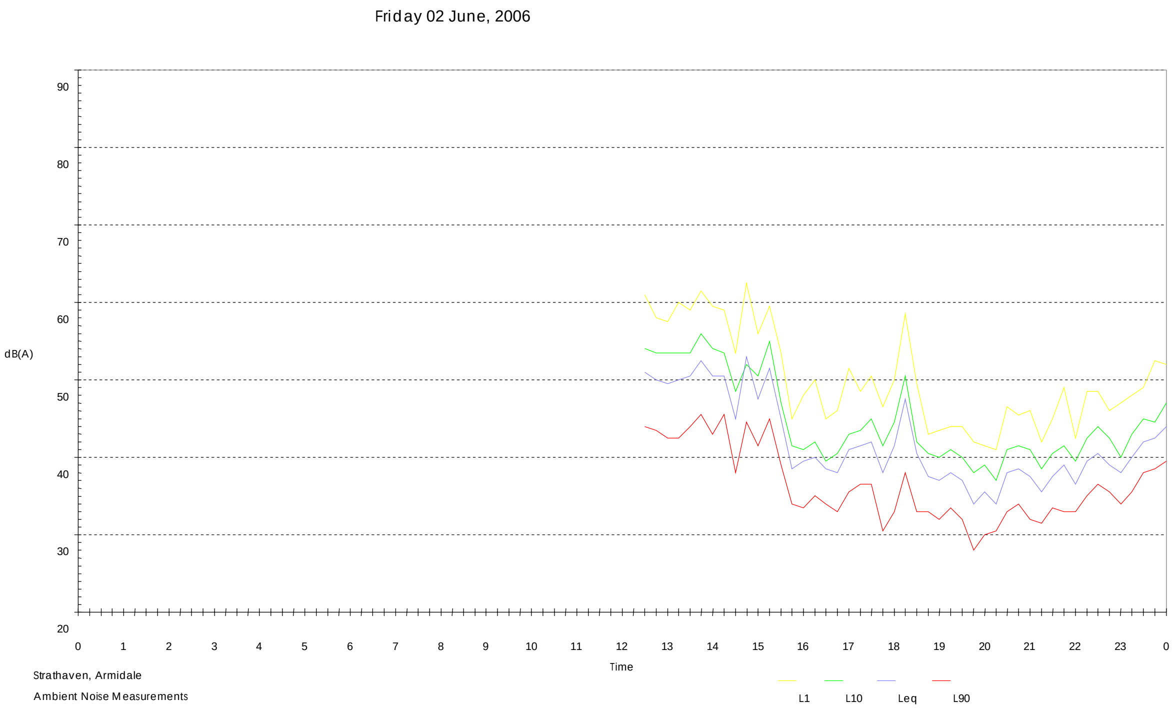
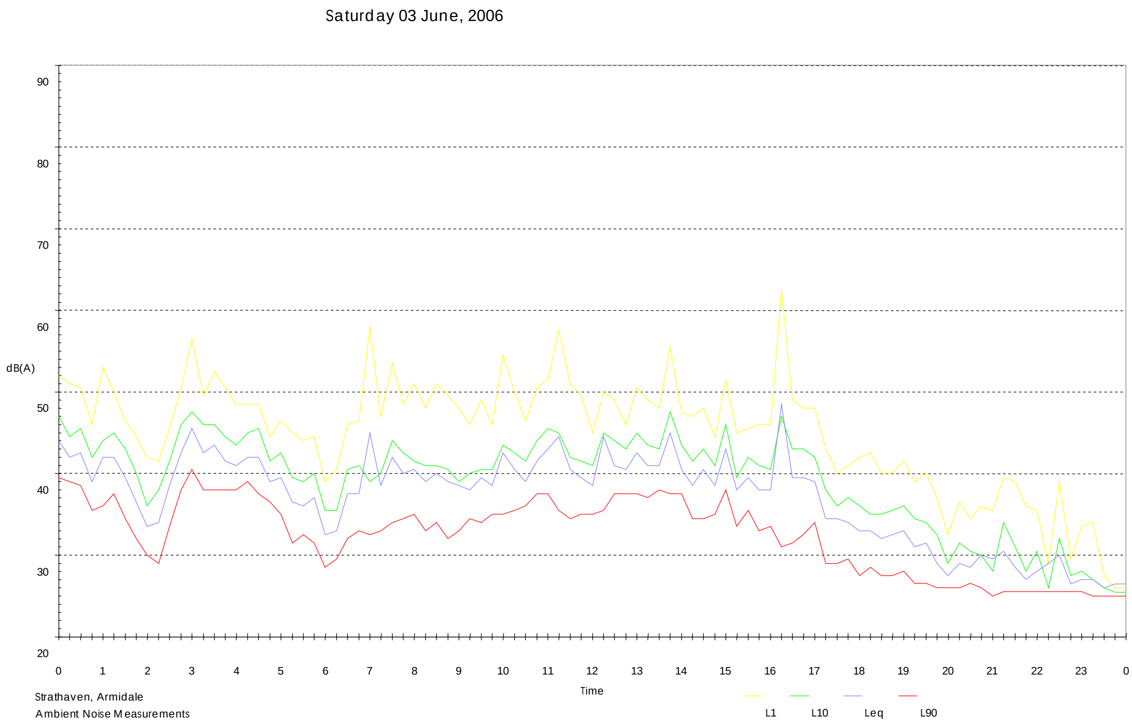
Appendix A

