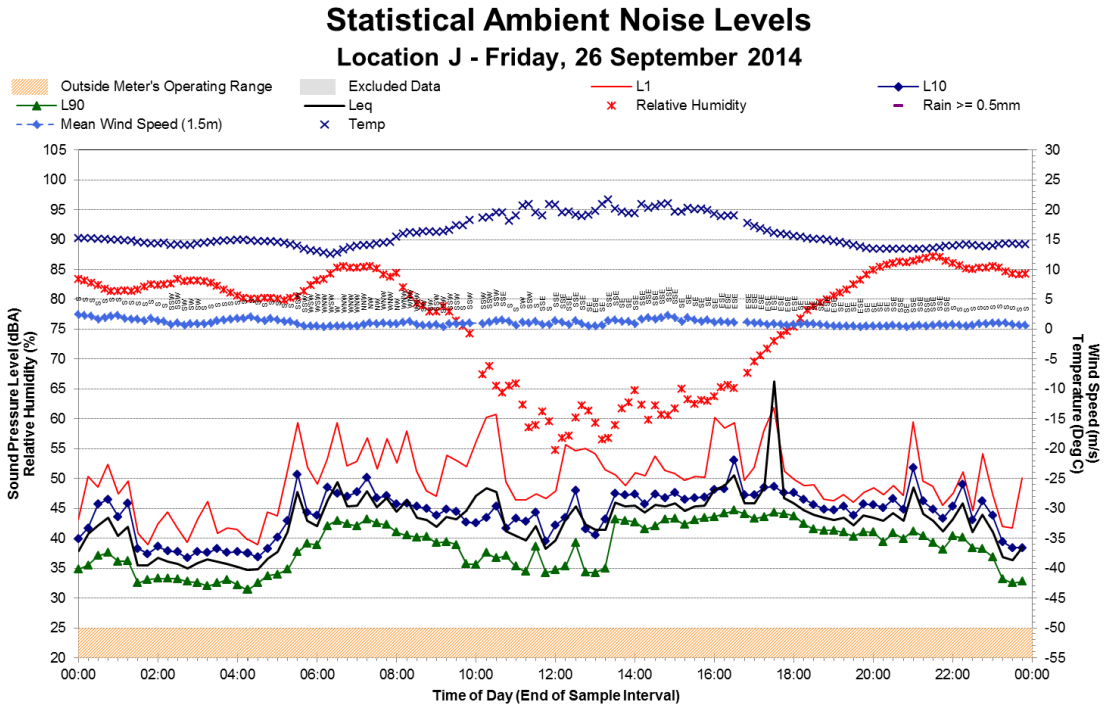

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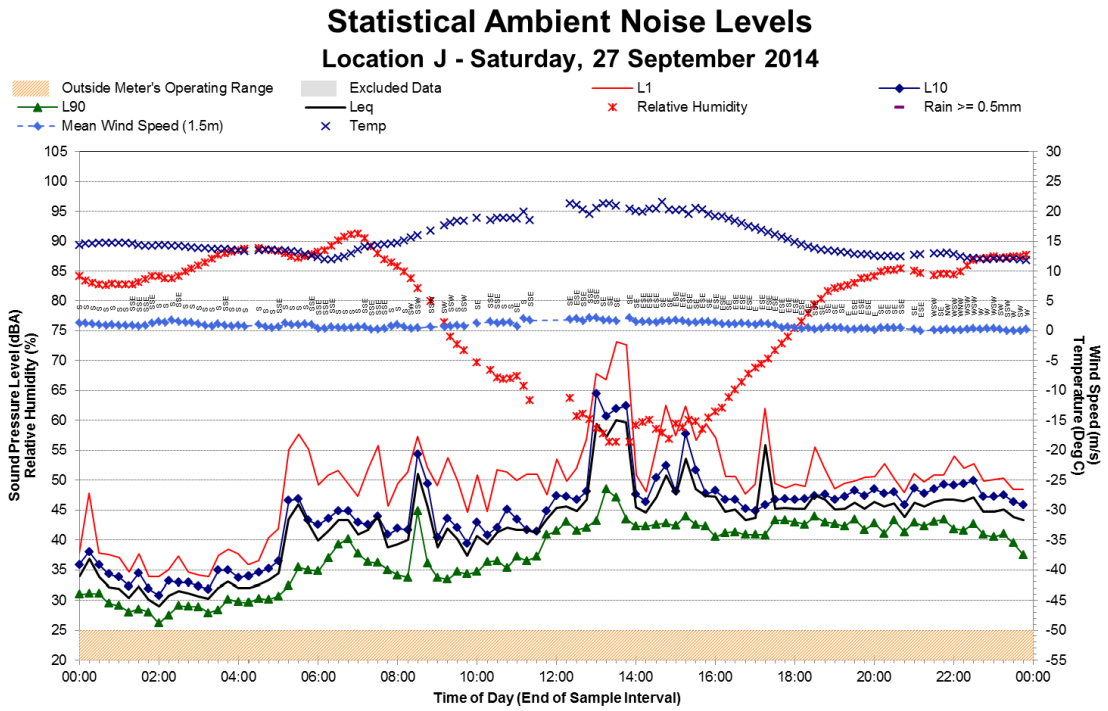

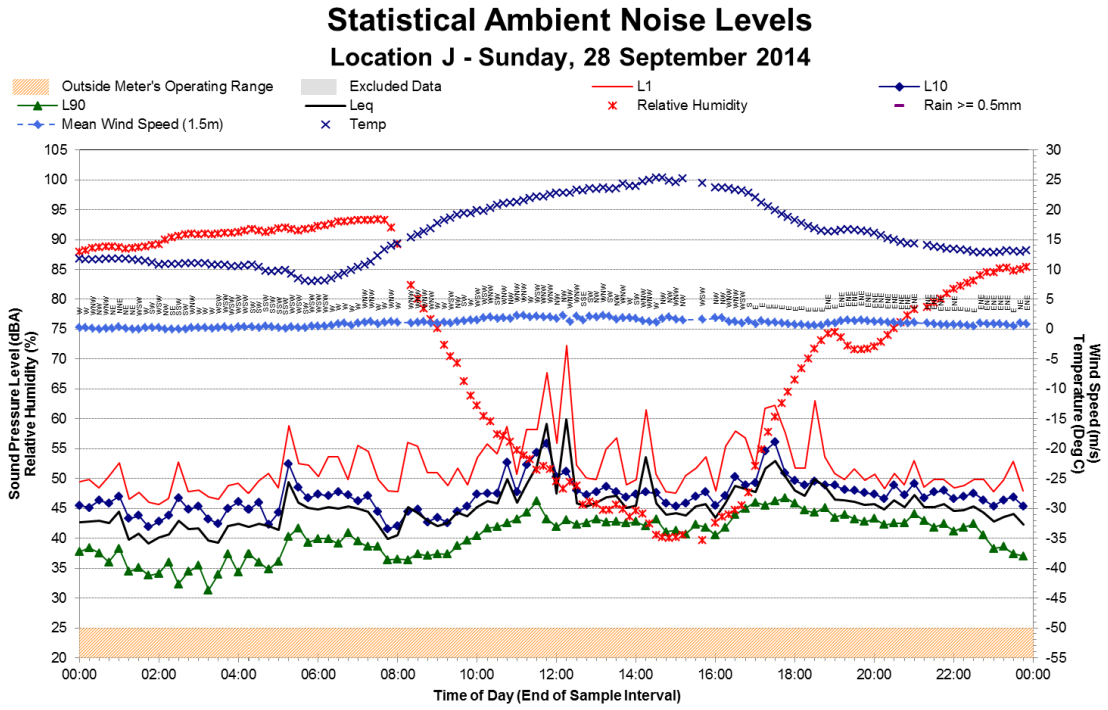

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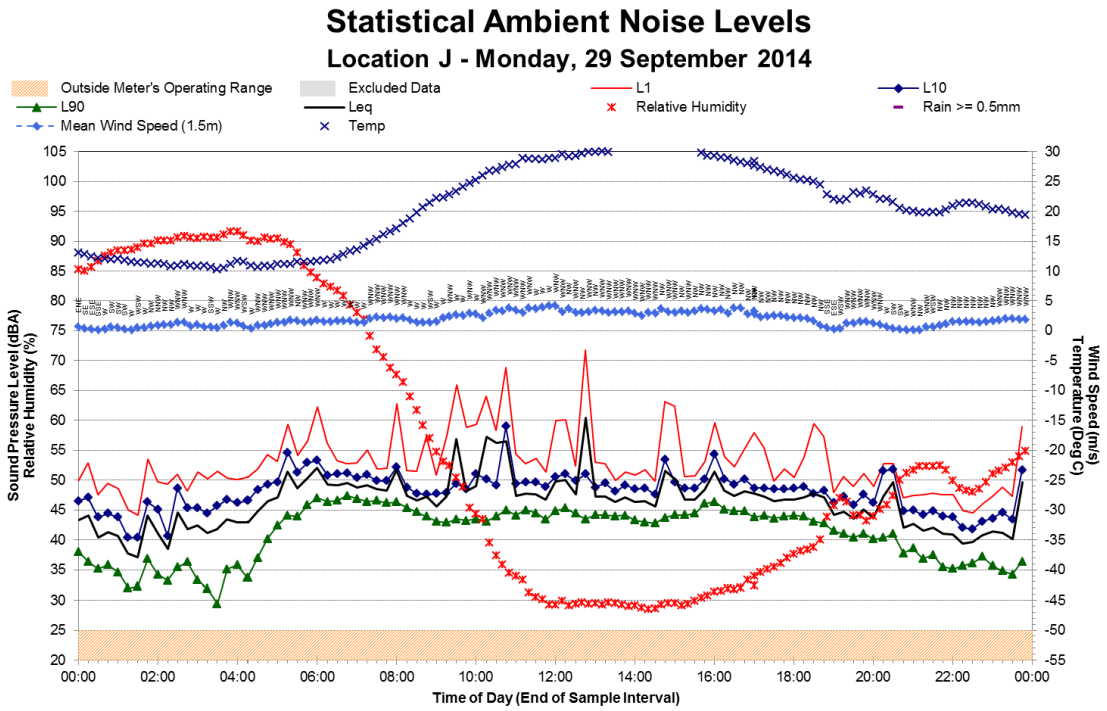

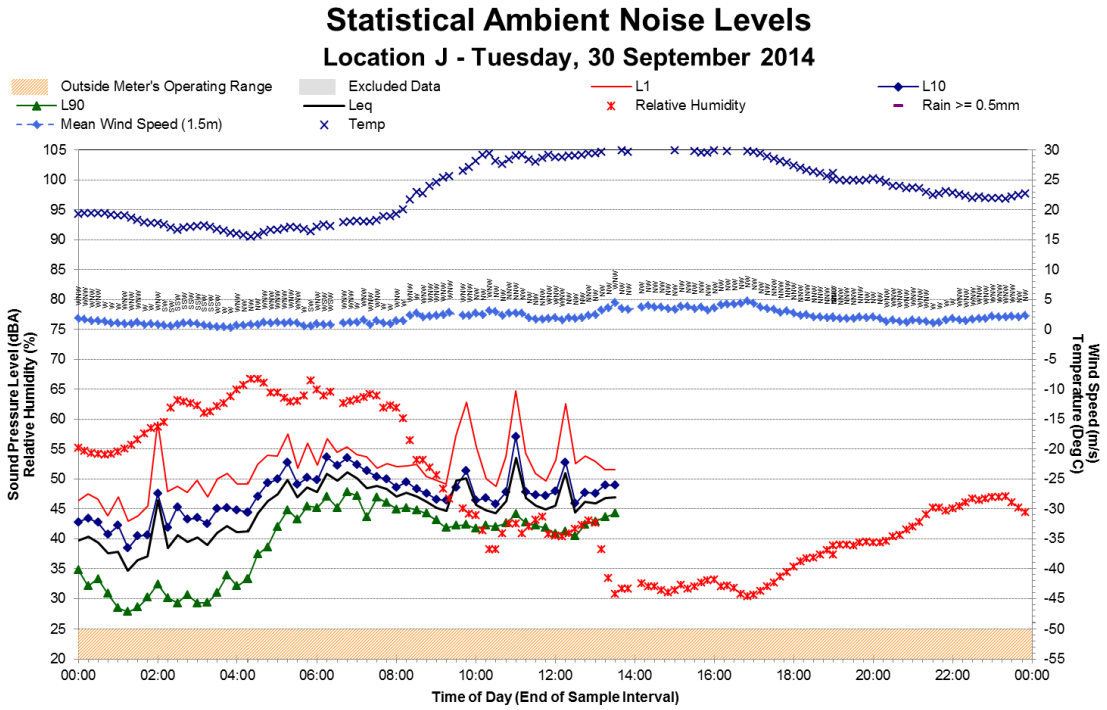

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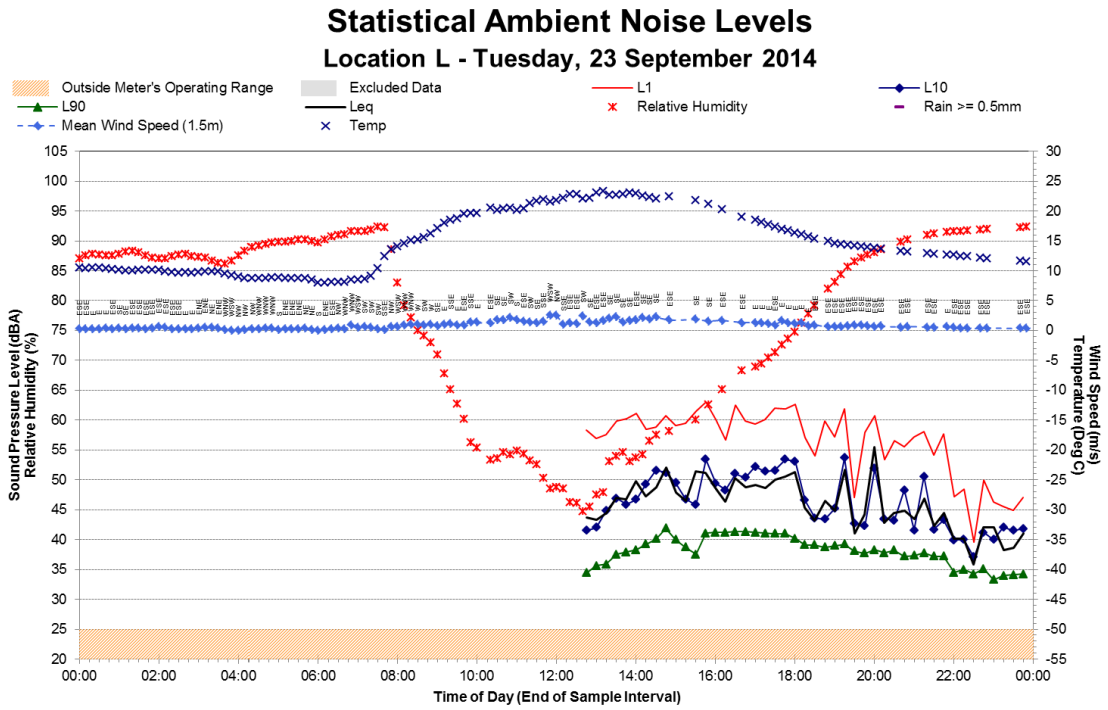
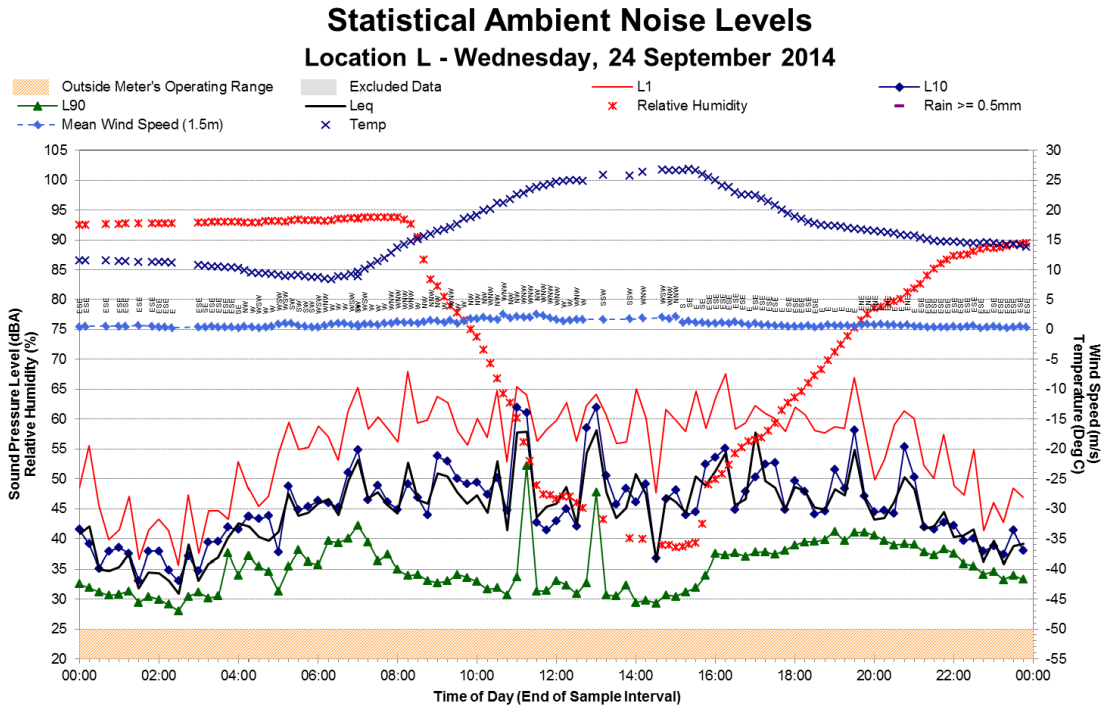
Statistical Ambient Noise Levels – Location L Page 1 of 3





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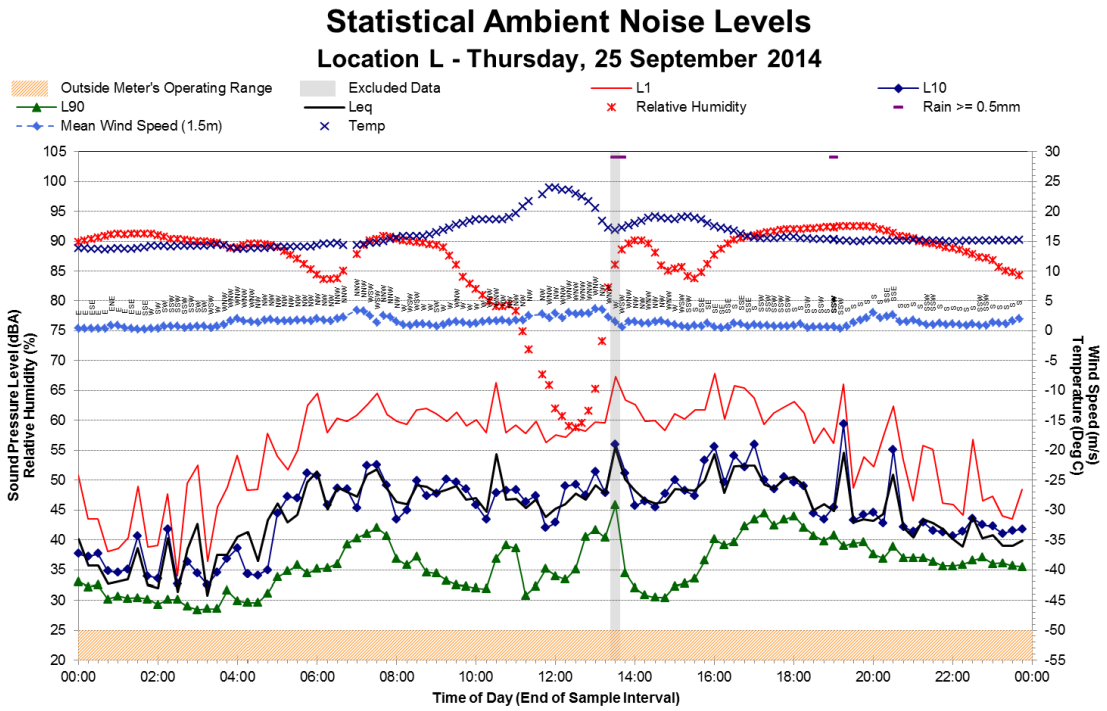

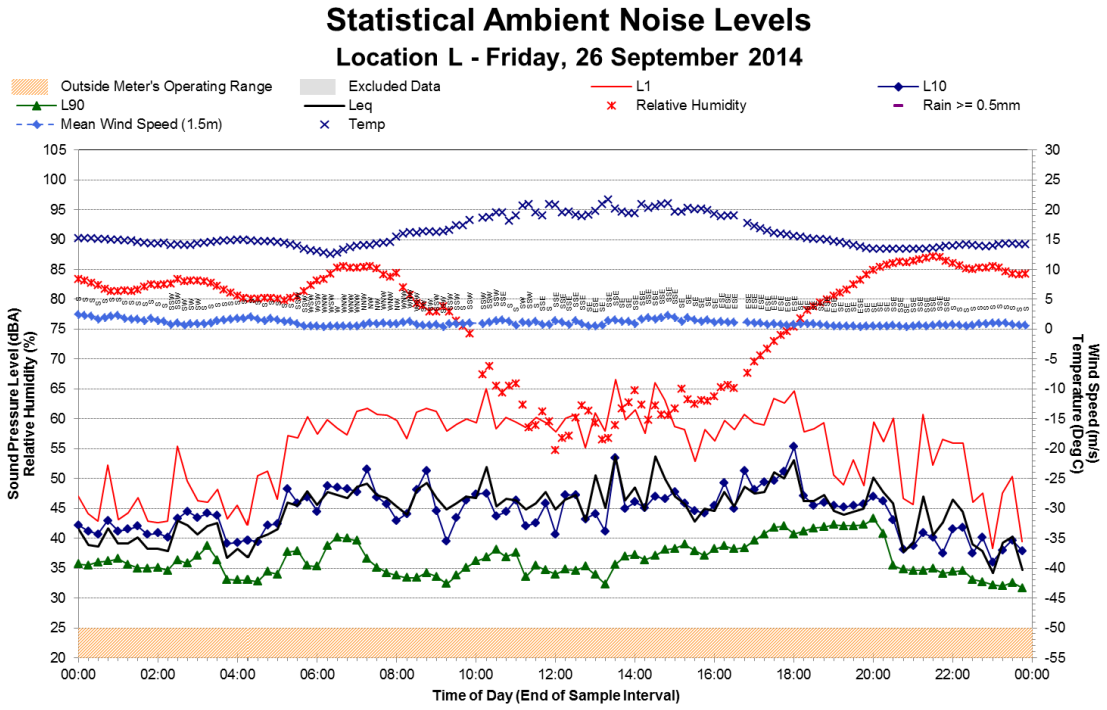

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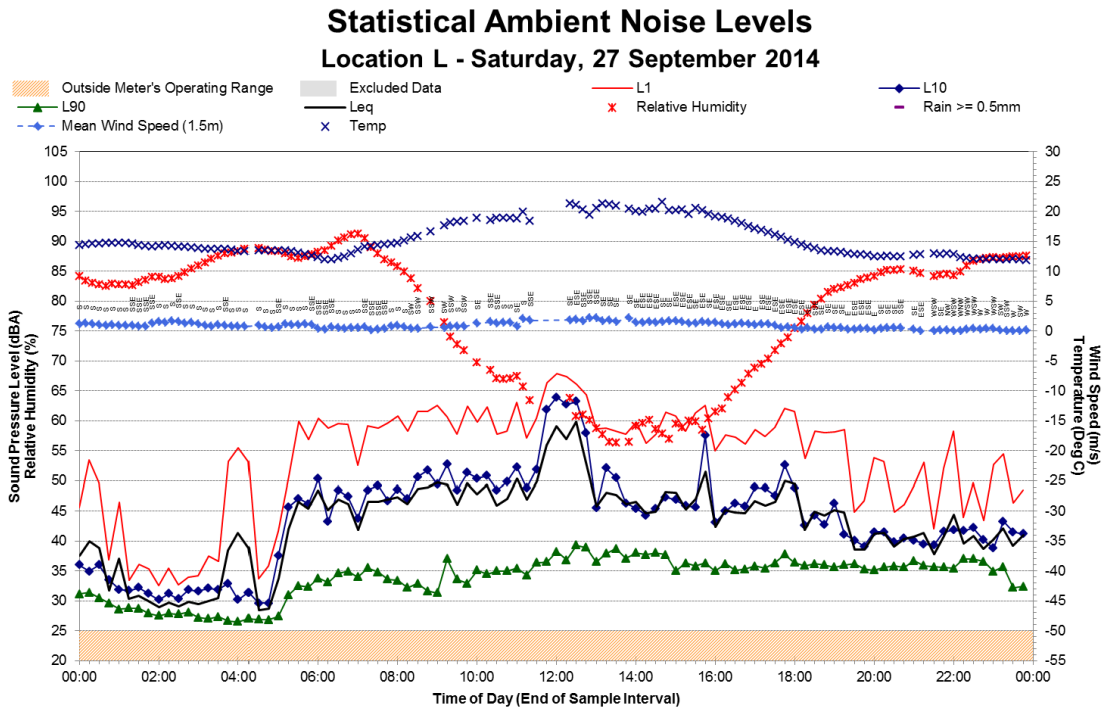

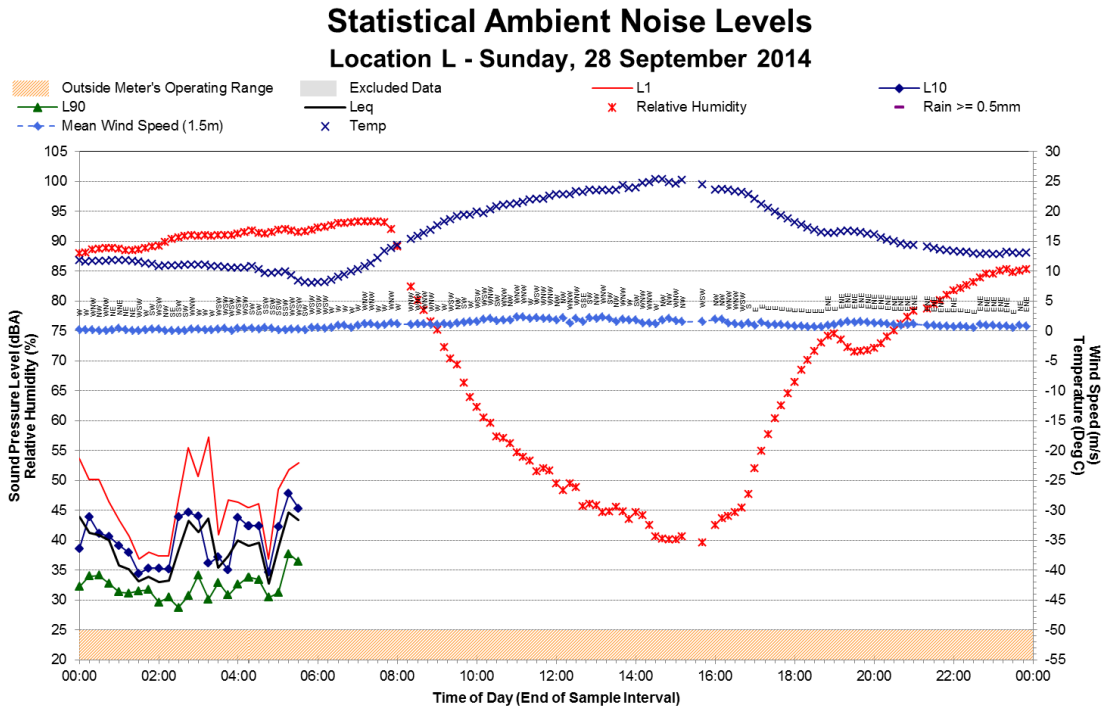

global environmental solutions

Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending December 2014

Report Number Q56 630.01053-R1

27 January 2015

Donaldson Coal Pty Ltd
PO Box 675
Green Hills 2320

Version: Revision 0

Donaldson and Abel Coal Mines

Quarterly Noise Monitoring

Quarter Ending December 2014

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Appendix A – Location Map

Appendix B – Statistical Ambient Noise Levels Graphs

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 Australia 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 six (6) 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	*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 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.*

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

1. *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 referred to in Table 5, see plan in Appendix 3* (attached to this report as **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

1. *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*
		LAeq(period)	
All privately-owned land	*55*	*45*	*40*

Cumulative Noise Criteria

1. *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
		LAeq(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

1. *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

2. *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 NOISE MONITORING 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 program 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 six (6) focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1**.

