



Vipac Engineers & Scientists Ltd.

17-19 King William Street, Kent Town, SA 5067, Australia

PO Box 2419, Kent Town, SA 5067

t. +618 8362 5445 | f. +618 8362 0793 | e. adelaide@vipac.com.au

w. www.vipac.com.au | A.B.N. 33 005 453 627 | A.C.N. 005 453 627

Vipac Engineers & Scientists

Adelaide Brighton Cement – Birkenhead

Annual Noise Survey

April 2014

50B-13-0022-TRP-793665-1-draft

12 May 2014



Job Title: Annual Noise Survey Report Title: April 2014																				
DOCUMENT NO: 50B-13-0022-TRP-793665-1-draft PREPARED FOR: Adelaide Brighton Cement PO Box 77 Port Adelaide SA 5015 CONTACT: Mark Carlstrom Tel: 61 8 83000300 Fax: 61 8 83000431	REPORT CODE: TRP PREPARED BY: Vipac Engineers & Scientists Ltd. 17-19 King William Street, Kent Town, SA 5067, Australia Tel: +61 8 8362 5445 Fax: +61 8 8362 0793																			
PREPARED BY: Author: Andrew Leonard Project Engineer Date: 12 May 2014																				
REVIEWED BY: Reviewer: Ivailo Dimitrov (Principal Engineer – Acoustics) Date: 12 May 2014																				
AUTHORISED BY: Ivailo Dimitrov (Principal Engineer – Acoustics) Date: 12 May 2014																				
REVISION HISTORY <table border="1"> <thead> <tr> <th>Revision No.</th> <th>Date Issued</th> <th>Reason/Comments</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>12 May 2014</td> <td>Initial Issue</td> </tr> <tr> <td>1</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> </tbody> </table>			Revision No.	Date Issued	Reason/Comments	0	12 May 2014	Initial Issue	1			2								
Revision No.	Date Issued	Reason/Comments																		
0	12 May 2014	Initial Issue																		
1																				
2																				
DISTRIBUTION <table border="1"> <thead> <tr> <th>Copy No. _____</th> <th>Location</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Project</td> <td></td> </tr> <tr> <td>2</td> <td>Client (PDF Format)</td> <td>Uncontrolled Copy</td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> </tr> </tbody> </table>			Copy No. _____	Location		1	Project		2	Client (PDF Format)	Uncontrolled Copy	3			4			5		
Copy No. _____	Location																			
1	Project																			
2	Client (PDF Format)	Uncontrolled Copy																		
3																				
4																				
5																				
KEYWORDS:																				

NOTE: This is a controlled document within the document control system. If revised, it must be marked SUPERSEDED and returned to the Vipac QA Representative. This document contains commercial, conceptual and engineering information that is proprietary to Vipac Engineers & Scientists Ltd. We specifically state that inclusion of this information does not grant the Client any license to use the information without Vipac's written permission. We further require that the information not be divulged to a third party without our written consent.



TABLE OF CONTENTS

1	INTRODUCTION	4
2	REFERENCES	4
3	EQUIPMENT	4
4	ASSESSMENT CRITERIA	4
4.1	Excerpt from the current EPA policy 2007 (ref [2])	5
4.2	Indicative noise factors	5
4.3	Adjustment for characteristics.....	5
5	METHODOLOGY	6
5.1	Measurement Locations.....	6
6	NOISE RESULTS	7
6.1	Automatic Noise Logging.....	7
6.1.1	Shut Down Period.....	7
6.1.2	Fully Operational Period	8
6.2	Attended Measurements – ShutDown Period	9
6.3	Attended Measurements – Fully Operational Period.....	10
6.4	Difference Between October 2013 and March 2014 Noise Surveys	11
7	COMPARISON BETWEEN MEASUREMENTS	11
8	SUMMARY AND DISCUSSION	12
Appendix A	: Graphs of Noise Monitoring Results – Shut Down	14
Appendix B	: Graphs of Noise Monitoring Results – Fully Operational	26
Appendix C	: Plant Operational Times	36
Appendix D	Bureau of Meteorology Data	39



1 INTRODUCTION

Vipac Engineers were engaged by Adelaide Brighton Cement (ABC) to undertake a routine environmental noise survey at residential locations near the ABC Birkenhead plant during typical operations and shut down operations. The measurements were conducted between the 18th March and 2nd April 2014.

2 REFERENCES

- [1] Environment Protection (Noise) Policy 2007, South Australian government;
- [2] Guidelines for the use of the Environment Protection (Noise) Policy 2007, June 2009, Environment Protection Authority (EPA);
- [3] Vipac report: 50H-07-0035-TRP-293141-0 – ABC Birkenhead Environmental Noise Report;
- [4] Vipac report: 50H-07-0035-TRP-293790-0 – Environmental Noise Acoustic Specification, 2007.
- [5] Vipac report: 50H-10-0020-TRP-772498-2 – ABC Birkenhead – Env Noise and Vib Survey 2010.
- [6] Vipac report: 50H-07-0035-TRP-383613-0 – ABC Birkenhead Environmental Noise; Concept Solutions.
- [7] Vipac report: 50B-12-0021-TRP-778549-0 – ABC Birkenhead - May 2012 Noise.
- [8] Vipac report: 50B-12-0021-TRP-779004-0 - ABC Birkenhead - June 2012 Noise.
- [9] Vipac report: 50B-12-0021-TRP-780144-0- ABC Birkenhead - October 2012 Noise.
- [10] Vipac report: 50B-13-0022-TRP-781296-0 – ABC Birkenhead March 2013 Noise.
- [11] Vipac report: 50B-13-0022-TRP-781494-0 – ABC Birkenhead April 2013 Shut Down Noise Survey
- [12] Vipac report: 50B-13-0022-TRP-791468-0 – ABC Birkenhead Gantry Dust Collector Noise Survey – August 2013
- [13] Vipac report: 50B-13-0022-TRP-792137-0 – ABC Birkenhead October 2013 Noise.
- [14] Map source - Atlas of South Australia, retrieved 21st June 2010 from <http://www.atlas.sa.gov.au>, © Copyright Government of South Australia.
- [15] Port Adelaide Enfield (City) Development Plan, Consolidated 13 June 2013, Development Act 1993.

3 EQUIPMENT

- Unattended automatic noise logging was undertaken at one location using a Larson Davis 870 Noise Logger (S/N 1458), with ½" free-field microphone (S/N 0800) and an approved windshield, due for calibration on 1st March 2015.
- The attended noise measurements were conducted using a Bruel & Kjaer Type 1 Hand-held Analyser model 2250 Sound Level Meter (Serial No. 2590542, due for calibration on 28 August 2015), fitted with an approved windshield. The calibration of the sound level meter was checked before and after the measurements and was found to be consistent.

4 ASSESSMENT CRITERIA

The Environment Protection (Noise) Policy 2007 (EPA) specifies the maximum allowable noise levels based on the time of day and land use, applicable at the most noise sensitive premises. These assessment criteria are determined based on the scheduled maximum noise levels for time of day and land use.



4.1 Excerpt from the current EPA policy 2007 (ref [2])

Part 1 – Section 5 – Indicative noise levels

(1) ... the indicative noise level for a noise source is to be determined as follows:

(a) where –

- i. the land uses principally promoted by the relevant Development Plan provisions for the noise source fall within a land use category specified in Table 1 in subclause (9); and
- ii. the land uses principally promoted by the relevant Development Plan provisions for the noise-affected premises fall within the same category as those principally promoted by the relevant Development Plan provisions for the noise source,

by reference to indicative noise factors set out in Table 1;

(b) in any other case – by reference to indicative noise factors set out in Table 2 in subclause (9).

(2) When measurements to determine the source noise level (continuous) are taken –

- (a) between 7:00am and 10:00pm on the same day – an indicative noise factor used to determine the indicative noise level for the noise source is found in Table 1 or 2 in the column under the heading "day"; or
- (b) between 10:00pm on one day and 7:00am on the following day – an indicative noise factor used to determine the indicative noise level for the noise source is found in Table 1 or 2 in the column under the heading "Night".

(5) ...if the land uses principally promoted by the relevant Development Plan provisions for the noise source and those principally promoted by the relevant Development Plan provisions for the noise-affected premises do not all fall within a single land use category, the indicative noise level is the average of the indicative noise factors for the land use categories within which those land uses fall.

4.2 Indicative noise factors

From the Port Adelaide Enfield Development Plan [15], the residential receivers are located within the zone designated as "Residential", whereas the Adelaide Brighton Cement Birkenhead Plant is located in the zone designated "Industry

From the above excerpts from the Environment Protection (Noise) Policy 2007, the indicative noise levels for the residential locations are as follows (Average between 'General Industry' and 'Residential' land use category indicative noise levels):

Table 4-1: Indicative Noise Level.

	Day	Night
Indicative noise level – dB(A)	59	50

4.3 Adjustment for characteristics

Note that for a noise containing a characteristic (tonal, impulsive, low frequency or modulating), the following adjustments are to be made to the source noise level:

- Noise containing 1 characteristic; a 5dB(A) penalty must be added to the noise level (continuous).
- Noise containing 2 characteristics; and 8dB(A) penalty must be added to the noise level (continuous).
- Noise containing 3 or 4 characteristics, a 10dB(A) penalty must be added to the noise level (continuous).

5 METHODOLOGY

5.1 Measurement Locations

Vipac conducted attended daytime and night-time measurements at 7 residential locations in accordance with the Environment Protection (Noise) Policy 2007. These locations are shown below in Figure 5-1 below, with measurements taken at locations R2, R3, R5, R8, R12, R13 and R15. Additionally unattended automatic noise logging at one residential location (R2) was conducted for the duration of seven days each during both the shutdown period, and also with the plant fully operational. We note that the night-time measurements were taken with both the plant fully operational as well as shut down, however, day-time measurements were taken whilst the plant was fully operational only.

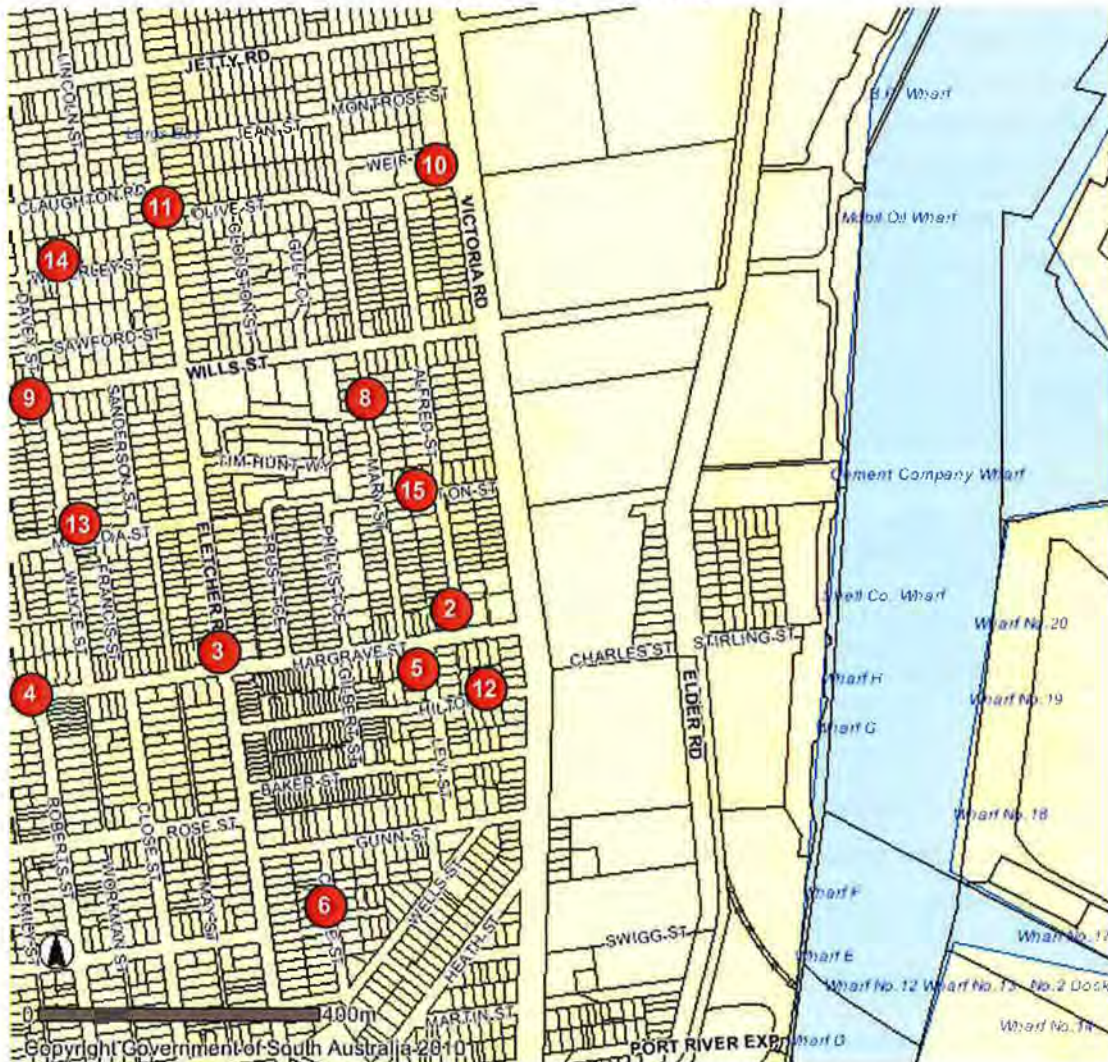


Figure 5-1: Current and previous measurement locations near Birkenhead plant [14].

6 NOISE RESULTS

6.1 Automatic Noise Logging

As has been noted during previous surveys, the noise levels at the receiver locations are heavily influenced by intermittent events, in particular traffic noise. As a result, the L_{Aeq} noise level has been shown to over-estimate the noise contribution from the ABC plant. To capture the noise from the plant only and to reduce the effect of traffic noise on the measurements, the L_{A90} noise levels have been used in the assessment of the contribution of the ABC Birkenhead plant at the resident receiver locations, (as presented in previous reports [7], [8], [9], [10], [11], [12], [13]).

Statistical noise measurements were acquired continuously and averaged over periods of 15 minutes, providing L_{A10} and L_{A90} levels. The L_{A10} and L_{A90} statistics relate to the noise level that is exceeded for 10% and 90% of the measurement time respectively.

6.1.1 Shut Down Period

The following results outline the results from the automatic noise monitoring campaign whilst the plant was shut down. We note that the Gantry Dust Collector was operating for the entire duration of the shutdown measurement period, and with CM6 operating for the majority of the time of the shutdown measurement period (maximum shutdown times were typically 1 hour in duration, and usually occurring within day-time periods. We note that CM1 was offline for approximately 2 days between 20th and the 23rd March, and CM7 was offline for approximately 2 days between the 18th and the 20th March. The items which were offline for the majority of the time during the shutdown period (18th until the 24th March) were the Calciner Feedrate, Woodchips Weigh Feeder, Raw Mill 4A, Raw Mill 4B and the Kiln. Appendix C outlines the times when various items of plant were operational or not (provided by Adelaide Brighton Cement).

Table 6-1 below provides a summary of the unattended noise measurements taken at R2 (Hargrave Street) during the shut down period.

