

<b>Corrib Gas Pipeline Environmental Report</b>	Period Ending:	30 <sup>th</sup> April 2012
Compiled By:	Carmel Carey and Siobhan Sheridan	
Approved By:	Aoife Reynolds	

## 1 Monitoring Data

### 1.1 Monitoring Equipment

Noise	Eight noise monitoring locations are currently being used – NSR1 & NSR2 (compliance monitoring points) and AN1, AN2, AN3, GN1, GN2 and RN1 (information purposes). The noise meters records in the 1/3 octave band.
Vibration	There are two vibration monitoring points being used- V2 and V3
Weather Station	The data used for this reporting period was taken from the Aughoose and Glengad construction site meteorological stations. The Glengad meteorological station was operation from 5 <sup>th</sup> April.
TSS	There are TSS meters (SB3 line 1 and SB3 line 2) on the each of discharges on the Silbuster.
Sonde	The results are displayed graphically for dissolved oxygen, conductivity, pH, turbidity and temperature.
Discharge pipe flow	The results are displayed graphically.

### 1.2 Rainfall Data

Aughoose					
Date	Rainfall mm	Date	Rainfall mm	Date	Rainfall mm
01/04/2012	0.4	11/04/2012	6.6	21/04/2012	1.8
02/04/2012	0.6	12/04/2012	0.2	22/04/2012	3.6
03/04/2012	4.6	13/04/2012	0.4	23/04/2012	3.0
04/04/2012	1.0	14/04/2012	0.0	24/04/2012	1.0
05/04/2012	1.2	15/04/2012	15.6	25/04/2012	1.4
06/04/2012	3.2	16/04/2012	11.2	26/04/2012	0.0
07/04/2012	0.2	17/04/2012	3.4	27/04/2012	0.6
08/04/2012	3.4	18/04/2012	3.0	28/04/2012	0.0
09/04/2012	6.6	19/04/2012	0.2	29/04/2012	0.0
10/04/2012	2.4	20/04/2012	2.6	30/04/2012	0.2
Total 78.4mm					
Glengad					
Date	Rainfall mm	Date	Rainfall mm	Date	Rainfall mm
01/04/2012		11/04/2012	3.2	21/04/2012	1.6
02/04/2012		12/04/2012	4.2	22/04/2012	1.6
03/04/2012		13/04/2012	0.0	23/04/2012	1.4
04/04/2012		14/04/2012	2.8	24/04/2012	0.8
05/04/2012	0.2	15/04/2012	0.2	25/04/2012	3.0
06/04/2012	4.0	16/04/2012	10.8	26/04/2012	0.4
07/04/2012	0.4	17/04/2012	18.0	27/04/2012	0.4
08/04/2012	2.4	18/04/2012	5.8	28/04/2012	0.0
09/04/2012	8.8	19/04/2012	1.0	29/04/2012	0.0
10/04/2012	1.8	20/04/2012	2.0	30/04/2012	0.0
Total 74.8mm					

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### 1.3 Summary

Environment	Comments										
Vibration	There were no vibration exceedances during the reporting period										
Weather	There was a total of 78.4mm of rainfall during the reporting period measured at the Aughooose weather station and a total of 74.8mm at the Glengad weather station, with a temperature range of -1.5°C to 14.5°C in Aughooose and 0°C and 13.2°C in Glengad.										
Noise	<p>There were periods of elevated noise on the following dates at:</p> <table border="1"> <thead> <tr> <th>NSR1</th><th>NSR2</th></tr> </thead> <tbody> <tr> <td>25/04/2012</td><td>03/04/2012</td></tr> <tr> <td>26/02/2012</td><td>25/04/2012</td></tr> <tr> <td>30/04/2012</td><td>26/02/2012</td></tr> <tr> <td></td><td>30/04/2012</td></tr> </tbody> </table> <p>The following is the outcome of the investigation into the elevated noise levels:</p> <p><b><u>April 3<sup>rd</sup></u></b>  On the 3<sup>rd</sup> of April there were occasions of elevated noise at NSR2. Elevated levels continued after site operations had ceased for the day. This would indicate that the noise source was close to the microphone at NSR2 and not site related. The additional data at the site boundary monitor GN2 also supports this view. The monitoring data was analysed and it was concluded that the general activities onsite at that time did not generate the high hourly <math>L_{Aeq}</math> and <math>L_{Amax}</math> values at NSR2.</p> <p><b><u>April 25<sup>th</sup></u></b>  Elevated noise at NSR2 was dominated by wind, which exceeded 7m/s measured at the Glengad weather station.</p> <p>There were also occasions of elevated noise at NSR1 exceeding 65bB(A). The noise results were issued to noise consultants for review as per the noise monitoring and reporting procedure. It was concluded that the elevations were not site work related. High wind gusts were recorded that day and no unusual work had taken place on the 25<sup>th</sup>. Site noise monitors confirmed that the elevations were not site related.</p> <p><b><u>April 26<sup>th</sup></u></b>  Wind dominated the readings with occasions of elevated noise when wind speeds measured at both the Glengad and Aughooose weather station exceeded 7m/s. The noise results were issued to noise consultants for review as per the noise monitoring and reporting procedure. It was concluded that the elevations were not site work related. High wind gusts were recorded that day and no unusual work had taken place on the 26<sup>th</sup>. Site noise monitors confirmed that the elevations were not site related.</p> <p><b><u>April 30<sup>th</sup></u></b>  Wind speeds measured at the Glengad and Aughooose weather stations</p>	NSR1	NSR2	25/04/2012	03/04/2012	26/02/2012	25/04/2012	30/04/2012	26/02/2012		30/04/2012
NSR1	NSR2										
25/04/2012	03/04/2012										
26/02/2012	25/04/2012										
30/04/2012	26/02/2012										
	30/04/2012										