It is relevant to note that Donaldson Open Cut Mine has ceased production and all major earthworks on the site have been finalised. Therefore, compliance noise monitoring for the Donaldson Open Cut Mine is no longer required.

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
J	Parish Drive, Thornton
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 5 December 2014 and 22 December 2014 at each of the six (6) 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 six (6) 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.

4 OPERATOR ATTENDED NOISE MONITORING

4.1 Results of Operator Attended Noise Monitoring

Operator attended noise measurements were conducted during the daytime on Monday 15 December 2014, evening on Monday 15 December 2014 and during the night-time on Monday 15 December 2014 and Thursday 18 December 2014. All operator attended noise surveys were conducted using a Brüel & Kjær 2250-L Type 1, integrating sound level meter (s/n: 3003389).

Results of the operator attended noise measurements are given in **Table 2** to **Table 7**.

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.

Mine noise at all monitoring locations during various periods was 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.

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	
15/12/2014 10:57am W = 1.2 m/s ESE Temp = 26.7°C Cloud cover = 1/8	Daytime Ambient	72	64	50	40	51	M1 Traffic ~ 40 dBA Local Traffic ~ 64 to 72 dBA Birds ~ 48 to 54 dBA Insects 36 Aircraft 44 to 64 School kids 47 to 49 Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <30 dBA[1].					
15/12/2014 6:13pm W = 1.5 m/s ESE Temp = 24.4°C Cloud cover = 0/8	Evening Ambient	84	69	52	41	58	Local Traffic ~ 68 to 84 dBA Dist Traffic ~ 47 dBA Aircraft 51 to 53 dBA Birds 44 to 55 dBA Insects~ 40 to 41 dBA Tress in wind 43 to 44 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <31 dBA[1].					
15/12/2014 22:00pm W = 0.5 m/s ESE Temp = 17.3°C Cloud cover = 0/8	Night-time Ambient	70	63	49	45	50	Insects ~ 44 to 50 dBA Distant Traffic ~ 44 to 47 dBA Local Traffic ~ 56 to 70 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <35 dBA[1]. LA1(1min) contribution <35 dBA[1].					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dBA below the overall LA90 noise level.

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	
15/12/2014 11:40am W = 1.3 m/s SE Temp = 27.7°C Cloud cover = 1/8	Daytime Ambient	81	73	60	49	59	Local Traffic ~ 75 to 81 dBA Birds ~ 54 to 55 dBA JRD Traffic ~ 53 to 68 dBA Insects 50 to 51 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <39 dBA[1].					
15/12/2014 6:34pm W = 1.2 m/s ESE Temp = 24.2°C Cloud cover = 0/8	Evening Ambient	79	66	58	43	56	JRD Traffic ~ 44 to 69 dBA Insects/frogs ~ 38 to 39 dBA Birds 50 to 58 dBA Aircraft 42 dBA Local road traffic 64 to 79 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <33 dBA[1].					
15/12/2014 10:20pm W = 0.5 m/s ESE Temp = 17.1°C Cloud cover = 0/8	Night-time Ambient	72	65	57	50	55	JRD Traffic ~ 55 to 72 dBA Insects/frogs ~ 51 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <40 dBA[1]. LA1(1min) contribution <40 dBA[1]					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dB below the overall LA90 noise level.

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	
15/12/2014 1:31pm W = 1.4 m/s ESE Temp = 28.8°C Cloud cover = 1/8	Daytime Ambient	58	54	52	46	50	Trees in wind 50 to 51 Insects 51 to 54 Bloomfield mine Haul trucks 40 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <36 dBA[1].					
15/12/2014 7:38pm W = 1 m/s ESE Temp = 21.6°C Cloud cover = 0/8	Evening Ambient	96	75	52	43	68	Insects ~ 44 to 50 dBA Dist Traffic ~ 46 to 50 dBA Dog barking 91 to 98 dBA Abel mine not audible Bloomfield mine Haul trucks 34 to 39 dBA
		Estimated Abel mine LAeq(15min) contribution <33 dBA[1].					
18/12/2014 10:24pm W = 0.3 m/s ESE Temp = 21.6°C Cloud cover = 0/8	Night-time Ambient	52	43	42	38	40	Distant Traffic ~ 43 to 52 dBA Insects 38 to 40 Abel mine not audible Bloomfield mine Haul tracks 35 to 40 dBA
		Estimated Abel mine LAeq(15min) contribution <30 dBA LA1(1min) contribution <30 dBA					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dB below the overall LA90 noise level.

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	
15/12/2014 2:58pm W = 1.5 m/s ESE Temp = 28.5°C Cloud cover = 1/8	Daytime Ambient	74	66	57	44	55	Dist Traffic ~ 46 to 47 dBA Birds ~ 55 to 68 dBA Local Traffic ~ 64 to 74 dBA Insects 35 to 36 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <34 dBA[1].					
15/12/2014 8:28pm W = 0.6 m/s ESE Temp = 19.65°C Cloud cover = 0/8	Evening Ambient	66	60	56	49	53	DIst Traffic ~ 53 to 58 dBA Birds ~ 54 dBA Insect/frogs 55 to 58 dBA Local Road traffic 58 to 66 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <39 dBA[1].					
18/12/2014 11:12pm W = 0.4 m/s S Temp = 20.9°C Cloud cover = 0/8	Night-time Ambient	54	51	49	45	48	Dist Traffic ~ 44 to 45 dBA Insect/frogs 51-54 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <35 dBA[1] LA1(1min) contribution <35 dBA[1]					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dB below the overall LA90 noise level.

Table 6 Location J, Parish Drive, Thornton

Date/Start Time/Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
15/12/2014 3:27pm W = 1.6 m/s ESE Temp = 29°C Cloud cover = 1/8	Daytime Ambient	59	57	55	50	53	Distant Road traffic 47-52 dBA Birds 42 to 59 dBA insects 47 to 54 dBA (constant) Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <40 dBA[1].					
15/12/2014 8:53pm W = 0.6 m/s ESE Temp = 18.7°C Cloud cover = 0/8	Evening Ambient	53	48	46	42	44	Distant Road traffic 42-53 dBA Insects 44 to 45 dBA Abel mine not audible
		Estimated Abel mine LAeq(15min) contribution <32 dBA[1].					
18/12/2014 11:35pm W = 0.6 m/s NW Temp = 20.6°C Cloud cover = 0/8	Night-time Ambient	52	49	45	40	43	Dist Traffic ~ 49 to 52 dBA insects ~ 30 to 35 dBA Abel mine not audible.
		Estimated Abel mine LAeq(15min) contribution <30 dBA[1]. LA1(1min) contribution <30 dBA[1]					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dB below the overall LA90 noise level.

Table 7 Location L, 17 Killshanny 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	
15/12/2014 2:31pm W = 1.5 m/s ESE Temp = 28.2°C Cloud cover = 1/8	Daytime Ambient	65	59	49	40	47	Birds ~ 50 dBA Trees in wind 40 to 42 dBA Local Traffic ~ 59 to 65 dBA Abel mine audible 33 to 35 dBA Constant rumble (CHP)
		Estimated Abel mine LAeq(15min) contribution 33 dBA.					
15/12/2014 8:06pm W = 0.7 m/s ESE Temp = 20.3°C Cloud cover = 0/8	Evening Ambient	66	57	55	44	51	Lawn Mower 43 to 52 Dog Barking ~ 50 to 51 dBA Local Traffic ~ 58 to 66 dBA Insects ~ 47 to 56 dBA Abel mine audible 32 to 33 dBA Constant rumble (CHP)
		Estimated Abel mine LAeq(15min) contribution 32 dBA.					
18/12/2014 10:52pm W = 0.3 m/s E Temp = 21.2°C Cloud cover = 0/8	Night-time Ambient	67	52	41	38	43	Local Traffic ~ 52 to 67 dBA Insects ~ 38 to 41 dBA Abel mine not Audible
		Estimated Abel mine LAeq(15min) contribution <30 dBA[1] LA1(1min) contribution <30 dBA[1]					

Note: 1. Mine operation remained inaudible during operator attended noise measurement suggesting that any contribution would be at least 10 dB below the overall LA90 noise level.

4.2 Operator Attended Noise Monitoring Summary

4.2.1 Donaldson Mine

Donaldson Open Cut Mine has ceased production and all major earthworks on the site have been finalised. Therefore, compliance noise monitoring for the Donaldson Open Cut Mine is no longer required.

4.2.2 Abel Coal Mine

Noise generated by local and distant traffic was a significant contributor to ambient 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 times at Location L.

4.3 Compliance Assessment and Discussion of Results

4.3.1 Operations

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

Table 8 Compliance Noise Assessment – Operations

Location	Estimated Abel LAeq(15minute) Contribution			Consent Conditions LAeq(15minute)			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
D – Black Hill School, Black Hill	<30	<31	<35	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
F – Black Hill Road, Black Hill	<39	<33	<40	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
G – Buchanan Road, Buchanan	<36	<33	<30	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
I – Lord Howe Drive, Ashtonfield	<34	<39	<35	36	36	36	Yes[1,2]	Yes[1,2]	Yes[1,2]
J – Parish Drive, Thornton	<41	<32	<30	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
L – Kilshanny Ave, Ashtonfield	33	32	<30	40	40	40	Yes	Yes	Yes[1,2]

1 – Abel operations inaudible/not measurable.
2 – Estimated contribution equals LA90 minus 10 dB.

Results presented in **Table 8** indicate that compliance with the relevant consent conditions was achieved at all noise monitoring locations during all periods.

4.3.2 Sleep Disturbance

Results of the sleep disturbance compliance assessment are given in **Table 9**.

Table 9 Compliance Noise Assessment – Sleep Disturbance

Location	Estimated Abel LA1(1minute) Contribution	Consent Conditions LA1(1minute)	Compliance
D – Black Hill School, Black Hill	<35	45	Yes
F – Black Hill Road, Black Hill	<40	45	Yes
G – Buchanan Road, Buchanan	<30	45	Yes
I – Lord Howe Drive, Ashtonfield	<35	45	Yes
J – Parish Drive, Thornton	<30	45	Yes
L – Kilshanny Ave, Ashtonfield	<30	47	Yes

Results presented in **Table 9** indicate 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 5 December 2014 and 22 December 2014 at each of the six (6) monitoring locations given in **Table 10**.

Table 10 Noise Logger and Noise Monitoring Locations

Location	Noise Logger Serial Number	Date of Logging
D – Black Hill School, Black Hill	ARL EL- 316 16-203-531	05/12/2014-15/12/2014
F – Black Hill Road, Black Hill	ARL EL- 316 16-203-509	05/12/2014-15/12/2014
G – Buchanan Road, Buchanan	ARL EL- 316 16-306-039	15/12/2014-22/12/2014
I – Lord Howe Drive, Ashtonfield	ARL EL- 316 16-203-531	15/12/2014-22/12/2014
L – Kilshanny Ave, Kilshanny	ARL EL- 316 16-203-509	15/12/2014-22/12/2014
J – Parish Drive, Thornton	ARL EL- 316 16-301-473	15/12/2014-22/12/2014

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendices B1 to B6**. A summary of the results of the unattended continuous noise monitoring is given in **Table 11**.

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 were 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 11 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}
D Black Hill School, Black Hill	Daytime	63	51	39	54
	Evening	61	52	40	53
	ENCM Daytime	62	52	40	54
	Night	52	49	38	50
F Lot 684 Black Hill Road, Black Hill	Daytime	70	59	47	60
	Evening	65	56	42	57
	ENCM Daytime	68	58	45	59
	Night	64	57	43	56
G 156 Buchanan Road, Buchanan	Daytime	58	54	41	54
	Evening	54	49	39	51
	ENCM Daytime	56	52	40	53
	Night	47	45	41	46
I 49 Magnetic Drive, Ashtonfield	Daytime	66	55	42	55
	Evening	63	54	41	55
	ENCM Daytime	65	55	42	55
	Night	56	54	46	53
L 17 Kilshanny Ave, Ashtonfield	Daytime	60	49	36	52
	Evening	58	48	37	50
	ENCM Daytime	59	49	37	51
	Night	49	44	37	46
J 220 Parish Drive, Thornton	Daytime	58	54	44	55
	Evening	52	47	40	56
	ENCM Daytime	56	52	42	56
	Night	47	43	34	46

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.
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 L_{A90} Noise Levels

The long term ambient L_{A90} 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

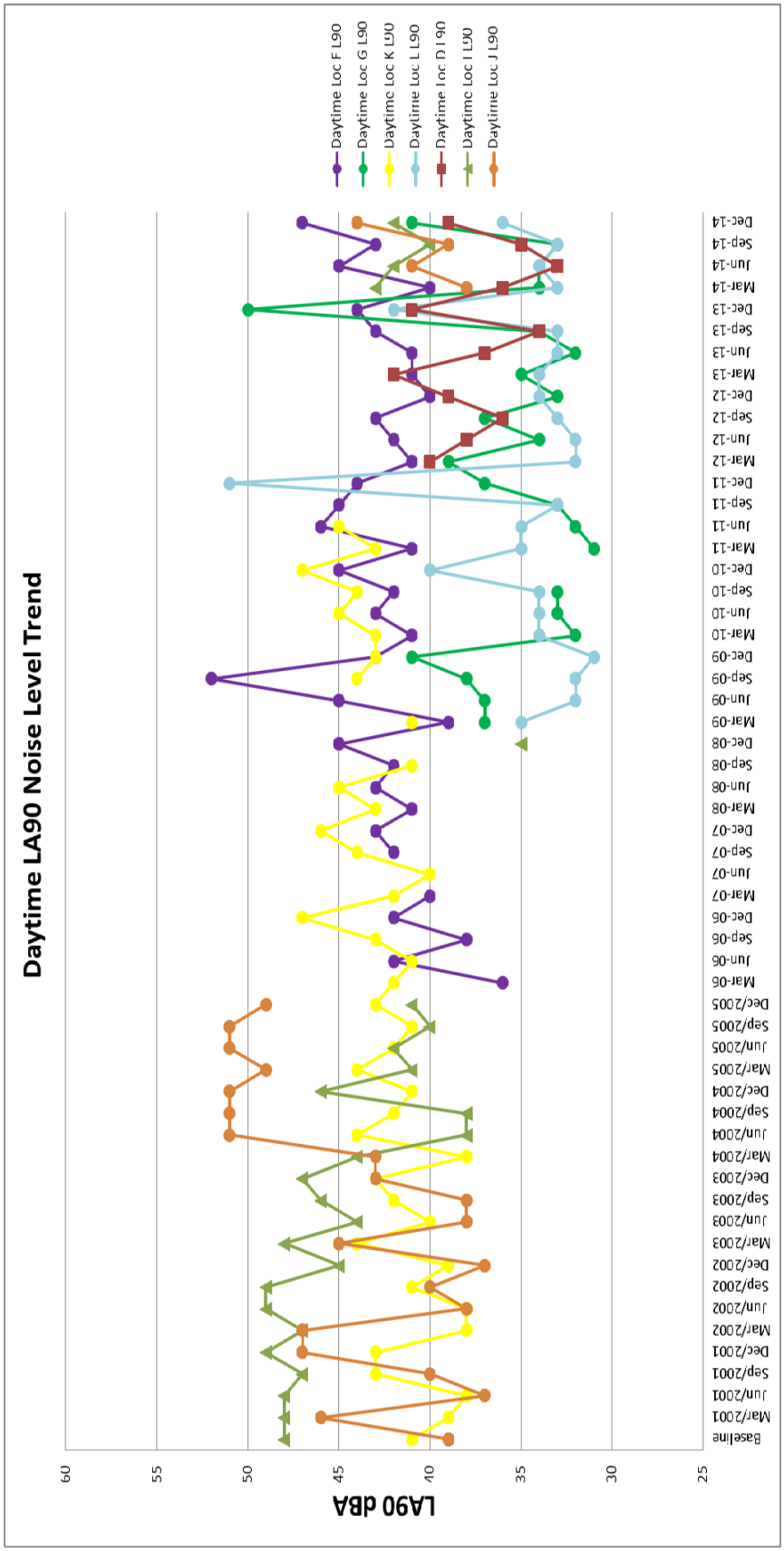


Figure 2 Long term Evening L_{A90} Noise Levels

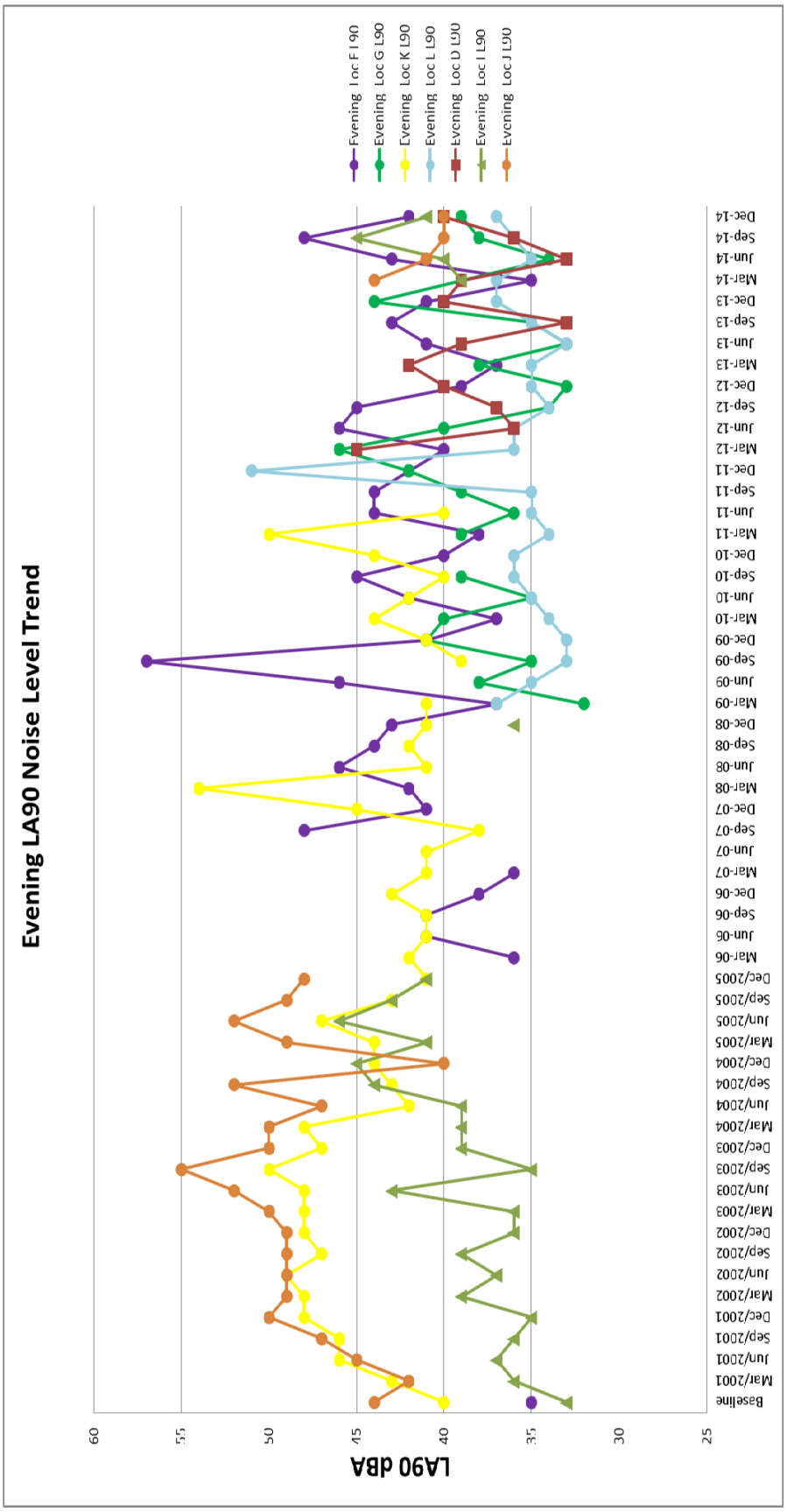
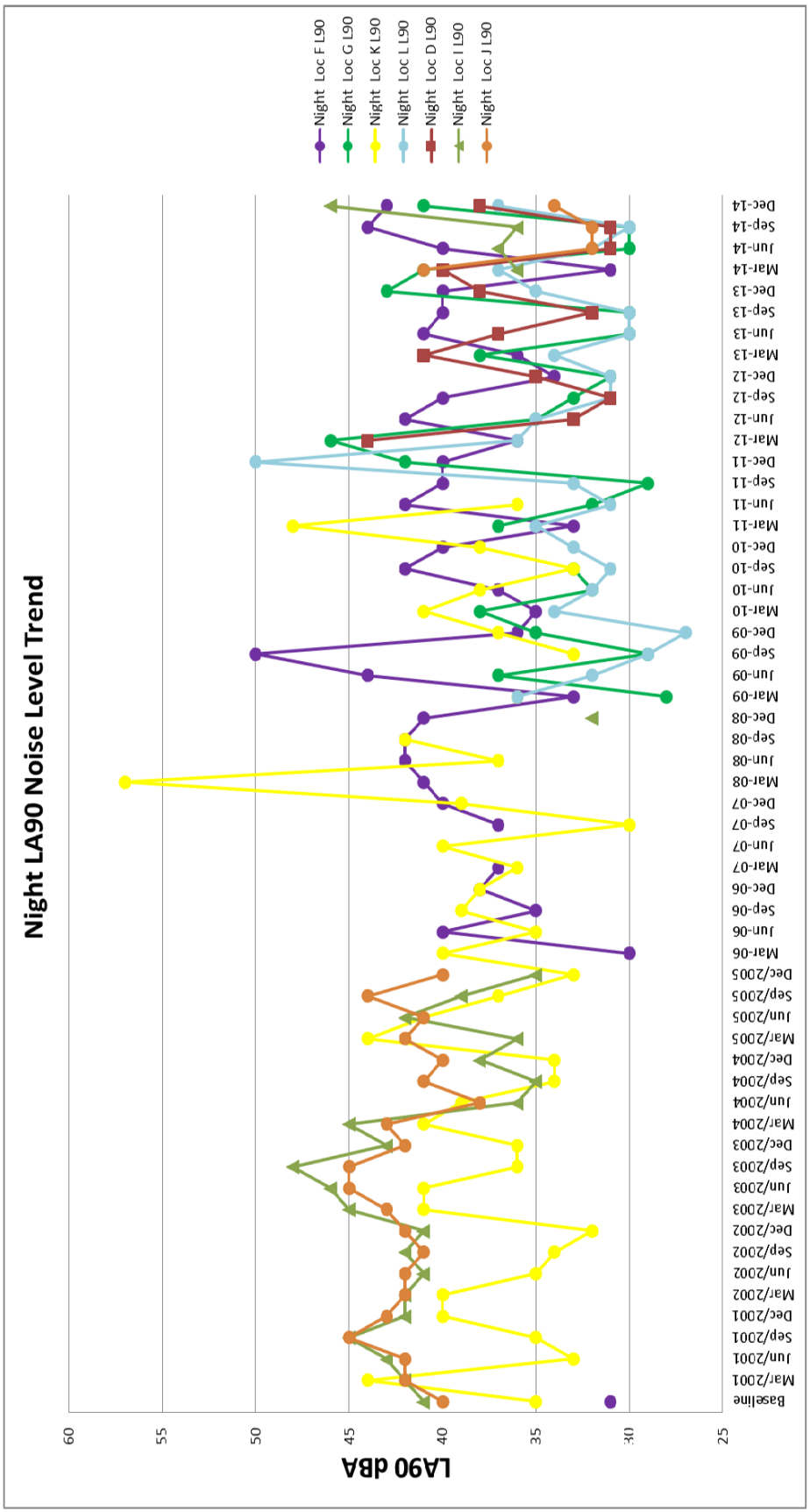


Figure 3 Long term Night-time LA90 Noise Levels



Baseline

The summary of results in **Table 12** shows the ambient LA90 noise levels recorded for the quarter ending December 2014 compared to the levels recorded during the baseline monitoring process (ie. Prior to commencement of mining operation at Donaldson).

Table 12 LA90 Results Comparison – Baseline

Monitoring Location	Period	Long term Night-time LA90 Noise Levels		Difference dB
		Baseline	December 2014	
D Black Hill School, Black Hill	Day	N/A[1]	39	N/A[1]
	Evening	N/A[1]	40	N/A[1]
	Night	N/A[1]	38	N/A[1]
F Lot 684 Black Hill Road, Black Hill	Day	39	47	8
	Evening	35	42	7
	Night	31	43	12
G 156 Buchanan Road, Buchanan	Day	N/A[1]	41	N/A[1]
	Evening	N/A[1]	39	N/A[1]
	Night	N/A[1]	41	N/A[1]
I 49 Magnetic Drive, Ashtonfield	Day	48	42	-6
	Evening	33	41	8
	Night	41	46	5
L 17 Kilshanny Ave, Ashtonfield	Day	N/A[1]	36	N/A[1]
	Evening	N/A[1]	37	N/A[1]
	Night	N/A[1]	37	N/A[1]
J 220 Parish Drive, Thornton	Day	39	44	5
	Evening	44	40	-4
	Night	40	34	-6

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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..

1. No data was available during baseline measurements, no comparisons can be made.

Previous Quarter (September 2014)

Table 13 presents the ambient L_{A90} noise levels recorded for the current monitoring period compared to those measured in the previous monitoring period.

Table 13 LA90 Results Comparison – Previous Quarter (September 2014)

Monitoring Location	Period	Long term Night-time L_{A90} Noise Levels		Difference dB
		September 2014	December 2014	
D Black Hill School, Black Hill	Day	35	39	4
	Evening	36	40	4
	Night	31	38	7
F Lot 684 Black Hill Road, Black Hill	Day	43	47	4
	Evening	48	42	-6
	Night	44	43	-1
G 156 Buchanan Road, Buchanan	Day	33	41	8
	Evening	38	39	1
	Night	30	41	11
I 49 Magnetic Drive, Ashtonfield	Day	40	42	2
	Evening	45	41	-4
	Night	36	46	10
L 17 Kilshanny Ave, Ashtonfield	Day	33	36	3
	Evening	36	37	1
	Night	30	37	7
J 220 Parish Drive, Thornton	Day	39	44	5
	Evening	40	40	0
	Night	32	34	2

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

Coinciding Period Last Year (December 2013)

Table 14 presents the ambient L_{A90} noise levels recorded for the current monitoring period compared to those measured during the coinciding monitoring period last year.