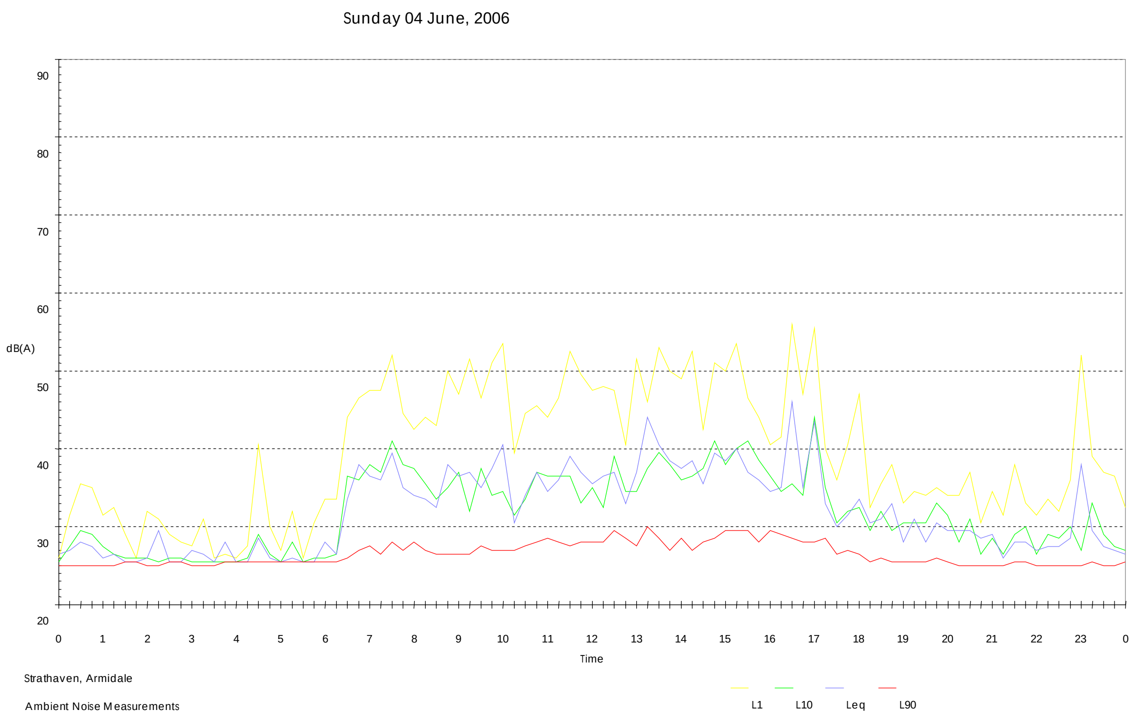
Graphical Measurement Results

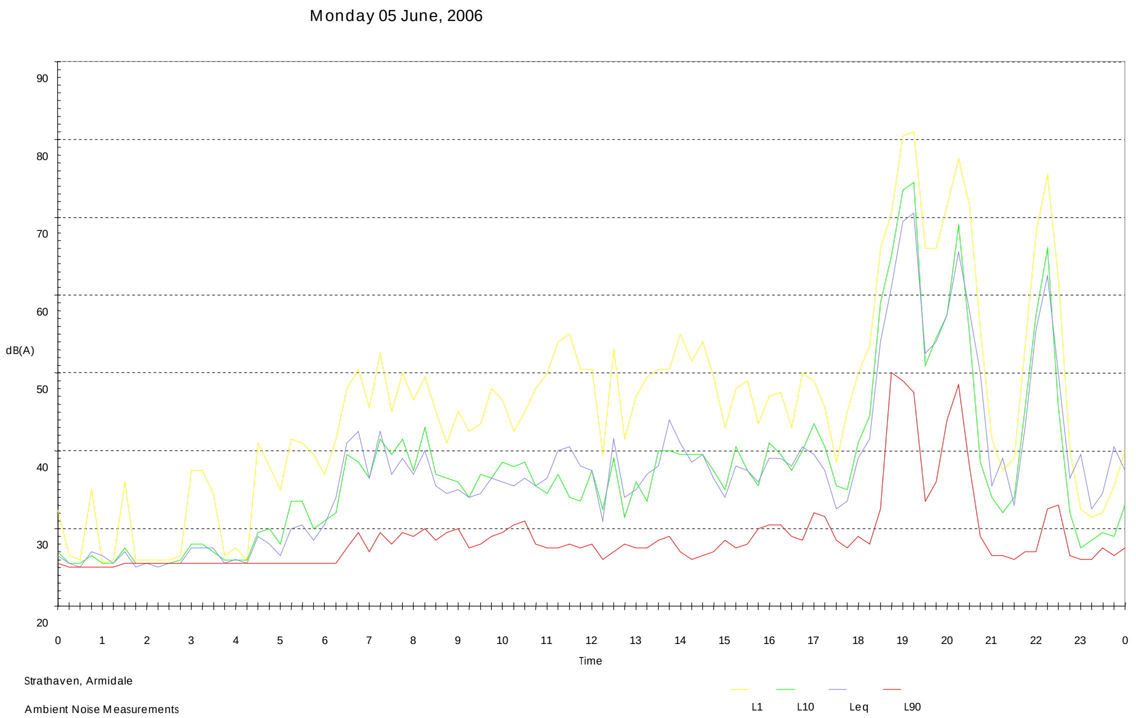
This page has been left blank intentionally