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Environment	Comments
	exceeded 7m/s so wind dominated the noise data at NSR1 and NSR2 during occasions of elevated noise readings.
Surface Water - Aughoose	There were no identified surface water exceedences during the reporting period. Surface water treatment ongoing.
Surface Water - Glengad	No surface water discharge was available at SW01 for sample collection.
Groundwater Monitoring	Monitoring of groundwater undertaken during the reporting period were within the anticipated results range. GW4 sonde began monitoring on 11th April.

## 2 Environmental Exceedances / Incidents / Complaints / Highlights

### 2.1 Complaints

Date & time of complaint	Nature of complaint	Actions taken as a result of the complaint
29/04/2012	Complaint about the quality of fencing carried out on lands by SEPIL, resulting in fatal accident with animal.	Receipt of complaint has been acknowledged by SEPIL to the complainant. The complaint is currently being looked into and a response will issue within 20 working days of receipt of the complaint.
30/04/2012	Complaint about damage to vehicles due to impact on roads as a result of SEPIL works/traffic.	Receipt of complaint has been acknowledged by SEPIL to the complainant. The complaint is currently being looked into and a response will issue within 20 working days of receipt of the complaint.

### 2.2 Exceedance

There were no identified environmental exceedances during this reporting period.

### 2.3 Incidents

There were no incidents during the reporting period.

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## 2.4 Environmental Highlights

Environment	Comments
Training	Environmental Management Plan training with contractors continued throughout reporting period.
Noise	Installation of acoustic barrier ongoing in Aughooose adjacent to the works associated with the construction of the tunnel starting shaft.
Monitoring	GW4 sonde began monitoring on 11th April.

	Date	Cond.	Turbidity	DO	pH	TSS	Orthophosphate as PO4	Extractable HC/ DRO (C8-C40) total and dissolved	PRO (C5 - C12) total and dissolved	TOC	DIN (TON as N + Ammonia as N)	COD
		µS/cm	NTU	%		mg/l	mg/l	ug/l	ug/l	mg/l	mg/l	mg/l