Table 14 LA90 Results Comparison – Coinciding Period Last Year (December 2013)

Monitoring Location	Period	Long term Night-time L_{A90} Noise Levels		Difference dB
		December 2013	December 2014	
D Black Hill School, Black Hill	Day	41	39	-2
	Evening	40	40	0
	Night	38	38	0
F Lot 684 Black Hill Road, Black Hill	Day	44	47	3
	Evening	41	42	1
	Night	40	43	3
G 156 Buchanan Road, Buchanan	Day	50	41	-9
	Evening	44	39	-5
	Night	43	41	-2
I 49 Magnetic Drive, Ashtonfield	Day	N/A[1]	42	N/A[1]
	Evening	N/A[1]	41	N/A[1]
	Night	N/A[1]	46	N/A[1]
L 17 Kilshanny Ave, Ashtonfield	Day	42	36	-6
	Evening	37	37	0
	Night	35	37	2
J 220 Parish Drive, Thornton	Day	N/A[1]	44	N/A[1]
	Evening	N/A[1]	40	N/A[1]
	Night	N/A[1]	34	N/A[1]

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No data was recorded at Location I and J during the quarter, no comparisons can be made.

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 LA10 Noise Levels

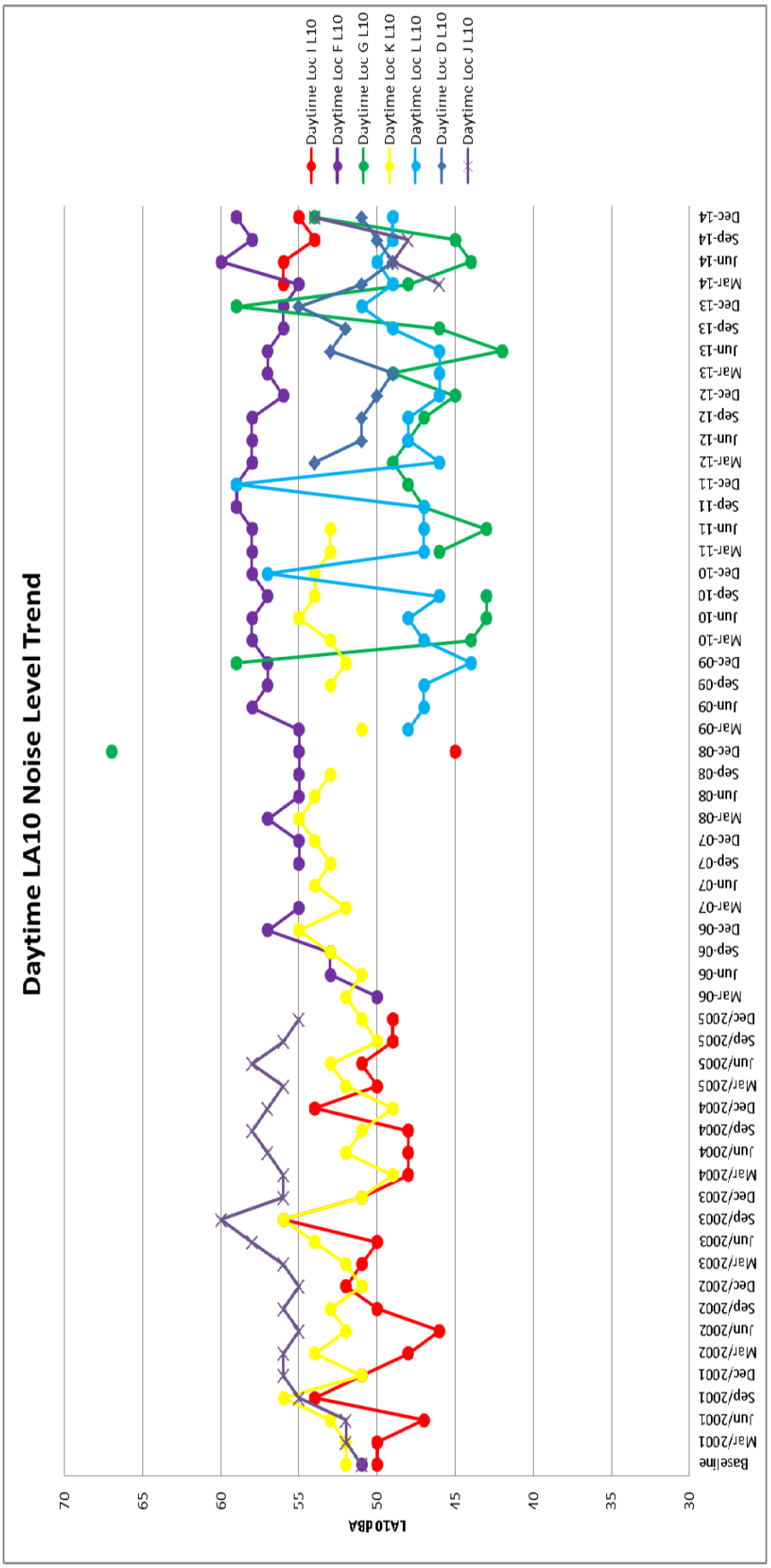


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Figure 5 Long term Evening L_{A10} Noise Levels

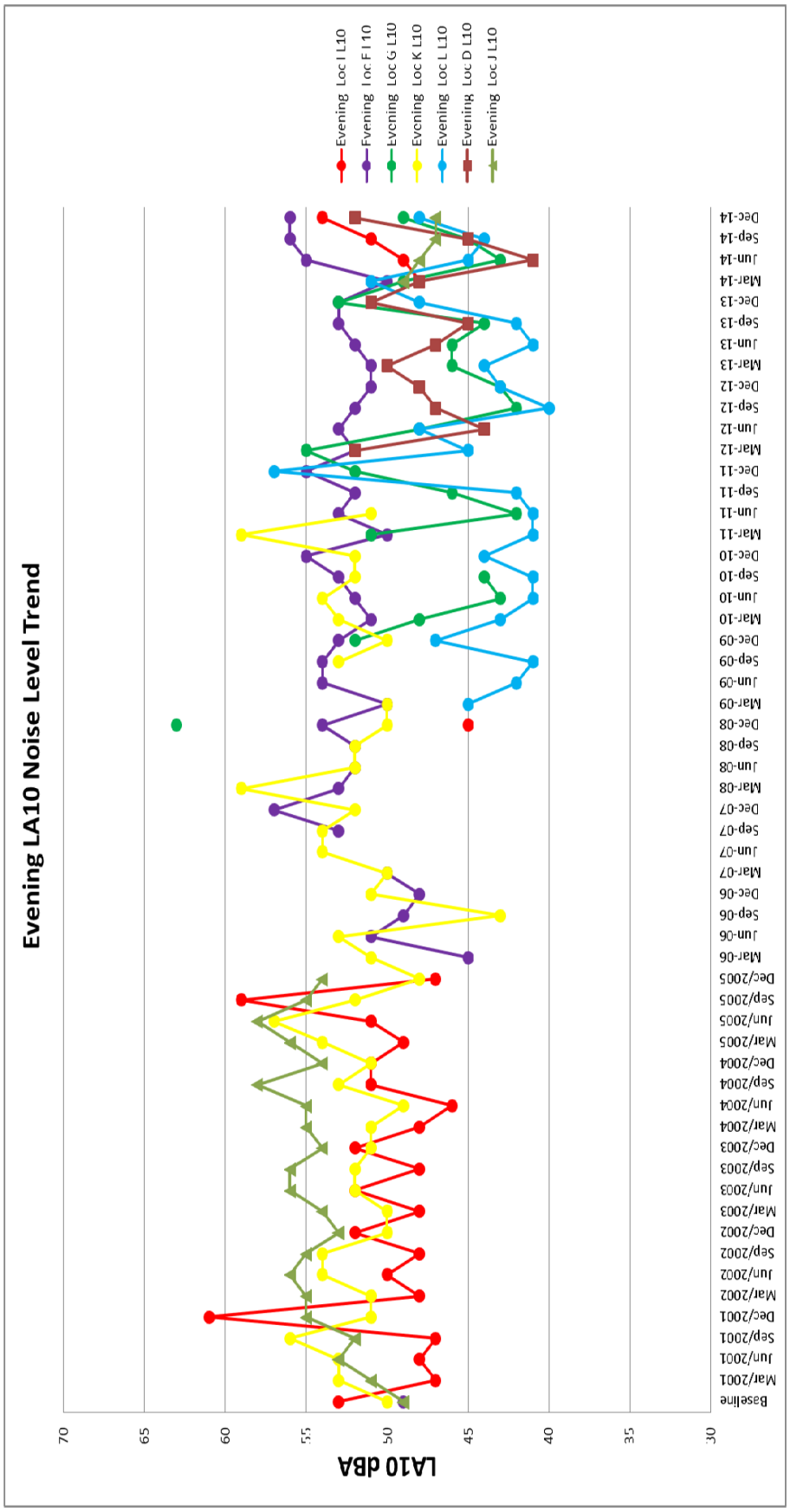

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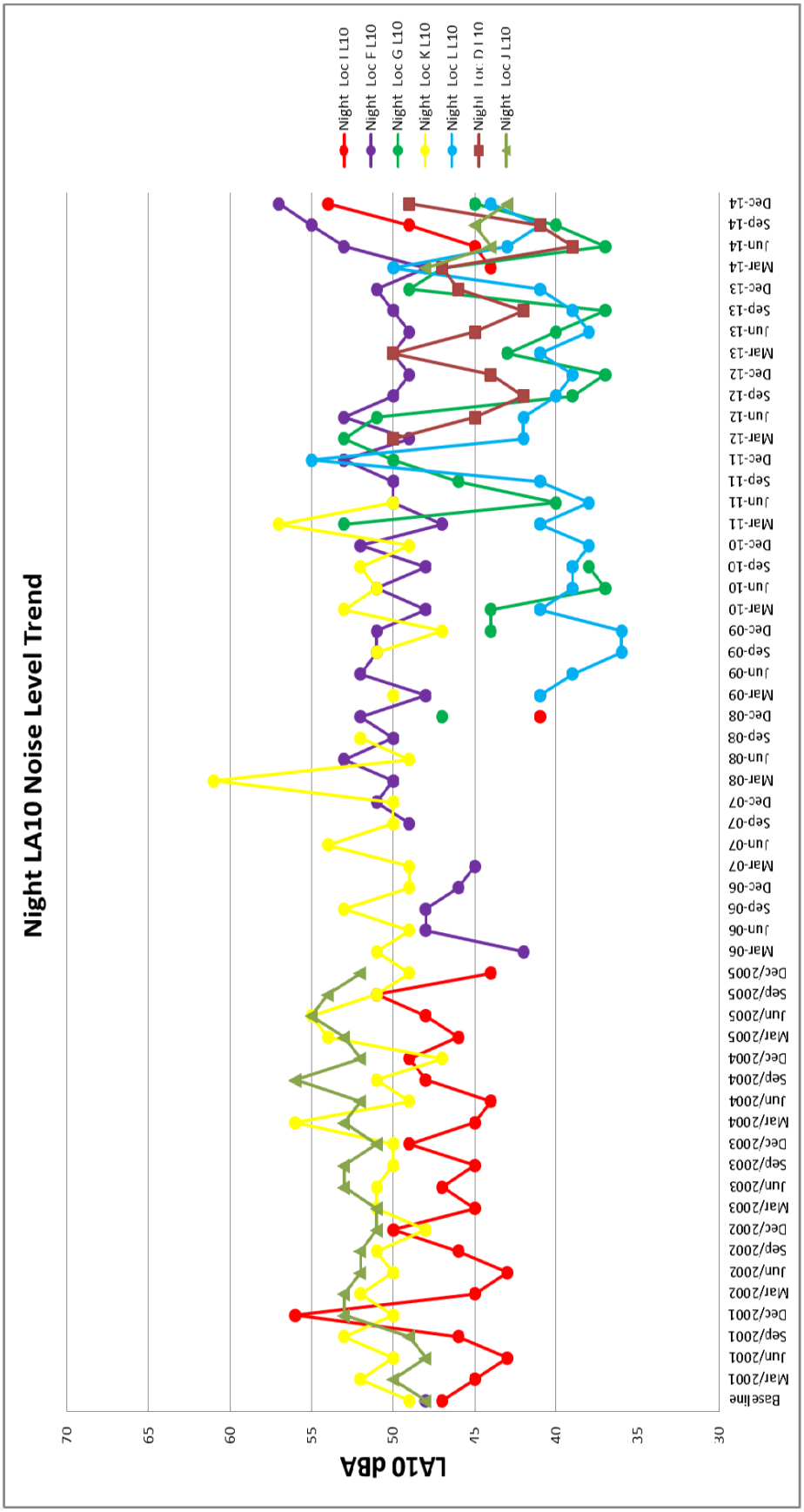
Figure 6 Long term Night-time LA10 Noise Levels



Baseline

Table 15 presents the ambient L_{A10} noise levels recorded for the quarter ending December 2014 compared to the levels recorded during the baseline monitoring period.

Table 15 LA10 Results Comparison – Baseline

Monitoring Location	Period	Long term Night-time L_{A10} Noise Levels		Difference dB
		Baseline	December 2014	
D Black Hill School, Black Hill	Day	N/A[1]	51	N/A[1]
	Evening	N/A[1]	52	N/A[1]
	Night	N/A[1]	49	N/A[1]
F Lot 684 Black Hill Road, Black Hill	Day	51	59	8
	Evening	49	56	7
	Night	48	57	9
G 156 Buchanan Road, Buchanan	Day	N/A[1]	54	N/A[1]
	Evening	N/A[1]	49	N/A[1]
	Night	N/A[1]	45	N/A[1]
I 49 Magnetic Drive, Ashtonfield	Day	50	55	5
	Evening	53	54	1
	Night	47	54	7
L 17 Kilshanny Ave, Ashtonfield	Day	N/A[1]	49	N/A[1]
	Evening	N/A[1]	48	N/A[1]
	Night	N/A[1]	44	N/A[1]
J 220 Parish Drive, Thornton	Day	51	54	3
	Evening	49	47	-2
	Night	48	43	-5

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No data was available during baseline measurements, no comparisons can be made.

Previous Quarter (September 2014)

Table 16 presents the ambient LA10 noise levels recorded for the current monitoring period compared to those measured during the previous monitoring period.

Table 16 LA10 Results Comparison – Previous Quarter (September 2014)

Monitoring Location	Period	Long term Night-time LA10 Noise Levels		Difference dB
		September 2014	December 2014	
D Black Hill School, Black Hill	Day	50	51	1
	Evening	45	52	7
	Night	41	49	8
F Lot 684 Black Hill Road, Black Hill	Day	58	59	1
	Evening	56	56	0
	Night	55	57	2
G 156 Buchanan Road, Buchanan	Day	45	54	9
	Evening	45	49	4
	Night	40	45	5
I 49 Magnetic Drive, Ashtonfield	Day	54	55	1
	Evening	51	54	3
	Night	49	54	5
L 17 Kilshanny Ave, Ashtonfield	Day	49	49	0
	Evening	44	48	4
	Night	41	44	3
J 220 Parish Drive, Thornton	Day	48	54	6
	Evening	47	47	0
	Night	45	43	-2

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

Coinciding Period Last Year (December 2013)

Table 17 presents the ambient L_{A10} noise levels recorded for the current monitoring period compared to those measured during the coinciding monitoring period last year.

Table 17 LA10 Results Comparison – Coinciding Period Last Year (December 2013)

Monitoring Location	Period	Long term Night-time L_{A10} Noise Levels		Difference dB
		December 2013	December 2014	
D Black Hill School, Black Hill	Day	55	51	-4
	Evening	51	52	1
	Night	46	49	3
F Lot 684 Black Hill Road, Black Hill	Day	56	59	3
	Evening	53	56	3
	Night	51	57	6
G 156 Buchanan Road, Buchanan	Day	59	54	-5
	Evening	53	49	-4
	Night	49	45	-4
I 49 Magnetic Drive, Ashtonfield	Day	N/A[1]	55	N/A[1]
	Evening	N/A[1]	54	N/A[1]
	Night	N/A[1]	54	N/A[1]
L 17 Kilshanny Ave, Ashtonfield	Day	51	49	-2
	Evening	48	48	0
	Night	41	44	3
J 220 Parish Drive, Thornton	Day	N/A[1]	54	N/A[1]
	Evening	N/A[1]	47	N/A[1]
	Night	N/A[1]	43	N/A[1]

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No data was recorded at Location I and J during the quarter, no comparisons 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 train loading times during the noise monitoring period are presented in **Table 18**. Only 4 trains during the day time and evening were recorded to have passed the monitoring location J during the monitoring period. No trains were loaded during the night-time period during the noise monitoring at Location J.

Table 18 Coal Train Loading Operations Log

Date	Coal Train Loading Time
15/12/2014	14:15 pm to 16:44 pm
16/12/2014	08:00 am to 10:15 am
16/12/2014	13:20 pm to 17:24 pm
16/12/2014	18:00 pm to 20:40 pm
17/12/2014	07:35 am to 12:35 am
17/12/2014	13:12 pm to 17:03 pm
18/12/2014	09:20 am to 13:25 pm
18/12/2014	15:25 am to 17:40 pm
19/12/2014	Nil Trains
20/12/2014	Nil Trains
21/12/2014	08:20 am to 11:40 am
21/12/2014	12:00 pm to 15:05 pm
22/12/2014	06:55 am to 8:34 am

The measured $L_{Aeq(period)}$ noise level for each period from rail traffic at Location J are presented in **Table 19**.

Table 19 Rail Noise Impact Monitoring Results

Location	Date	Period	Measured $L_{Aeq(Period)}$	Criteria $L_{Aeq(Period)}$	Compliance
Location J	15/12/2014	Day	49	55	Yes
	16/12/2014		54		Yes
	17/12/2014		53		Yes
	18/12/2014		54		Yes
	21/12/2014		55		Yes
	22/12/2014		51		Yes
	16/12/2014	Evening	45	45	Yes
	21/12/2014	Night	35	40	Yes

Note: Periods are as detailed in the Industrial Noise Policy (INP) and are 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.

1. No trains were loaded during this time period.

The results contained in **Table 19** show that compliance with the rail noise criteria was achieved during the December 2014 Quarter.

6 CONCLUSION

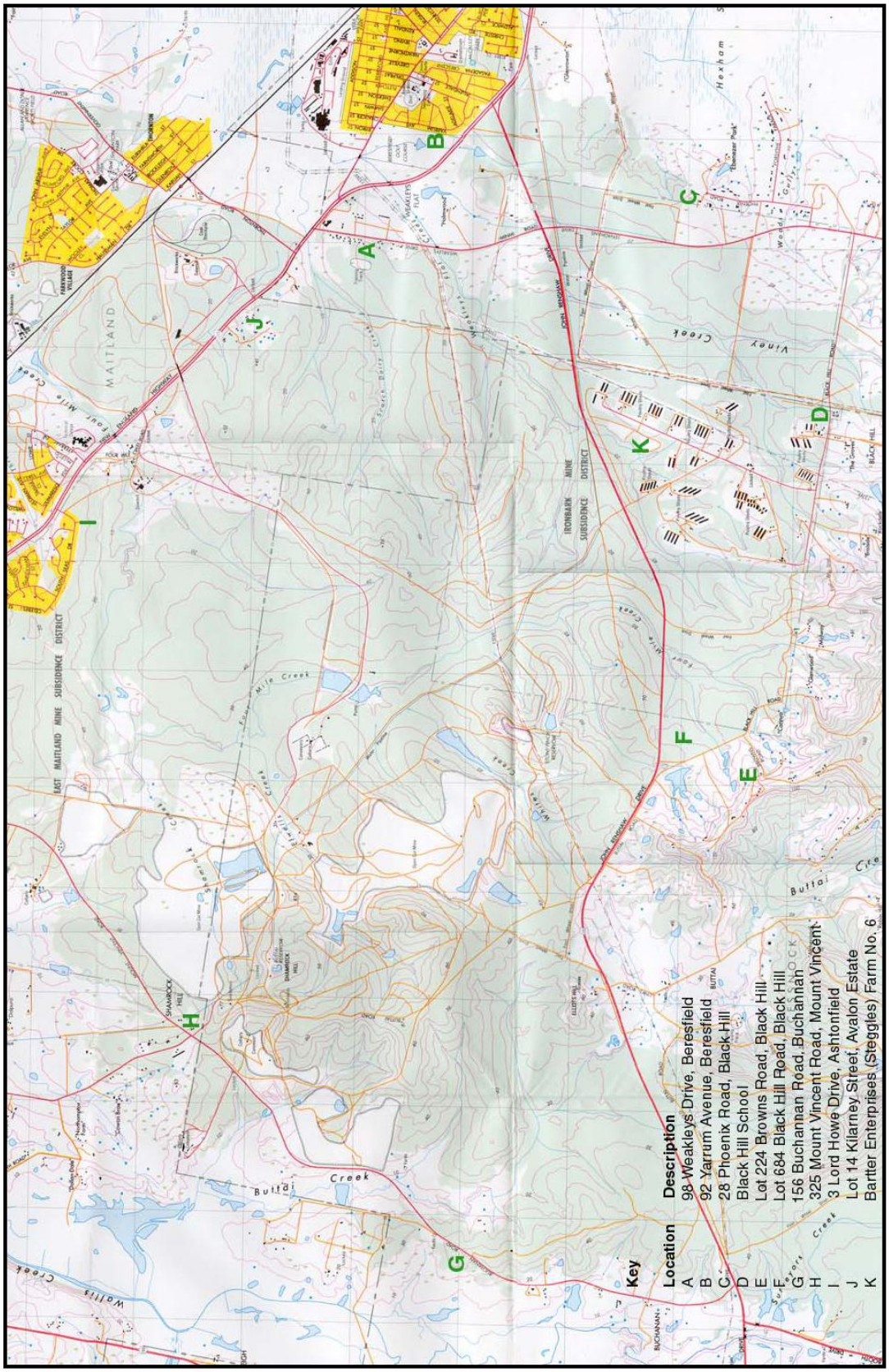
SLR was engaged by Donaldson Coal Pty Ltd to conduct quarterly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the Abel Coal Mine Noise Monitoring Program, dated 27 May 2007.

The results of the operator-attended noise measurements conducted at six (6) focus locations surrounding the mine site are included in **Table 2** to **Table 7**.

Abel Mine operations at the CHPP were only faintly audible at Location L during the day and evening. Abel portal operations were not observed to be audible at any other locations during the monitoring period. 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 2014), the baseline monitoring period, the last monitoring period (September 2014), and the coinciding monitoring period from last year (December 2013) has been conducted.

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



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Noise Monitoring Locations
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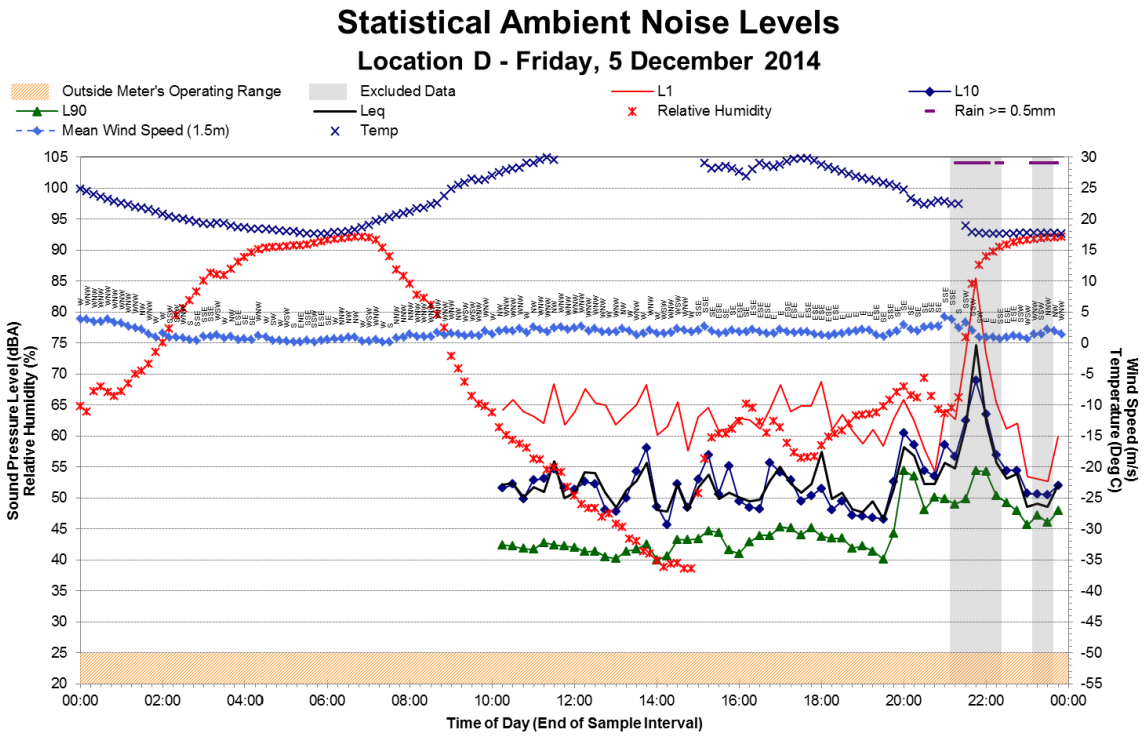
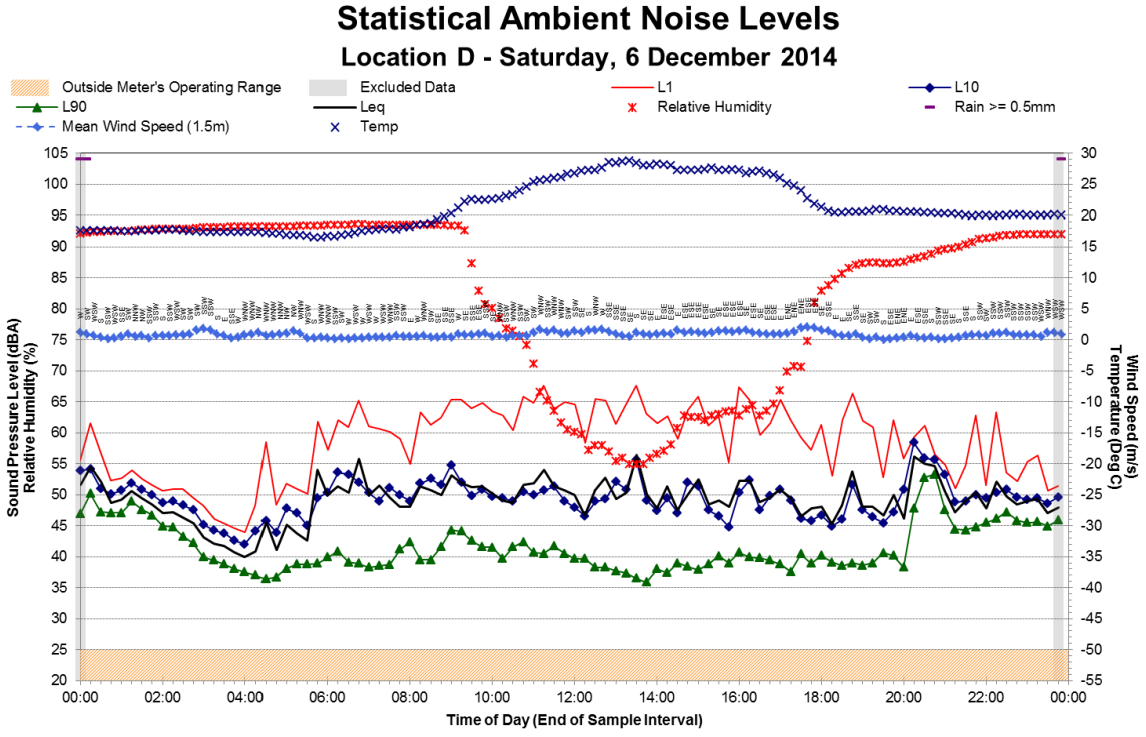
Appendix B1