Table 6-1: Automatic Noise Logger Measurements at Hargrave Street during shut down period

Resident Number	Date/Time	Time Period	Criteria dB(A)	Noise Level dB(A)			Exceedance (dB)	Average Wind Speed (m/s)	Average Wind Direction (deg)
				L_{Aeq}	L_{A10}	L_{A90}			
R2	18/03	Day-time (7am - 10pm)	59	53	54	50	—	3.2	191.3
	19/03			55	57	51	—	5.3	138.0
	20/03			56	57	52	—	3.3	148.5
	21/03			57	59	53	—	11.3	176.3
	22/03			55	56	52	—	6.0	162.8
	23/03			54	56	52	—	7.2	179.3
	18/03	Night-time (10pm - 7am)	50	52	53	50	0	2.6	68.8
	19/03			53	55	51	1	2.6	87.5
	20/03			54	56	52	2	2.4	88.8
	21/03			52	54	50	0	6.8	213.8
	22/03			54	55	52	2	5.8	137.5
	23/03			53	54	52	2	5.1	163.8

Graphs representing results of the automatic noise monitoring for the shut-down period are included in Appendix B. The background noise levels measured at R2 exceeded the 50dB(A) criterion applicable during most of the night time periods. It was noted that this noise level was exceeded regardless of wind direction, however, generally when there was an easterly wind, this exceedance is greater. The daytime noise levels are generally greater than night time noise levels, however this is likely to be due to the influence of traffic noise and the noise emissions from the plant are likely to be similar in both the day time and night time. We note that as the gantry dust collector was operational for the majority of the measurement period, this greatly influenced the noise levels measured at this receiver (as noted in previous studies), and from previous measurements of the gantry dust collector, we expect the noise levels from this item alone to be approximately 52dB(A) at the selected receiver, which reflects the monitored noise levels.

6.1.2 Fully Operational Period

The following results outline the results from the automatic noise monitoring campaign whilst the plant was fully operational. We note that most items within the plant were operational during this monitored period, with periodical instances where separate items were offline for short periods of time. We note that the evening of the 29th March following into the morning of the 30th March, there was a significant amount of time where some plant items were not operational, these items included the Raw Mill 4A, Raw Mill 4B, Kiln, Calciner Feedrate, CM1 and CM7

Table 6-2 below provides a summary of the unattended noise measurements taken at R2 (185 Hargrave Street) during the fully operational period.

Table 6-2: Automatic Noise Logger Measurements at Hargrave Street during fully operational period

Resident Number	Date/Time	Time Period	Criteria dB(A)	Noise Level dB(A)			Exceedance (dB)	Average Wind Speed (m/s)	Average Wind Direction (deg)
				L _{Aeq}	L _{A10}	L _{A90}			
R2	25/03	Day-time (7am - 10pm)	59	55	57	53	—	5.9	169.5
	26/03			55	57	52	—	4.6	196.7
	27/03			55	57	52	—	2.5	153.0
	28/03			55	56	52	—	4.0	174.8
	29/03			54	55	52	—	4.6	167.3
	30/03			55	57	53	—	3.0	108.0
	31/03			57	59	54	—	3.3	78.0
	1/04			57	58	54	—	6.0	183.6
	2/04			56	58	53	—	7.5	198.0
	25/03	Night-time (10pm - 7am)	50	53	55	52	2	5.4	170.0
	26/03			55	56	53	3	2.8	133.8
	27/03			55	56	53	3	2.3	135.0
	28/03			55	56	53	3	2.9	141.3
	29/03			54	55	53	3	2.7	82.5
30/03	54			56	53	3	3.1	55.0	



Resident Number	Date/Time	Time Period	Criteria dB(A)	Noise Level dB(A)			Exceedance (dB)	Average Wind Speed (m/s)	Average Wind Direction (deg)
				L _{Aeq}	L _{A10}	L _{A90}			
	31/03			56	58	54	4	5.9	47.5
	1/04			55	57	53	3	5.1	90.0
	2/04			53	55	51	1	7.5	191.3

Graphs representing results of the automatic noise monitoring for the fully operational period are included in Appendix A. The background noise levels measured at R2 exceeded the 50dB(A) criterion applicable during all the night time periods. It was noted that this noise level was exceeded regardless of wind direction, however, generally when there was an easterly wind direction, this exceedance is greater. The daytime noise levels are generally similar to the night time noise levels, and meet the applicable day time noise criterion.

6.2 Attended Measurements – Shutdown Period

Attended noise measurements were undertaken to coincide with the automatic noise monitoring during the shutdown period. We note that night-time measurements were only conducted during the shutdown period, as night-time is when the ABC plant exceeds the EPA noise criterion, and is where other extraneous noises (such as traffic) is minimal, allowing better determination of noise directly from the ABC plant.

During the measurements, four out of the seven monitored residential receivers (resident numbers 3, 5, 8 and 13) met the EPA criterion during the night. Three residential receivers exceeded the night time criteria, and these receivers are the closest to the Birkenhead plant. From the attended measurements, noise from the ABC plant was audible at all residential receivers, with the exception of resident number 13. Additionally, the average wind direction during the night-time measurements was north easterly, therefore these receivers were directly down wind of the plant (compared to the other receivers measured). It was observed that the measured L_{A90} noise levels were indicative of the noise levels observed to be from the plant where other extraneous sources were absent (i.e. traffic noise). The attended measured noise levels generally agree with the noise measured by the unattended noise logger.

Additionally, analysis of the third octave noise data showed that there was a 6300Hz tone present at R13 during the night-time measurement, where the measured sound level in one third octave band was 5dB higher than the sound level in the adjacent third octave bands. This third octave peak was not detected at any other location. As this tone has not been detected at locations closer to the plant, or at other locations at similar distance away from the plant, we deem that this is extraneous noise not associated with the plant, and is from a more localised source.

Table 6-3 below provides a summary of the attended noise measurements taken at the 7 selected residential locations.

Table 6-3: March 2014 shut down night time environmental noise survey summary data.

Resident Number	Date/Time	Time Period	Criteria dB(A)	Noise Level (L _{A90}) dB(A)	Exceedance (dBA)	Wind Speed (m/s)	Wind Direction (deg)
#2	20/03/2014 23:31	Night	50	55	5	1.7	45
#3	20/03/2014 23:48	Night	50	45	—	1.7	270
#5	20/03/2014 23:18	Night	50	50	—	1.7	45



Resident Number	Date/Time	Time Period	Criteria dB(A)	Noise Level (L _{A90}) dB(A)	Exceedance (dBA)	Wind Speed (m/s)	Wind Direction (deg)
#8	20/03/2014 22:33	Night	50	44	—	1.7	90
#12	20/03/2014 23:03	Night	50	52	2	2.5	67.5
#13	20/03/2014 22:10	Night	50	46	—	2.5	112.5
#15	20/03/2014 22:48	Night	50	53	3	2.5	67.5

6.3 Attended Measurements – Fully Operational Period

Attended noise measurements (both day-time and night-time) were undertaken to coincide with the automatic noise monitoring during the fully operational period.

During the measurements, two out of the seven monitored residential receivers (resident numbers 8 and 13) met the EPA criterion during the night. Five residential receivers exceeded the night time criteria, and these receivers are the closest to the Birkenhead plant. From the attended measurements, noise from the ABC plant was audible at all residential receivers, with the exception of resident number 13. Additionally, the average wind direction during the night-time measurements was north easterly, therefore these receivers were directly downwind of the plant (compared to the other receivers measured). For the day-time measurements, the wind direction was northerly, and therefore we expect that the day-time measurements would not give a worst-case indication of the noise experienced at the receivers. It was observed that the measured L_{A90} noise levels were indicative of the noise levels observed to be from the plant where other extraneous sources were absent (i.e. traffic noise). We note however that the attended measurements at R2 were significantly affected by traffic noise during the attended measurements, and the noise from the ABC plant was approximately 55dB(A), and therefore an exceedance of 5dB was noted. We note that the difference between the noise levels measured by the automatic noise logger and the hand held sound level meter was likely due to the traffic noise being shielded by the fence of R2, and is more representative of noise from the ABC site, whereas the attended measurements were not shielded from the traffic noise.

Additionally, analysis of the third octave noise data showed that there was a 63Hz tone present at R15 during the night-time measurements only, where the measured sound level in one third octave band was 5dB higher than the sound level in the adjacent third octave bands, we note that this tone was not subjectively discerned from the attended noise measurements. This third octave peak was not detected at any other location, and we consider that this is most likely emanating from a localised noise source to R15, and not from the ABC plant.

Table 6-4 below provides a summary of the attended noise measurements taken at the 7 selected residential locations.

Table 6-4: March 2014 fully operational environmental noise survey summary data a.

Resident Number	Date/Time	Time Period	Criteria dB(A)	Noise Level (L _{A90}) dB(A)	Exceedance (dBA)	Wind Speed (m/s)	Wind Direction (deg)
#2	1/04/2014 11:43	Day	59	54	—	8.3	0
	31/03/2014 23:25	Night	50	59	9*	6.1	45
#3	1/04/2014 11:59	Day	59	47	—	9.7	0
	31/03/2014 23:40	Night	50	53	3	6.1	45



Resident Number	Date/Time	Time Period	Criteria dB(A)	Noise Level (L _{A90}) dB(A)	Exceedance (dBA)	Wind Speed (m/s)	Wind Direction (deg)
#5	1/04/2014 11:28	Day	59	51	—	8.3	0
	31/03/2014 23:11	Night	50	53	3	6.7	45
#8	1/04/2014 10:41	Day	59	45	—	4.7	0
	31/03/2014 22:27	Night	50	46	—	5.6	45
#12	1/04/2014 11:11	Day	59	54	—	5.3	338
	31/03/2014 22:57	Night	50	55	5	6.7	45
#13	1/04/2014 10:26	Day	59	45	—	4.7	0
	31/03/2014 22:11	Night	50	49	—	4.2	45
#15	1/04/2014 10:55	Day	59	55	—	5.3	338
	31/03/2014 22:41	Night	50	55	5	5.6	45

*We note that the exceedance should be 5dB as the observed noise level by the ABC plant was 55dB(A), and measurements were influenced heavily by traffic noise.

6.4 Difference Between October 2013 and March 2014 Noise Surveys

A comparison between the noise surveys taken in October 2013 and March 2014 can provide an indicative impact of any change in noise levels due to changes in plant operations.

As noted in Section 6.2 and 6.3, noise from the plant was audible from a number of measurement locations throughout both the day-time and night-time attended measurements. Exceedences were noted to exist or be possible at R2, R5, R12 and R15 during both the March and October survey. We note that generally throughout the duration of the March 2014 unattended noise monitoring, measured noise levels were similar to the measured levels in previous surveys (October 2013). We note that incidents of noise criteria exceedance have been shown to still occur during worst-case meteorological conditions.

7 COMPARISON BETWEEN MEASUREMENTS

Table 7-1 outlines the comparison between attended night-time noise measurements at each of the residential noise receivers of whilst the plant was shut down and fully operational. We note that for all measurements the wind was in a worst-case wind direction (easterly to north-easterly). The wind speed during the measurements taken whilst the ABC plant was fully operational was greater than the wind speeds during the shut-down measurements (by a factor of 2 up to a factor of 5), and therefore a comparison between these measurements is indicative only, and we expect that the higher wind speeds would elevate the noise levels from the plant to some extent.

Table 7-1: Comparison Between Shut-Down and Fully Operational Noise Levels

Resident Number	Measured L _{A90} (dB(A))		Difference in Noise Level
	Shut Down (20/03/14)	Fully Operational (1/04/14)	
#2	55	59	4
#3	45	53	8



Resident Number	Measured L _{A90} (dB(A))		Difference in Noise Level
	Shut Down (20/03/14)	Fully Operational (1/04/14)	
#5	50	53	3
#8	44	46	2
#12	52	55	3
#13	46	49	3
#15	53	55	2

We note that generally, there is a 2 to 3 dB decrease in the noise levels at the residential receivers whilst the plant is shut down. There is a large difference in noise level at residence R3, however this jump in noise level is uncharacteristic of the other sites. Additionally the shutdown measurements were taken whilst the wind direction had changed to a westerly (i.e. blowing directly away from the plant), whilst the wind direction of the measurements whilst the plant was online was blowing in a north easterly direction (with a greater wind speed), resulting in higher noise levels than if in similar conditions of the shutdown measurements.

During the shutdown measurements, the gantry dust collector was operational, which has been identified as a significant noise source in our previous reports [13]. From previous reports, we determined that the impact of the gantry dust collector was approximately 3dB to the nearby residential receivers, therefore having a noise level of approximately 52dB(A) and 53dB(A) at receivers R2 and R15 respectively. We note that the noise levels measured at these receivers during the shutdown period were dominated by this gantry dust collector.

During the noise measurement period whilst the ABC plant was fully operational, there was a period on the morning of the 30th March where the Raw Mills 4A and 4B, Kiln, Calciner Feedrate and CM1 were all offline, however the measured noise levels with these items shut down were comparable to the measured noise levels when they were operational in similar wind conditions, are relatively unchanged, and suggest that these items are not the dominant noise sources at R2 (apart from the gantry dust collector). At other times during the shutdown period, specific items of plant were turned on and off for short periods of time, however, that happened either during periods where the difference in noise level would not be as pronounced (i.e. during the day-time), or those items were turned on and off for too short periods of time for any trends to be captured by the noise logger.

We note that the first item to be targeted for noise reduction is to be the gantry dust collector, and when sufficiently treated, any changes in plant state will be identified more readily, as the gantry dust collector was dominating the noise levels at the receivers during the entire survey.

Additionally, we note that during the shutdown period, remedial work was undertaken on the Stack 4A silencer, to help improve its performance. We note that in previous assessments we have detected a 165Hz tone which was due to the 4A stack. Since this remedial work, we were not able to detect any tone at 165Hz at all receivers, even within the narrow band spectra. We recommend that regular maintenance of this silencer to be undertaken to ensure that it continues to perform optimally.

8 SUMMARY AND DISCUSSION

From the attended noise measurement data and the automatic noise logging (at Residence 2), it is shown that the noise levels exceed the night time noise criteria at up to 5 measurement locations. The daytime criterion has been achieved at all locations. We note that compared to the most recent environmental noise survey undertaken while the plant was fully operational, the measured noise levels at the nearby residences have not significantly changed, however, tonality from the 4A stack (at 165Hz) was not detected as was previously which is due to the recent maintenance of the 4A silencer during the shutdown period. We



recommend that this silencer receives regular maintenance. The noise levels measured whilst some of the plant was shut down showed that there was approximately 3dB decrease in the noise levels measured at the residential receivers. We note however that the major noise source whilst the plant was shut down was the gantry dust collector, which was still operational during the entire shut-down period.

We note that the first item to be targeted for noise reduction is to be the gantry dust collector (which is currently ongoing, and being attended to as a priority), and when sufficiently treated, any changes in plant state will be identified more readily.

Wind direction is an important influencing factor in the noise impact of the ABC Birkenhead plant to its neighbouring receivers. For the Birkenhead site, predominant wind directions (from BOM weather station data from Outer Harbor from April 2009 to April 2013) are shown to be from the sou'-sou'-west (13%), south (12%) and North East (8%). A wind rose of the wind direction data is given in Appendix D.

The noise from the plant is dominant at night in the nearby residential areas, especially in times of low wind speed and worst case meteorological conditions.