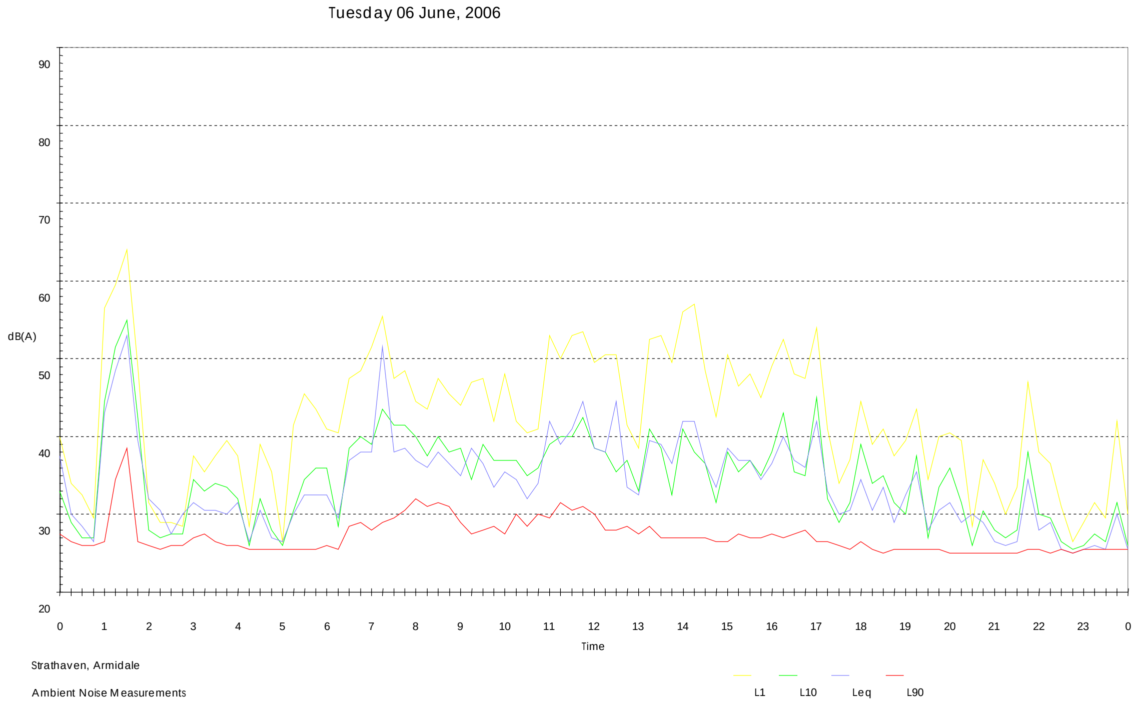
Strathaven, Armidale

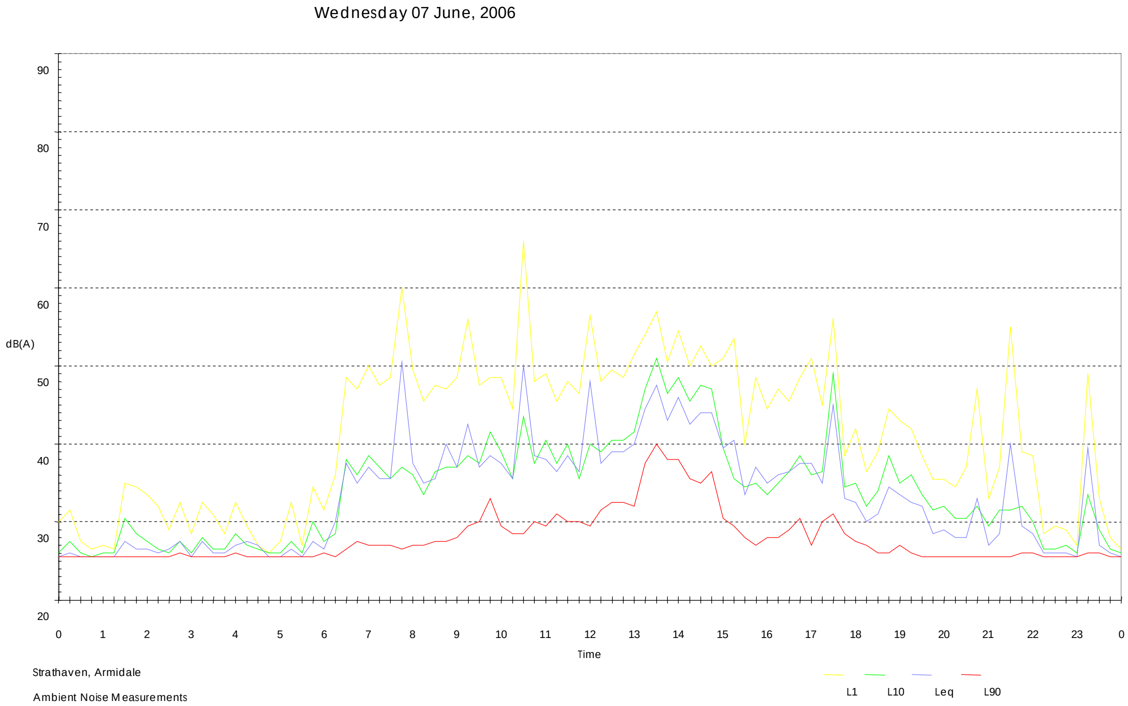


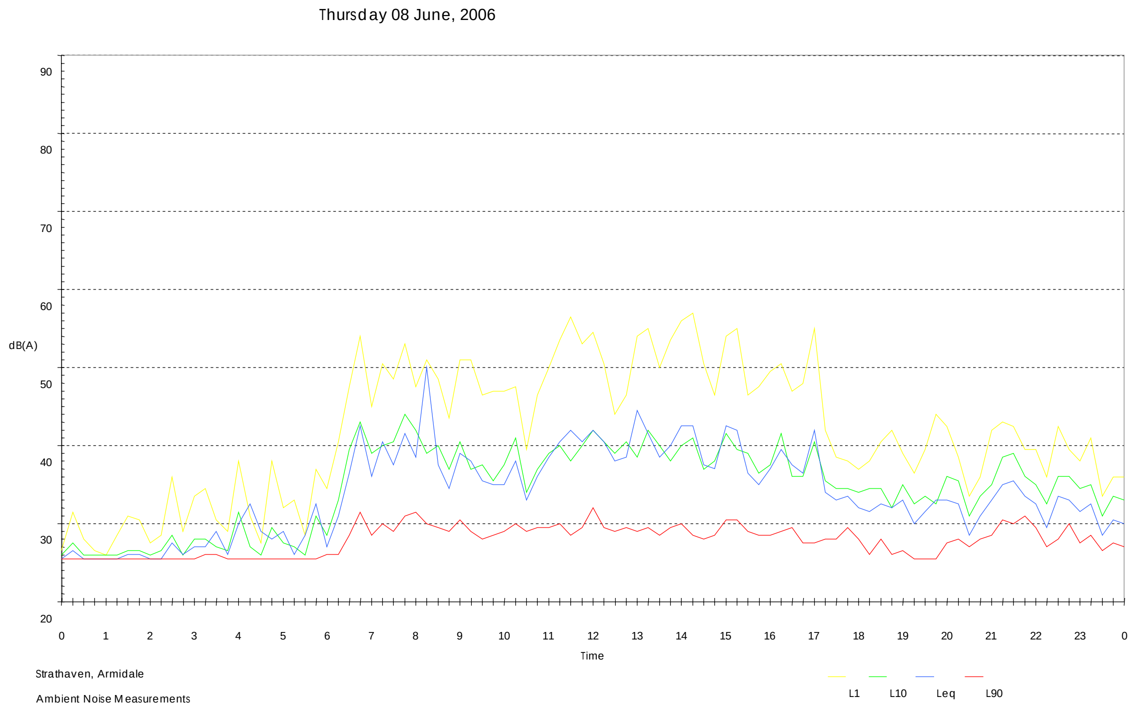


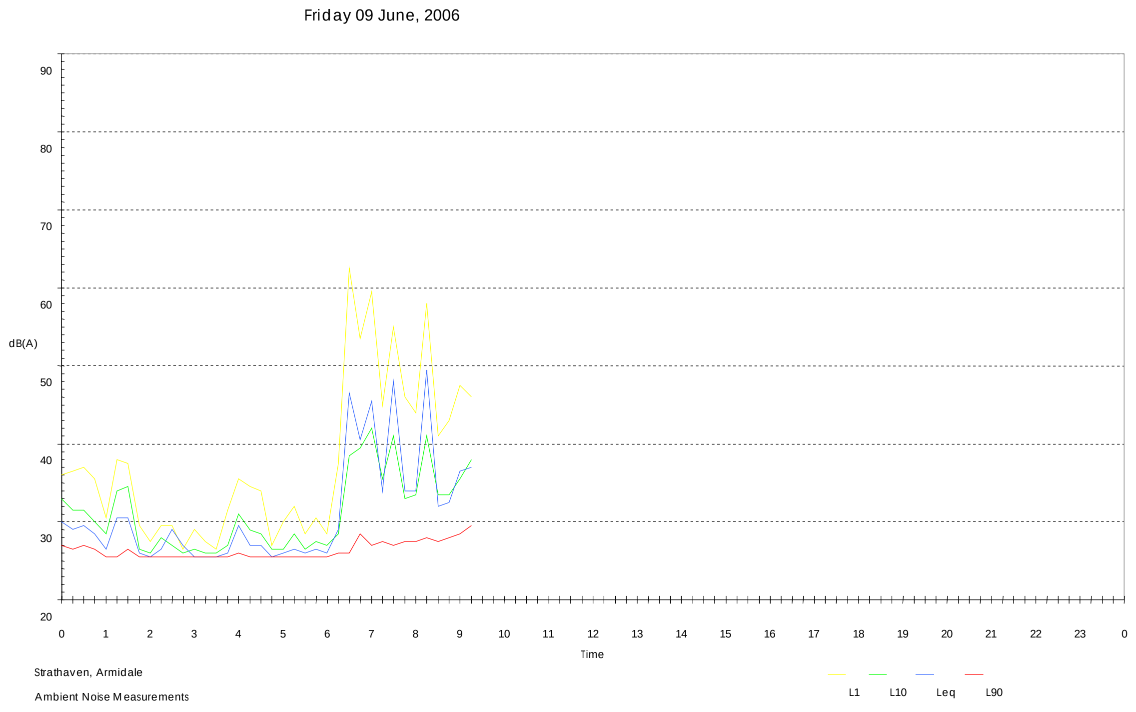

Sunday 04 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Strathaven, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90


Monday 05 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Strathaven, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