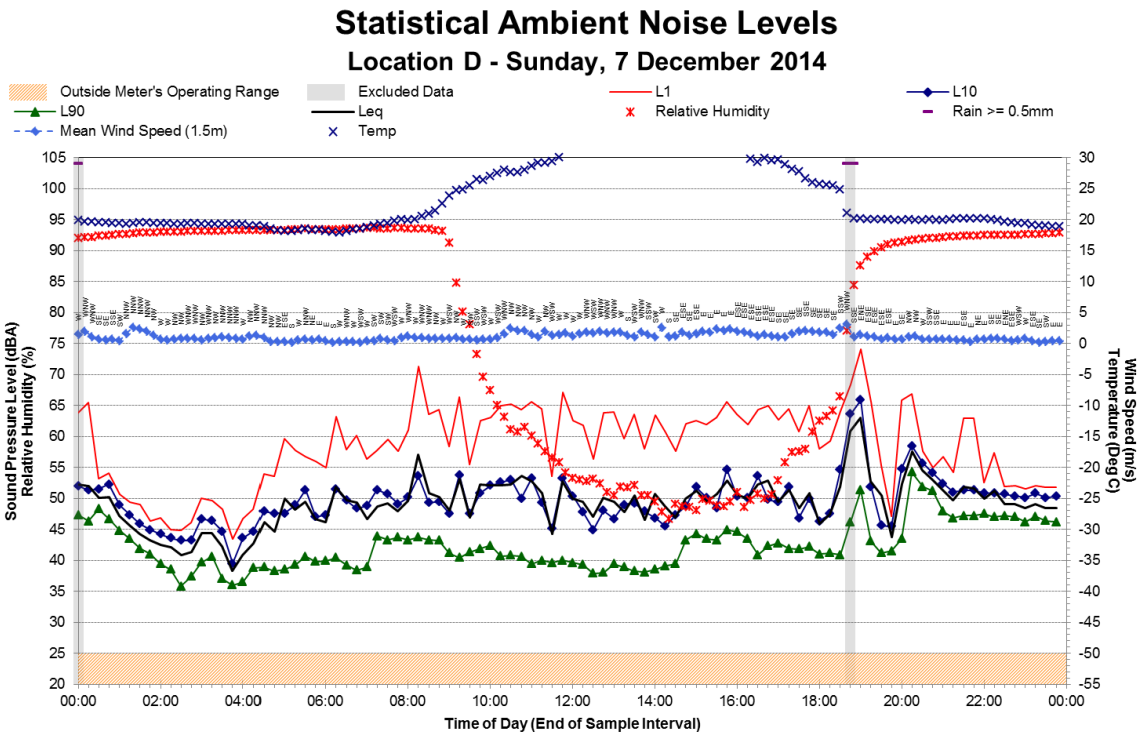
Statistical Ambient Noise Levels – Location D Page 1 of 6

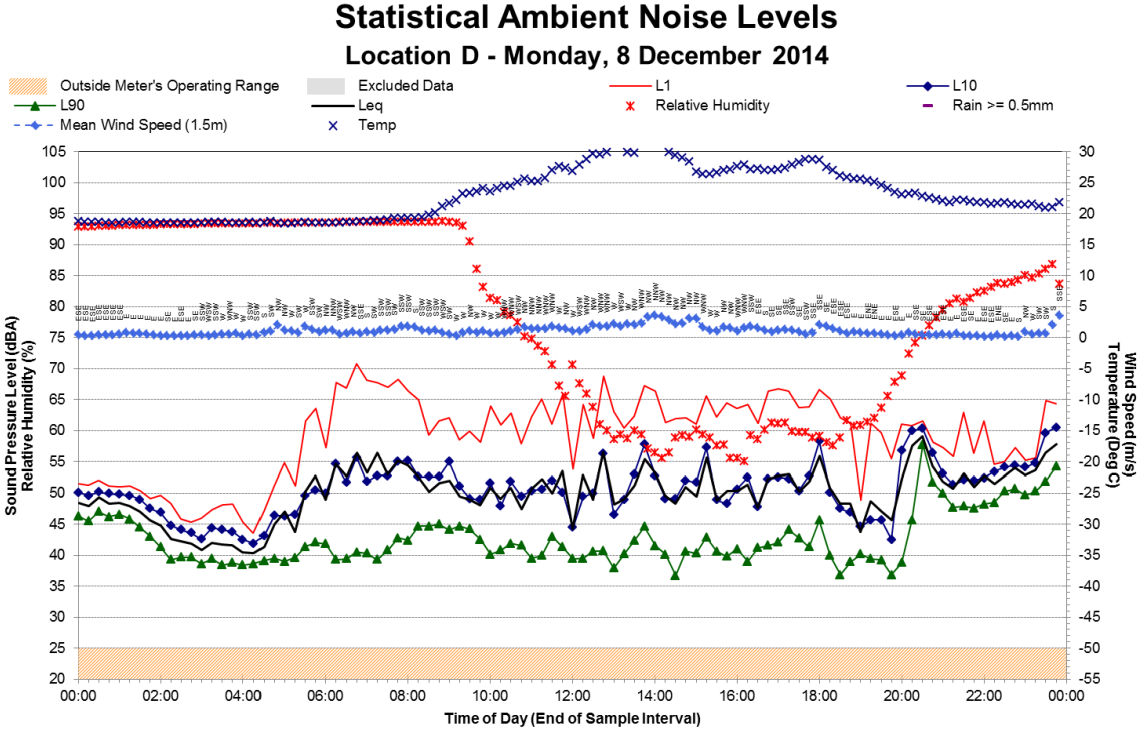




Appendix B1

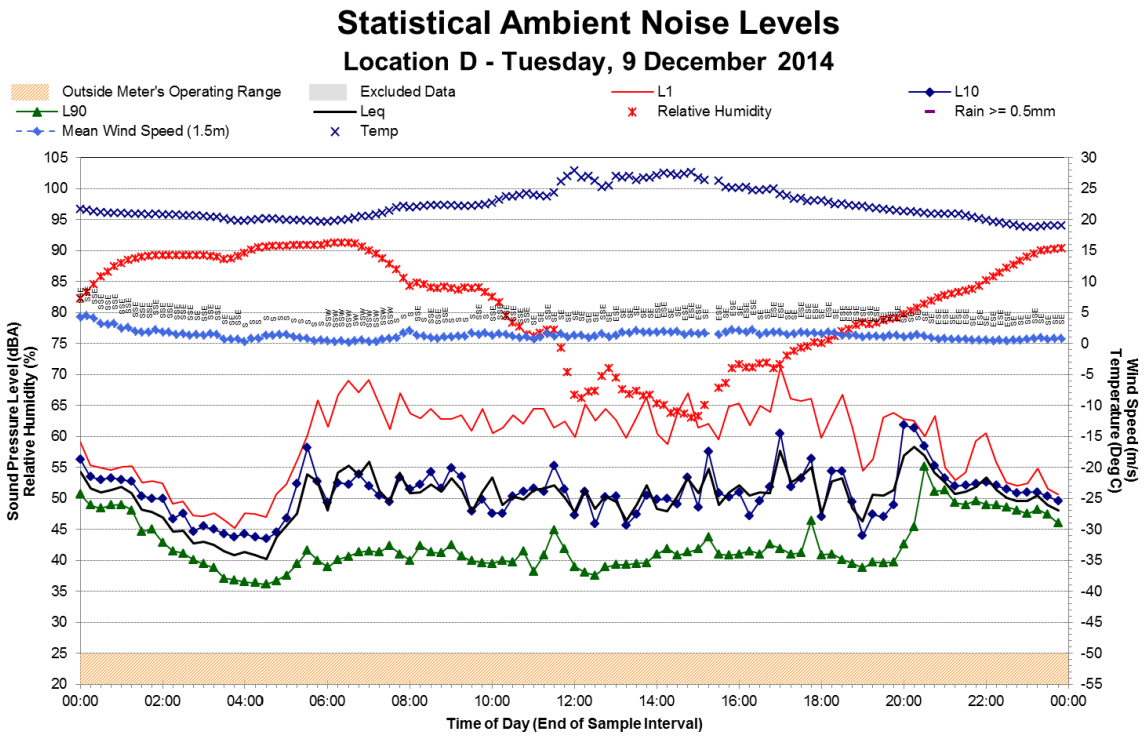
Statistical Ambient Noise Levels – Location D Page 2 of 6

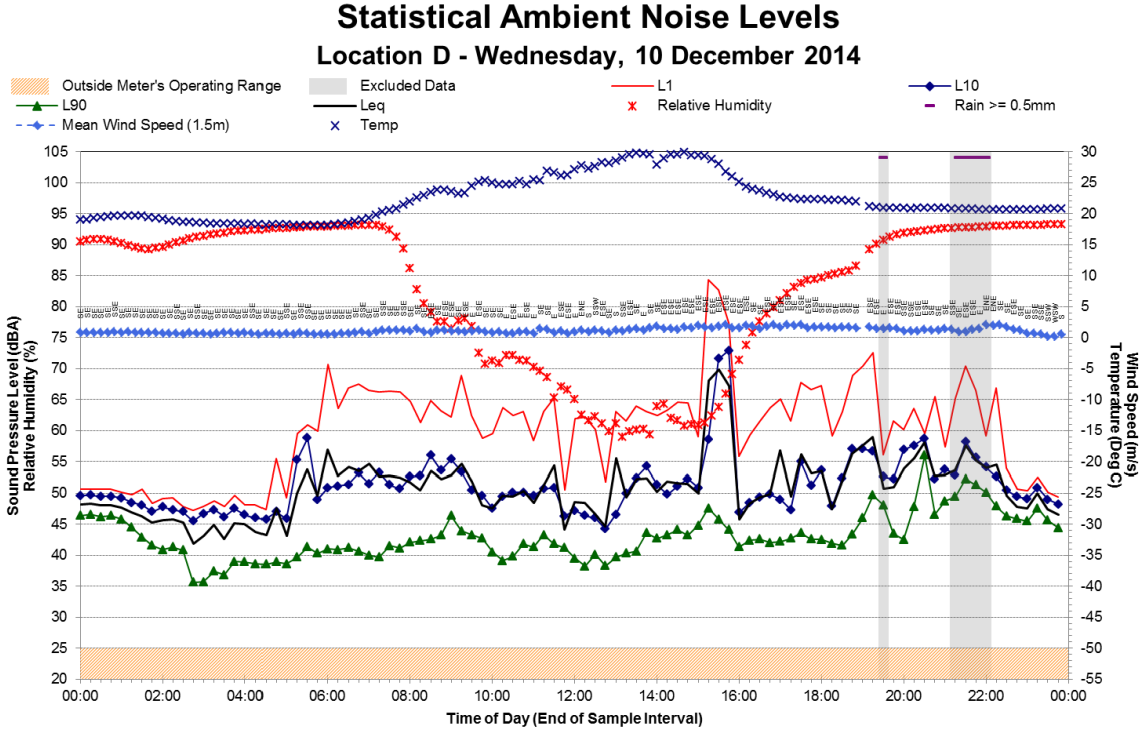




Appendix B1

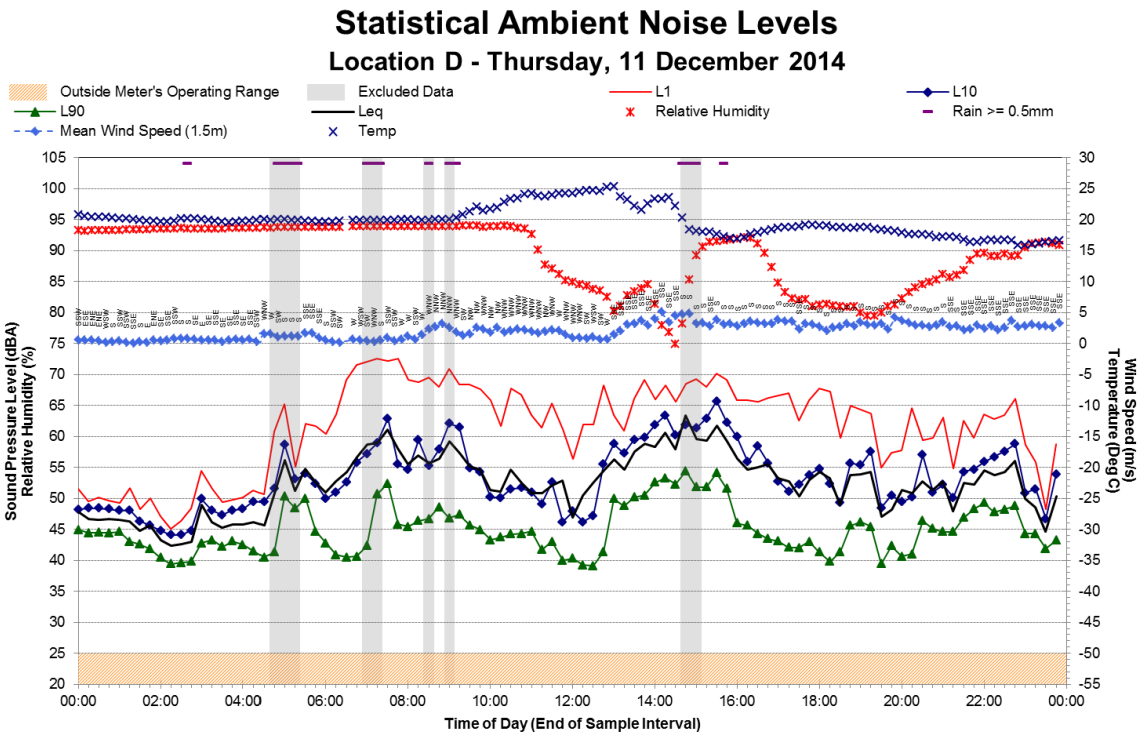
Statistical Ambient Noise Levels – Location D Page 3 of 6

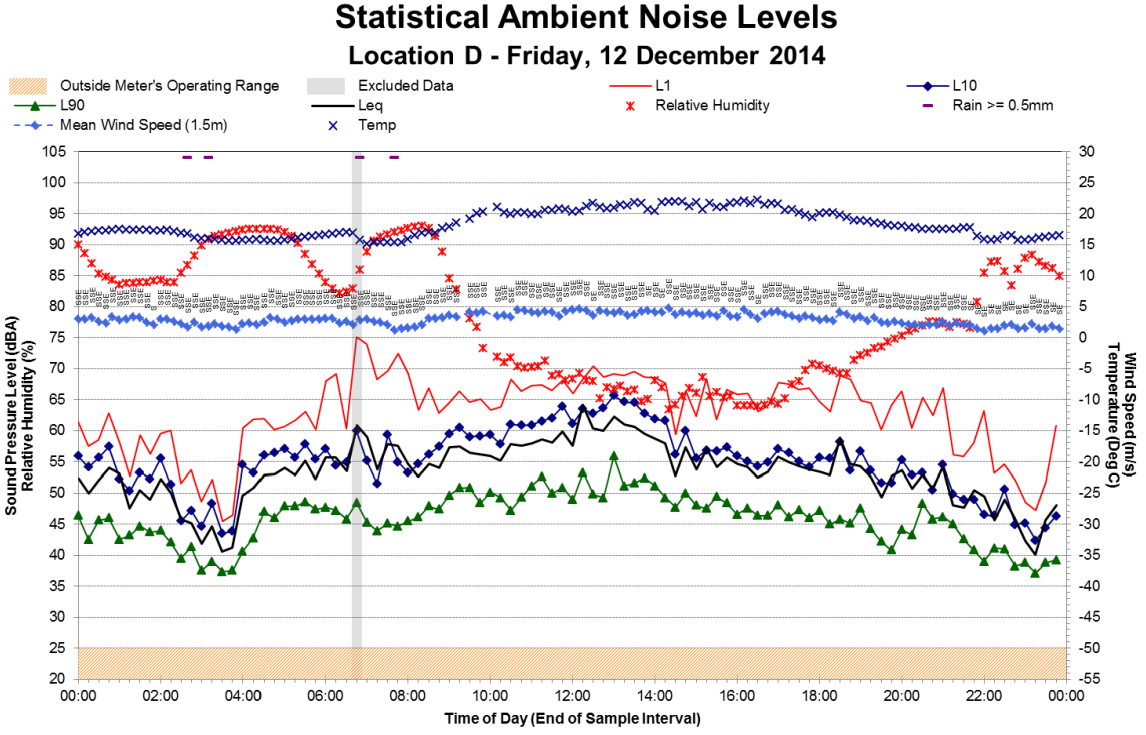




Appendix B1

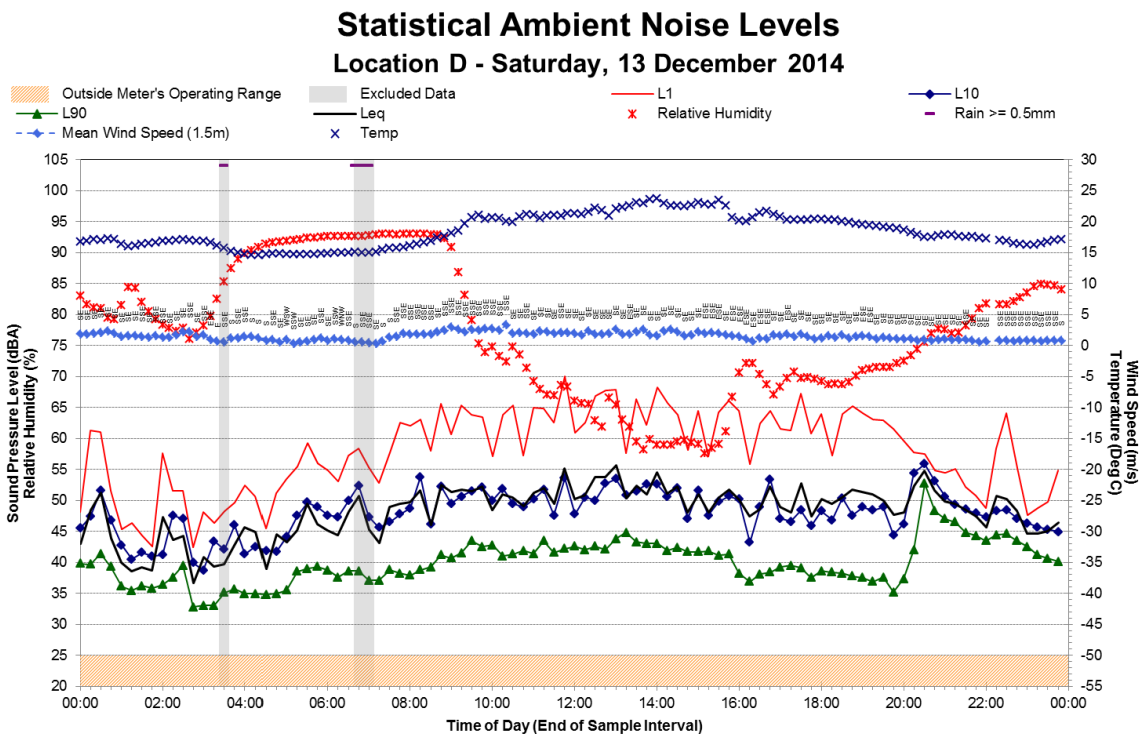
Statistical Ambient Noise Levels – Location D Page 4 of 6

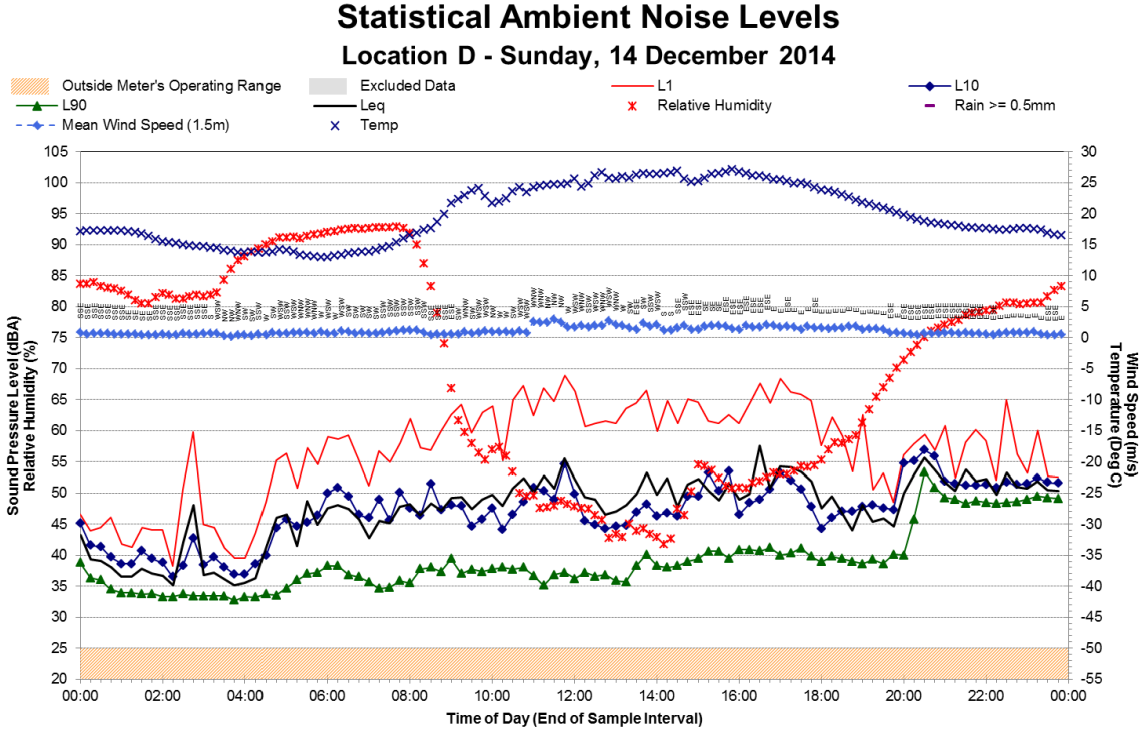




Appendix B1

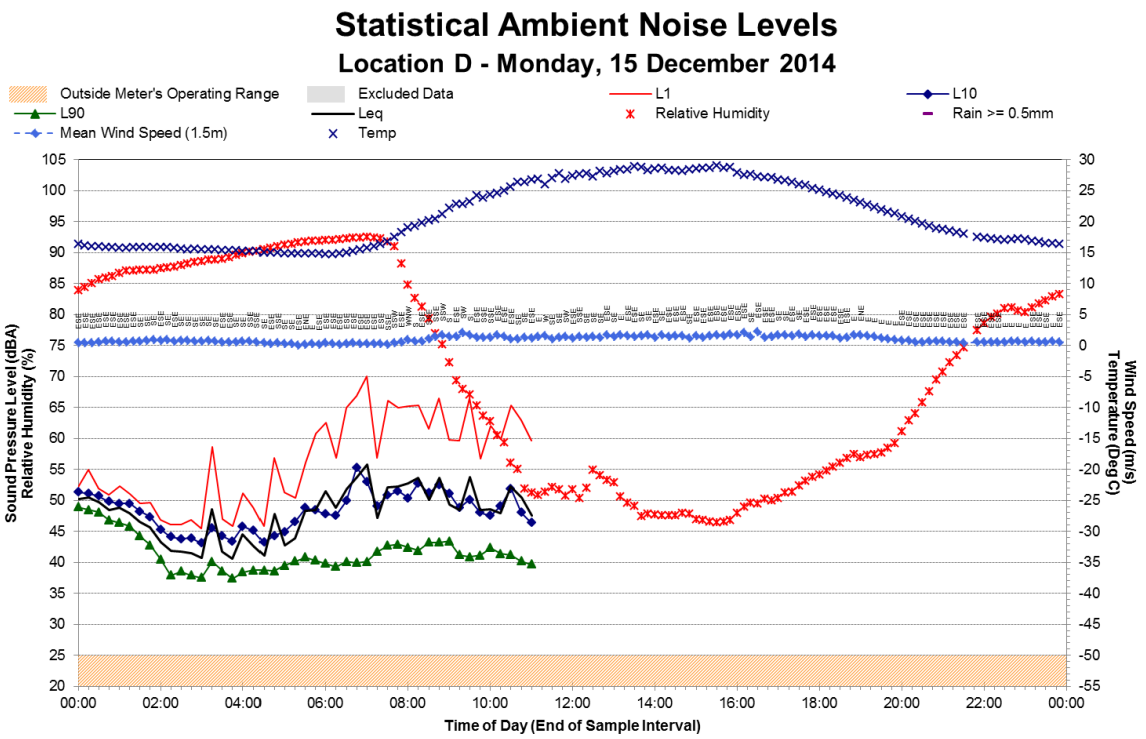
Statistical Ambient Noise Levels – Location D Page 5 of 6