Adelaide Brighton Cement
Annual Noise Survey
April 2014

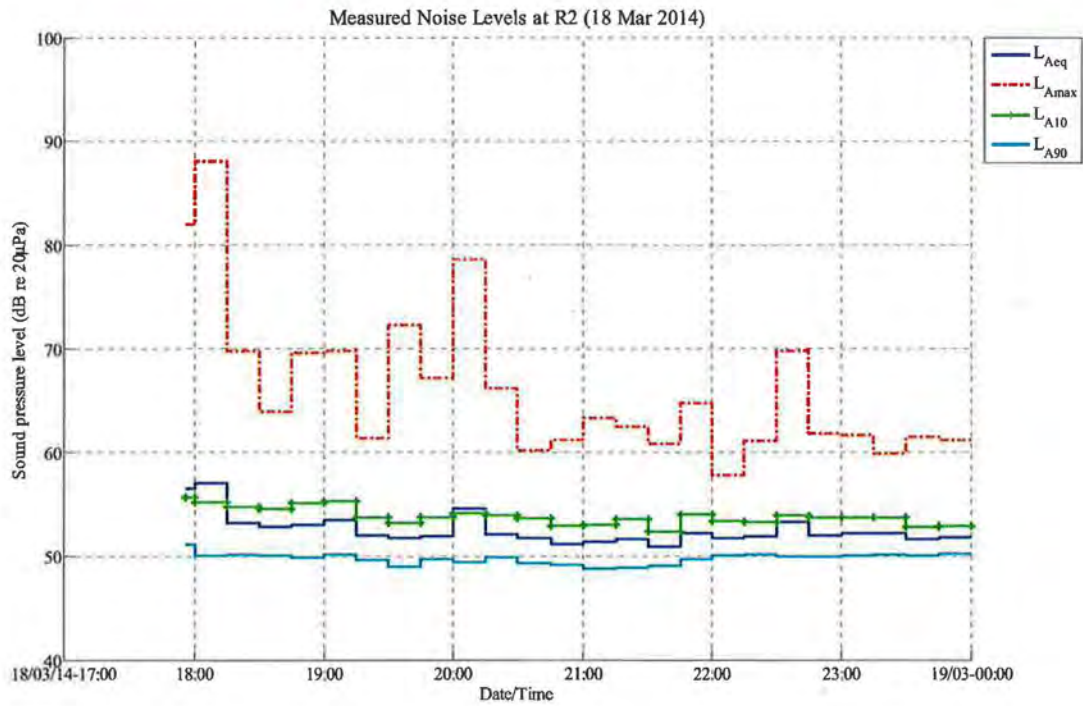
Appendix A : Graphs of Noise Monitoring Results – Shut Down