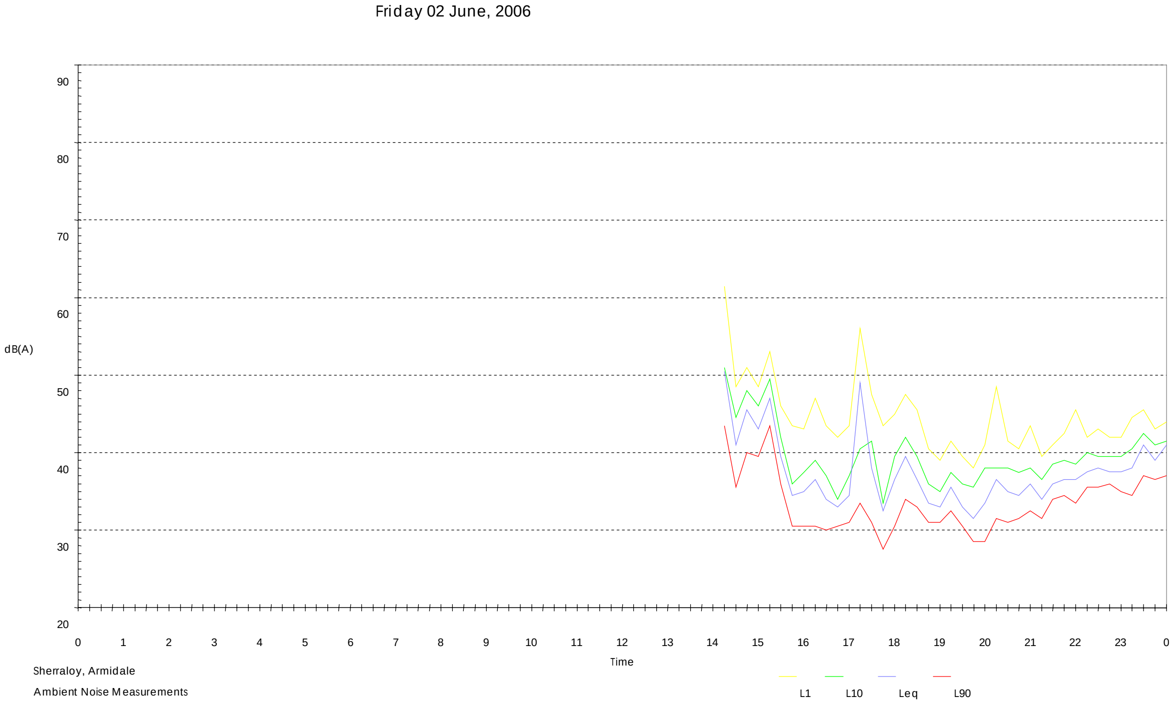

Tuesday 06 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Strathaven, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

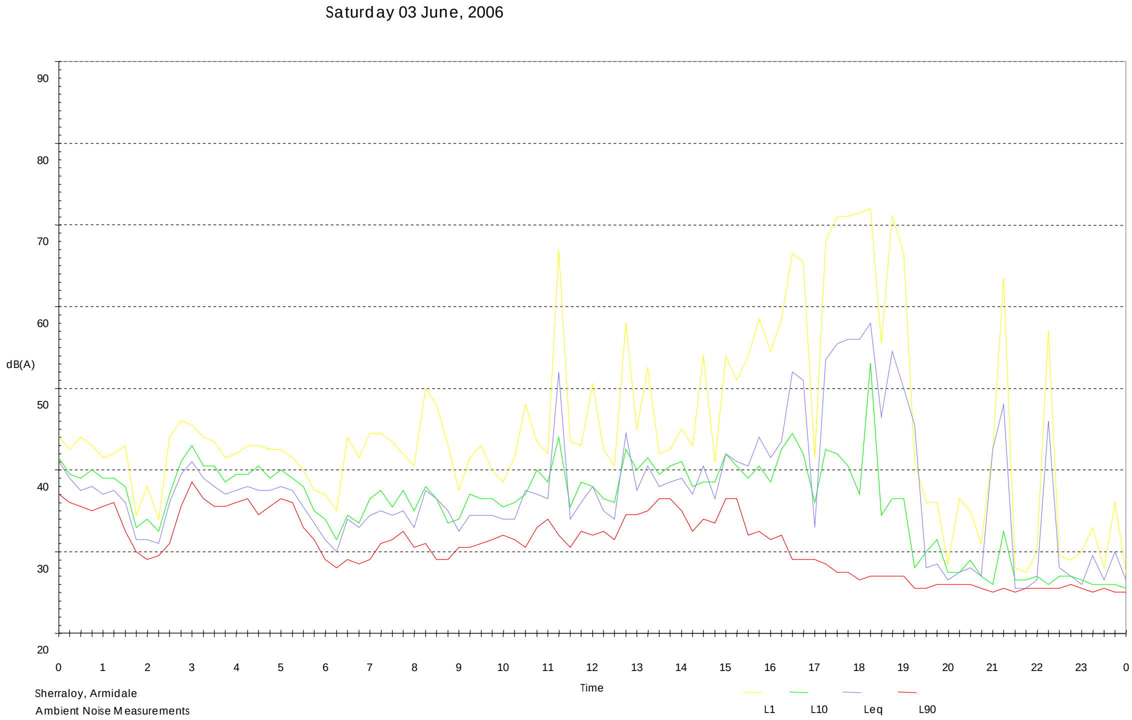

Wednesday 07 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Strathaven, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

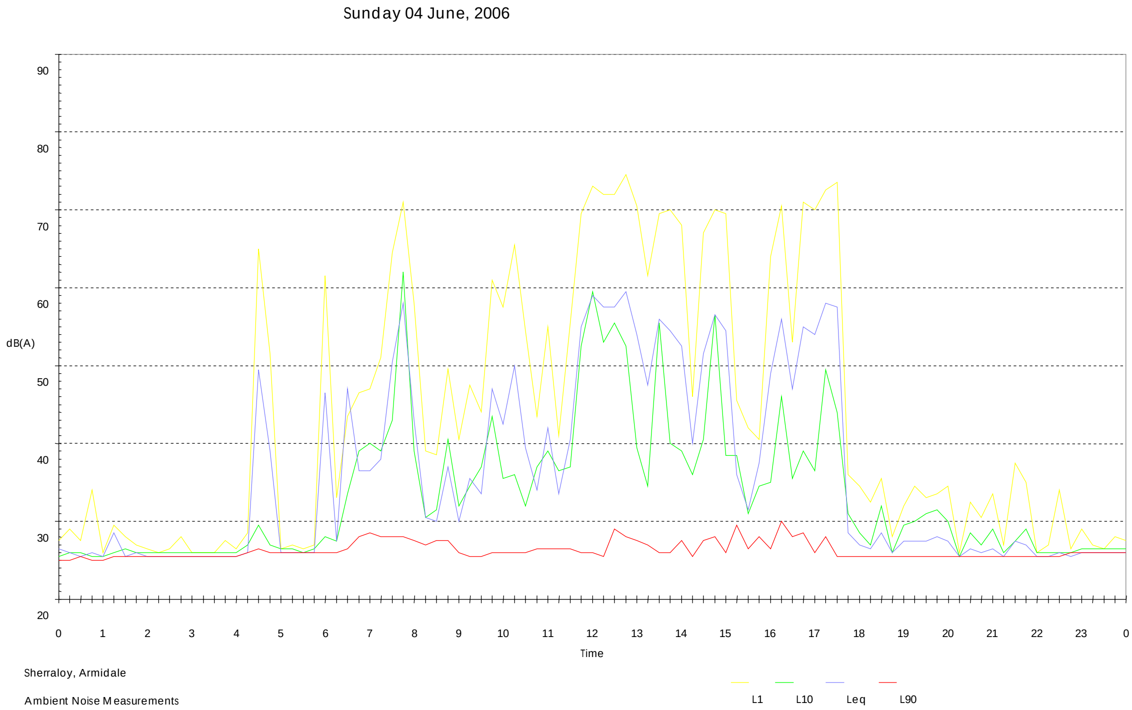

Thursday 08 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Strathaven, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