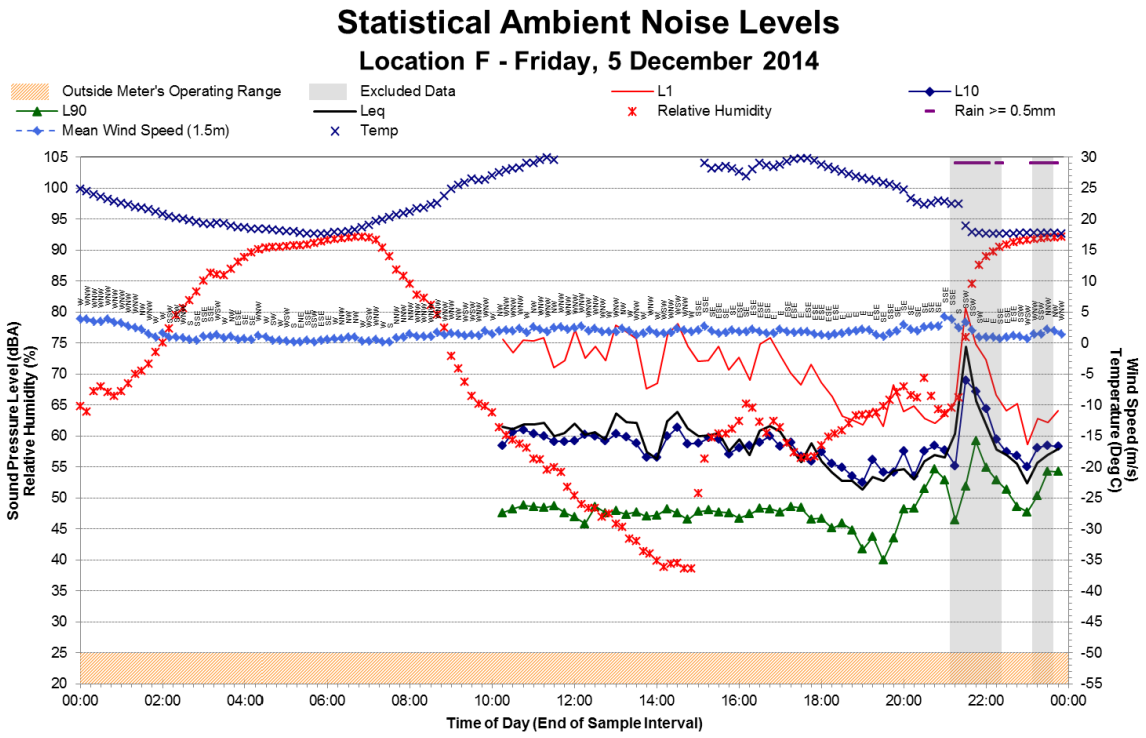
Appendix B1

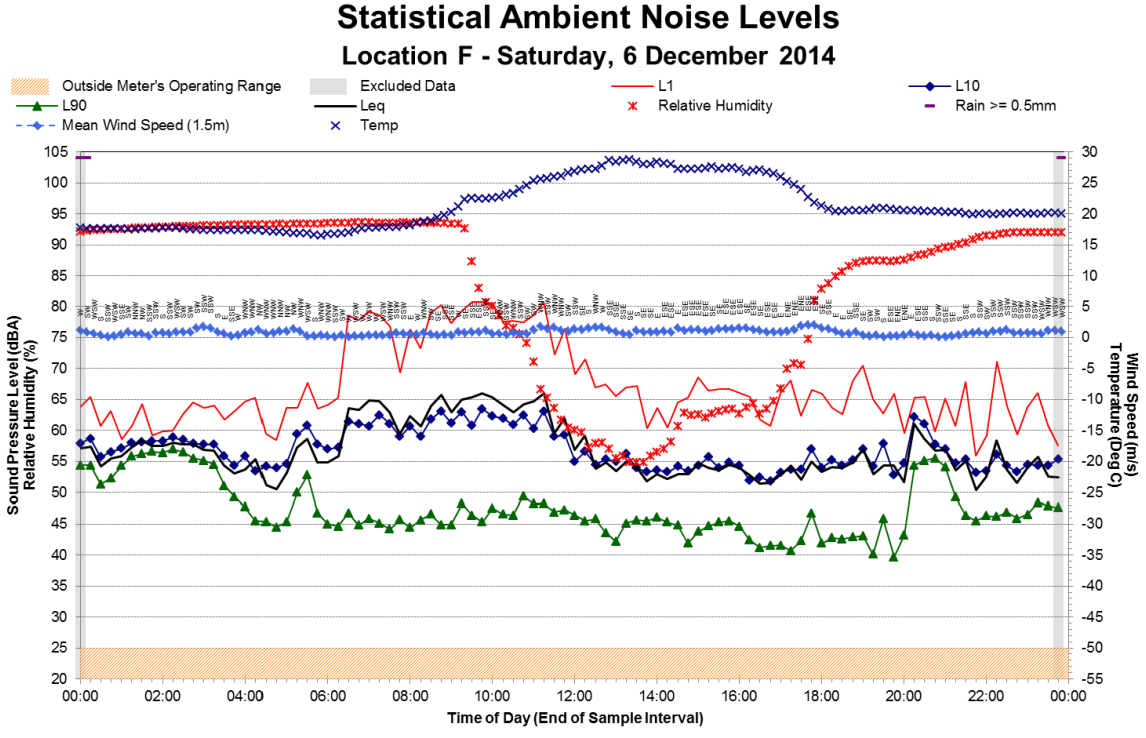
Statistical Ambient Noise Levels – Location D Page 6 of 6



Appendix B2

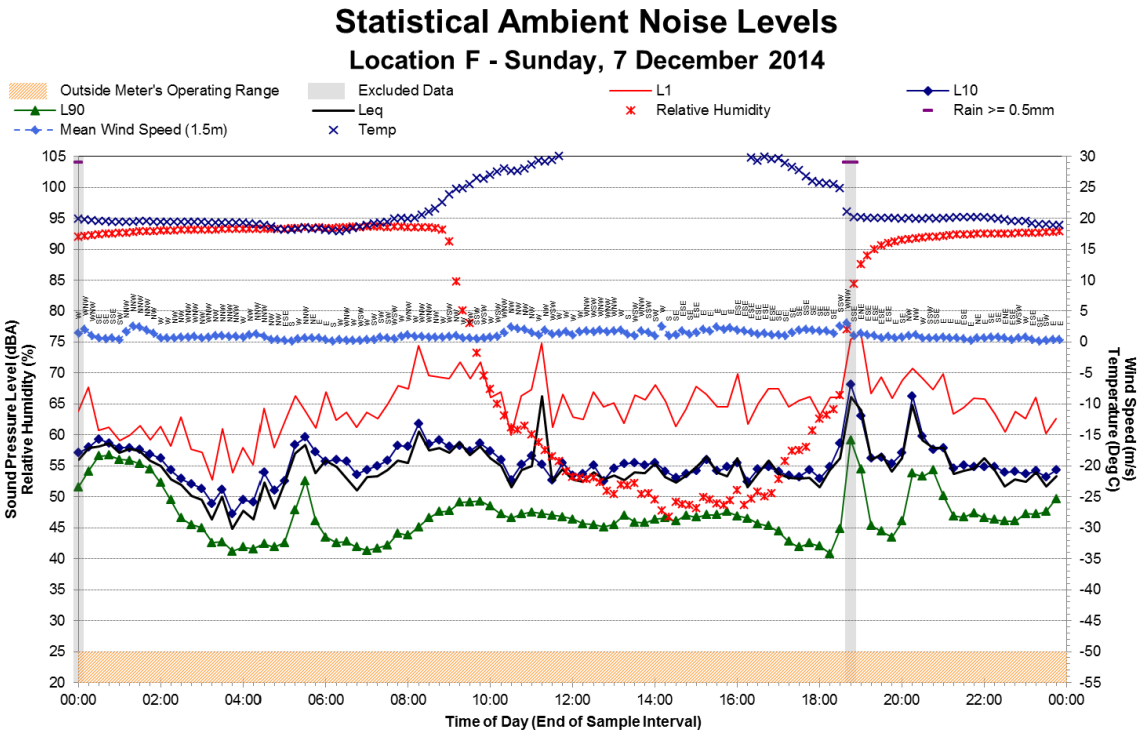
Statistical Ambient Noise Levels – Location F Page 1 of 6

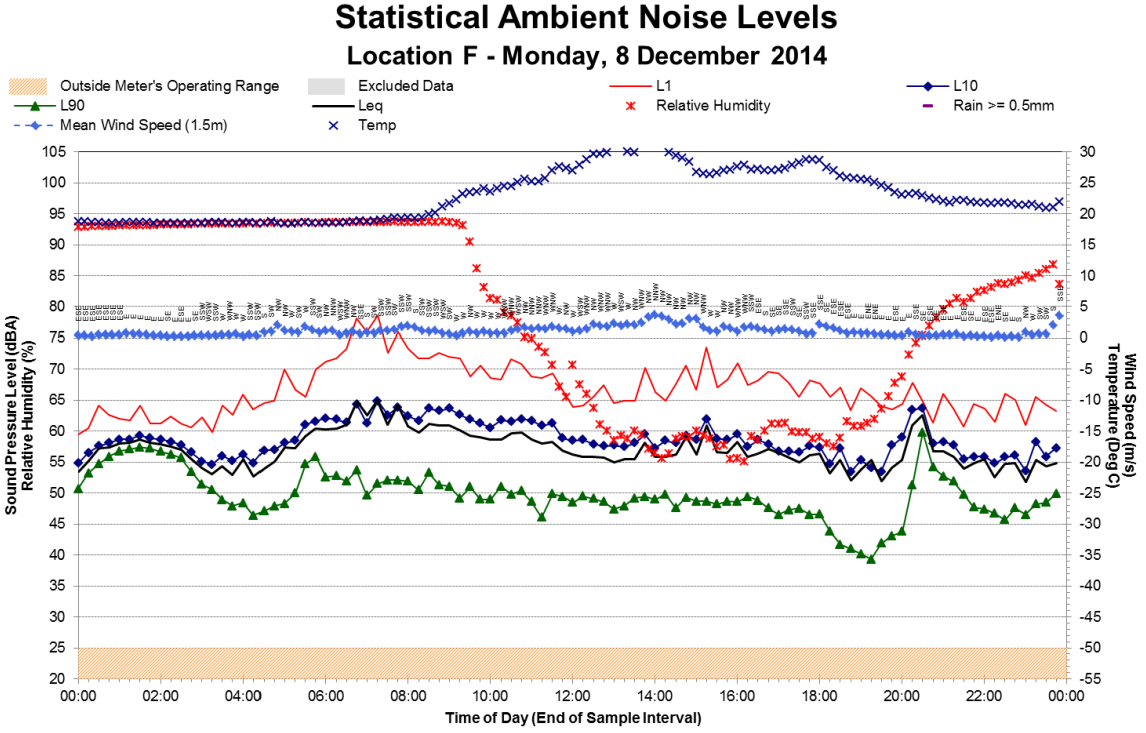




Appendix B2

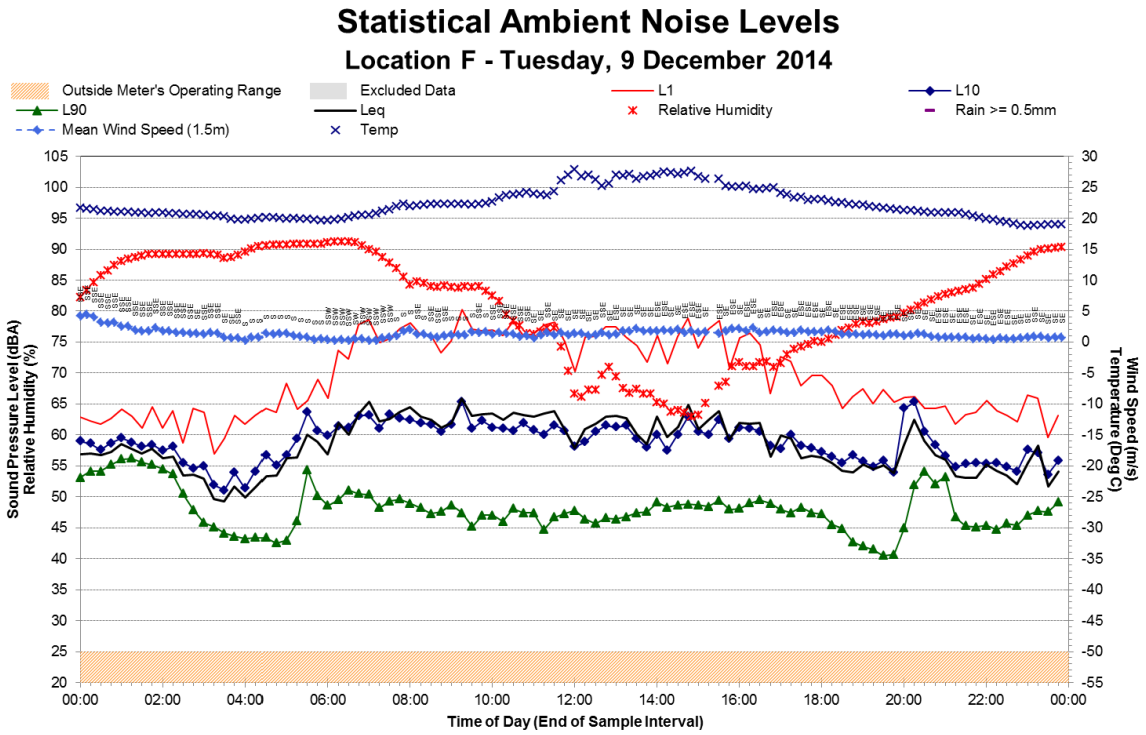
Statistical Ambient Noise Levels – Location F Page 2 of 6

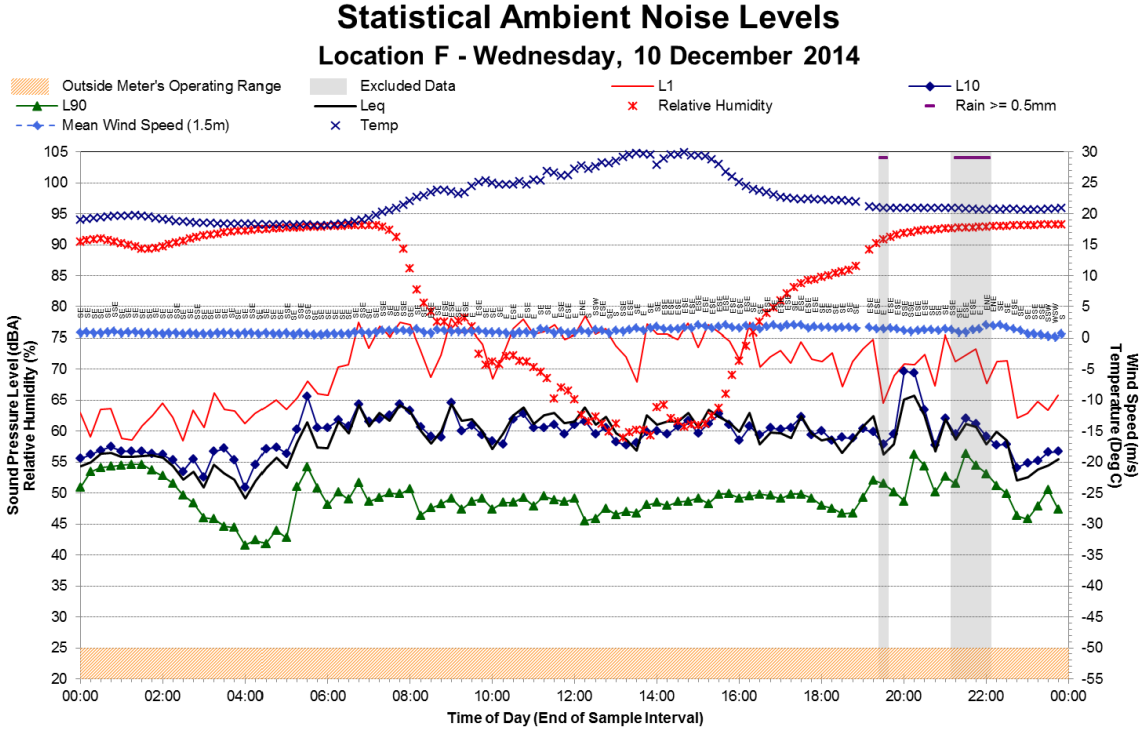




Appendix B2

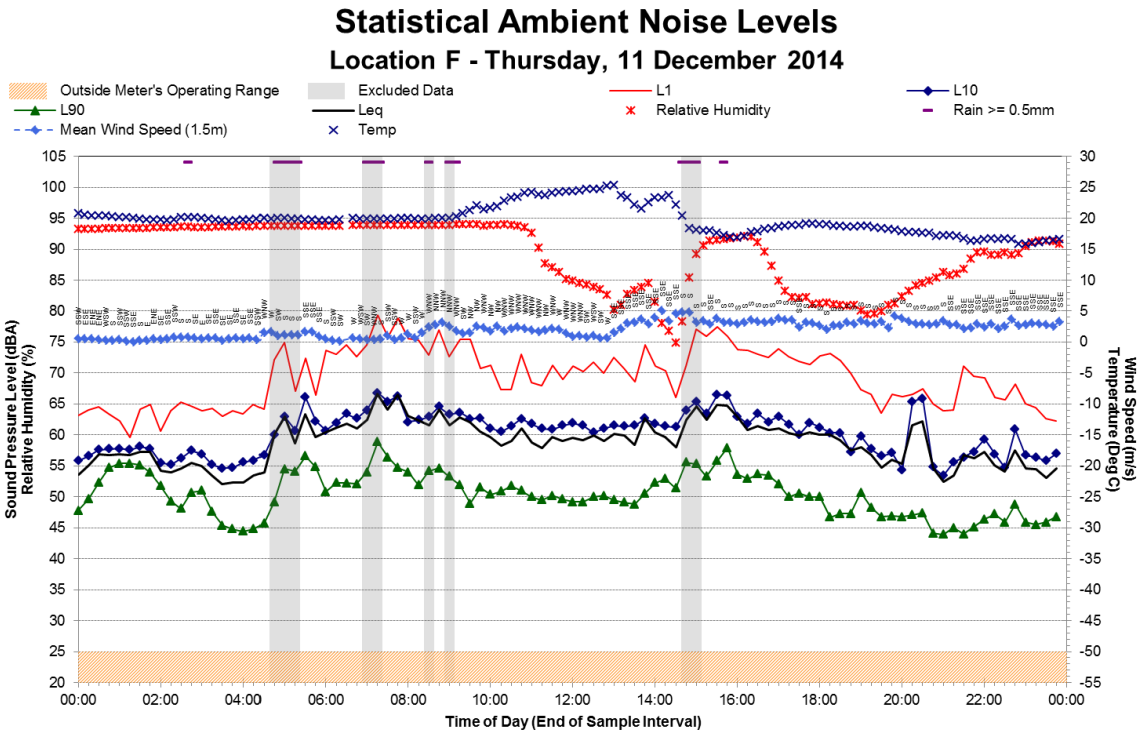
Statistical Ambient Noise Levels – Location F Page 3 of 6

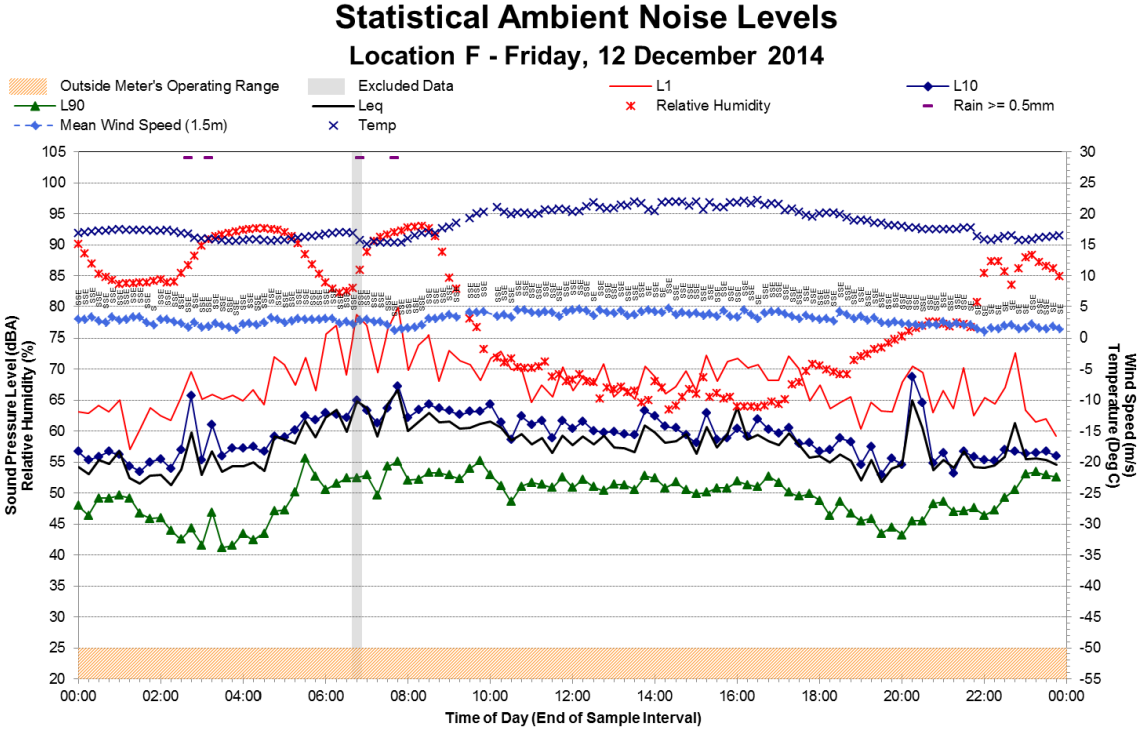




Appendix B2

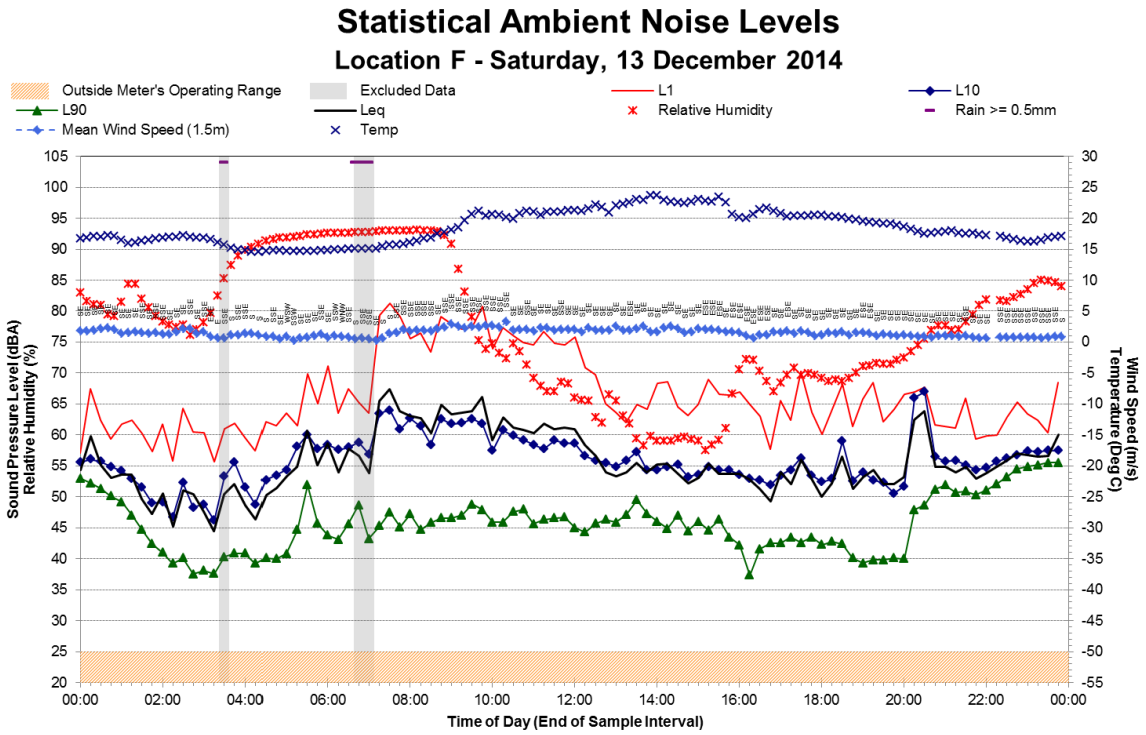
Statistical Ambient Noise Levels – Location F Page 4 of 6

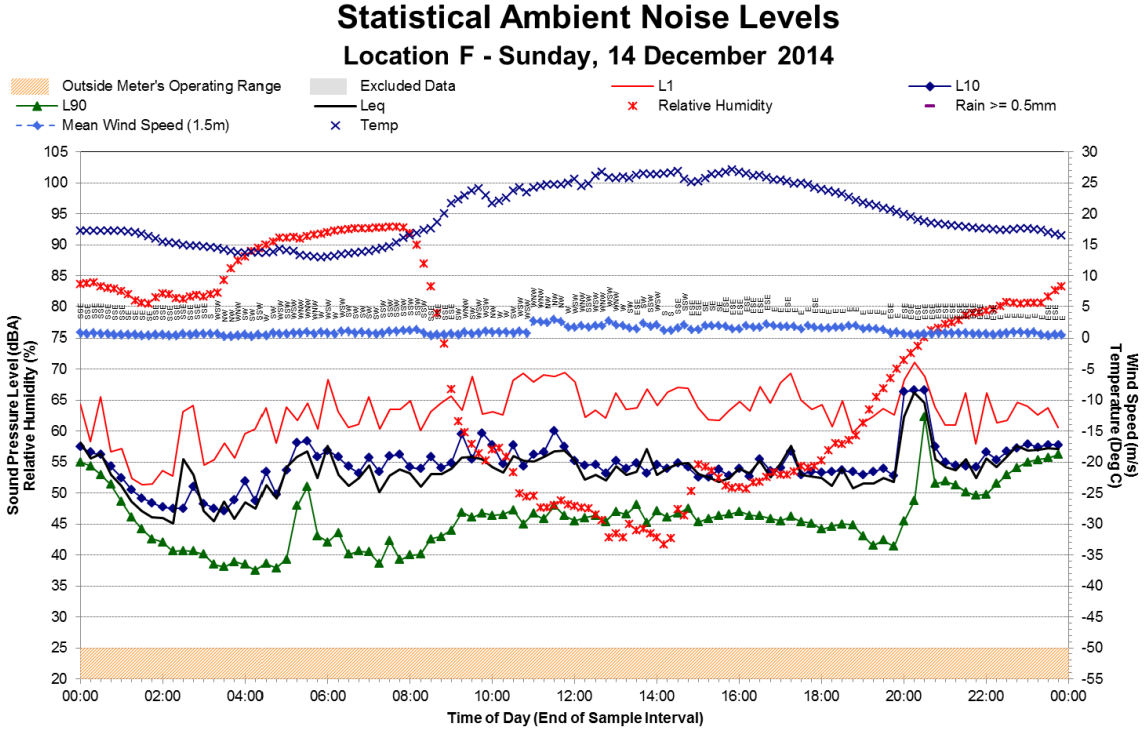




Appendix B2

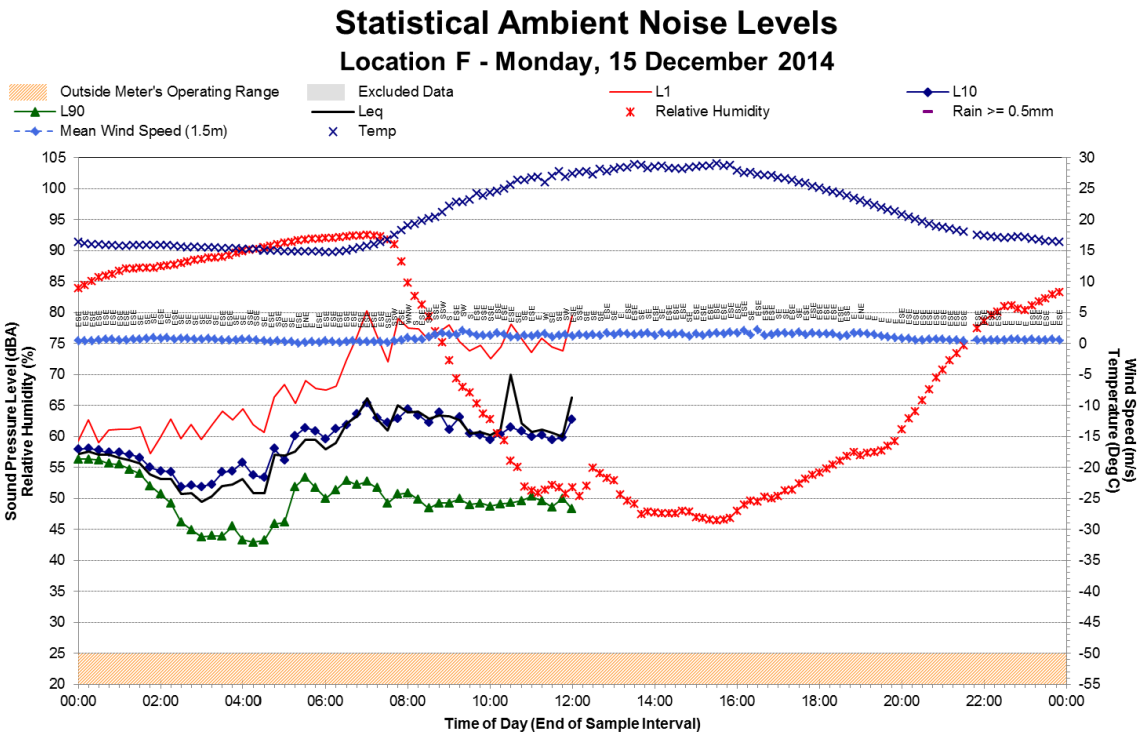
Statistical Ambient Noise Levels – Location F Page 5 of 6