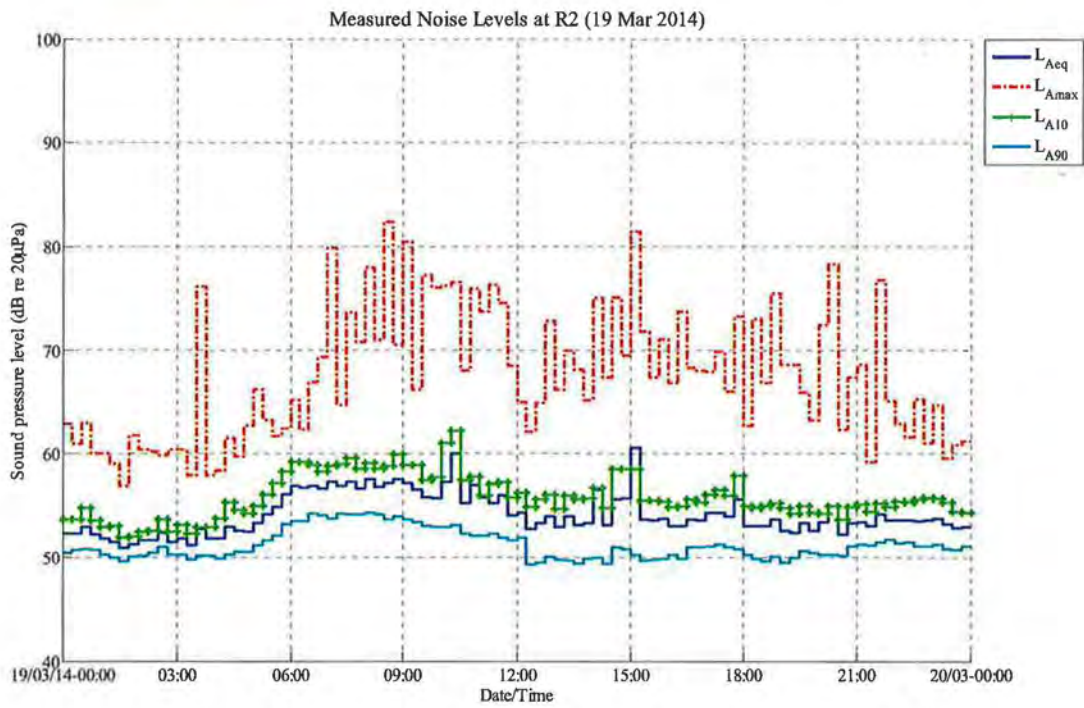


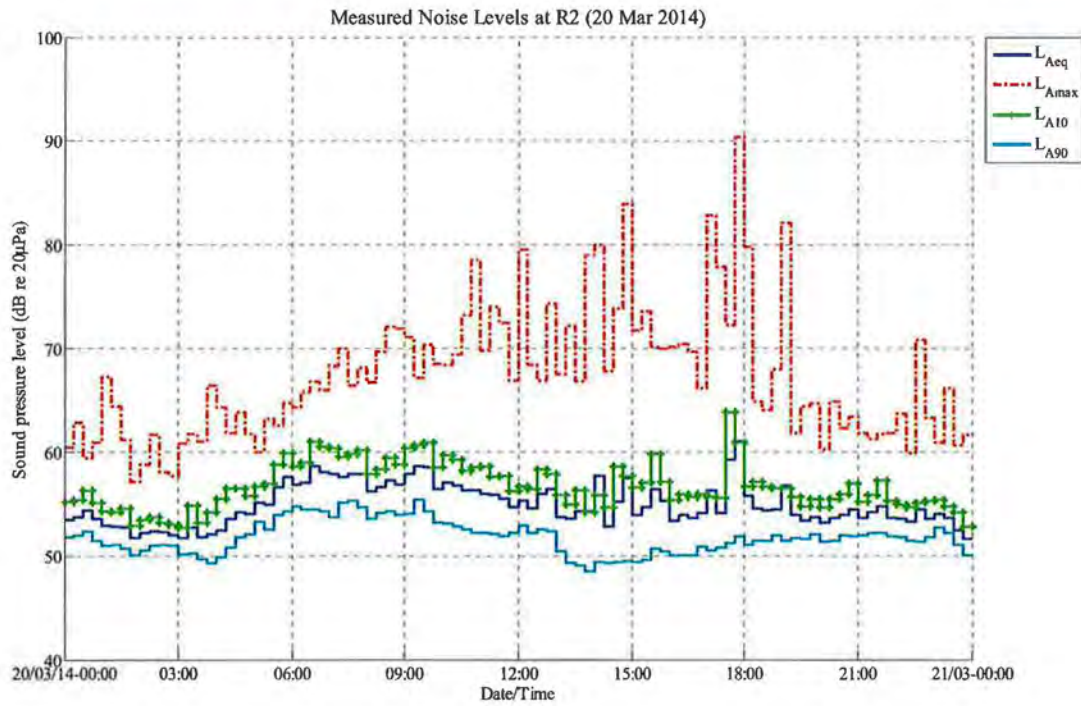
Adelaide Brighton Cement

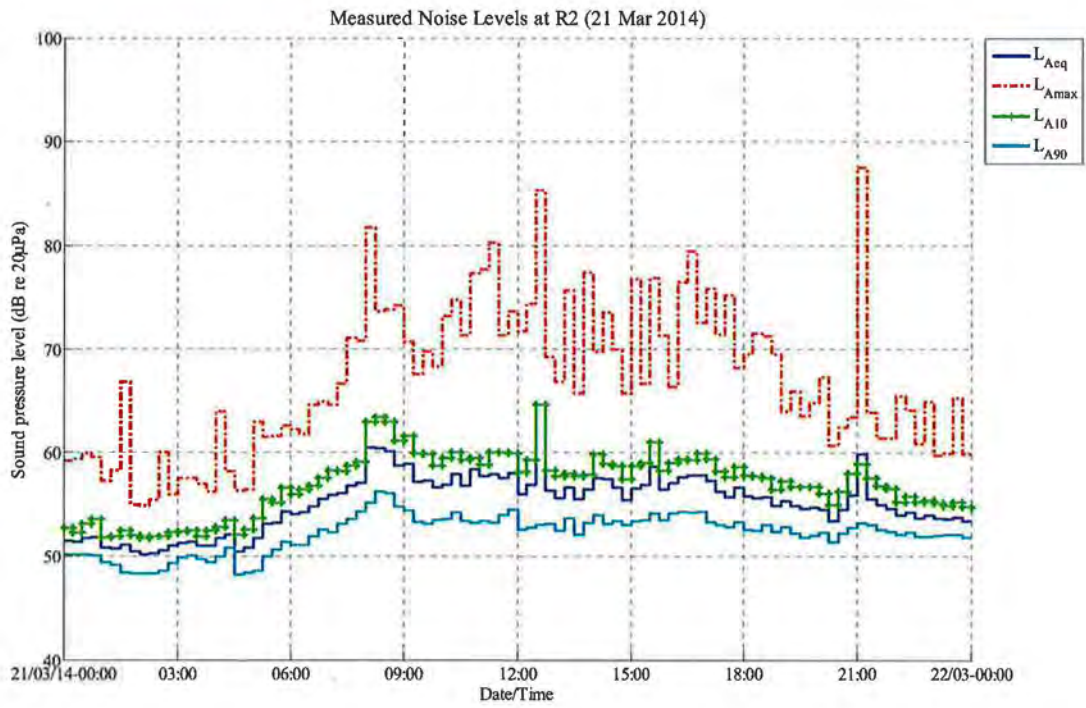
Annual Noise Survey

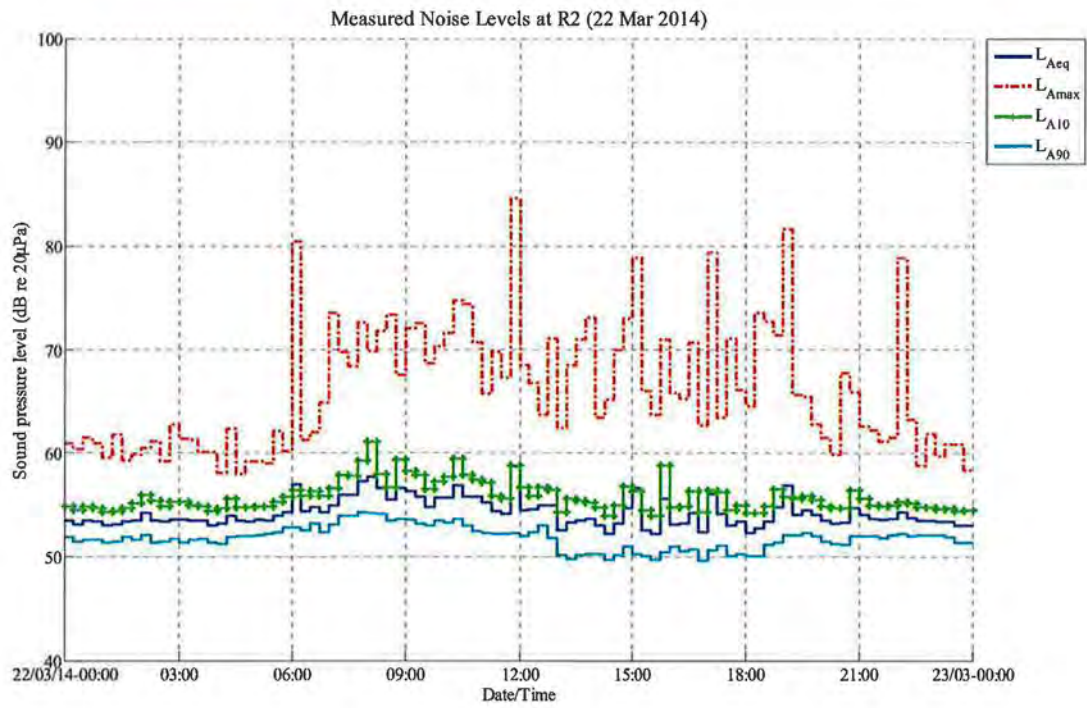
April 2014

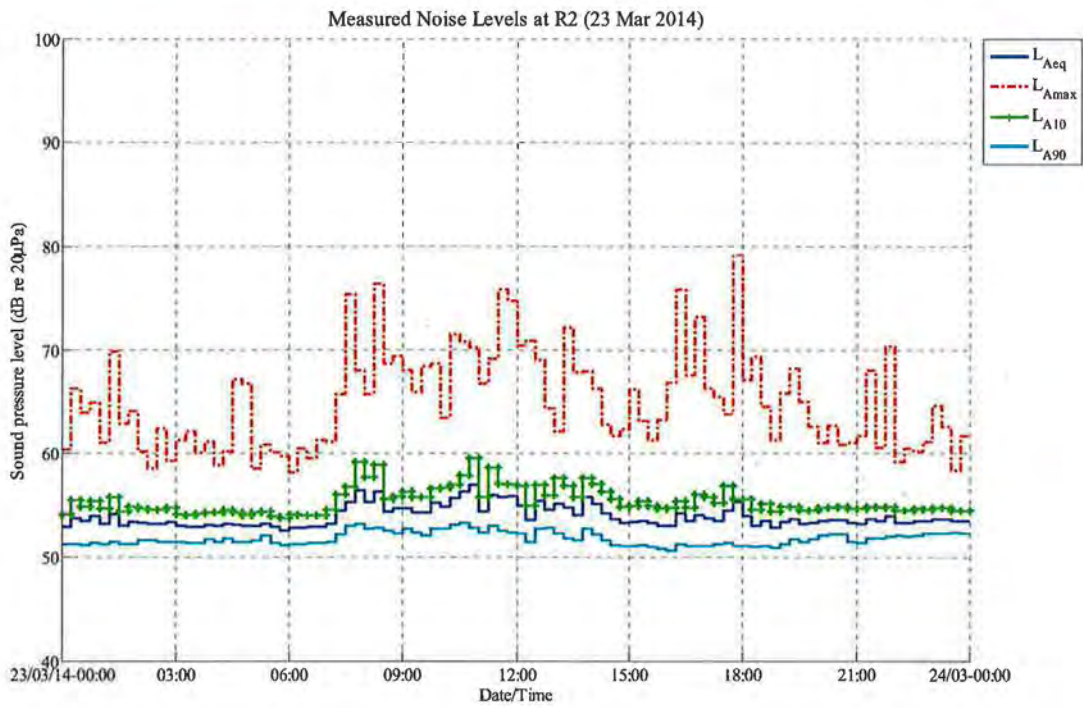








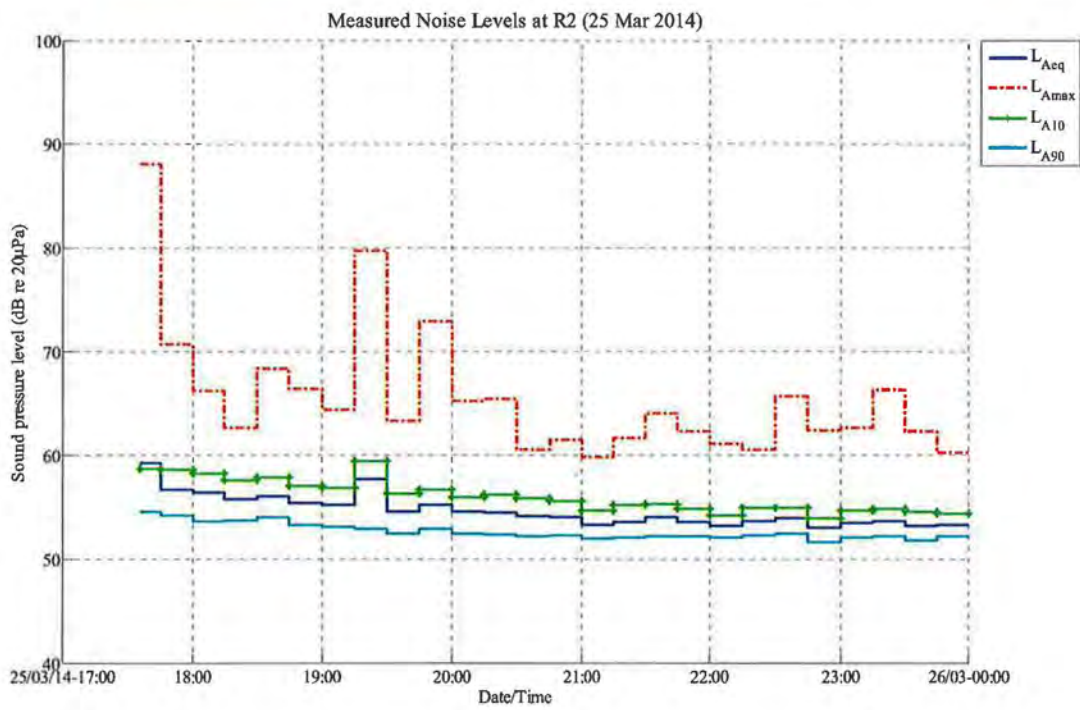


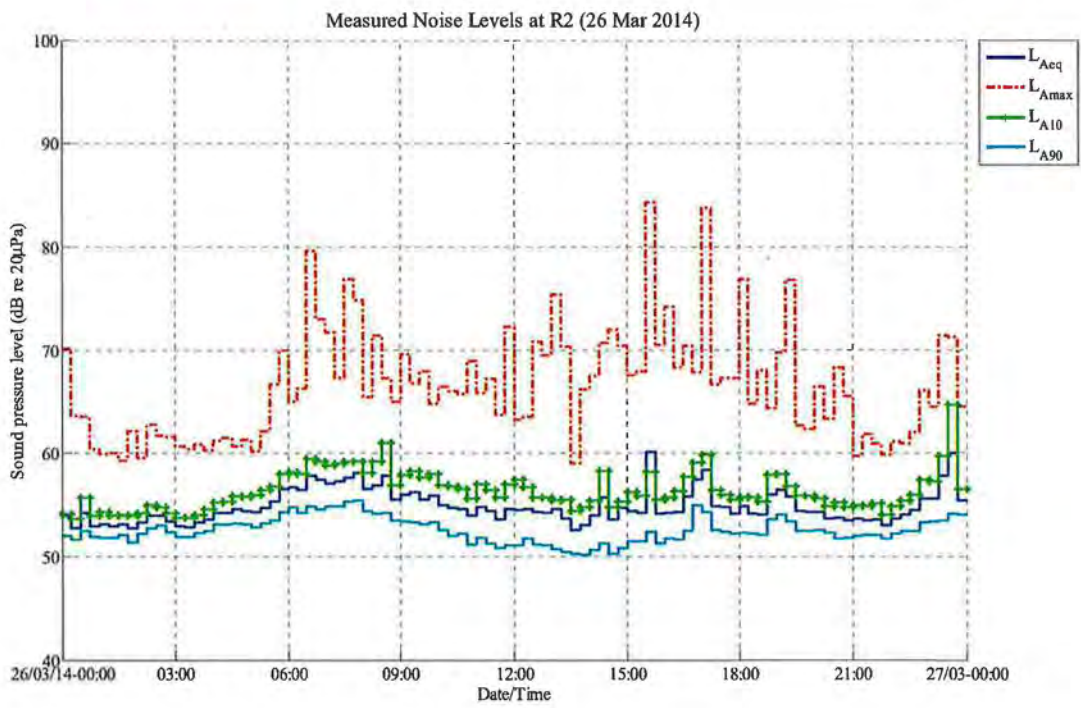


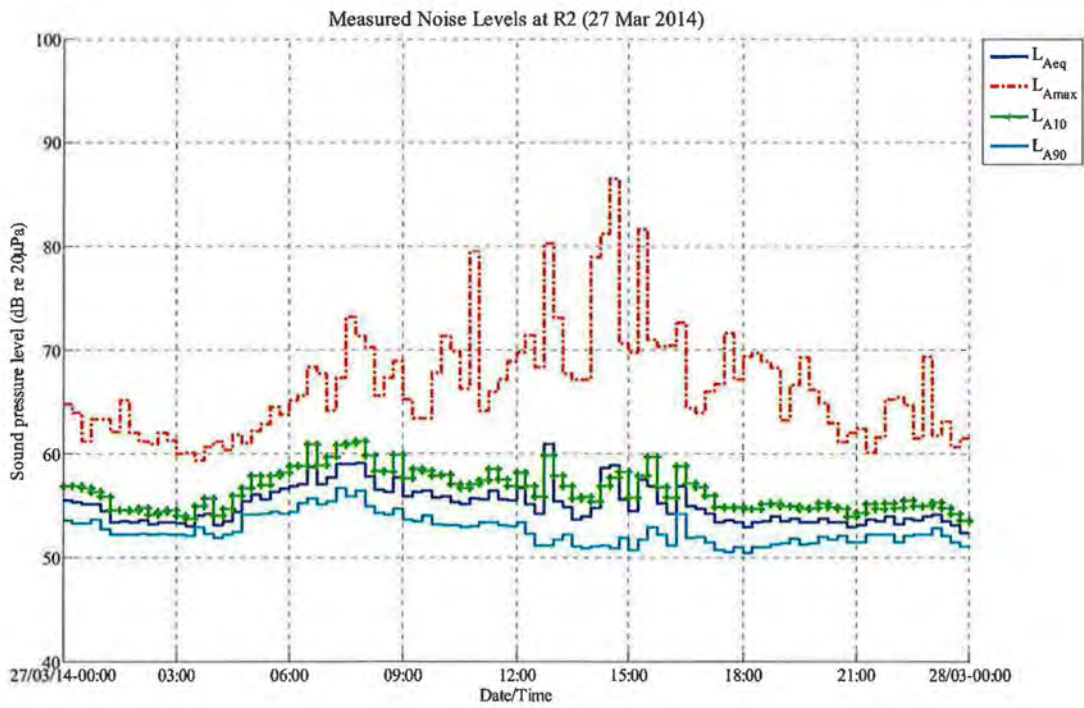


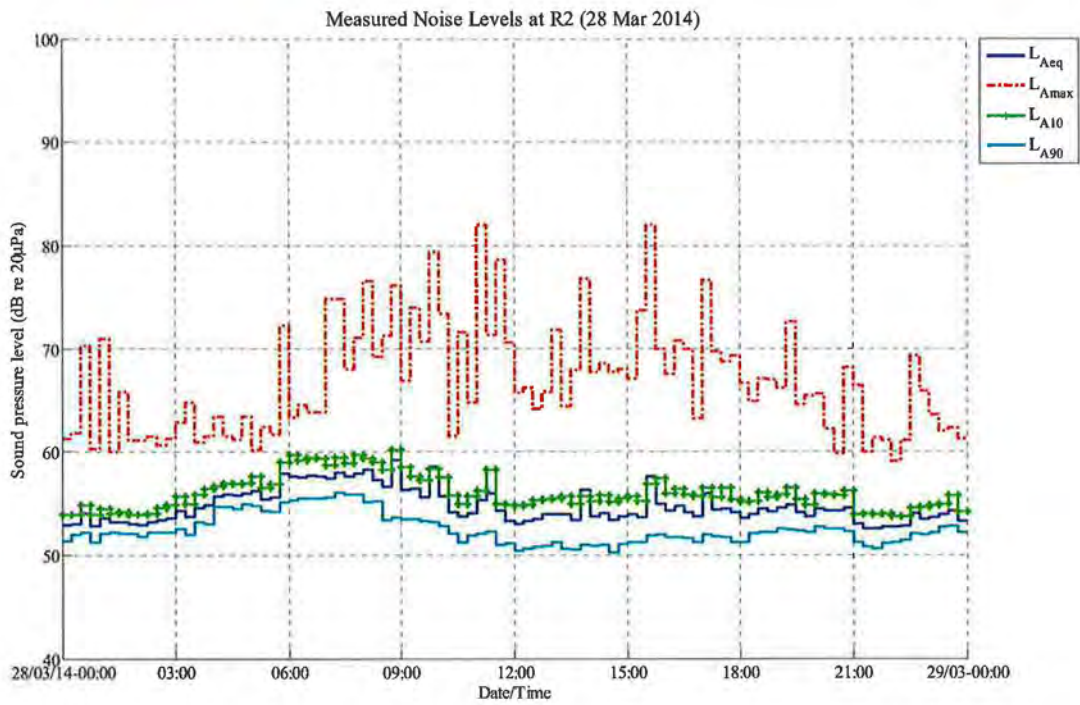
Adelaide Brighton Cement
Annual Noise Survey
April 2014

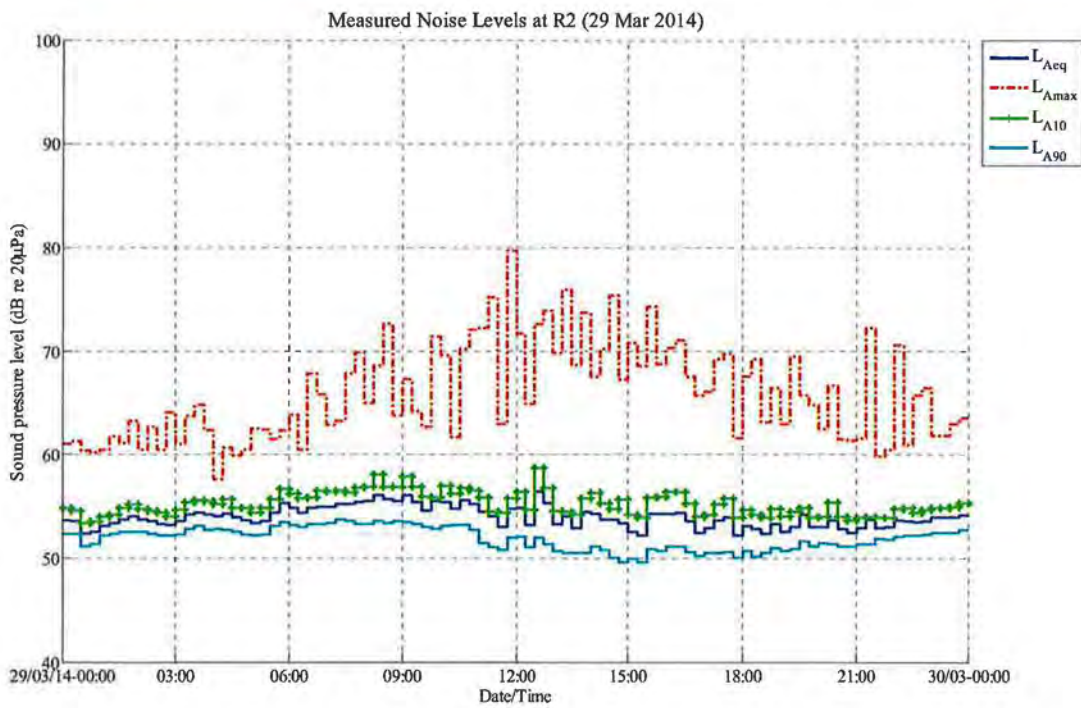
Appendix B : Graphs of Noise Monitoring Results – Fully Operational