SB3	01/04/2012	453	2.4	68.5	7.2	2	<0.03	<100	<100	4.94	1.020	23
SB3	02/04/2012	469	1.3	65.4	7.8	2	<0.03	<100	<100	4.38	0.963	14
SB3	03/04/2012	467	3.0	66.5	7.4	2	<0.03	<100	<100	4.37	0.968	15
SB3	04/04/2012	423	6.3	68.5	7.6	8	<0.03	<100	<100	4.41	0.929	31
SB3	05/04/2012	450	1.9	68.5	7.2	2	<0.03	127	<100	3.44	0.771	16
SB3	06/04/2012	465	1.3	68.3	7.6	2	<0.03	<100	<100	3.28	0.732	21
SB3	07/04/2012	470	1.5	67.4	7.6	2	<0.03	139	<100	3.48	0.855	25
SB3	08/04/2012	487	2.0	68.5	7.7	2	<0.03	<100	<100	4.31	1.140	22
SB3	09/04/2012	475	1.9	66.5	7.7	2	<0.03	<100	<100	4.29	1.150	<10
SB3	10/04/2012	481	2.4	68.7	7.4	2	<0.03	112	<100	4.60	1.170	16
SB3	11/04/2012	452	5.2	68.7	7.6	4	<0.03	<100	<100	4.39	1.010	28
SB3	12/04/2012	410	5.7	67.5	7.4	5	<0.03	<100	122	4.27	0.754	<10
SB3	13/04/2012	467	4.4	68.5	7.4	2	<0.03	103	<100	4.32	0.537	46
SB3	14/04/2012	450	2.7	67.8	7.5	3	<0.03	<100	<100	3.96	0.822	40
SB3	15/04/2012	482	2.2	68.5	7.5	2	<0.03	<100	<100	4.25	0.968	19
SB3	16/04/2012	436	2.0	68.5	7.5	6	<0.03	145	184	4.69	0.728	30
SB3	17/04/2012	367	6.5	65.6	7.2	6	<0.03	162	151	5.36	0.800	<10
SB3	18/04/2012	383	2.1	90.4	6.7	2	<0.03	106	<100	4.00	0.663	<10
SB3	19/04/2012	393	1.8	82.6	7.1	2	<0.03	<100	<100	3.65	0.610	<10
SB3	20/04/2012	402	1.6	68.5	7.2	2	<0.03	<100	164	3.69	0.612	29
SB3	21/04/2012	406	1.8	69.5	7.2	2	<0.03	<100	<100	3.56	0.642	34
SB3	22/04/2012	424	1.7	68.5	7.2	2	<0.03	<100	158	4.26	0.992	38
SB3	23/04/2012	445	1.4	68.5	7.3	2	<0.03	<100	<100	4.46	1.090	10
SB3	24/04/2012	429	1.7	67.4	7.3	2	<0.03	<100	253	3.76	0.912	20
SB3	25/04/2012	460	1.7	68.5	7.4	2	<0.03	186	<100	3.45	0.921	12
SB3	26/04/2012	487	1.5	67.5	7.3	2	<0.03	182	<100	3.54	1.080	<10
SB3	27/04/2012	481	1.5	65.3	7.3	2	<0.03	225	<100	3.09	0.640	<10
SB3	28/04/2012	506	1.4	68.5	7.4	2	<0.03	301	<100	3.13	0.645	<10
SB3	29/04/2012	450	2.7	65.8	7.4	2	<0.03	198	<100	3.55	0.737	<10
SB3	30/04/2012	460	2.4	65.3	7.9	3	<0.03	<100	<100	4.06	0.433	13

<b>DL2</b>	04/04/2012	441	3.1	65.3	7.6	2	<0.03	<100	<100	3.84	0.862	17
<b>DL2</b>	11/04/2012	447	4.3	68.4	7.6	5	<0.03	<100	106	4.19	1.000	37
<b>DL2</b>	12/04/2012	420	3.2	68.5	7.4	5	<0.03	<100	<100	4.16	0.678	16
<b>DL2</b>	16/04/2012	409	1.2	68.5	7.4	2	<0.03	<100	<100	4.36	1.020	11
<b>DL2</b>	17/04/2012	363	1.2	67.8	7.3	9	<0.03	<100	<100	5.38	0.838	<10
<b>DL2</b>	25/04/2012	462	0.8	68.5	7.2	2	<0.03	169	<100	3.17	1.93	<10

Sbay 1	12/04/2012	47700	0.7	68.3	8.3	<2	<0.03	<100	100	1.28	0.047	60
Sbay 3	12/04/2012	40100	1.2	68.4	8.2	5	<0.03	<100	<100	2.59	0.019	30
Sbay 4	12/04/2012	34800	1.4	68.5	8.2	2	<0.03	<100	<100	3.42	0.017	30
Sbay 6	12/04/2012	47600	0.9	66.7	8.2	7	<0.03	<100	153	1.85	0.021	40

SW 08	13/04/2012	207	2.1	66.8	7.6	<2	0.049	116	<100	14.70	0.014	85
SW 09	13/04/2012	257	3.2	68.5	7.1	2	0.038	<100	<100	16.00	0.065	96
SW 10	13/04/2012	211	3.9	67.9	6.8	2	0.063	<100	<100	17.80	0.117	71
SW 11	13/04/2012	196	1.6	69.5	6.5	<2	0.056	<100	<100	20.90	0.043	100
SW 12	13/04/2012	197	1.3	68.5	6.2	<2	0.050	<100	198	20.50	0.039	92

< LOD	= Below Limit of Detection
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> LOD	= Above Limit of Detection
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On site laboratory results included in Appendix 1

Grey shaded areas denote parameters that cannot or were not analysed on-site or the lab.