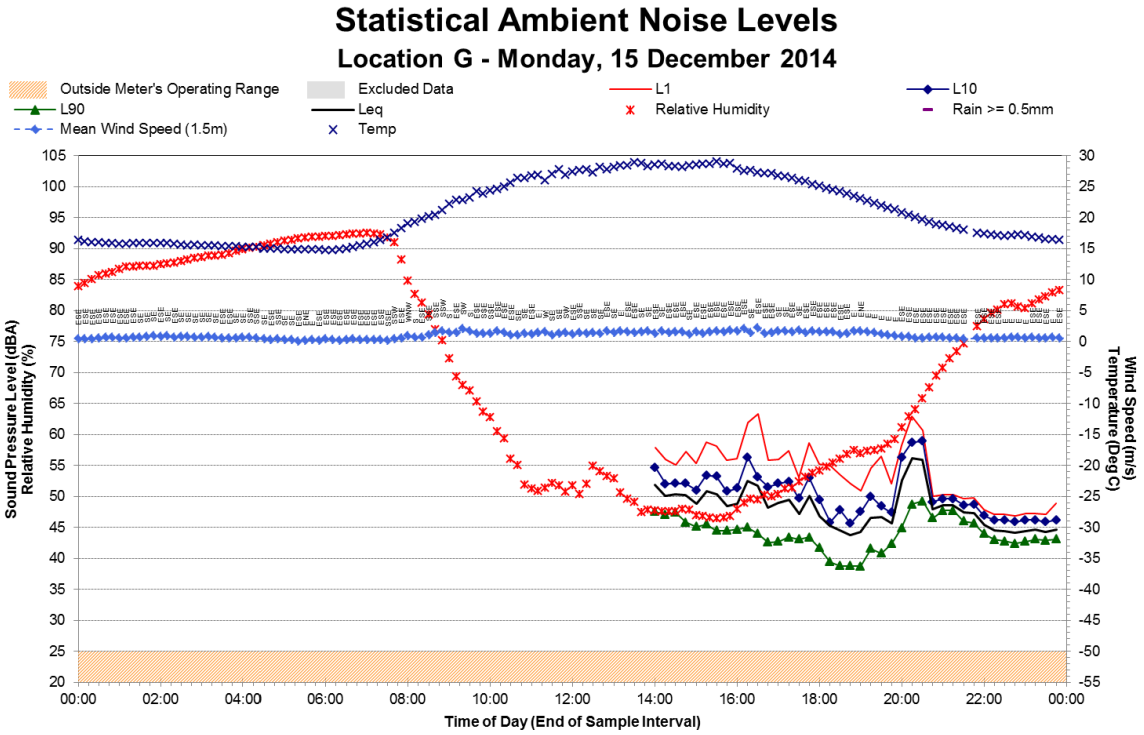
Appendix B2

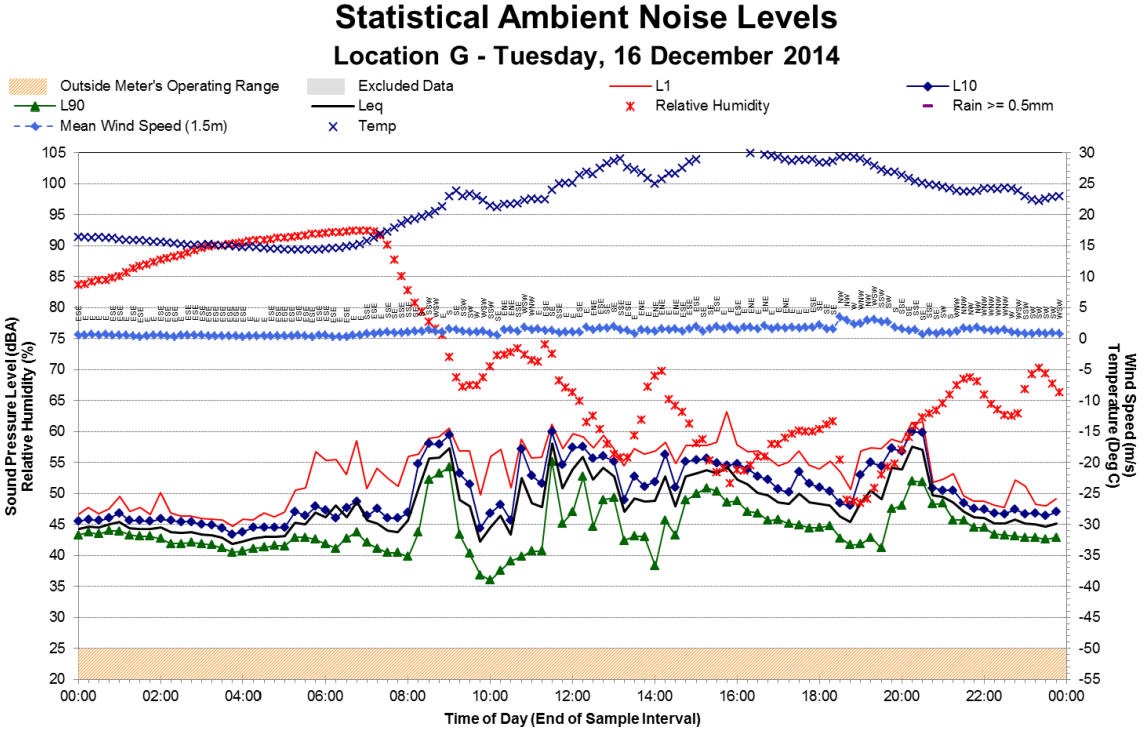
Statistical Ambient Noise Levels – Location F Page 6 of 6



Appendix B3

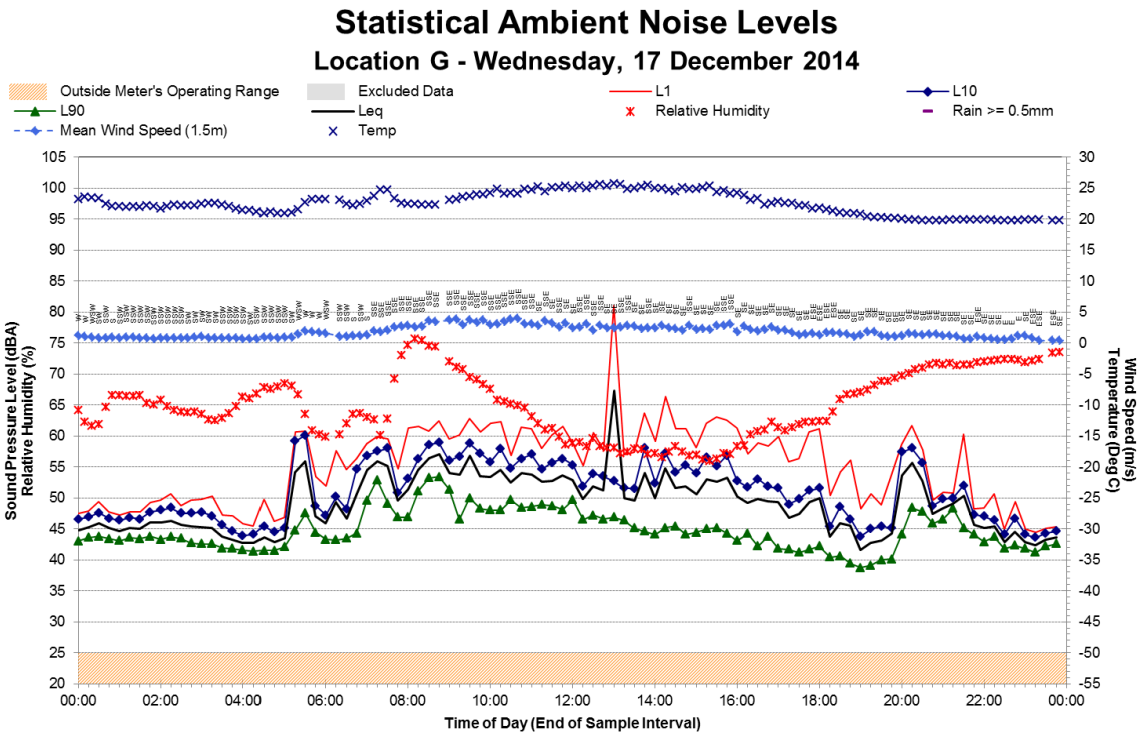
Statistical Ambient Noise Levels – Location G Page 1 of 4

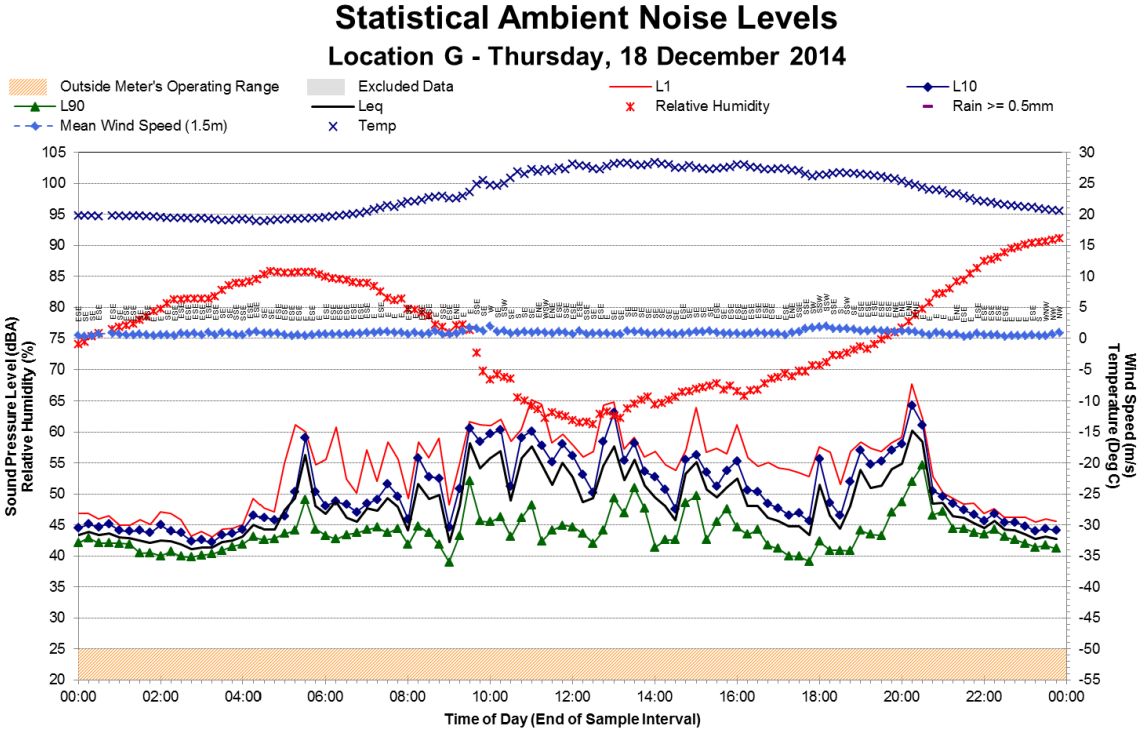




Appendix B3

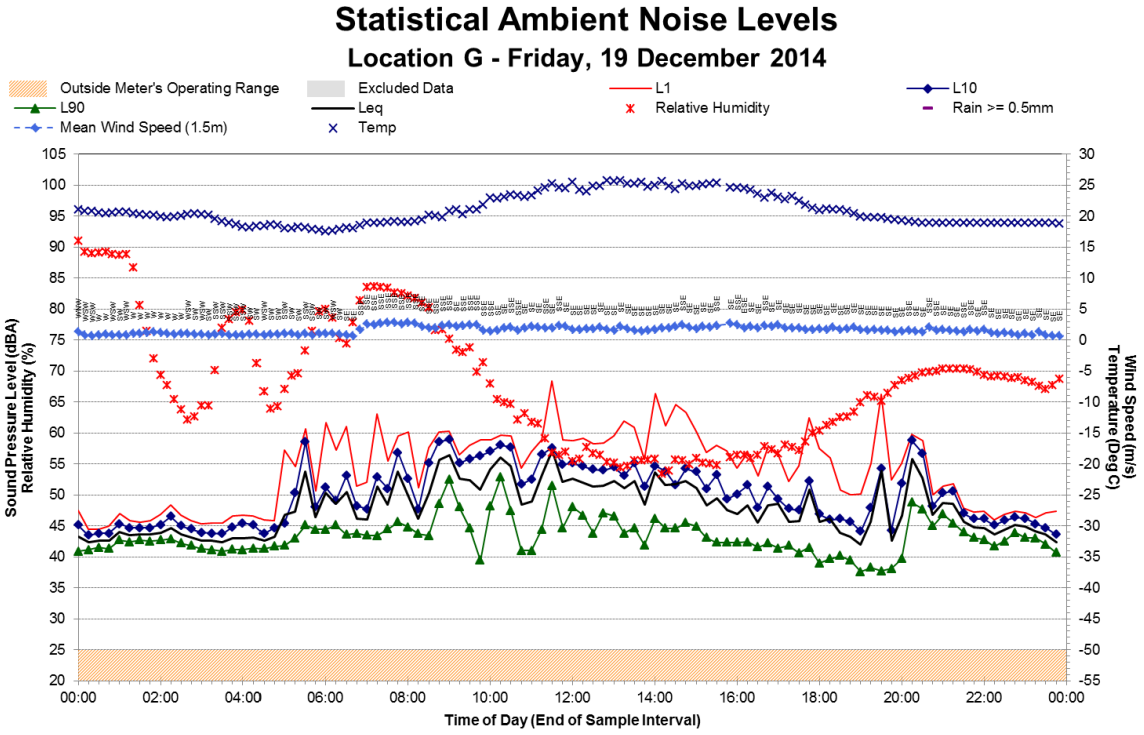
Statistical Ambient Noise Levels – Location G Page 2 of 4

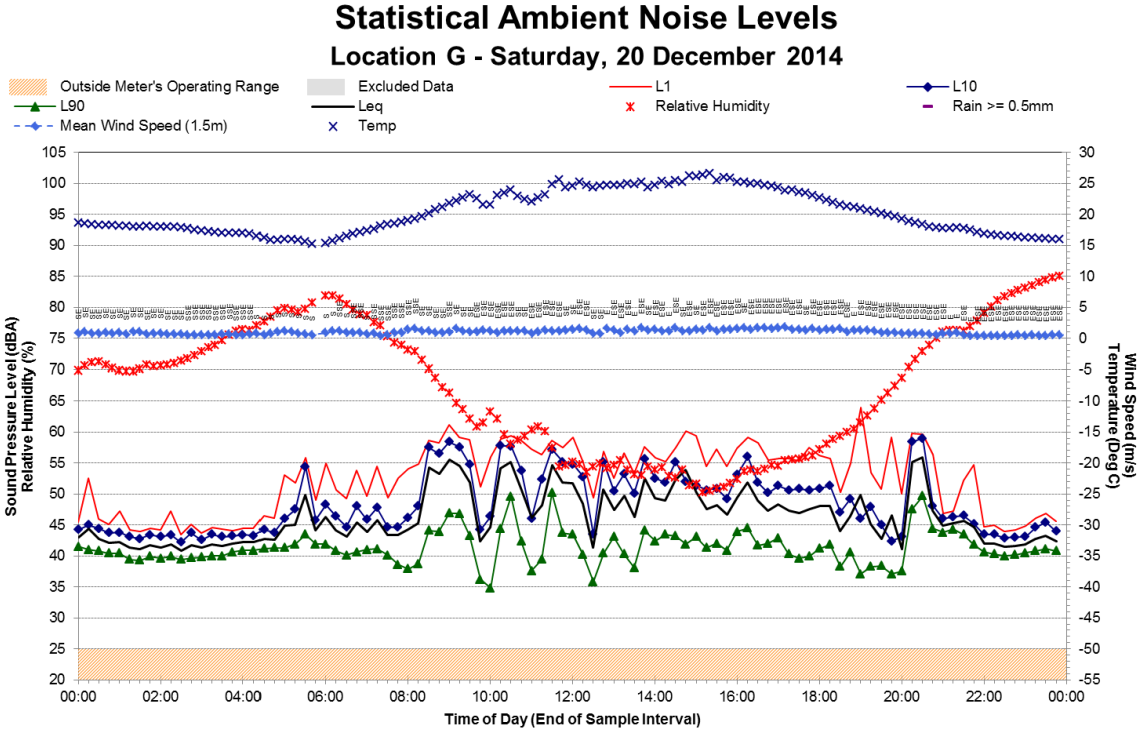




Appendix B3

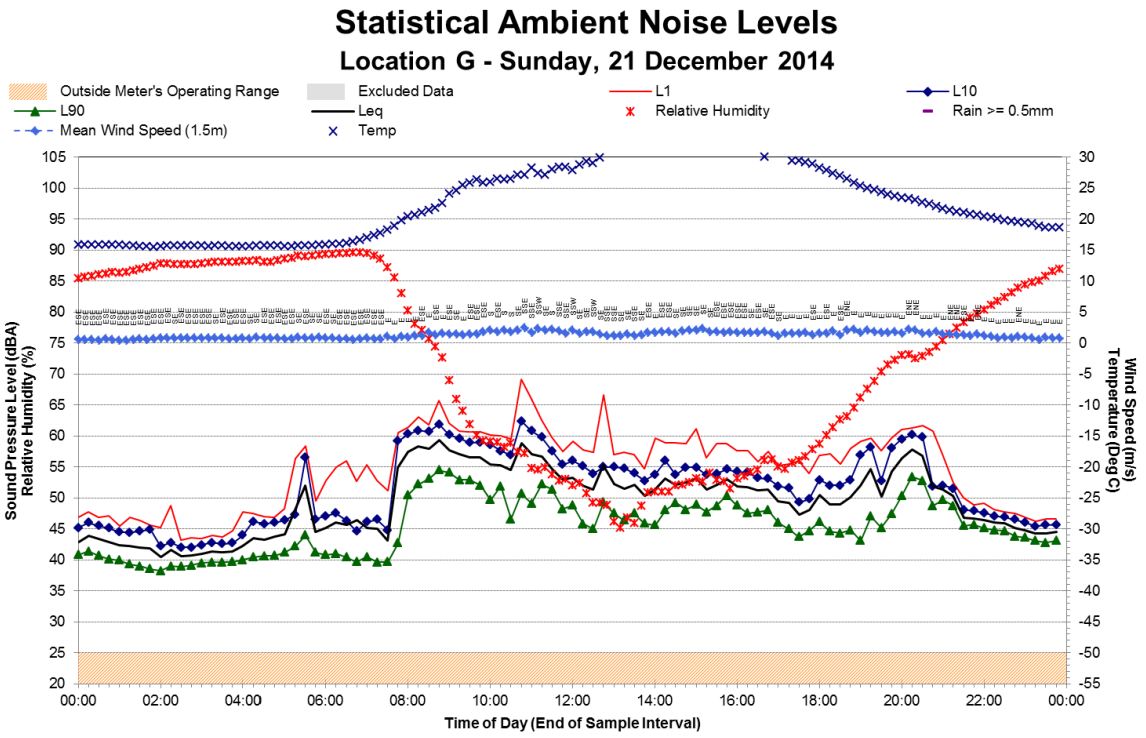
Statistical Ambient Noise Levels – Location G Page 3 of 4

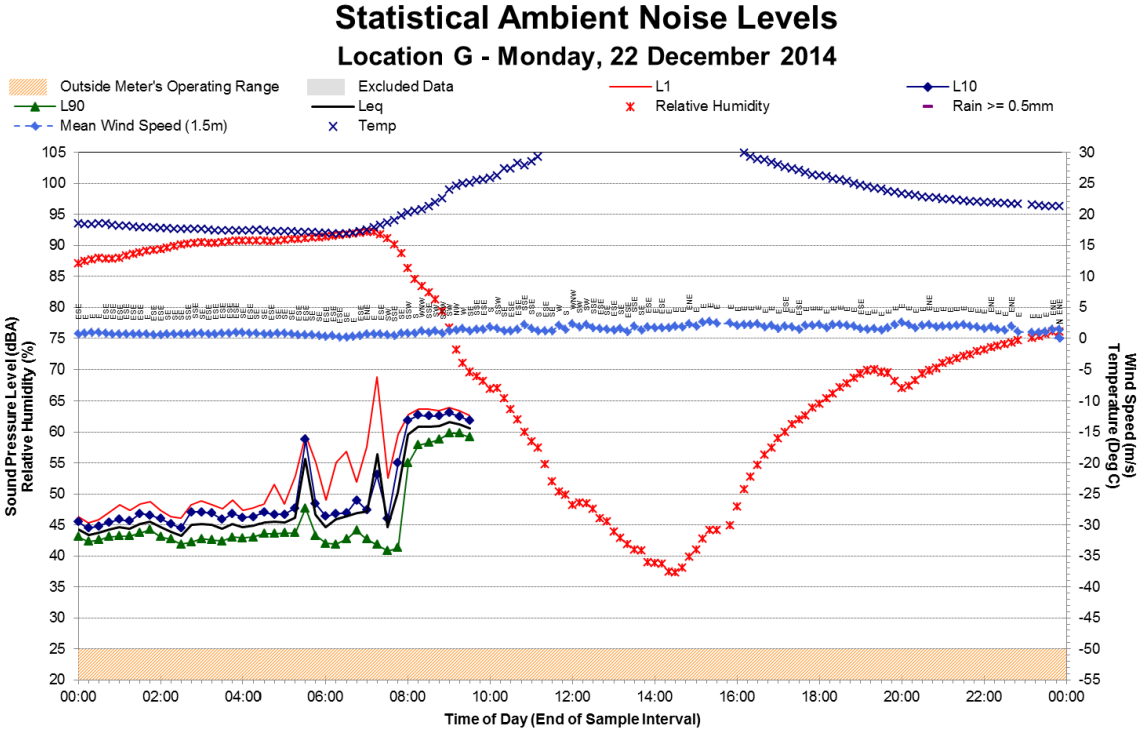




Appendix B3

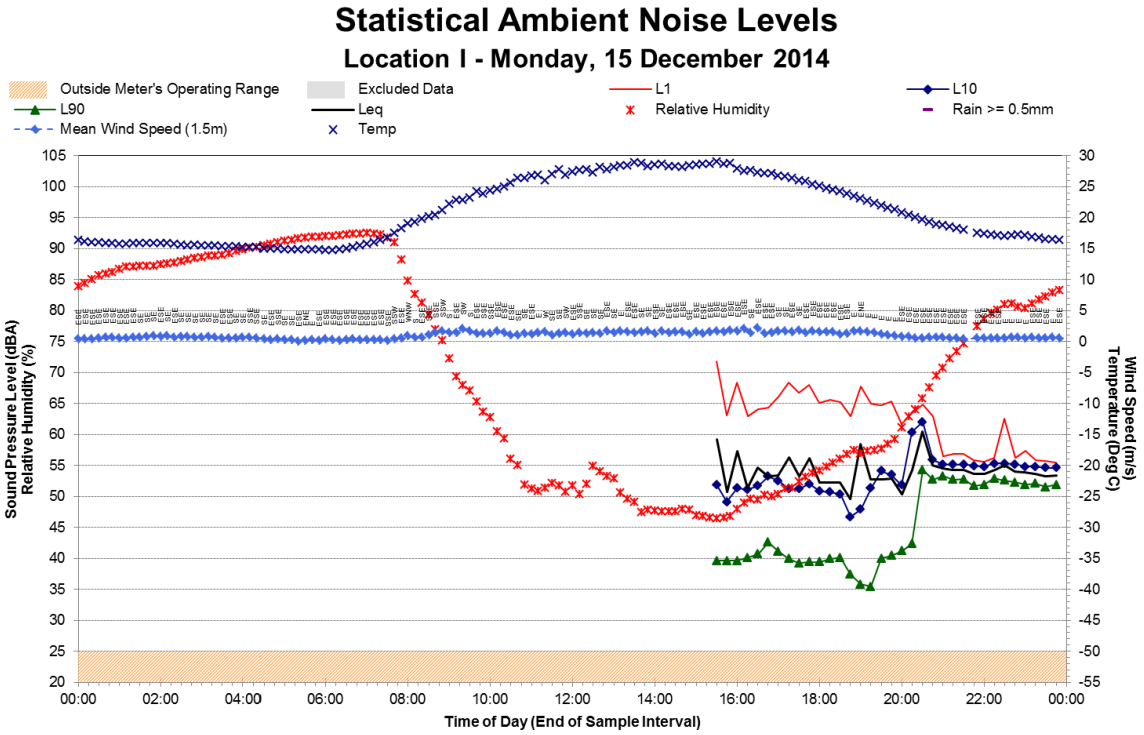
Statistical Ambient Noise Levels – Location G Page 4 of 4