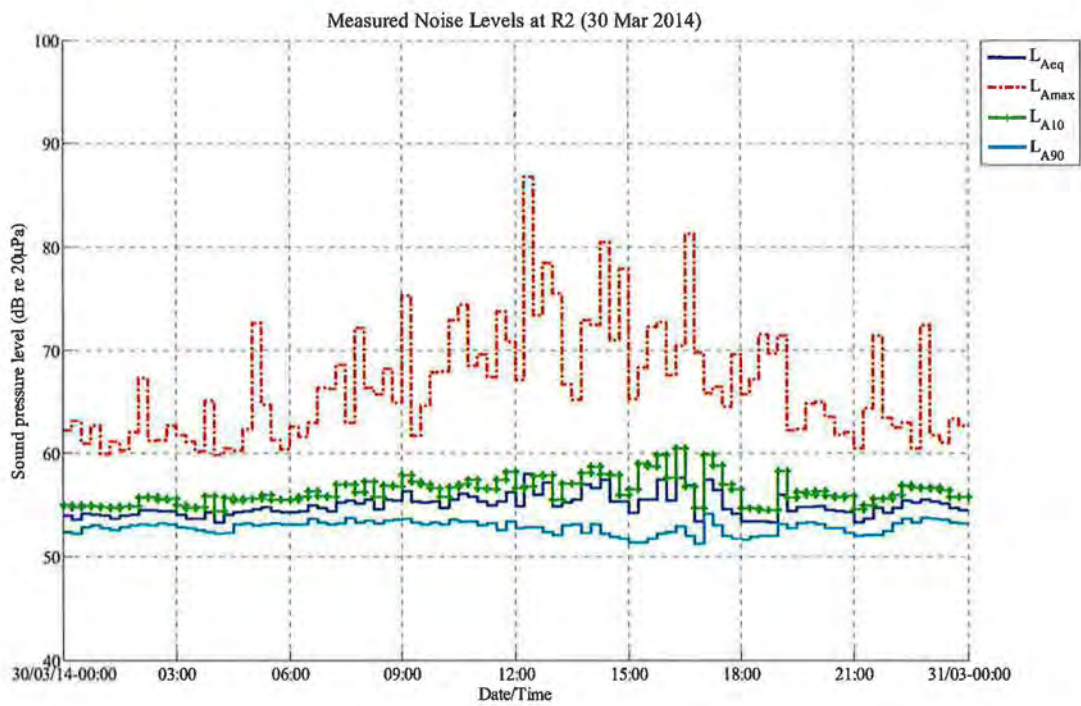


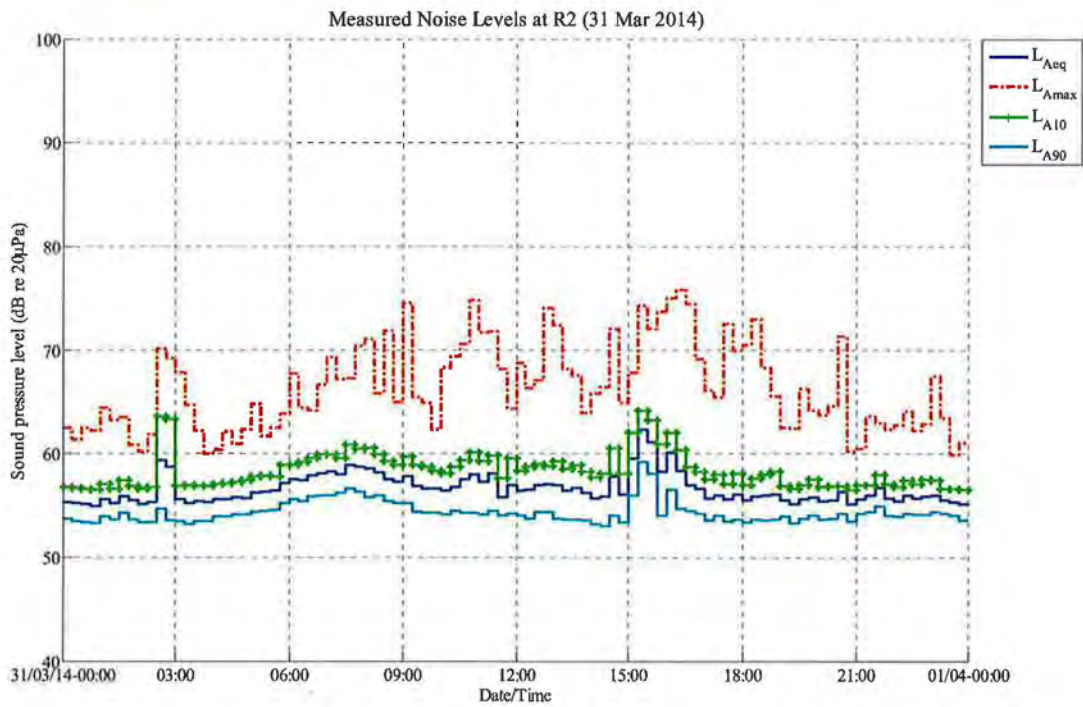


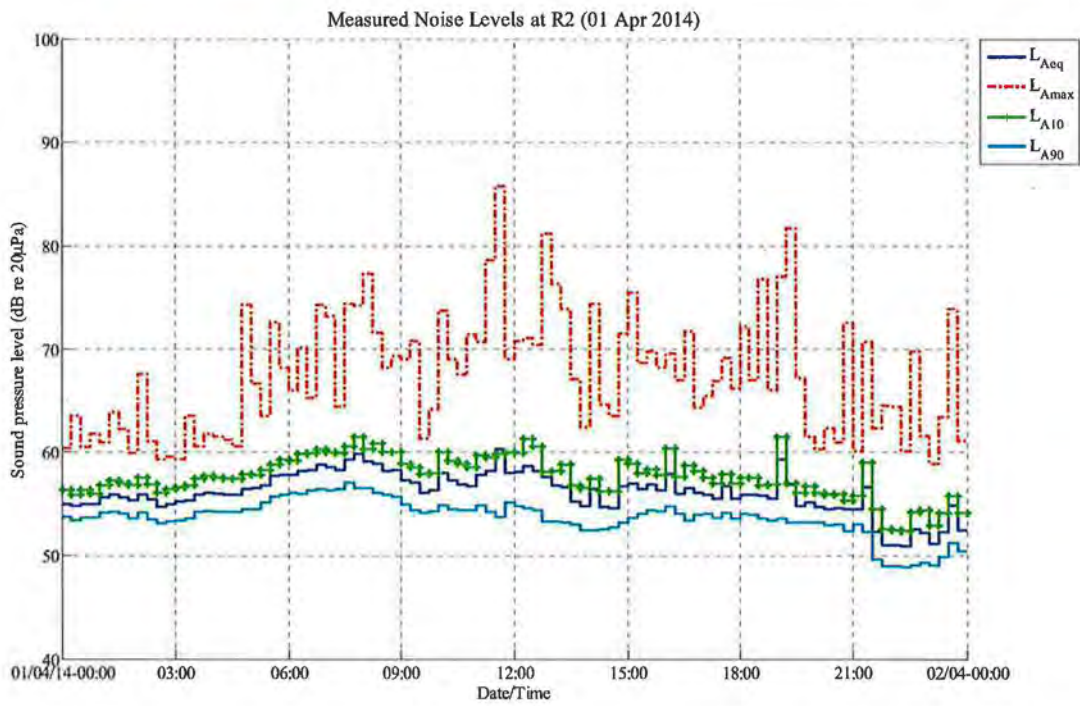


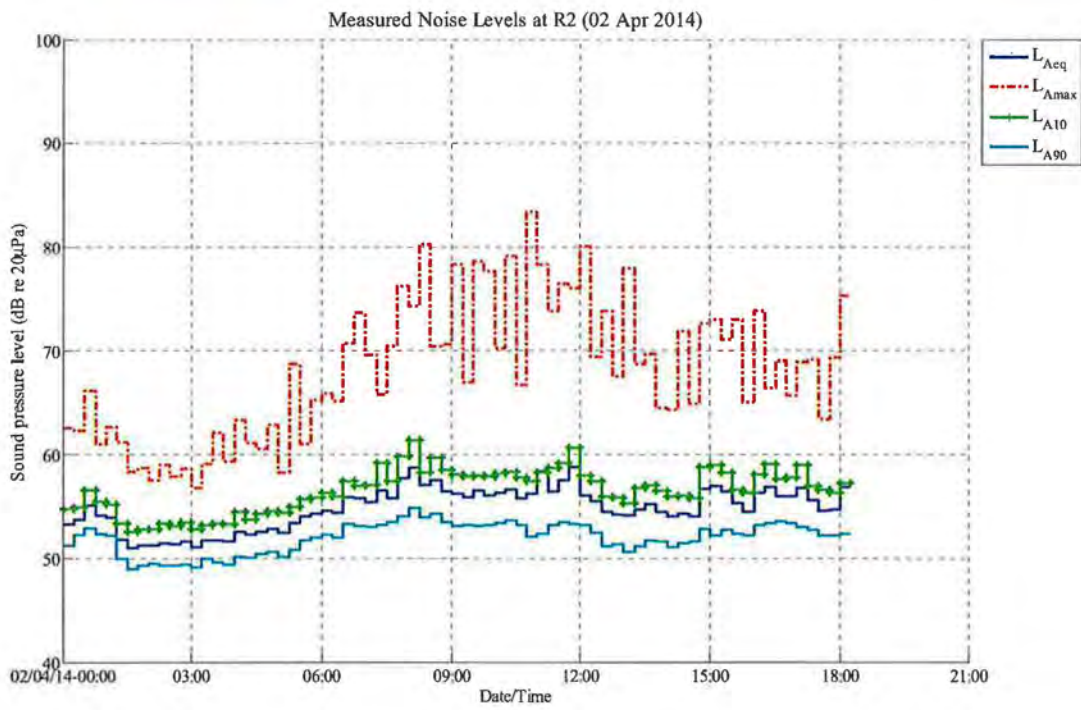














Appendix C : Plant Operational Times

Woodchips Weigh Feeder			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
17/03/2014 0:00	25/03/2014 15:20	8:15:20	-
25/03/2014 15:40	25/03/2014 17:30	0:01:50	0:00:20
28/03/2014 8:10	28/03/2014 21:50	0:13:40	2:14:40
29/03/2014 17:40	30/03/2014 15:30	0:21:50	0:19:50
31/03/2014 6:30	31/03/2014 8:30	0:02:00	0:15:00
1/04/2014 0:00			0:15:30

Raw Mill 4A			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
17/03/2014 0:00	24/03/2014 3:00	7:03:00	-
24/03/2014 3:50	24/03/2014 6:00	0:02:10	0:00:50
24/03/2014 18:10	24/03/2014 20:40	0:02:30	0:12:10
25/03/2014 14:20	25/03/2014 14:50	0:00:30	0:17:40
26/03/2014 17:20	26/03/2014 19:40	0:02:20	1:02:30
28/03/2014 8:10	28/03/2014 10:10	0:02:00	1:12:30
28/03/2014 14:10	28/03/2014 15:20	0:01:10	0:04:00
29/03/2014 17:50	30/03/2014 5:00	0:11:10	1:02:30
1/04/2014 0:00			1:19:00

Raw Mill 4B			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
17/03/2014 0:00	25/03/2014 16:00	8:16:00	-
25/03/2014 21:40	26/03/2014 0:10	0:02:30	0:05:40
26/03/2014 10:50	26/03/2014 13:00	0:02:10	0:10:40
26/03/2014 17:20	26/03/2014 17:50	0:00:30	0:04:20
28/03/2014 8:10	28/03/2014 21:30	0:13:20	1:14:20
29/03/2014 17:30	30/03/2014 15:00	0:21:30	0:20:00
1/04/2014 0:00			1:09:00

Kiln			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
17/03/2014 0:00	23/03/2014 23:00	6:23:00	-
24/03/2014 18:10	24/03/2014 19:20	0:01:10	0:19:10
28/03/2014 8:10	28/03/2014 9:10	0:01:00	3:12:50
28/03/2014 14:10	28/03/2014 14:50	0:00:40	0:05:00
29/03/2014 18:00	30/03/2014 3:50	0:09:50	1:03:10
1/04/2014 0:00			1:20:10

12 May 2014



Calcliner Feedrate			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
17/03/2014 0:00	20/03/2014 9:50	3:09:50	-
20/03/2014 10:10	23/03/2014 7:30	2:21:20	0:00:20
23/03/2014 12:50	23/03/2014 14:30	0:01:40	0:05:20
23/03/2014 19:20	24/03/2014 16:30	0:21:10	0:04:50
24/03/2014 18:50	25/03/2014 2:10	0:07:20	0:02:20
25/03/2014 4:30	25/03/2014 10:00	0:05:30	0:02:20
28/03/2014 8:50	28/03/2014 11:40	0:02:50	2:22:50
28/03/2014 14:10	28/03/2014 19:40	0:05:30	0:02:30
30/03/2014 0:30	30/03/2014 12:30	0:12:00	1:04:50
1/04/2014 0:00			1:11:30

CM1			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
17/03/2014 0:00	18/03/2014 9:30	1:09:30	-
19/03/2014 5:40	19/03/2014 8:30	0:02:50	0:20:10
20/03/2014 14:40	20/03/2014 17:10	0:02:30	1:06:10
20/03/2014 21:50	23/03/2014 11:00	2:13:10	0:04:40
24/03/2014 5:00	25/03/2014 9:10	1:04:10	0:18:00
25/03/2014 17:30	26/03/2014 5:30	0:12:00	0:08:20
26/03/2014 14:50	28/03/2014 16:50	2:02:00	0:09:20
28/03/2014 17:20	30/03/2014 10:20	1:17:00	0:00:30
30/03/2014 15:20	30/03/2014 15:30	0:00:10	0:05:00
30/03/2014 17:20	31/03/2014 0:10	0:06:50	0:01:50
31/03/2014 5:20	31/03/2014 5:40	0:00:20	0:05:10
31/03/2014 11:00	31/03/2014 13:30	0:02:30	0:05:20
31/03/2014 14:50	31/03/2014 17:10	0:02:20	0:01:20
31/03/2014 17:40	31/03/2014 19:30	0:01:50	0:00:30
31/03/2014 20:30			0:01:00

CM6			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
17/03/2014 0:50	17/03/2014 1:00	0:00:10	-
17/03/2014 12:10	17/03/2014 15:30	0:03:20	0:11:10
18/03/2014 11:00	18/03/2014 12:00	0:01:00	0:19:30
22/03/2014 10:20	22/03/2014 11:10	0:00:50	3:22:20
23/03/2014 4:40	23/03/2014 4:50	0:00:10	0:17:30
25/03/2014 7:10	25/03/2014 7:40	0:00:30	2:02:20
25/03/2014 12:30	25/03/2014 12:50	0:00:20	0:04:50



CM6			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
25/03/2014 14:00	25/03/2014 21:00	0:07:00	0:01:10
26/03/2014 6:50	26/03/2014 7:00	0:00:10	0:09:50
26/03/2014 12:10	26/03/2014 13:50	0:01:40	0:05:10
27/03/2014 6:20	27/03/2014 8:20	0:02:00	0:16:30
27/03/2014 10:20	27/03/2014 19:30	0:09:10	0:02:00
27/03/2014 23:20	28/03/2014 1:50	0:02:30	0:03:50
28/03/2014 2:20	28/03/2014 3:30	0:01:10	0:00:30
28/03/2014 6:50	28/03/2014 8:20	0:01:30	0:03:20
31/03/2014 7:50	31/03/2014 19:00	0:11:10	2:23:30
1/04/2014 0:00			0:05:00

CM7			
Off From	On From	Off Duration D:HH:MM	On Duration D:HH:MM
18/03/2014 5:10	18/03/2014 5:40	0:00:30	-
18/03/2014 7:20	18/03/2014 7:50	0:00:30	0:01:40
18/03/2014 8:30	20/03/2014 13:50	2:05:20	0:00:40
20/03/2014 16:10	20/03/2014 20:00	0:03:50	0:02:20
21/03/2014 6:00	21/03/2014 6:30	0:00:30	0:10:00
21/03/2014 11:40	21/03/2014 12:10	0:00:30	0:05:10
22/03/2014 14:00	22/03/2014 14:20	0:00:20	1:01:50
23/03/2014 10:30	24/03/2014 4:00	0:17:30	0:20:10
25/03/2014 9:00	25/03/2014 17:10	0:08:10	1:05:00
26/03/2014 5:10	26/03/2014 13:50	0:08:40	0:12:00
27/03/2014 18:20	27/03/2014 19:40	0:01:20	1:04:30
28/03/2014 2:30	28/03/2014 4:00	0:01:30	0:06:50
28/03/2014 11:10	28/03/2014 12:00	0:00:50	0:07:10
28/03/2014 16:00	28/03/2014 22:30	0:06:30	0:04:00
28/03/2014 23:30	29/03/2014 2:30	0:03:00	0:01:00
29/03/2014 4:00	29/03/2014 5:40	0:01:40	0:01:30
29/03/2014 7:20	29/03/2014 10:40	0:03:20	0:01:40
29/03/2014 17:50	29/03/2014 18:30	0:00:40	0:07:10
30/03/2014 3:30	30/03/2014 5:30	0:02:00	0:09:00
30/03/2014 7:10	30/03/2014 9:00	0:01:50	0:01:40
30/03/2014 10:40	30/03/2014 11:20	0:00:40	0:01:40
31/03/2014 0:20	31/03/2014 3:10	0:02:50	0:13:00
1/04/2014 0:00			0:20:50