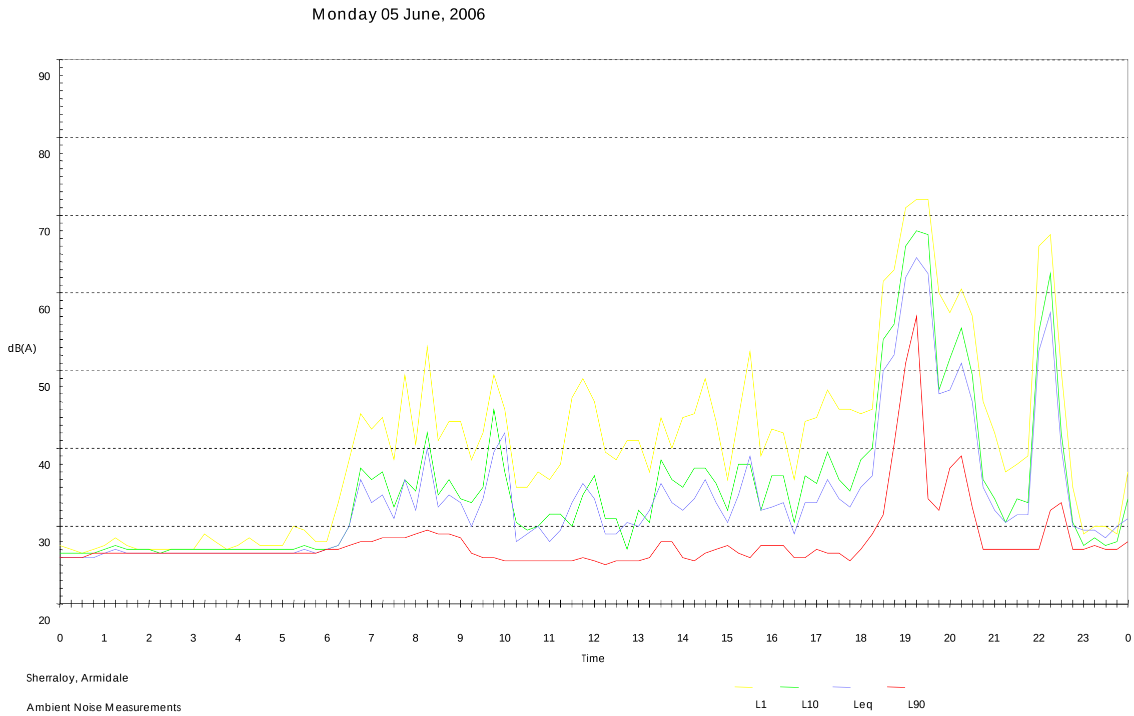

Friday 09 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Strathaven, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