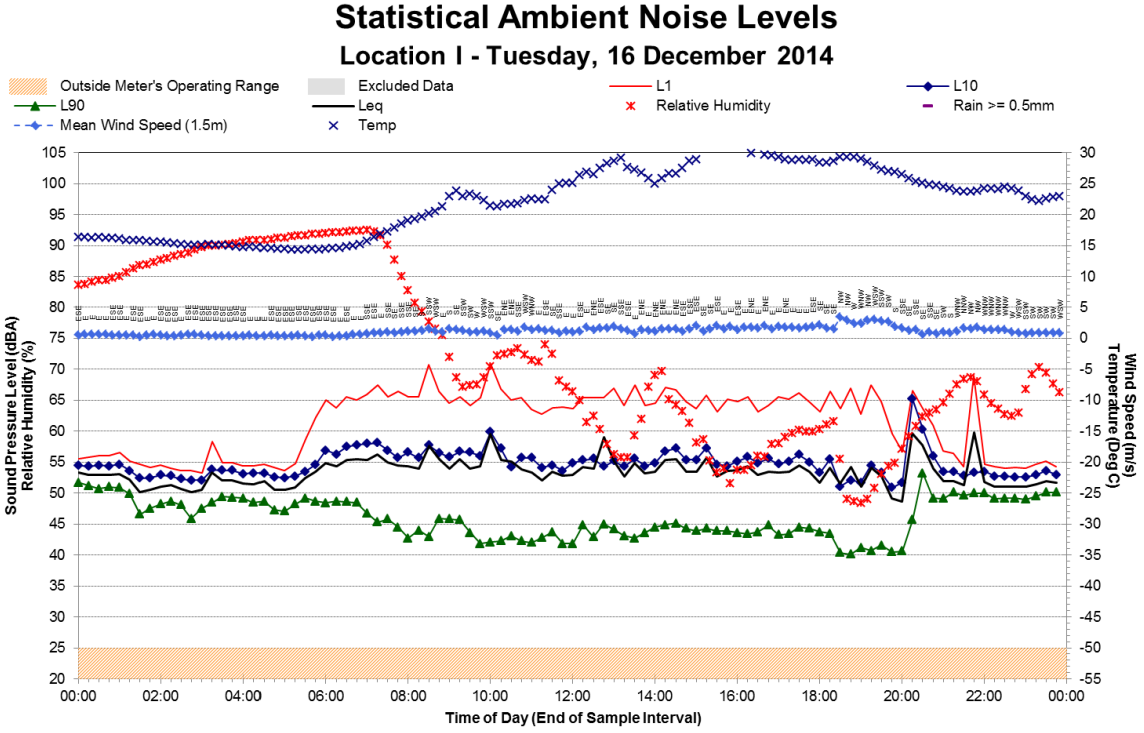




Appendix B4

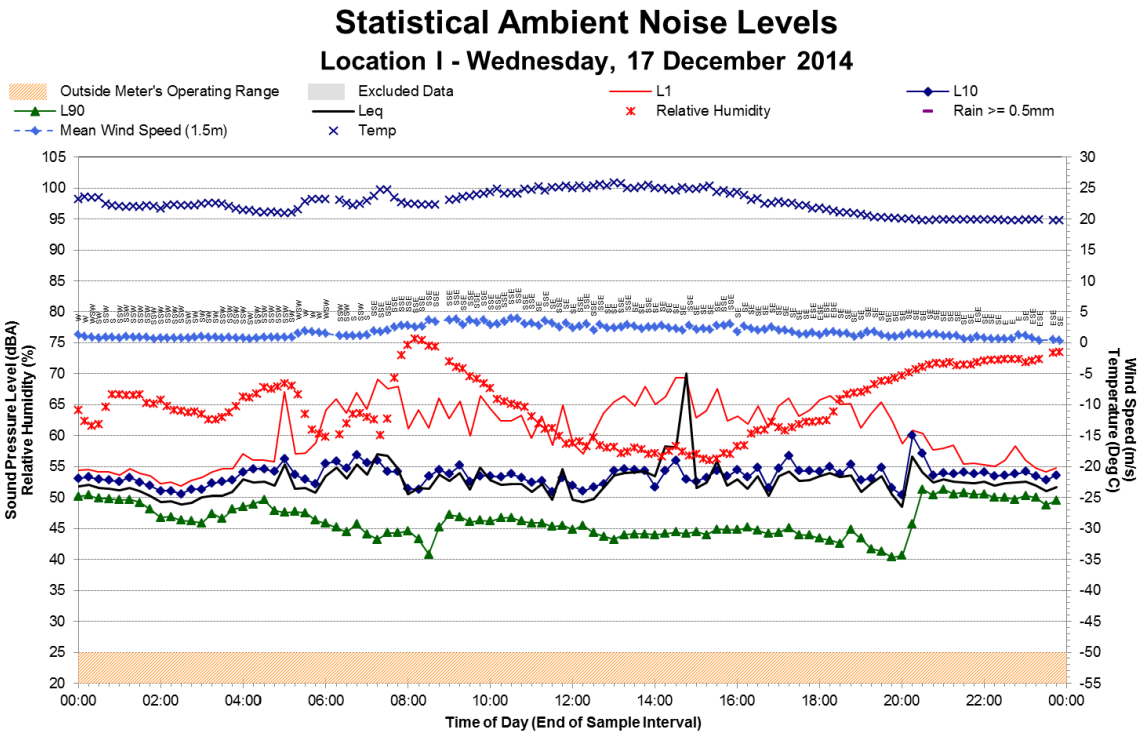
Statistical Ambient Noise Levels – Location I Page 1 of 4

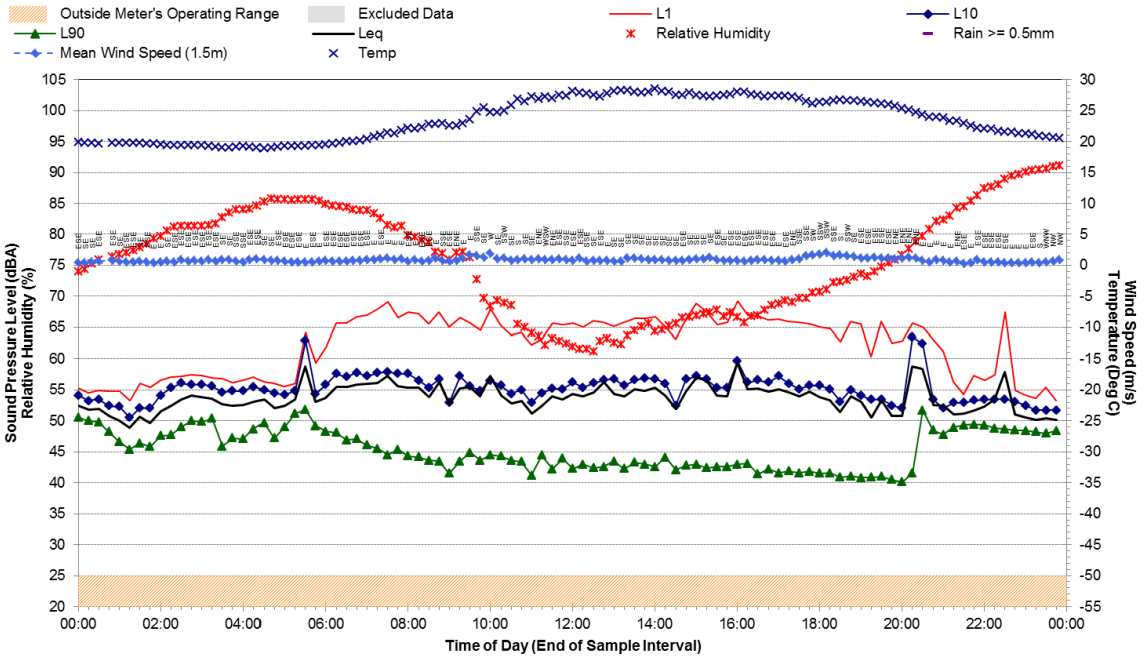




Appendix B4

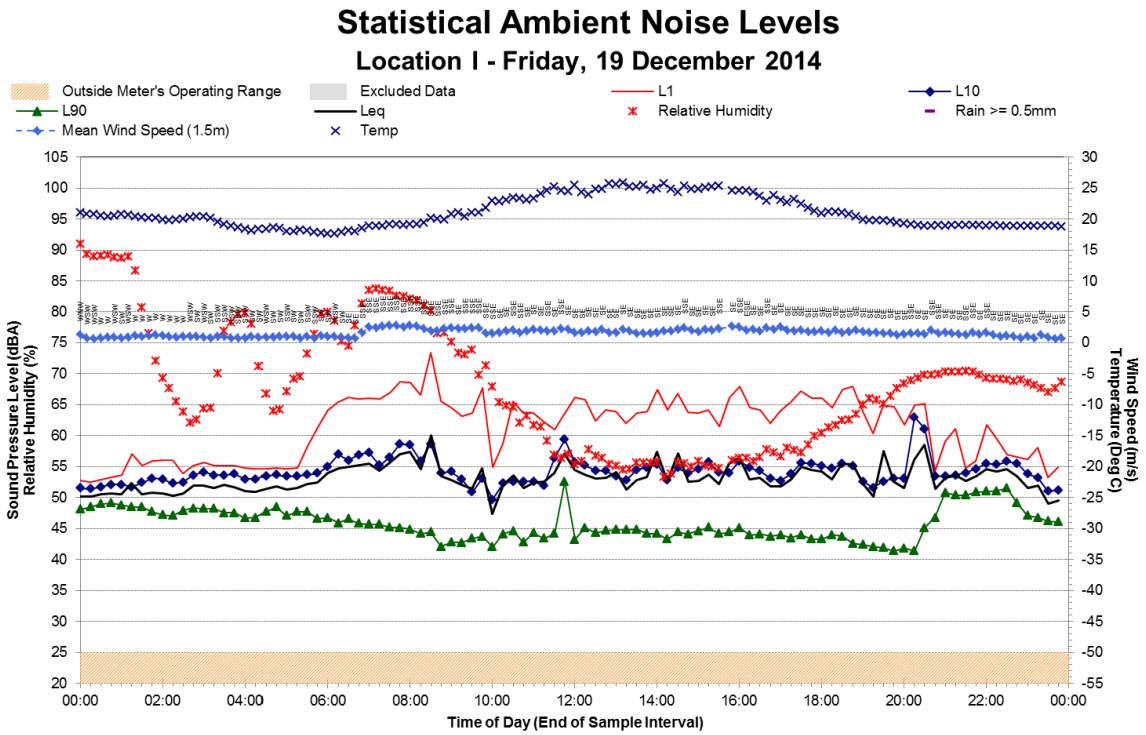
Statistical Ambient Noise Levels – Location I Page 2 of 4

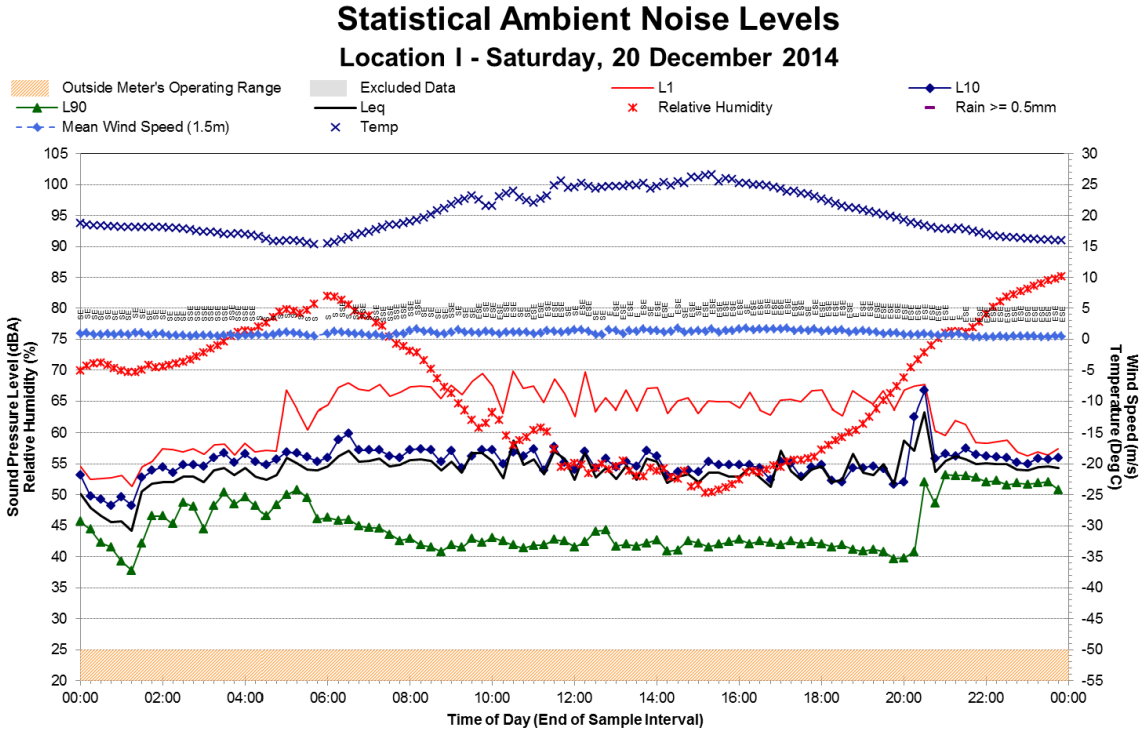




Appendix B4

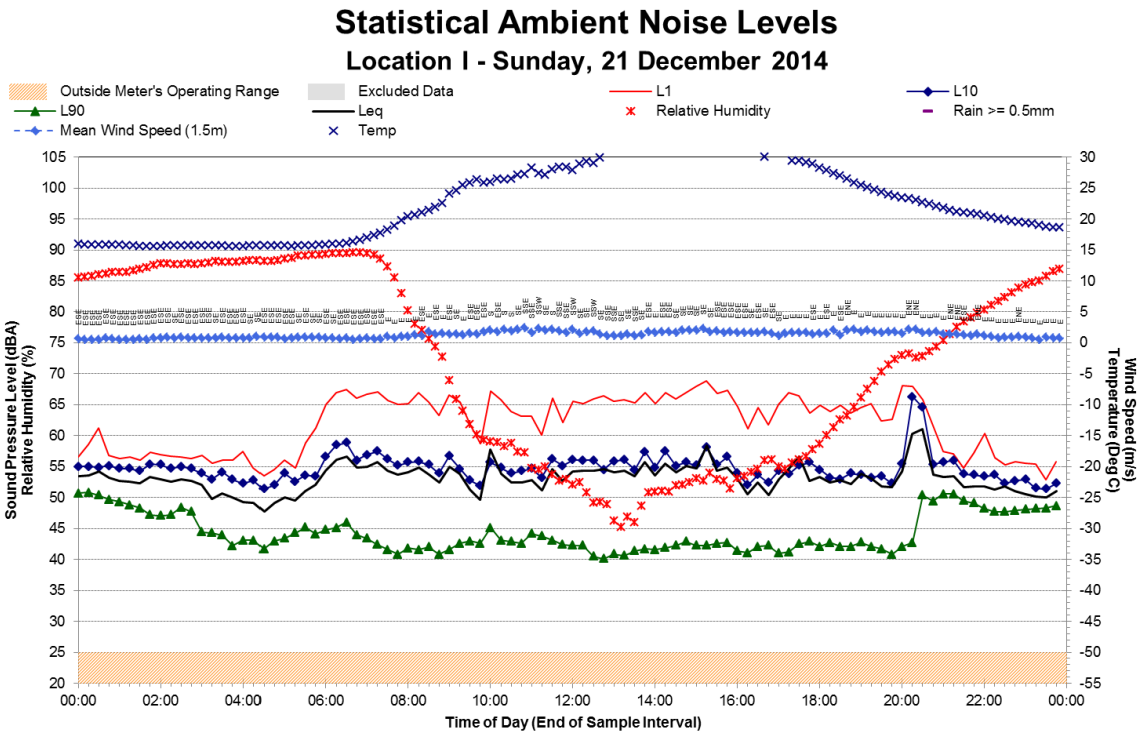
Statistical Ambient Noise Levels – Location I Page 3 of 4

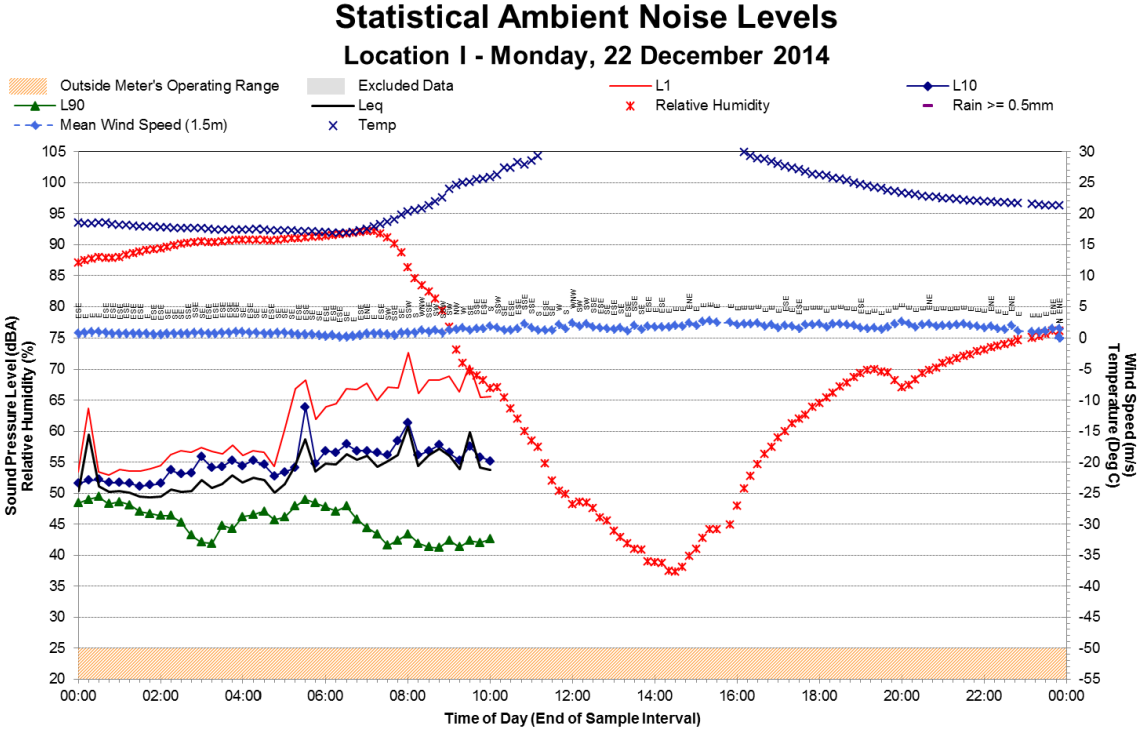




Appendix B4

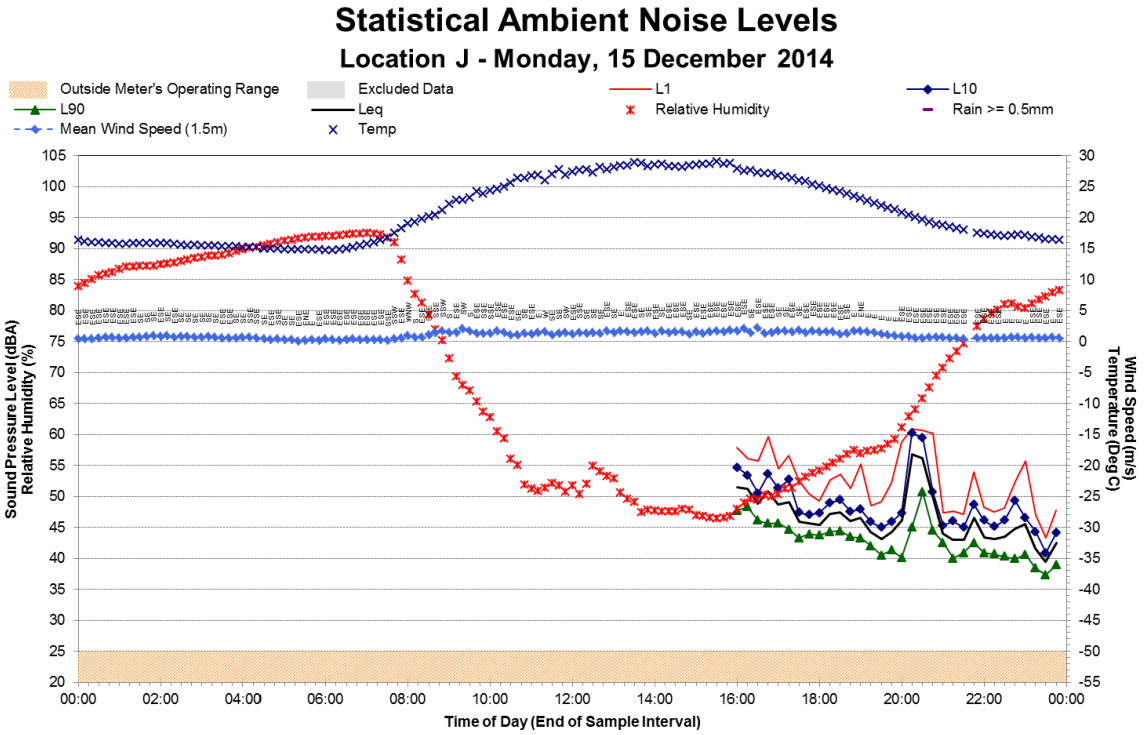
Statistical Ambient Noise Levels – Location I Page 4 of 4

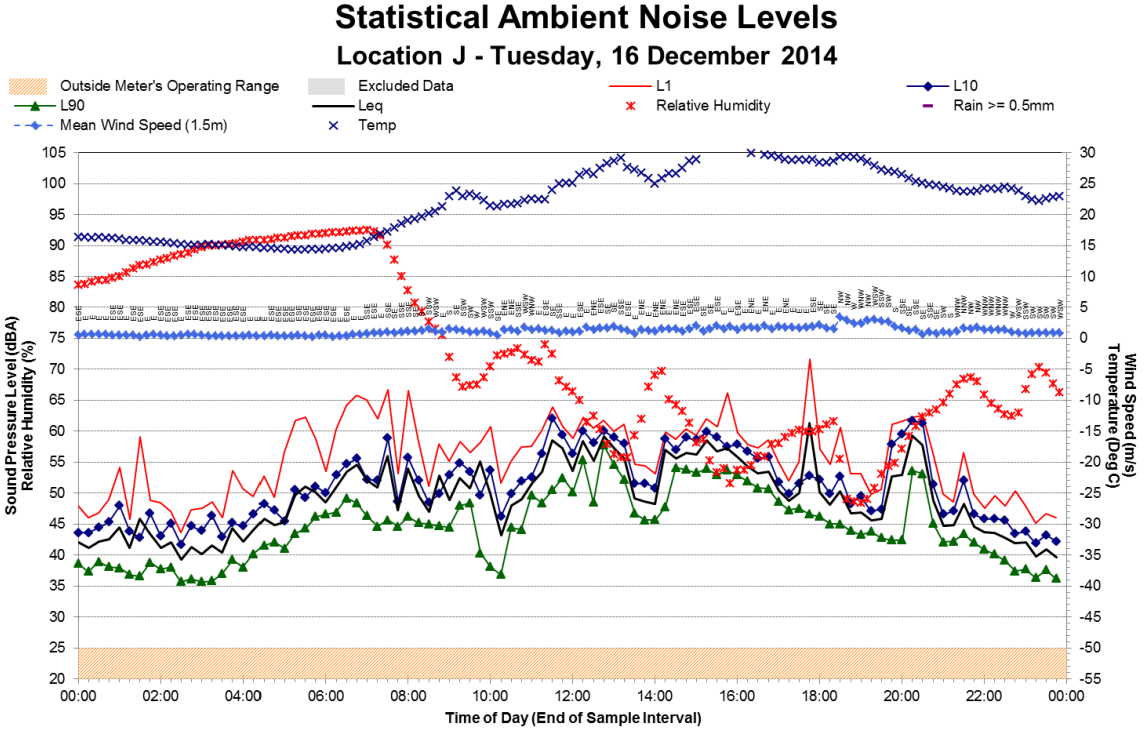




Appendix B5

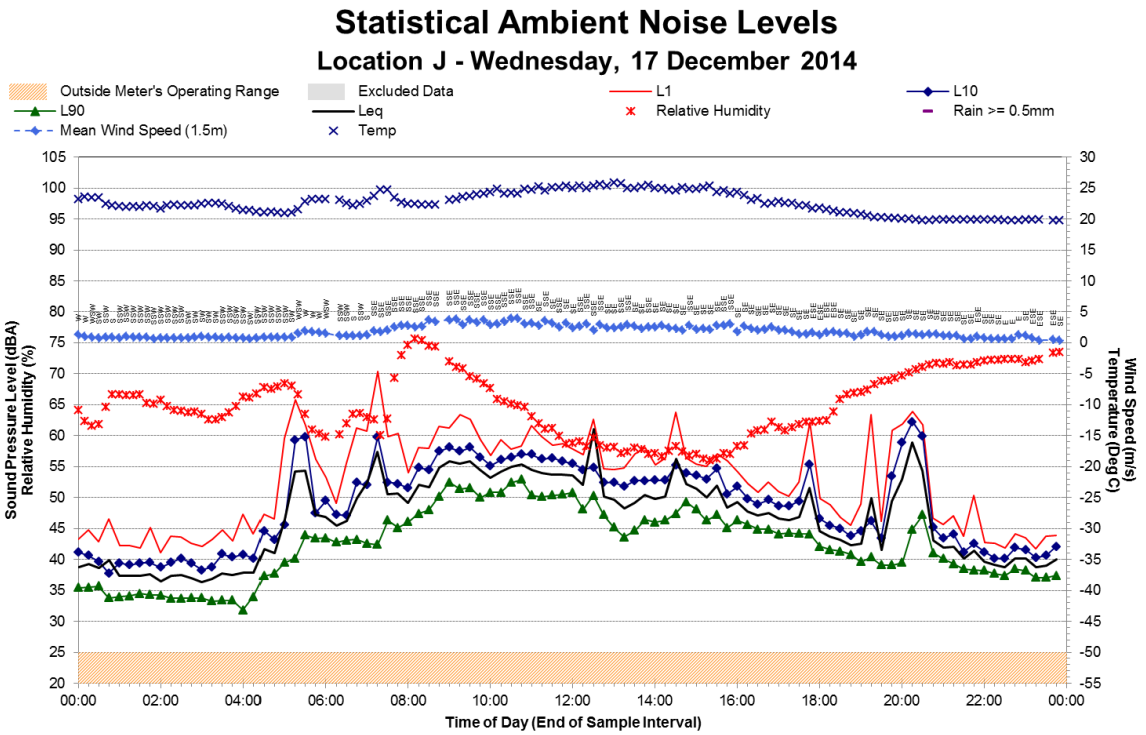
Statistical Ambient Noise Levels – Location J Page 1 of 4

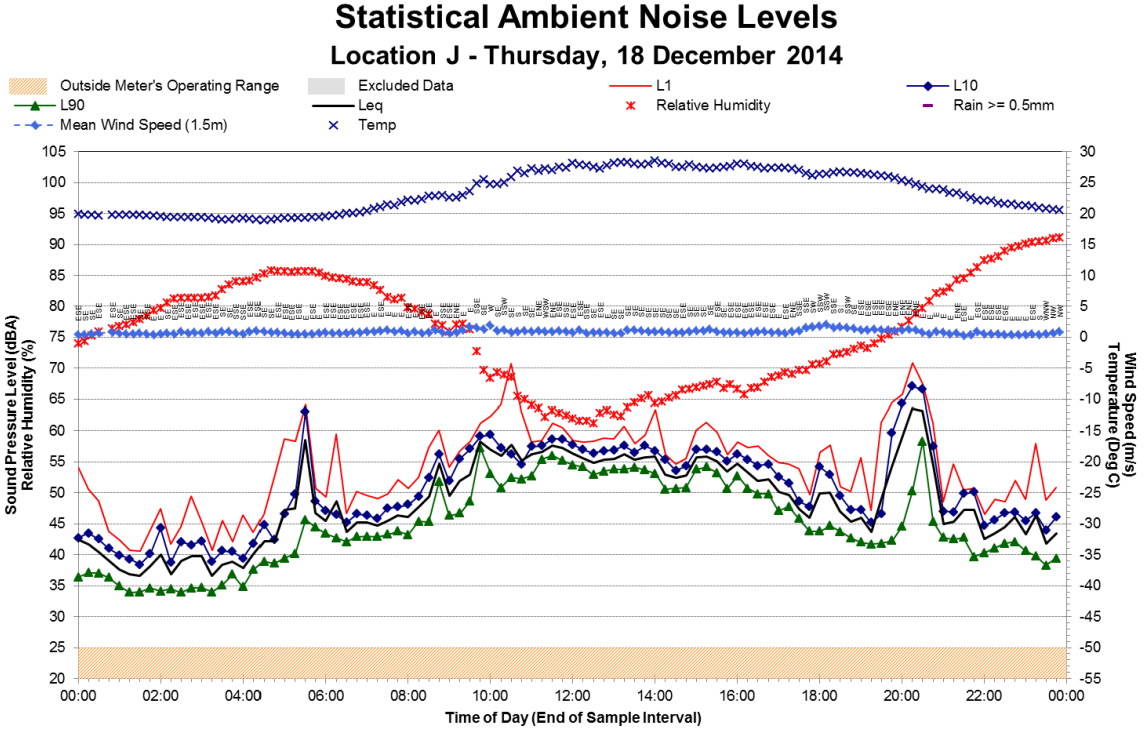




Appendix B5

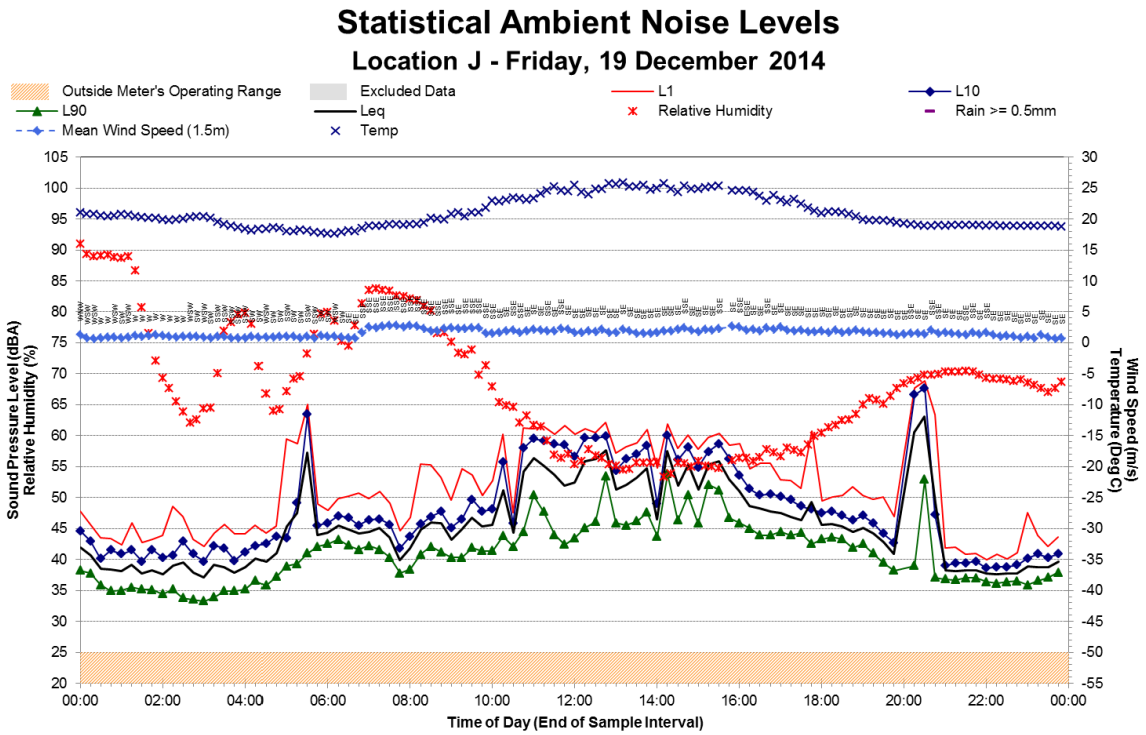
Statistical Ambient Noise Levels – Location J Page 2 of 4