Appendix D Bureau of Meteorology Data

Figure D-1: Wind Rose at Outer Harbor from April 2009 – April 2013

Outer Harbor Wind Rose April 2009 - April 2013

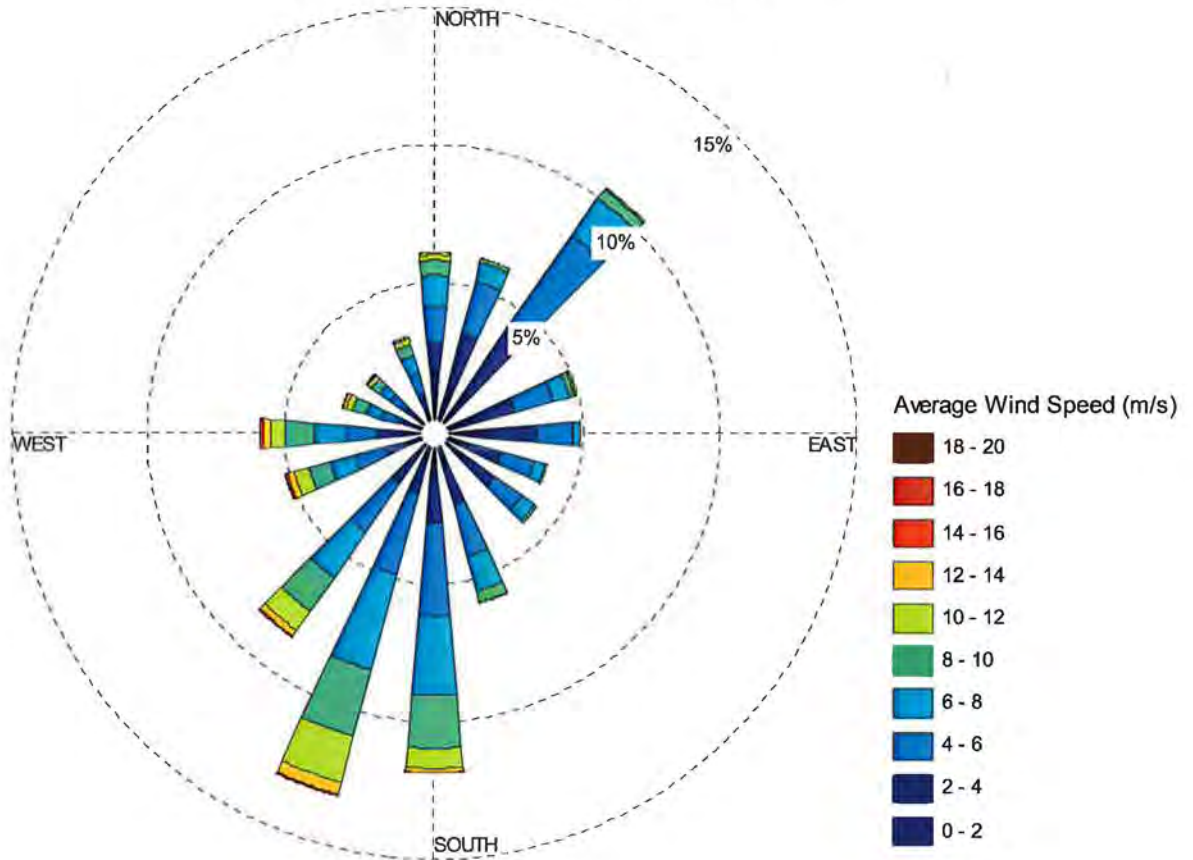




Table D-1: BOM Weather Data For Duration of Survey

Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
18/03/2014 0:30	22.5	2.5	3.1	26/03/2014 8:00	0	0.0	0.6
18/03/2014 1:00	0	2.5	2.5	26/03/2014 8:30	135	1.1	1.9
18/03/2014 1:30	0	2.5	2.5	26/03/2014 9:00	135	1.1	1.7
18/03/2014 2:00	0	1.9	2.5	26/03/2014 9:30	135	1.7	1.7
18/03/2014 2:30	337.5	2.5	2.5	26/03/2014 10:00	135	0.6	1.1
18/03/2014 3:00	0	2.5	2.5	26/03/2014 10:30	270	0.6	1.1
18/03/2014 3:30	22.5	2.5	3.1	26/03/2014 11:00	270	1.9	2.5
18/03/2014 4:00	0	1.9	2.5	26/03/2014 11:30	247.5	3.1	3.6
18/03/2014 4:30	0	1.9	3.6	26/03/2014 12:00	247.5	3.1	3.6
18/03/2014 5:00	0	2.5	3.1	26/03/2014 12:30	247.5	3.6	4.2
18/03/2014 5:30	0	2.5	3.1	26/03/2014 13:00	247.5	4.2	4.7
18/03/2014 6:00	0	2.5	3.1	26/03/2014 13:30	247.5	4.7	5.6
18/03/2014 6:30	270	1.7	2.5	26/03/2014 14:00	247.5	5.6	6.7
18/03/2014 7:00	0	1.9	3.1	26/03/2014 14:30	225	6.1	7.2
18/03/2014 7:30	0	2.5	3.1	26/03/2014 15:00	225	6.1	7.2
18/03/2014 8:00	337.5	2.5	3.1	26/03/2014 15:30	202.5	6.7	8.3
18/03/2014 8:30	247.5	1.7	1.9	26/03/2014 16:00	202.5	7.2	8.9
18/03/2014 9:00	315	1.1	1.9	26/03/2014 16:30	202.5	7.2	8.3
18/03/2014 9:30	315	1.1	1.9	26/03/2014 17:00	202.5	7.2	8.3
18/03/2014 10:00	45	1.1	1.9	26/03/2014 17:21	157.5	10.3	14.4
18/03/2014 10:30	45	0.6	1.1	26/03/2014 17:22	157.5	11.9	28.9
18/03/2014 11:00	22.5	0.6	1.1	26/03/2014 17:23	112.5	17.5	28.9
18/03/2014 11:30	202.5	2.5	3.6	26/03/2014 17:25	157.5	8.9	11.9
18/03/2014 12:00	247.5	3.6	4.2	26/03/2014 17:30	180	5.3	7.8
18/03/2014 12:30	225	2.5	3.6	26/03/2014 18:00	270	2.5	3.1
18/03/2014 13:00	225	3.6	4.2	26/03/2014 18:30	202.5	3.1	3.6
18/03/2014 13:30	202.5	2.5	3.6	26/03/2014 19:00	225	3.1	4.2
18/03/2014 14:00	180	1.7	1.9	26/03/2014 19:15	225	9.2	10.8
18/03/2014 14:30	180	0.6	1.1	26/03/2014 19:30	180	3.1	5.6
18/03/2014 15:00	180	1.9	1.9	26/03/2014 20:00	247.5	2.5	3.1
18/03/2014 15:30	180	3.1	3.6	26/03/2014 20:30	157.5	3.6	4.7
18/03/2014 16:00	202.5	4.2	4.7	26/03/2014 21:00	157.5	3.1	4.2
18/03/2014 16:30	180	4.7	5.3	26/03/2014 21:30	157.5	2.5	3.1
18/03/2014 17:00	202.5	5.3	5.3	26/03/2014 22:00	135	1.7	1.9
18/03/2014 17:30	202.5	5.3	5.6	26/03/2014 22:30	135	1.7	1.9
18/03/2014 18:00	202.5	5.3	6.1	26/03/2014 23:00	90	5.6	7.2



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
18/03/2014 18:30	202.5	4.2	5.3	26/03/2014 23:30	90	5.3	6.1
18/03/2014 19:00	202.5	4.7	5.3	27/03/2014 0:00	67.5	5.3	6.7
18/03/2014 19:30	202.5	4.7	5.3	27/03/2014 0:30	67.5	6.1	7.2
18/03/2014 20:00	180	4.7	5.6	27/03/2014 1:00	112.5	5.6	7.2
18/03/2014 20:30	202.5	5.3	6.1	27/03/2014 1:30	112.5	5.3	6.1
18/03/2014 21:00	202.5	5.3	5.6	27/03/2014 2:00	67.5	2.5	3.6
18/03/2014 21:30	202.5	5.3	5.6	27/03/2014 2:30	0	1.7	2.5
18/03/2014 22:00	202.5	4.2	5.3	27/03/2014 3:00	247.5	1.1	1.1
18/03/2014 22:30	180	4.2	4.7	27/03/2014 3:30	247.5	1.1	1.1
18/03/2014 23:00	180	3.6	4.7	27/03/2014 4:00	225	1.1	1.7
18/03/2014 23:30	157.5	5.3	5.6	27/03/2014 4:30	180	1.7	2.5
19/03/2014 0:00	112.5	4.7	5.6	27/03/2014 5:00	180	2.5	2.5
19/03/2014 0:30	112.5	4.2	4.7	27/03/2014 5:30	135	1.7	1.9
19/03/2014 1:00	112.5	3.6	4.2	27/03/2014 6:00	112.5	1.7	1.9
19/03/2014 1:30	90	1.7	2.5	27/03/2014 6:30	112.5	1.1	1.1
19/03/2014 2:00	157.5	1.9	3.1	27/03/2014 7:00	45	1.1	1.7
19/03/2014 2:30	135	2.5	3.1	27/03/2014 7:30	45	1.1	1.9
19/03/2014 3:00	90	1.9	3.1	27/03/2014 8:00	337.5	0.6	1.1
19/03/2014 3:30	90	1.7	2.5	27/03/2014 8:30	90	1.7	1.9
19/03/2014 4:00	90	1.1	1.9	27/03/2014 9:00	67.5	1.9	3.1
19/03/2014 4:30	67.5	1.7	2.5	27/03/2014 9:30	45	1.9	2.5
19/03/2014 5:00	90	1.7	1.9	27/03/2014 10:00	67.5	1.9	2.5
19/03/2014 5:30	45	2.5	3.1	27/03/2014 10:30	45	1.7	1.9
19/03/2014 6:00	67.5	2.5	3.1	27/03/2014 11:00	0	0.0	0.6
19/03/2014 6:30	45	2.5	3.1	27/03/2014 11:30	135	0.6	1.7
19/03/2014 7:00	45	3.1	3.6	27/03/2014 12:00	135	0.6	1.7
19/03/2014 7:30	45	2.5	3.6	27/03/2014 12:30	0	0.6	1.1
19/03/2014 8:00	67.5	4.2	5.3	27/03/2014 13:00	22.5	0.6	1.1
19/03/2014 8:30	45	3.6	4.7	27/03/2014 13:30	180	1.9	2.5
19/03/2014 9:00	67.5	4.7	6.1	27/03/2014 14:00	202.5	3.1	3.6
19/03/2014 9:30	67.5	4.7	5.6	27/03/2014 14:30	202.5	4.7	5.3
19/03/2014 10:00	90	5.3	6.1	27/03/2014 15:00	202.5	4.2	5.3
19/03/2014 10:30	90	4.2	5.3	27/03/2014 15:30	202.5	4.7	5.3
19/03/2014 11:00	67.5	4.7	5.6	27/03/2014 16:00	225	5.6	6.1
19/03/2014 11:30	67.5	3.1	4.2	27/03/2014 16:30	225	5.3	5.6
19/03/2014 12:00	67.5	1.7	2.5	27/03/2014 17:00	225	4.7	5.3
19/03/2014 12:30	180	1.7	2.5	27/03/2014 17:30	225	4.7	5.6



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
19/03/2014 13:00	135	0.6	1.1	27/03/2014 18:00	247.5	4.2	5.3
19/03/2014 13:30	0	0.0	0.6	27/03/2014 18:30	270	3.6	4.2
19/03/2014 14:00	202.5	5.3	6.1	27/03/2014 19:00	202.5	4.2	5.3
19/03/2014 14:30	202.5	5.3	6.1	27/03/2014 19:30	202.5	3.6	4.2
19/03/2014 15:00	202.5	6.1	6.7	27/03/2014 20:00	180	3.1	3.1
19/03/2014 15:30	202.5	6.1	7.2	27/03/2014 20:30	112.5	1.1	1.1
19/03/2014 16:00	202.5	7.2	8.3	27/03/2014 21:00	225	1.1	1.1
19/03/2014 16:30	202.5	7.2	8.3	27/03/2014 21:30	0	0.0	0.6
19/03/2014 17:00	202.5	7.8	8.9	27/03/2014 22:00	270	1.7	1.7
19/03/2014 17:30	180	8.3	9.2	27/03/2014 22:30	292.5	1.1	1.1
19/03/2014 18:00	180	8.9	9.7	27/03/2014 23:00	67.5	0.6	1.1
19/03/2014 18:30	180	8.9	9.7	27/03/2014 23:30	157.5	1.1	1.9
19/03/2014 19:00	202.5	8.3	9.7	28/03/2014 0:00	180	3.1	3.6
19/03/2014 19:30	180	8.3	9.2	28/03/2014 0:30	180	2.5	3.1
19/03/2014 20:00	180	7.8	8.9	28/03/2014 1:00	202.5	3.1	3.6
19/03/2014 20:30	180	7.8	8.9	28/03/2014 1:30	202.5	2.5	3.1
19/03/2014 21:00	180	6.1	7.2	28/03/2014 2:00	202.5	1.9	1.9
19/03/2014 21:30	157.5	4.2	4.7	28/03/2014 2:30	180	3.6	4.2
19/03/2014 22:00	112.5	3.1	3.6	28/03/2014 3:00	157.5	2.5	3.1
19/03/2014 22:30	90	3.1	4.2	28/03/2014 3:30	135	2.5	2.5
19/03/2014 23:00	90	4.2	5.3	28/03/2014 4:00	135	1.9	1.9
19/03/2014 23:30	45	1.9	2.5	28/03/2014 4:30	45	3.1	3.6
20/03/2014 0:00	45	1.9	2.5	28/03/2014 5:00	22.5	3.1	3.6
20/03/2014 0:30	67.5	1.7	1.9	28/03/2014 5:30	22.5	3.1	3.6
20/03/2014 1:00	67.5	2.5	2.5	28/03/2014 6:00	337.5	1.7	1.9
20/03/2014 1:30	90	1.9	2.5	28/03/2014 6:30	22.5	2.5	3.6
20/03/2014 2:00	90	1.7	1.9	28/03/2014 7:00	0	1.7	2.5
20/03/2014 2:30	202.5	1.1	1.7	28/03/2014 7:30	45	1.9	3.1
20/03/2014 3:00	202.5	2.5	3.1	28/03/2014 8:00	45	2.5	2.5
20/03/2014 3:30	180	2.5	3.1	28/03/2014 8:30	22.5	1.7	1.9
20/03/2014 4:00	180	2.5	3.1	28/03/2014 9:00	45	1.7	2.5
20/03/2014 4:30	112.5	1.9	2.5	28/03/2014 9:30	45	2.5	3.1
20/03/2014 5:00	67.5	2.5	2.5	28/03/2014 10:00	45	2.5	3.1
20/03/2014 5:30	0	3.1	3.6	28/03/2014 10:30	0	0.6	1.1
20/03/2014 6:00	22.5	3.6	4.2	28/03/2014 11:00	270	1.1	1.7
20/03/2014 6:30	22.5	3.6	4.2	28/03/2014 11:30	270	1.7	1.9
20/03/2014 7:00	45	4.7	5.6	28/03/2014 12:00	247.5	2.5	3.1