Sherraloy, Armidale

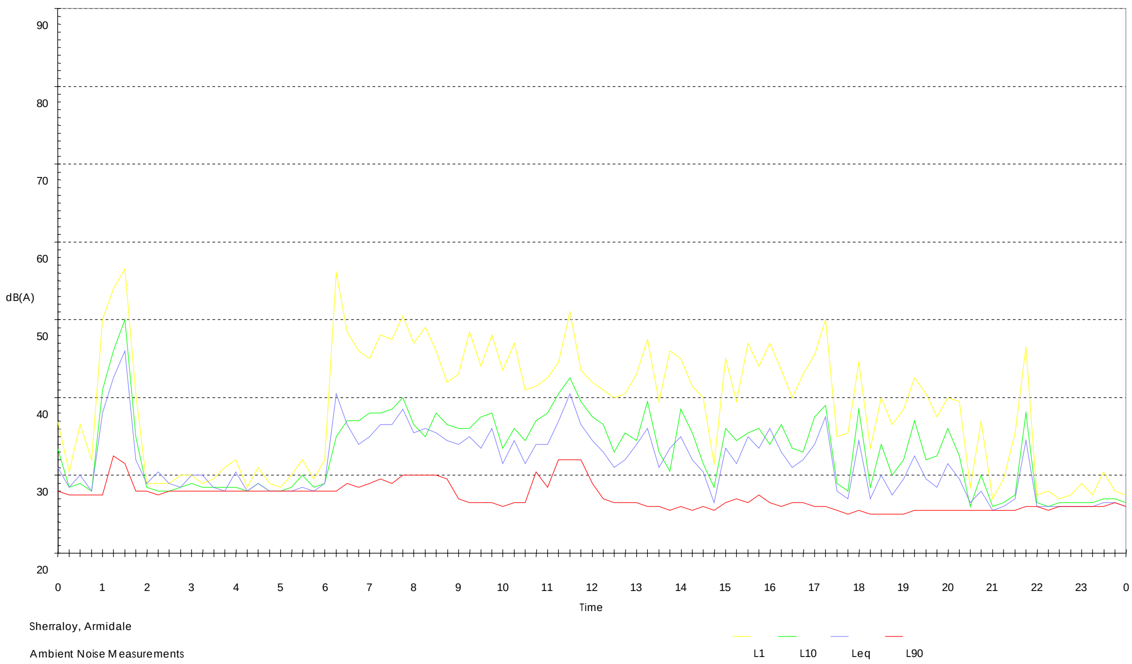




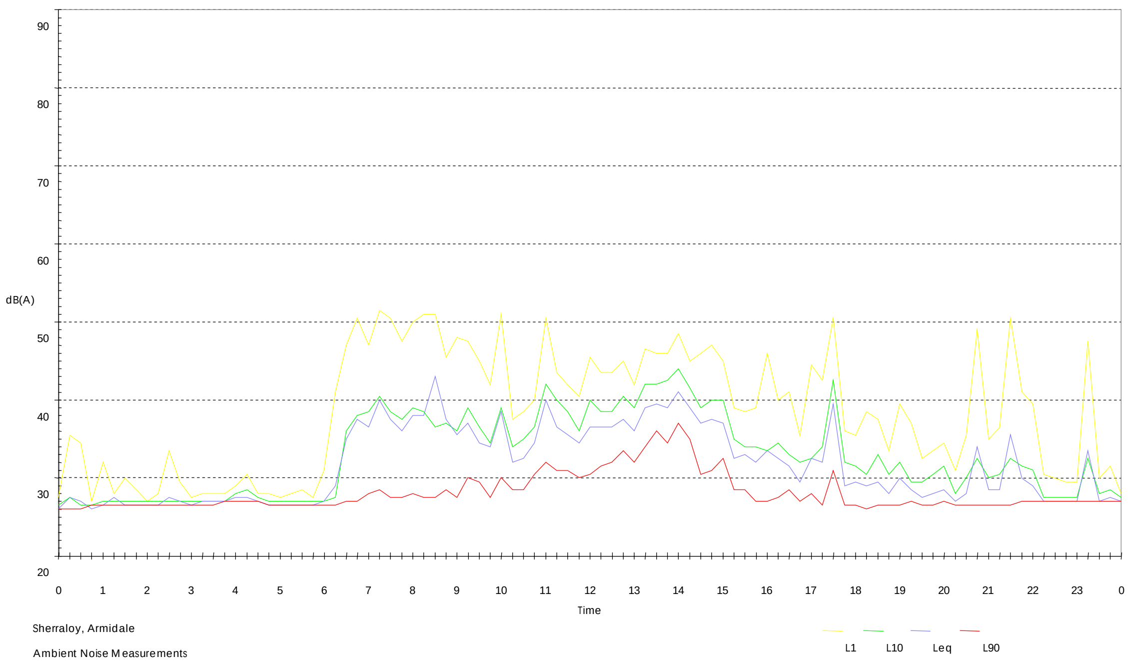

Sunday 04 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Sherraloy, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

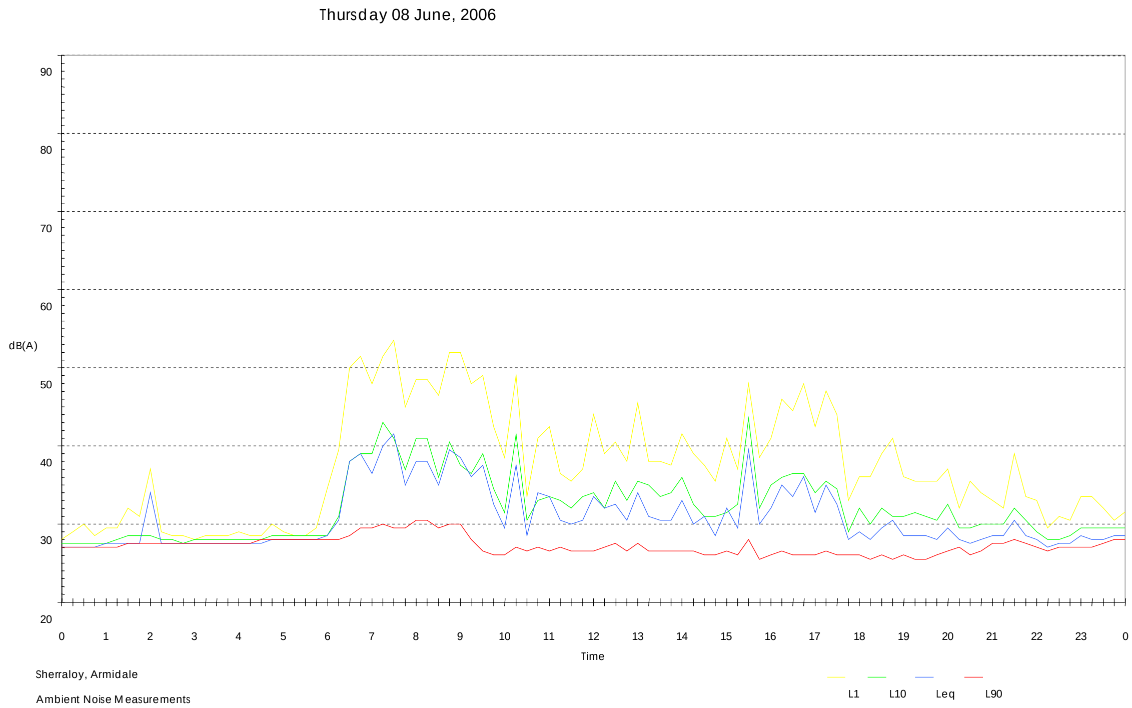

Monday 05 June, 2006
dB(A)
90
80
70
60
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Sherraloy, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