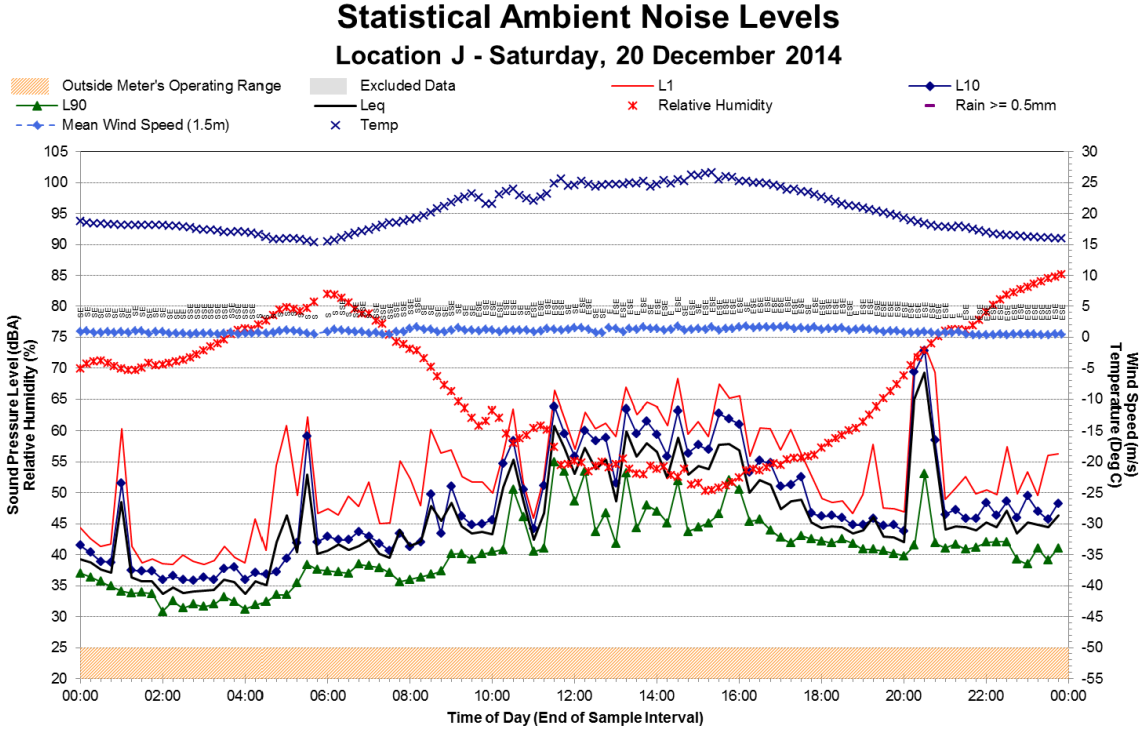




Appendix B5

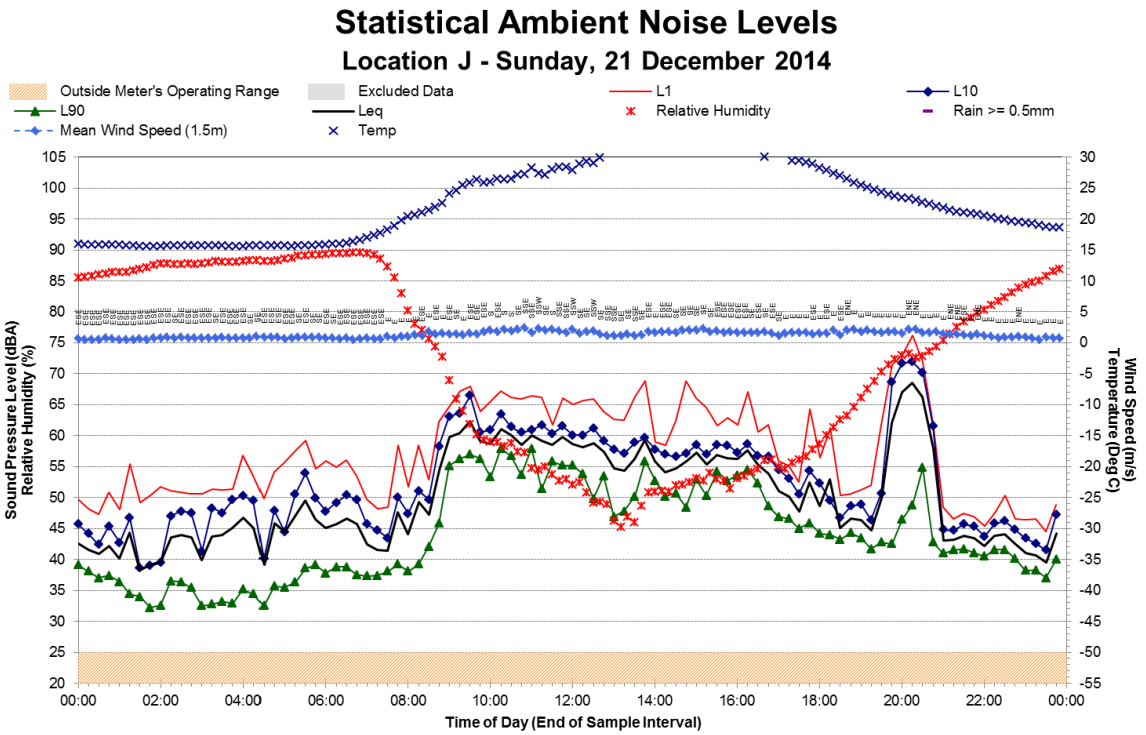
Statistical Ambient Noise Levels – Location J Page 3 of 4

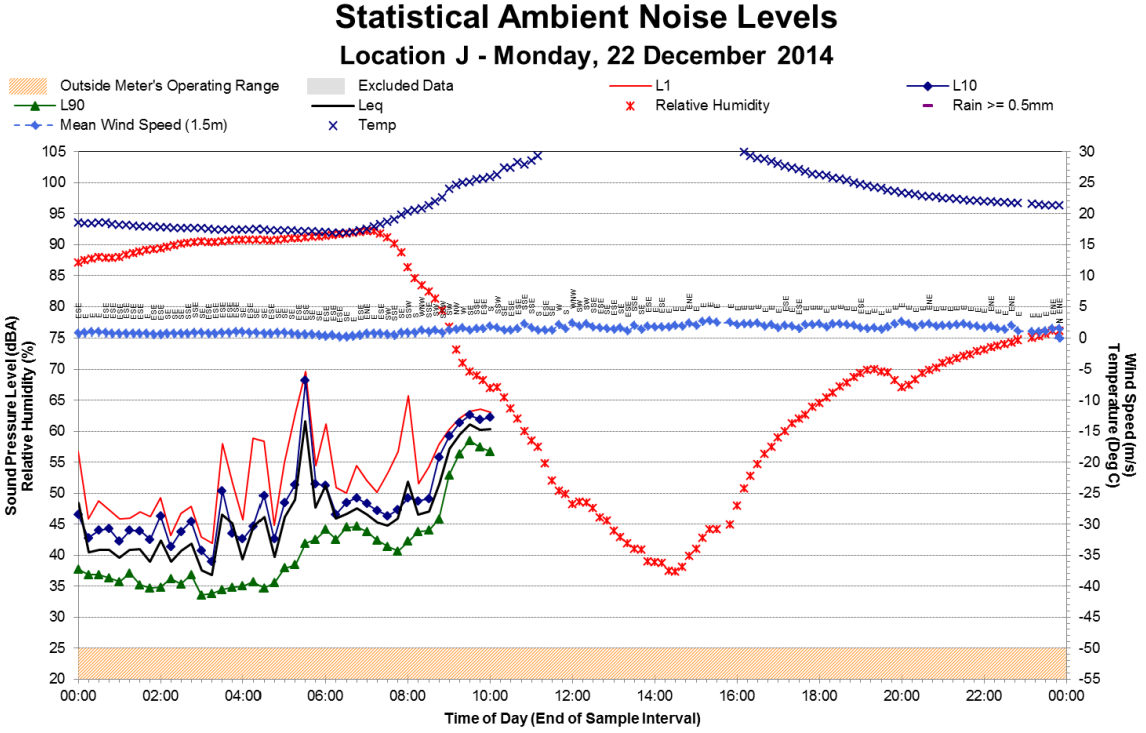




Appendix B5

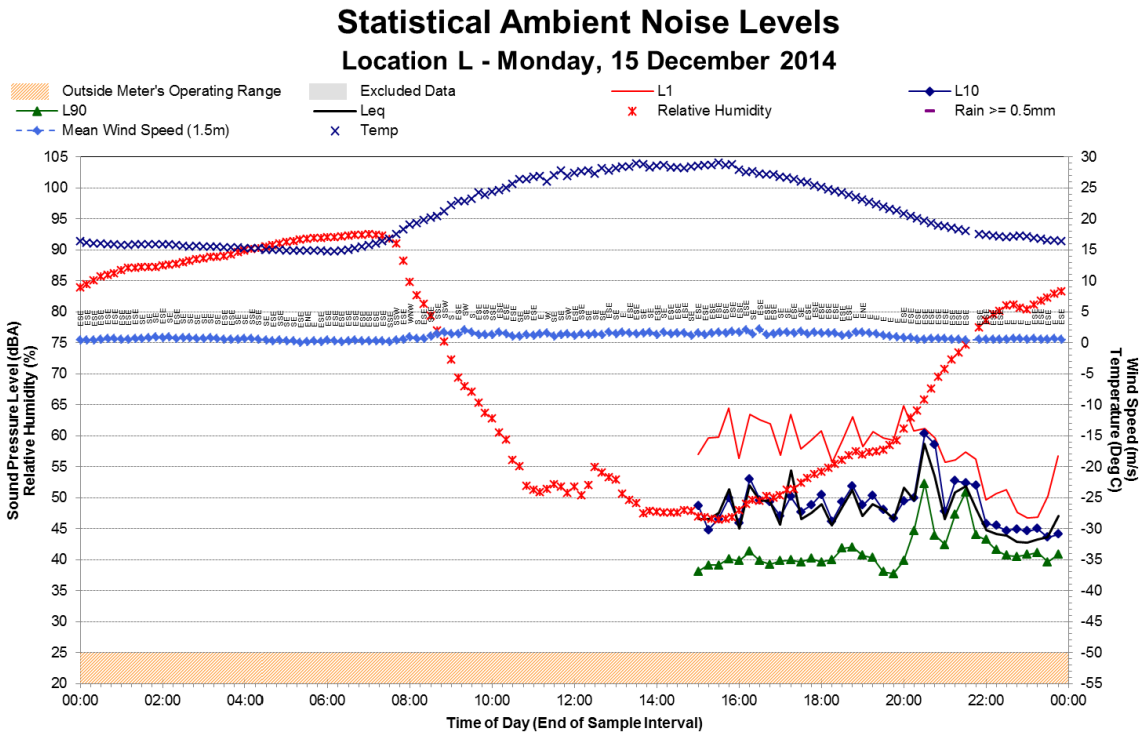
Statistical Ambient Noise Levels – Location J Page 4 of 4

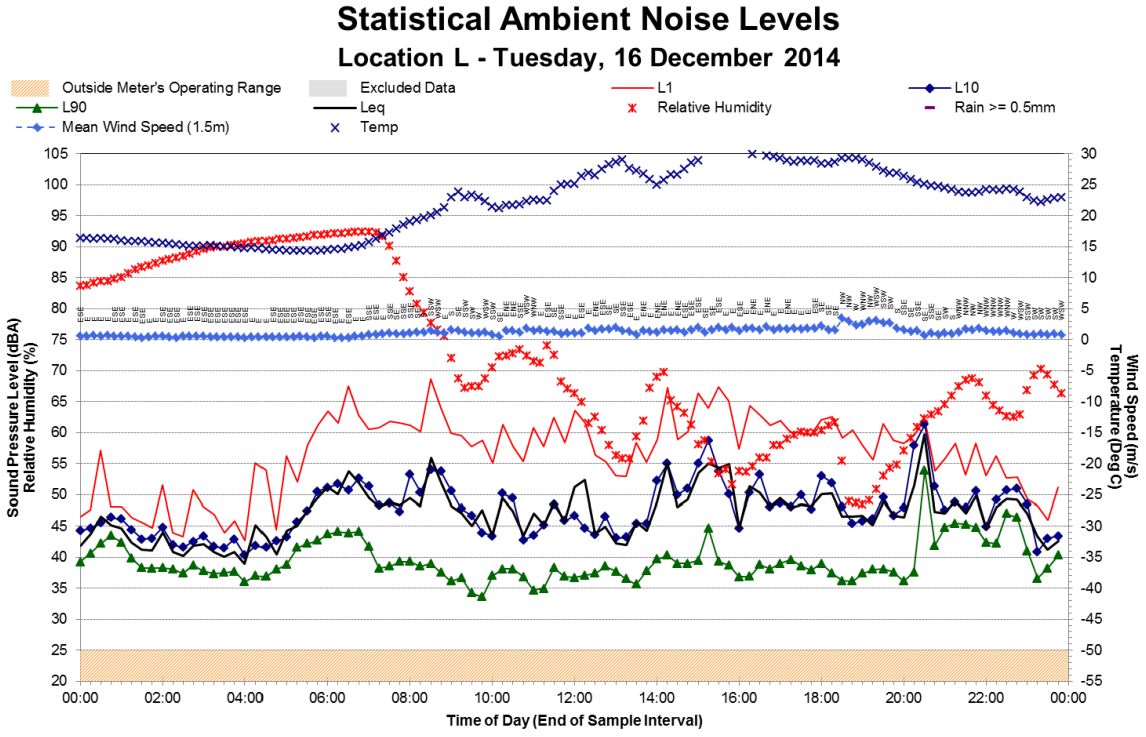




Appendix B6

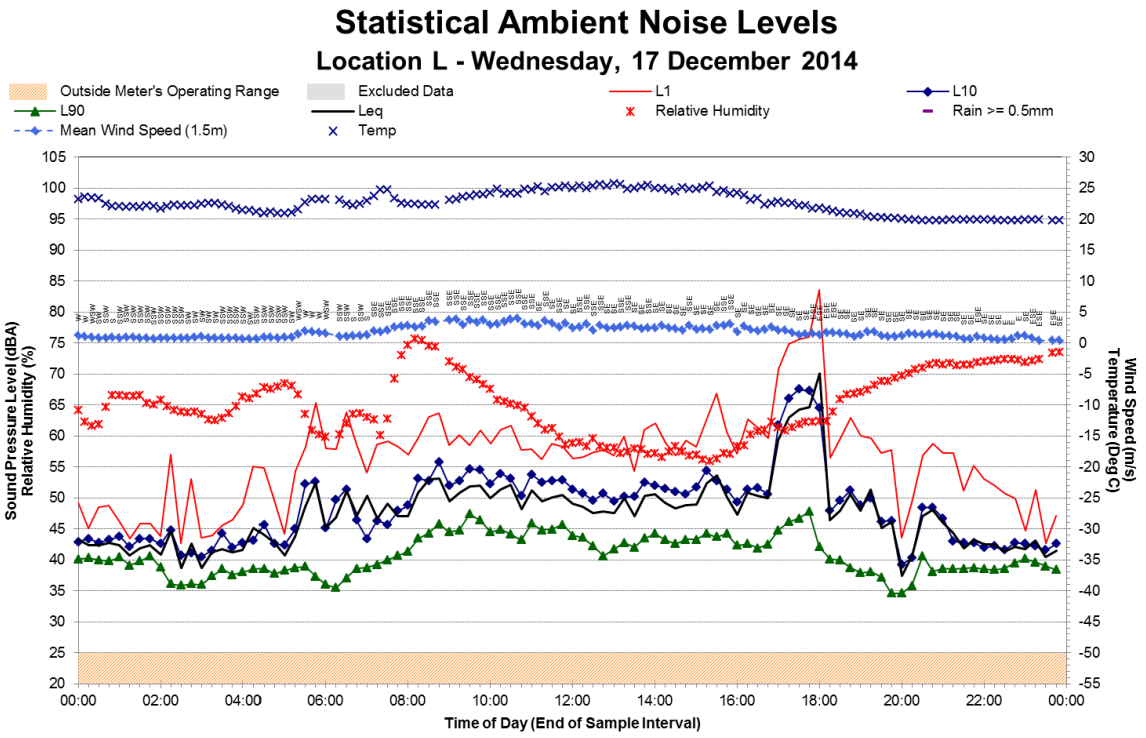
Statistical Ambient Noise Levels – Location L Page 1 of 4

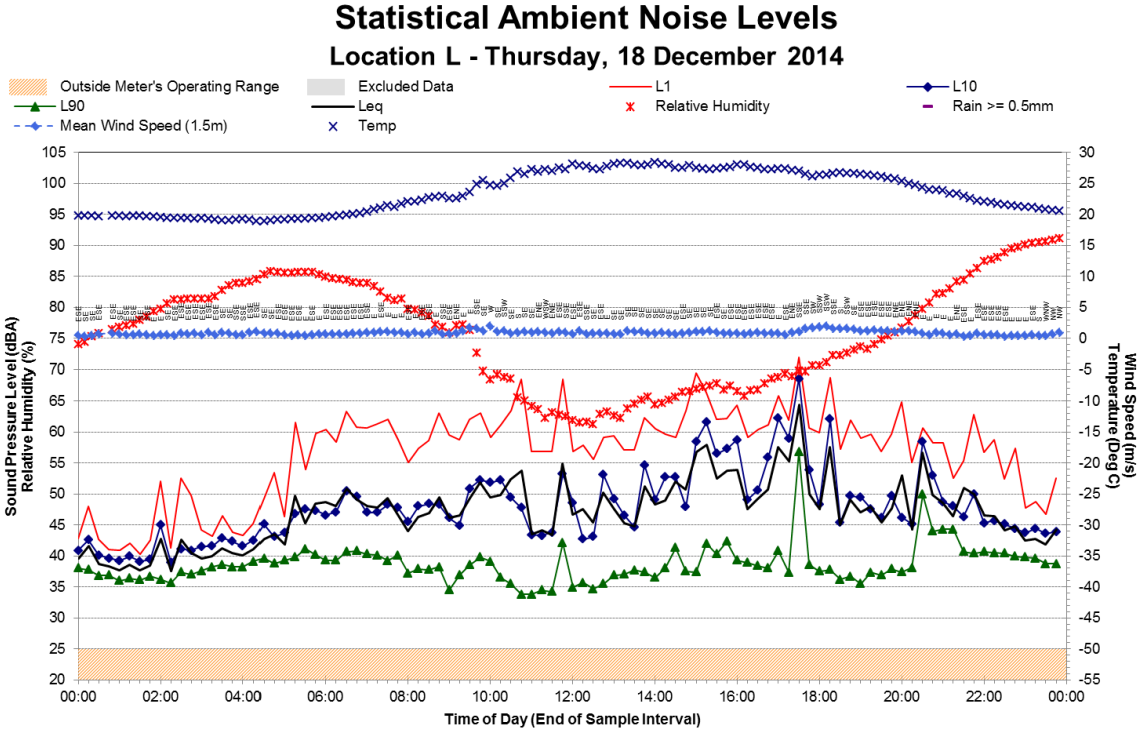




Appendix B6

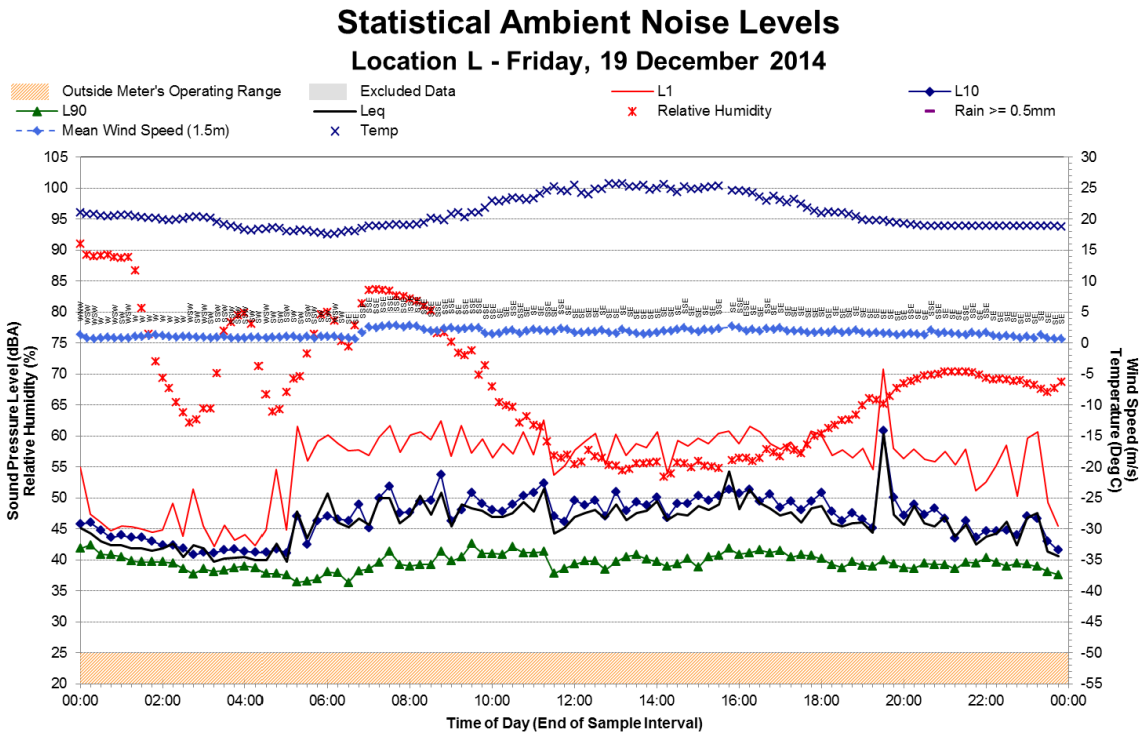
Statistical Ambient Noise Levels – Location L Page 2 of 4

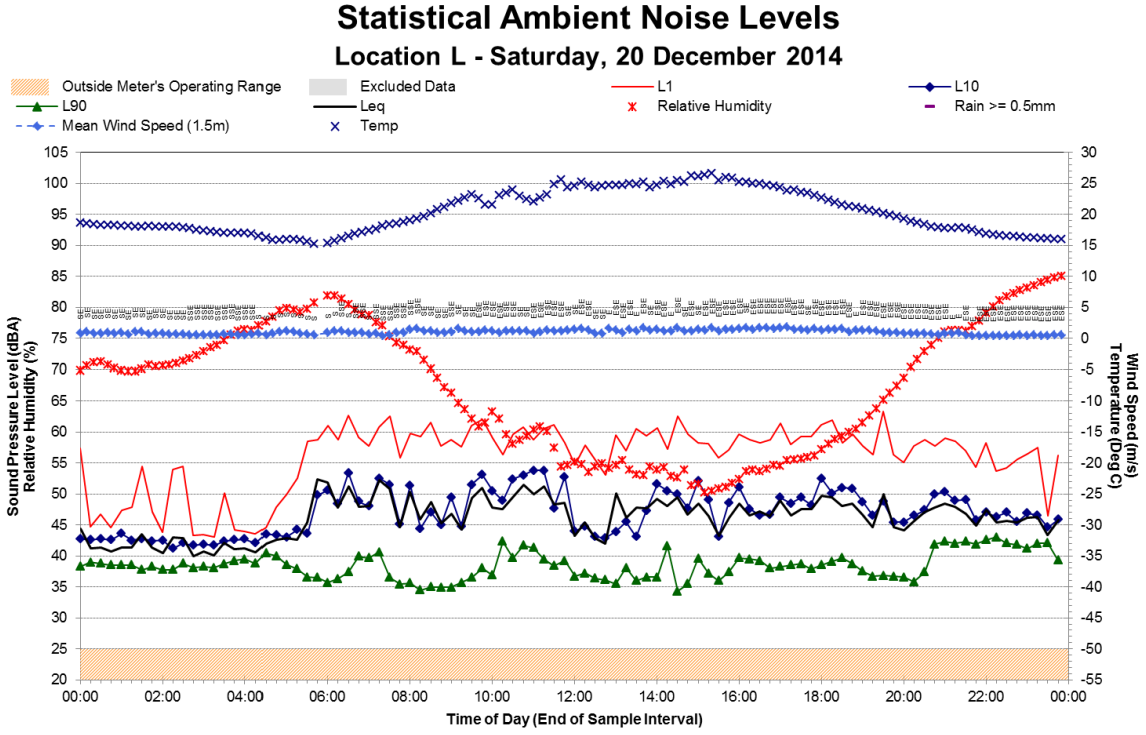




Appendix B6

Statistical Ambient Noise Levels – Location L Page 3 of 4





Appendix B6

Statistical Ambient Noise Levels – Location L Page 4 of 4