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
20/03/2014 7:30	22.5	5.3	6.1	28/03/2014 12:30	247.5	3.6	4.2
20/03/2014 8:00	45	4.7	5.3	28/03/2014 13:00	247.5	3.1	3.6
20/03/2014 8:30	45	5.3	6.1	28/03/2014 13:30	247.5	4.7	5.6
20/03/2014 9:00	45	5.3	6.1	28/03/2014 14:00	225	5.6	6.1
20/03/2014 9:30	45	3.6	4.7	28/03/2014 14:30	225	6.1	7.2
20/03/2014 10:00	45	2.5	3.6	28/03/2014 15:00	225	7.2	8.3
20/03/2014 10:30	45	1.1	1.7	28/03/2014 15:30	202.5	7.8	9.2
20/03/2014 11:00	157.5	0.6	0.6	28/03/2014 16:00	202.5	7.8	8.9
20/03/2014 11:30	225	1.9	2.5	28/03/2014 16:30	202.5	7.8	8.9
20/03/2014 12:00	180	1.1	1.1	28/03/2014 17:00	202.5	7.8	9.2
20/03/2014 12:30	180	1.1	1.7	28/03/2014 17:30	202.5	6.7	8.3
20/03/2014 13:00	180	1.7	1.9	28/03/2014 18:00	202.5	6.7	7.8
20/03/2014 13:30	225	4.2	4.7	28/03/2014 18:30	202.5	5.3	6.1
20/03/2014 14:00	225	4.2	4.7	28/03/2014 19:00	225	3.1	3.6
20/03/2014 14:30	247.5	5.3	5.6	28/03/2014 19:30	202.5	2.5	3.1
20/03/2014 15:00	225	4.7	5.3	28/03/2014 20:00	157.5	1.1	1.7
20/03/2014 15:30	202.5	3.6	3.6	28/03/2014 20:30	202.5	0.6	1.1
20/03/2014 16:00	202.5	4.2	4.7	28/03/2014 21:00	202.5	2.5	4.2
20/03/2014 16:30	180	5.6	6.7	28/03/2014 21:30	202.5	6.1	7.2
20/03/2014 17:00	180	5.6	6.7	28/03/2014 22:00	180	6.7	7.8
20/03/2014 17:30	180	4.7	5.3	28/03/2014 22:30	180	5.6	6.7
20/03/2014 18:00	180	4.2	4.7	28/03/2014 23:00	180	4.2	4.7
20/03/2014 18:30	180	4.2	4.2	28/03/2014 23:30	157.5	3.1	3.1
20/03/2014 19:00	180	3.1	3.6	29/03/2014 0:00	157.5	1.7	1.7
20/03/2014 19:30	180	2.5	3.1	29/03/2014 0:30	90	1.1	1.7
20/03/2014 20:00	157.5	1.9	2.5	29/03/2014 1:00	180	0.6	1.9
20/03/2014 20:30	112.5	1.9	2.5	29/03/2014 1:30	180	1.7	1.9
20/03/2014 21:00	135	1.9	1.9	29/03/2014 2:00	22.5	1.9	3.1
20/03/2014 21:30	135	1.9	1.9	29/03/2014 2:30	0	1.9	3.1
20/03/2014 22:00	112.5	2.5	2.5	29/03/2014 3:00	0	1.9	2.5
20/03/2014 22:30	90	1.7	1.9	29/03/2014 3:30	45	3.1	3.6
20/03/2014 23:00	67.5	2.5	3.1	29/03/2014 4:00	45	4.7	5.3
20/03/2014 23:30	45	1.7	1.9	29/03/2014 4:30	45	3.6	4.2
21/03/2014 0:00	270	1.7	3.1	29/03/2014 5:00	22.5	3.1	4.2
21/03/2014 0:30	270	3.1	3.6	29/03/2014 5:30	22.5	4.2	5.3
21/03/2014 1:00	247.5	3.1	3.6	29/03/2014 6:00	45	4.7	5.6
21/03/2014 1:30	225	4.2	5.6	29/03/2014 6:30	22.5	4.7	5.3



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
21/03/2014 2:00	202.5	5.6	7.2	29/03/2014 7:00	45	5.6	6.7
21/03/2014 2:30	202.5	6.1	7.2	29/03/2014 7:30	45	5.6	6.7
21/03/2014 3:00	225	5.6	6.7	29/03/2014 8:00	45	6.7	7.8
21/03/2014 3:30	225	3.1	3.6	29/03/2014 8:30	45	5.6	6.7
21/03/2014 4:00	247.5	6.1	6.7	29/03/2014 9:00	45	6.1	7.2
21/03/2014 4:30	225	3.6	5.6	29/03/2014 9:30	45	4.7	5.6
21/03/2014 5:00	202.5	7.8	9.2	29/03/2014 10:00	22.5	2.5	3.1
21/03/2014 5:30	225	11.9	13.9	29/03/2014 10:30	22.5	1.7	1.9
21/03/2014 6:00	202.5	11.9	13.9	29/03/2014 11:00	0	0.0	0.6
21/03/2014 6:30	202.5	11.9	14.4	29/03/2014 11:30	292.5	2.5	3.6
21/03/2014 7:00	202.5	12.2	14.4	29/03/2014 12:00	247.5	3.1	4.2
21/03/2014 7:30	202.5	12.2	14.4	29/03/2014 12:30	247.5	2.5	3.1
21/03/2014 8:00	202.5	12.2	15.6	29/03/2014 13:00	247.5	2.5	3.1
21/03/2014 8:30	202.5	15.6	18.6	29/03/2014 13:30	247.5	3.6	4.2
21/03/2014 9:00	180	14.4	18.1	29/03/2014 14:00	247.5	3.6	3.6
21/03/2014 9:30	180	15.0	17.5	29/03/2014 14:30	247.5	3.6	4.2
21/03/2014 10:00	180	13.9	16.4	29/03/2014 15:00	247.5	5.3	5.6
21/03/2014 10:30	180	12.8	15.8	29/03/2014 15:30	225	5.6	6.1
21/03/2014 11:00	180	11.9	13.9	29/03/2014 16:00	202.5	6.1	7.2
21/03/2014 11:30	180	11.9	15.0	29/03/2014 16:30	202.5	5.6	6.7
21/03/2014 12:00	180	11.9	13.9	29/03/2014 17:00	202.5	7.2	7.8
21/03/2014 12:30	180	11.4	13.9	29/03/2014 17:30	202.5	6.7	7.2
21/03/2014 13:00	180	10.8	12.8	29/03/2014 18:00	202.5	6.7	8.3
21/03/2014 13:30	180	11.9	14.4	29/03/2014 18:30	180	6.7	7.8
21/03/2014 14:00	202.5	12.2	14.4	29/03/2014 19:00	180	6.1	7.2
21/03/2014 14:30	180	12.8	15.0	29/03/2014 19:30	180	6.1	6.7
21/03/2014 15:00	180	11.9	13.3	29/03/2014 20:00	180	5.6	6.1
21/03/2014 15:30	180	11.4	14.4	29/03/2014 20:30	180	4.7	5.3
21/03/2014 16:00	180	11.9	13.3	29/03/2014 21:00	202.5	5.3	5.6
21/03/2014 16:30	180	11.4	12.8	29/03/2014 21:30	202.5	4.2	5.3
21/03/2014 17:00	180	10.3	11.9	29/03/2014 22:00	180	2.5	3.1
21/03/2014 17:30	180	8.9	11.9	29/03/2014 22:30	180	1.9	2.5
21/03/2014 18:00	157.5	7.8	9.7	29/03/2014 23:00	202.5	1.1	1.7
21/03/2014 18:30	157.5	8.9	10.8	29/03/2014 23:30	180	1.9	2.5
21/03/2014 19:00	157.5	9.7	11.9	30/03/2014 0:00	157.5	1.1	1.9
21/03/2014 19:30	157.5	8.9	10.8	30/03/2014 0:30	67.5	1.9	3.1
21/03/2014 20:00	157.5	9.2	11.4	30/03/2014 1:00	22.5	1.7	1.9



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
21/03/2014 20:30	157.5	8.9	11.4	30/03/2014 1:30	0	1.7	1.9
21/03/2014 21:00	157.5	10.8	12.2	30/03/2014 2:00	22.5	1.7	2.5
21/03/2014 21:30	157.5	8.9	11.9	30/03/2014 2:30	45	3.1	3.6
21/03/2014 22:00	157.5	9.2	11.4	30/03/2014 3:00	45	3.1	3.6
21/03/2014 22:30	157.5	8.9	10.8	30/03/2014 3:30	45	2.5	3.6
21/03/2014 23:00	157.5	8.3	9.7	30/03/2014 4:00	67.5	2.5	2.5
21/03/2014 23:30	157.5	7.2	8.9	30/03/2014 4:30	67.5	3.1	3.6
22/03/2014 0:00	157.5	6.7	9.7	30/03/2014 5:00	67.5	3.1	3.6
22/03/2014 0:30	157.5	5.6	7.2	30/03/2014 5:30	67.5	3.1	3.6
22/03/2014 1:00	157.5	6.7	8.3	30/03/2014 6:00	45	3.6	4.2
22/03/2014 1:30	157.5	6.7	9.2	30/03/2014 6:30	67.5	3.1	3.1
22/03/2014 2:00	135	6.7	8.9	30/03/2014 7:00	45	3.1	3.6
22/03/2014 2:30	112.5	7.2	8.9	30/03/2014 7:30	22.5	4.2	4.7
22/03/2014 3:00	135	7.8	9.2	30/03/2014 8:00	45	4.7	5.6
22/03/2014 3:30	135	8.3	10.3	30/03/2014 8:30	45	4.7	6.1
22/03/2014 4:00	135	6.7	9.7	30/03/2014 9:00	45	4.7	5.3
22/03/2014 4:30	112.5	5.6	7.8	30/03/2014 9:30	45	3.6	4.2
22/03/2014 5:00	135	5.3	6.7	30/03/2014 10:00	67.5	3.6	4.7
22/03/2014 5:30	112.5	4.7	6.1	30/03/2014 10:30	45	4.7	5.3
22/03/2014 6:00	112.5	3.6	4.7	30/03/2014 11:00	45	4.2	4.7
22/03/2014 6:30	135	3.6	5.3	30/03/2014 11:30	22.5	1.7	1.9
22/03/2014 7:00	90	4.2	5.3	30/03/2014 12:00	112.5	0.6	0.6
22/03/2014 7:30	112.5	6.1	7.8	30/03/2014 12:30	247.5	2.5	2.5
22/03/2014 8:00	90	5.3	6.1	30/03/2014 13:00	202.5	2.5	2.5
22/03/2014 8:30	90	4.2	5.3	30/03/2014 13:30	180	2.5	3.1
22/03/2014 9:00	90	5.3	6.1	30/03/2014 14:00	180	2.5	3.1
22/03/2014 9:30	45	1.9	3.1	30/03/2014 14:30	180	2.5	3.1
22/03/2014 10:00	90	2.5	4.7	30/03/2014 15:00	180	2.5	2.5
22/03/2014 10:30	112.5	4.7	5.6	30/03/2014 15:30	180	2.5	2.5
22/03/2014 11:00	112.5	3.6	5.6	30/03/2014 16:00	157.5	1.1	1.7
22/03/2014 11:30	112.5	2.5	4.7	30/03/2014 16:30	112.5	1.1	1.1
22/03/2014 12:00	112.5	3.6	5.6	30/03/2014 17:00	135	1.1	1.1
22/03/2014 12:30	90	1.7	4.2	30/03/2014 17:30	157.5	1.1	1.1
22/03/2014 13:00	90	1.7	3.6	30/03/2014 18:00	112.5	1.1	1.7
22/03/2014 13:30	225	4.2	5.3	30/03/2014 18:30	112.5	1.9	2.5
22/03/2014 14:00	247.5	4.7	5.6	30/03/2014 19:00	90	3.1	3.1
22/03/2014 14:30	225	4.7	6.1	30/03/2014 19:30	90	3.6	4.7



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
22/03/2014 15:00	225	6.1	8.3	30/03/2014 20:00	90	3.6	4.2
22/03/2014 15:30	202.5	6.7	8.3	30/03/2014 20:30	90	3.6	4.2
22/03/2014 16:00	225	7.8	8.9	30/03/2014 21:00	90	3.6	4.2
22/03/2014 16:30	225	8.3	10.3	30/03/2014 21:30	90	4.2	4.2
22/03/2014 17:00	225	8.9	9.7	30/03/2014 22:00	67.5	5.6	6.1
22/03/2014 17:30	225	8.3	9.7	30/03/2014 22:30	45	5.3	5.6
22/03/2014 18:00	225	8.9	10.3	30/03/2014 23:00	45	6.1	6.7
22/03/2014 18:30	225	9.7	11.4	30/03/2014 23:30	67.5	6.1	7.8
22/03/2014 19:00	202.5	8.3	9.7	31/03/2014 0:00	45	6.1	7.8
22/03/2014 19:30	180	9.7	10.8	31/03/2014 0:30	45	6.1	6.7
22/03/2014 20:00	180	8.3	10.3	31/03/2014 1:00	45	6.1	7.8
22/03/2014 20:30	180	8.3	9.7	31/03/2014 1:30	45	6.7	7.8
22/03/2014 21:00	180	9.2	11.4	31/03/2014 2:00	45	7.2	8.9
22/03/2014 21:30	180	8.9	9.7	31/03/2014 2:30	45	7.8	8.9
22/03/2014 22:00	157.5	6.7	8.3	31/03/2014 3:00	67.5	6.7	8.3
22/03/2014 22:30	157.5	5.6	6.7	31/03/2014 3:30	45	6.7	8.3
22/03/2014 23:00	157.5	4.7	5.6	31/03/2014 4:00	45	6.1	7.2
22/03/2014 23:30	180	4.7	5.3	31/03/2014 4:30	67.5	5.6	6.7
23/03/2014 0:00	180	5.6	6.7	31/03/2014 5:00	45	5.3	6.7
23/03/2014 0:30	180	7.2	8.9	31/03/2014 5:30	45	5.3	6.1
23/03/2014 1:00	180	7.8	8.9	31/03/2014 6:00	45	4.7	5.3
23/03/2014 1:30	180	7.8	9.2	31/03/2014 6:30	45	3.6	4.7
23/03/2014 2:00	180	7.2	8.3	31/03/2014 7:00	45	3.6	4.7
23/03/2014 2:30	157.5	5.6	6.7	31/03/2014 7:30	45	4.7	5.3
23/03/2014 3:00	157.5	4.2	5.3	31/03/2014 8:00	45	4.7	5.3
23/03/2014 3:30	157.5	3.6	4.2	31/03/2014 8:30	45	3.6	5.3
23/03/2014 4:00	157.5	3.6	4.7	31/03/2014 9:00	45	3.1	4.2
23/03/2014 4:30	135	3.1	4.2	31/03/2014 9:30	45	2.5	3.1
23/03/2014 5:00	157.5	3.1	3.6	31/03/2014 10:00	45	3.6	3.6
23/03/2014 5:30	157.5	3.1	4.2	31/03/2014 10:30	67.5	3.6	4.7
23/03/2014 6:00	180	2.5	4.7	31/03/2014 11:00	45	4.2	4.7
23/03/2014 6:30	157.5	5.3	6.7	31/03/2014 11:30	45	3.1	3.1
23/03/2014 7:00	157.5	5.3	6.7	31/03/2014 12:00	67.5	0.6	1.1
23/03/2014 7:30	157.5	5.3	6.7	31/03/2014 12:30	90	1.7	1.9
23/03/2014 8:00	157.5	5.6	6.7	31/03/2014 13:00	22.5	3.1	4.2
23/03/2014 8:30	135	4.2	5.3	31/03/2014 13:30	0	4.7	5.6
23/03/2014 9:00	180	4.7	5.6	31/03/2014 14:00	337.5	4.2	4.7