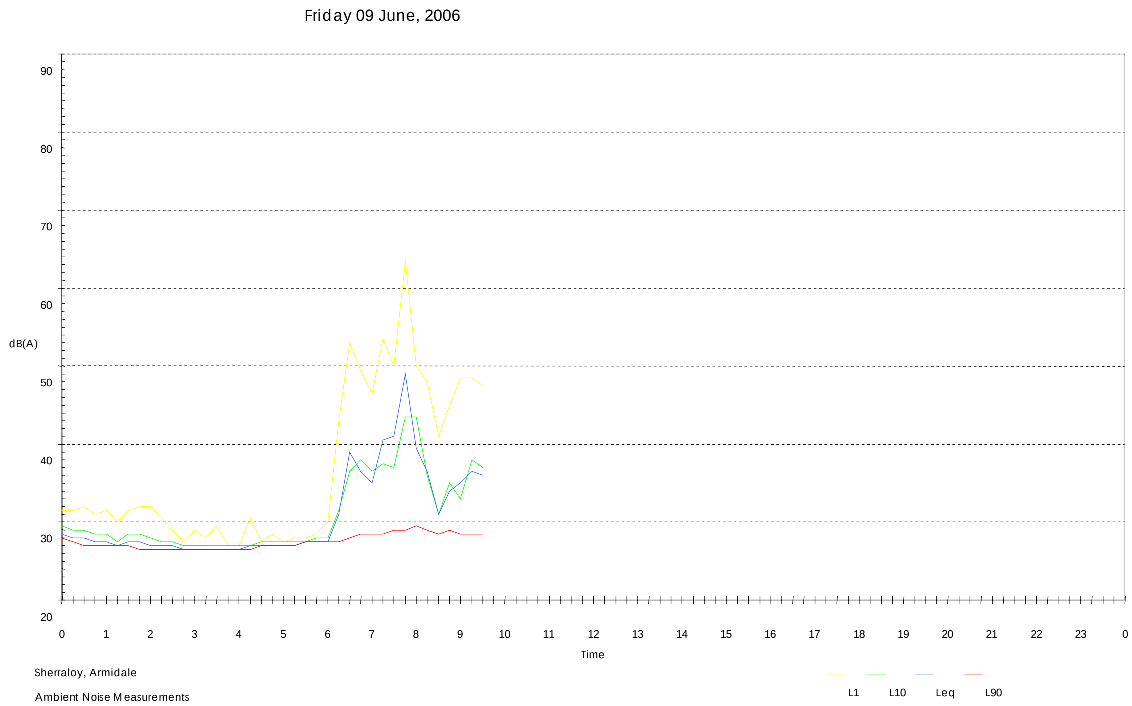
Tuesday 06 June, 2006



Wednesday 07 June, 2006




Thursday 08 June, 2006
90
80
70
60
dB(A)
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Sherraloy, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90


Friday 09 June, 2006
90
80
70
60
dB(A)
50
40
30
20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
Time
Sherraloy, Armidale
Ambient Noise Measurements
L1
L10
Leq
L90

Appendix B

Glossary of Acoustic Terminology

Glossary of Acoustic Terminology

The following is a brief description of the acoustic terminology used in this report.

Ambient Sound	The totally encompassing sound in a given situation at a given time usually composed of sound from all sources near and far.
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB Martin Place at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	*A-weighted decibels* The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.
Frequency	Frequency is synonymous to *pitch*. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
L_{max}	The maximum sound pressure level measured over a given period.
L_{min}	The minimum sound pressure level measured over a given period.
L_1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L_{10}	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L_{90}	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L_{90} noise level expressed in units of dB(A) the L_{90} is usually described as the 'background noise level'
L_{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time. The L_{eq} is usually described as the 'ambient noise level'

Appendix C

Traffic Noise Impact – Calculation Results

Traffic Noise Impact – Calculation Results

Table 14 - Increase in Traffic Noise Levels on Waterfall Way – Operation (Worst Case)

Time	Weekdays					Weekend				
	Existing Flow	Traffic Generated*		Proposed Flow	dB Increase	Existing Flow	Traffic Generated*		Proposed Flow	dB Increase
		Light Vehicles	Heavy Vehicles				Light Vehicles	Heavy Vehicles		
7:00	35	2	6	43	0.9	43			43	0.0
8:00	60		6	66	0.4	72	2	2	76	0.3
9:00	69		6	75	0.4	83		6	89	0.3
10:00	73		6	79	0.3	87		6	93	0.3
11:00	79		6	85	0.3	95		6	101	0.3
12:00	72		6	78	0.3	86		6	92	0.3
13:00	75		6	81	0.3	90		6	96	0.3
14:00	80		6	86	0.3	96		6	102	0.3
15:00	90		6	96	0.3	109		6	115	0.2
16:00	79		6	85	0.3	95		6	101	0.3
17:00	58	2	2	62	0.3	69		6	75	0.4
18:00	34			34	0.0	40	2	2	44	0.5
Total	**804**	**4**	**62**	**870**	**0.9**	**965**	**4**	**58**	**1027**	**0.5**

* Traffic generation based on 6 waste truck deliveries, 2 cover truck deliveries and 2 passenger vehicles per day with a peak of 6 vehicle movements per hour. Peak traffic movements were applied to each 1 hour period to determine the maximum impact.

Table 15 - Increase in Traffic Noise Levels on Waterfall Way – Construction (Worst Case)

Time	Weekdays					Weekend				
	Existing Flow	Traffic Generated		Proposed Flow	dB Increase	Existing Flow	Traffic Generated		Proposed Flow	dB Increase
		Light Vehicles	Heavy Vehicles				Light Vehicles	Heavy Vehicles		
7:00	35	5	3	43	0.9	43			43	0.0
8:00	60		5	65	0.3	72	5	3	80	0.5
9:00	69		5	74	0.3	83		5	88	0.3
10:00	73		5	78	0.3	87		5	92	0.2
11:00	79		5	84	0.3	95		5	100	0.2
12:00	72		5	77	0.3	86		5	91	0.2
13:00	75		5	80	0.3	90		5	95	0.2
14:00	80		5	85	0.3	96		5	101	0.2
15:00	90		5	95	0.2	109		5	114	0.2
16:00	79		5	84	0.3	95		5	100	0.2
17:00	58	5	3	66	0.6	69	5	3	77	0.5
Total	**770**	**10**	**51**	**831**	**0.9**	**925**	**10**	**46**	**981**	**0.5**

* Traffic generation based on 10 construction trucks and 5 passenger vehicles per day with a peak of 5 vehicles movements per hour. Peak traffic movements were applied to each 1 hour period to determine the maximum impact.