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
23/03/2014 9:30	157.5	5.6	7.8	31/03/2014 14:30	0	2.5	3.1
23/03/2014 10:00	180	5.6	7.2	31/03/2014 15:00	0	3.6	4.2
23/03/2014 10:30	157.5	6.1	7.8	31/03/2014 15:30	337.5	3.1	3.6
23/03/2014 11:00	157.5	6.7	9.2	31/03/2014 16:00	45	1.7	1.9
23/03/2014 11:30	157.5	6.1	8.9	31/03/2014 16:30	90	2.5	3.1
23/03/2014 12:00	202.5	7.8	8.9	31/03/2014 17:00	90	3.1	3.6
23/03/2014 12:30	202.5	8.9	10.8	31/03/2014 17:30	112.5	2.5	2.5
23/03/2014 13:00	180	7.8	9.7	31/03/2014 18:00	112.5	2.5	3.1
23/03/2014 13:30	180	7.8	9.2	31/03/2014 18:30	112.5	4.2	4.2
23/03/2014 14:00	180	7.2	9.7	31/03/2014 19:00	112.5	2.5	3.1
23/03/2014 14:30	180	9.2	10.8	31/03/2014 19:30	90	2.5	2.5
23/03/2014 15:00	180	7.8	9.7	31/03/2014 20:00	67.5	3.1	3.6
23/03/2014 15:30	202.5	7.8	9.2	31/03/2014 20:30	67.5	3.6	5.3
23/03/2014 16:00	202.5	8.3	10.8	31/03/2014 21:00	67.5	4.2	4.2
23/03/2014 16:30	202.5	8.3	10.3	31/03/2014 21:30	45	4.7	5.3
23/03/2014 17:00	202.5	8.9	10.8	31/03/2014 22:00	45	4.2	4.7
23/03/2014 17:30	202.5	9.2	11.4	31/03/2014 22:30	45	5.6	6.1
23/03/2014 18:00	202.5	9.7	11.9	31/03/2014 23:00	45	6.7	8.3
23/03/2014 18:30	202.5	9.2	11.4	31/03/2014 23:30	45	6.1	7.2
23/03/2014 19:00	180	8.3	10.3	1/04/2014 0:00	45	5.6	6.7
23/03/2014 19:30	180	8.3	10.8	1/04/2014 0:30	45	5.6	6.1
23/03/2014 20:00	180	6.7	8.9	1/04/2014 1:00	67.5	5.3	6.1
23/03/2014 20:30	157.5	5.6	7.2	1/04/2014 1:30	45	6.1	7.2
23/03/2014 21:00	157.5	6.1	7.2	1/04/2014 2:00	45	5.3	5.6
23/03/2014 21:30	180	6.7	8.3	1/04/2014 2:30	22.5	4.2	4.7
23/03/2014 22:00	180	7.2	8.9	1/04/2014 3:00	45	3.6	4.2
23/03/2014 22:30	157.5	6.1	7.8	1/04/2014 3:30	45	3.6	4.2
23/03/2014 23:00	157.5	5.6	7.2	1/04/2014 4:00	45	3.1	3.6
23/03/2014 23:30	157.5	4.7	5.6	1/04/2014 4:30	45	3.1	3.6
24/03/2014 0:00	157.5	4.2	5.3	1/04/2014 5:00	45	2.5	3.6
24/03/2014 0:30	157.5	4.2	5.3	1/04/2014 5:30	22.5	1.9	2.5
24/03/2014 1:00	135	3.6	4.7	1/04/2014 6:00	45	2.5	2.5
24/03/2014 1:30	135	3.6	4.2	1/04/2014 6:30	45	1.9	2.5
24/03/2014 2:00	135	4.2	4.7	1/04/2014 7:00	45	1.9	3.1
24/03/2014 2:30	90	2.5	4.2	1/04/2014 7:30	45	2.5	3.1
24/03/2014 3:00	22.5	3.1	3.6	1/04/2014 8:00	45	1.9	3.1
24/03/2014 3:30	22.5	2.5	3.1	1/04/2014 8:30	45	1.9	2.5



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
24/03/2014 4:00	22.5	2.5	3.1	1/04/2014 9:00	45	2.5	3.1
24/03/2014 4:30	45	2.5	3.6	1/04/2014 9:30	45	1.7	1.9
24/03/2014 5:00	22.5	3.1	3.6	1/04/2014 10:00	22.5	2.5	2.5
24/03/2014 5:30	337.5	1.7	3.1	1/04/2014 10:30	0	4.7	6.7
24/03/2014 6:00	0	2.5	3.1	1/04/2014 11:00	337.5	5.3	6.7
24/03/2014 6:30	22.5	2.5	4.2	1/04/2014 11:30	0	8.3	9.7
24/03/2014 7:00	22.5	4.2	4.7	1/04/2014 12:00	0	9.7	11.4
24/03/2014 7:30	0	4.2	4.7	1/04/2014 12:30	315	6.7	7.8
24/03/2014 8:00	45	3.1	3.6	1/04/2014 13:00	315	7.2	8.3
24/03/2014 8:30	45	3.1	4.2	1/04/2014 13:30	315	8.3	9.2
24/03/2014 9:00	0	4.2	4.7	1/04/2014 14:00	315	8.3	9.7
24/03/2014 9:30	0	1.9	3.1	1/04/2014 14:30	315	7.2	8.9
24/03/2014 10:00	22.5	1.7	3.1	1/04/2014 15:00	337.5	7.2	9.2
24/03/2014 10:30	45	1.9	3.1	1/04/2014 15:30	315	7.8	8.9
24/03/2014 11:00	90	1.1	1.7	1/04/2014 16:00	315	6.7	8.3
24/03/2014 11:30	0	0.0	1.1	1/04/2014 16:30	315	7.2	7.8
24/03/2014 12:00	0	0.0	0.6	1/04/2014 17:00	315	7.2	8.3
24/03/2014 12:30	292.5	1.7	2.5	1/04/2014 17:30	337.5	6.7	7.2
24/03/2014 13:00	247.5	3.1	4.2	1/04/2014 18:00	337.5	5.6	6.7
24/03/2014 13:30	202.5	5.3	6.1	1/04/2014 18:30	337.5	6.7	7.8
24/03/2014 14:00	202.5	6.7	8.3	1/04/2014 19:00	0	5.6	6.1
24/03/2014 14:30	202.5	7.8	9.7	1/04/2014 19:30	0	5.6	6.1
24/03/2014 15:00	202.5	8.9	10.3	1/04/2014 20:00	22.5	5.6	6.1
24/03/2014 15:30	202.5	9.7	11.4	1/04/2014 20:30	22.5	5.6	6.1
24/03/2014 16:00	202.5	9.7	11.4	1/04/2014 21:00	22.5	5.3	5.6
24/03/2014 16:30	202.5	9.2	10.8	1/04/2014 21:30	315	5.3	6.1
24/03/2014 17:00	202.5	8.9	10.8	1/04/2014 21:46	270	8.3	12.8
24/03/2014 17:30	202.5	9.2	10.8	1/04/2014 22:00	270	9.7	12.2
24/03/2014 18:00	202.5	9.7	11.9	1/04/2014 22:28	292.5	7.8	17.5
24/03/2014 18:30	180	8.3	10.3	1/04/2014 22:30	292.5	14.4	18.1
24/03/2014 19:00	180	8.3	9.7	1/04/2014 23:00	270	9.7	12.2
24/03/2014 19:30	180	8.3	9.7	1/04/2014 23:30	202.5	9.2	11.4
24/03/2014 20:00	180	7.8	9.7	2/04/2014 0:00	180	7.8	10.3
24/03/2014 20:30	157.5	6.7	8.9	2/04/2014 0:30	157.5	4.2	5.3
24/03/2014 21:00	180	6.7	8.9	2/04/2014 1:00	112.5	5.6	6.7
24/03/2014 21:30	180	7.2	8.3	2/04/2014 1:30	202.5	5.3	7.8
24/03/2014 22:00	157.5	5.6	6.7	2/04/2014 2:00	225	7.8	9.2



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
24/03/2014 22:30	157.5	5.6	7.2	2/04/2014 2:30	225	5.3	6.7
24/03/2014 23:00	180	6.1	8.3	2/04/2014 3:00	202.5	8.3	10.3
24/03/2014 23:30	157.5	7.2	9.2	2/04/2014 3:30	202.5	8.9	10.3
25/03/2014 0:00	157.5	6.7	8.3	2/04/2014 4:00	225	8.9	10.3
25/03/2014 0:30	180	5.6	6.7	2/04/2014 4:30	202.5	8.9	10.8
25/03/2014 1:00	180	5.3	6.7	2/04/2014 5:00	202.5	9.7	11.4
25/03/2014 1:30	180	5.6	7.8	2/04/2014 5:30	202.5	9.7	11.4
25/03/2014 2:00	180	6.1	7.8	2/04/2014 6:00	202.5	9.2	10.8
25/03/2014 2:30	157.5	5.6	6.7	2/04/2014 6:30	202.5	9.7	11.9
25/03/2014 3:00	157.5	5.6	7.2	2/04/2014 7:00	202.5	8.9	10.8
25/03/2014 3:30	157.5	4.7	5.6	2/04/2014 7:30	202.5	10.3	12.8
25/03/2014 4:00	157.5	5.6	7.2	2/04/2014 8:00	202.5	9.7	11.4
25/03/2014 4:30	157.5	5.3	6.7	2/04/2014 8:30	180	9.2	10.8
25/03/2014 5:00	180	6.1	7.8	2/04/2014 9:00	180	8.3	9.7
25/03/2014 5:30	180	5.3	6.1	2/04/2014 9:30	180	8.3	9.2
25/03/2014 6:00	180	5.3	6.7	2/04/2014 10:00	180	6.7	8.3
25/03/2014 6:30	180	5.6	6.7	2/04/2014 10:30	180	5.6	7.2
25/03/2014 7:00	157.5	5.6	7.2	2/04/2014 11:00	180	4.7	6.1
25/03/2014 7:30	157.5	5.6	6.7	2/04/2014 11:30	202.5	5.6	6.7
25/03/2014 8:00	157.5	5.6	6.7	2/04/2014 12:00	202.5	5.6	7.2
25/03/2014 8:30	157.5	5.3	6.7	2/04/2014 12:30	202.5	5.3	6.7
25/03/2014 9:00	180	5.3	6.1	2/04/2014 13:00	225	6.1	7.8
25/03/2014 9:30	157.5	5.3	6.7	2/04/2014 13:30	225	6.1	7.2
25/03/2014 10:00	157.5	4.2	5.6	2/04/2014 14:00	225	7.8	9.2
25/03/2014 10:30	135	4.2	5.6	2/04/2014 14:30	225	7.8	9.2
25/03/2014 11:00	112.5	3.6	5.3	2/04/2014 15:00	225	8.3	9.7
25/03/2014 11:30	157.5	5.3	6.1	2/04/2014 15:30	225	8.3	9.7
25/03/2014 12:00	157.5	4.7	7.2	2/04/2014 16:00	225	8.9	9.7
25/03/2014 12:30	202.5	5.6	7.2	2/04/2014 16:30	225	8.9	10.8
25/03/2014 13:00	180	6.1	7.8	2/04/2014 17:00	202.5	8.3	9.7
25/03/2014 13:30	202.5	6.1	7.8	2/04/2014 17:30	202.5	8.9	10.3
25/03/2014 14:00	202.5	6.1	7.8	2/04/2014 18:00	202.5	8.9	10.3
25/03/2014 14:30	202.5	7.8	8.9	2/04/2014 18:30	202.5	8.3	9.7
25/03/2014 15:00	202.5	8.3	9.7	2/04/2014 19:00	202.5	8.9	9.7
25/03/2014 15:30	202.5	8.9	10.3	2/04/2014 19:30	202.5	8.3	9.7
25/03/2014 16:00	202.5	8.9	10.8	2/04/2014 20:00	180	7.8	9.7
25/03/2014 16:30	180	7.2	8.3	2/04/2014 20:30	180	7.2	8.9



Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)	Date & Time	Wind Direction	Wind Speed (m/s)	Wind Gust (m/s)
25/03/2014 17:00	157.5	6.7	8.9	2/04/2014 21:00	157.5	6.1	7.8
25/03/2014 17:30	157.5	7.2	8.3	2/04/2014 21:30	157.5	6.1	8.3
25/03/2014 18:00	157.5	7.2	8.3	2/04/2014 22:00	157.5	5.6	6.7
25/03/2014 18:30	157.5	7.2	8.3	2/04/2014 22:30	157.5	6.1	7.2
25/03/2014 19:00	157.5	6.1	7.8	2/04/2014 23:00	180	5.6	6.7
25/03/2014 19:30	157.5	5.6	6.7	2/04/2014 23:30	157.5	5.6	7.2
25/03/2014 20:00	157.5	5.6	6.7	3/04/2014 0:00	157.5	5.6	6.7
25/03/2014 20:30	157.5	4.7	6.1	3/04/2014 0:30	157.5	4.7	6.1
25/03/2014 21:00	157.5	5.3	6.1	3/04/2014 1:00	157.5	5.6	6.7
25/03/2014 21:30	180	4.2	5.3	3/04/2014 1:30	157.5	5.3	6.1
25/03/2014 22:00	180	4.2	5.6	3/04/2014 2:00	157.5	4.7	5.6
25/03/2014 22:30	180	4.2	4.7	3/04/2014 2:30	157.5	5.3	6.1
25/03/2014 23:00	180	4.7	5.6	3/04/2014 3:00	157.5	5.3	6.1
25/03/2014 23:30	157.5	4.2	5.3	3/04/2014 3:30	157.5	4.7	6.1
26/03/2014 0:00	180	4.7	5.6	3/04/2014 4:00	157.5	5.3	6.1
26/03/2014 0:30	180	5.3	6.1	3/04/2014 4:30	157.5	4.2	5.3
26/03/2014 1:00	180	3.6	4.7	3/04/2014 5:00	157.5	4.7	6.1
26/03/2014 1:30	180	3.6	5.6	3/04/2014 5:30	157.5	5.3	6.1
26/03/2014 2:00	180	3.1	4.2	3/04/2014 6:00	157.5	5.3	6.7
26/03/2014 2:30	22.5	3.1	5.3	3/04/2014 6:30	157.5	6.1	7.2
26/03/2014 3:00	202.5	1.1	1.7	3/04/2014 7:00	157.5	5.6	6.7
26/03/2014 3:30	157.5	0.6	1.7	3/04/2014 7:30	157.5	5.6	6.7
26/03/2014 4:00	90	1.7	2.5	3/04/2014 8:00	157.5	5.6	6.7
26/03/2014 4:30	202.5	1.7	2.5	3/04/2014 8:30	157.5	4.7	5.6
26/03/2014 5:00	225	1.7	2.5	3/04/2014 9:00	157.5	4.7	6.1
26/03/2014 5:30	180	1.9	2.5	3/04/2014 9:30	180	5.6	7.2
26/03/2014 6:00	67.5	2.5	3.6	3/04/2014 10:00	180	6.7	8.3
26/03/2014 6:30	45	2.5	3.1	3/04/2014 10:30	180	5.3	6.7
26/03/2014 7:00	0	1.7	1.7	3/04/2014 11:00	180	5.3	7.2
26/03/2014 7:30	337.5	0.6	1.1				