Groundwater Monitoring Results - Accredited Laboratory

Location	Date	DO	Temp	Cond.	pH	TDS	BOD	Suspended Solids	Turbidity	Orthophosphate as PO4 -P	Ammonia as NH3-N	Total Phosphorus as P	Nitrate as NO <sub>3</sub>	Nitrite as NO <sub>2</sub>	Phosphate as PO4	COD	Copper
		% Sat	°C	uS/cm	pH Units	mg/l	mg/l	mg/l	N.T.U	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l
GW1	05/04/2012	15	9.6	398	6.5	210	<1	11	1.9	0.018	0.34	0.11	<0.44	<0.017	0.05	38	7
GW2	05/04/2012	16	10.0	431	6.5	237	<1	47	79.0	<0.01	2.52	<0.05	<0.44	<0.017	<0.03	38	3
GW3	05/04/2012	25	9.6	463	6.8	171	<1	393	505.0	0.165	2.29	0.64	<0.44	<0.017	0.51	48	11
GW4	05/04/2012	22	9.8	415	6.7	184	<1	48	55.4	0.545	0.23	0.59	<0.44	<0.017	1.67	37	14
Location	Date	Arsenic, total	Chromium, total	Lead, total	Cadmium, total	Tin, total	Iron, total	Mercury	TOC	Total Hardness	Zinc	Extractable HC/ DRO (C8-C40) total and dissolved	PRO (C5 - C12) total and dissolved	Manganese	Chloride	Water Level	
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	mg/l	m	
GW1	05/04/2012	2	0.8	<0.5	<0.5	<0.5	22310	<0.05	5.46	115	<5	<100	<100	1312	58.60	4.40	
GW2	05/04/2012	5	3.0	2.0	<0.5	<0.5	56000	<0.05	5.83	90	8	<100	<100	374	56.40	3.85	
GW3	05/04/2012	3	6.0	41.0	<0.5	<0.5	27250	<0.05	10.30	176	17	<100	<100	772	51.90	3.45	
GW4	05/04/2012	10	2.0	4.0	1.0	<0.5	17280	<0.05	7.26	155	8	<100	<100	2640	54.50	3.11	

Grey shaded areas denote parameters that cannot or were not analysed on-site or at the lab.

Graphs provided for GW1 - GW4: Temperature, Conductivity, and pH.

## Dust Monitoring Record Sheet

	Date Positioned	Date Removed	Ref. Number	Date Dispatched	Date Returned	Weight (mg/m <sup>2</sup> /day)
<b>Target (Consent) Limit: 350 mg m<sup>2</sup> d<sup>-1</sup> on as a 30 day average</b>						
<b>AD1</b>	12/03/2012	12/04/2012	369579	13/04/2012	11/05/2012	163
<b>AD2</b>	12/03/2012	12/04/2012	369580	13/04/2012	11/05/2012	78
<b>AD3</b>	12/03/2012	12/04/2012	369581	13/04/2012	11/05/2012	85
<b>AD4</b>	12/03/2012	12/04/2012	369582	13/04/2012	11/05/2012	99
		NDP = No Determination Possible				
Monitoring Results will be presented monthly						





Day Time Noise Monitoring / Max Hourly or above 60dB L <sub>aeq</sub> Record Sheet - Compliance monitoring locations										
Determinant Results										
Location	Air Temp. (Min)	Air Temp. (Max)	Start Date and Time	Duration	Wind		Results dB			*Comments
					Speed (m/s)*	Direction (Degrees)	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>	
NSR1	3.3	10.7	25/04/2012 09:00	1:00:00	6.6	39.8	60.0	79.4	41.0	
			25/04/2012 11:00	1:00:00	4.9	19.0	62.9	83.4	46.5	
			25/04/2012 12:00	1:00:00	6.5	101.3	64.4	85.4	46.7	
			25/04/2012 13:00	1:00:00	3.9	126.0	66.3	85.4	46.7	Site monitors confirm that noise is not from site
			25/04/2012 14:00	1:00:00	3.6	10.3	64.8	84.6	44.4	
			25/04/2012 15:00	1:00:00	5.6	95.0	67.6	91.1	47.7	
			25/04/2012 16:00	1:00:00	6.8	11.5	66.5	90.2	46.8	Outside measurement parameters - no unusual activities onsite. Site monitors confirm that noise is not from site
			25/04/2012 17:00	1:00:00	5.4	190.3	66.3	86.6	48.8	
			25/04/2012 18:00	1:00:00	5.0	182.3	67.0	91.5	45.9	
			NSR2	25/04/2012 10:00	1:00:00	7.0	180.0	60.5	77.1	43.3
25/04/2012 11:00	1:00:00	8.5		179.5	66.2	78.5	50.1			
25/04/2012 12:00	1:00:00	8.5		353.5	67.0	80.2	50.6			
25/04/2012 13:00	1:00:00	7.3		345.8	67.2	80.7	51.5			
25/04/2012 14:00	1:00:00	7.7		257.5	68.5	81.3	50.0	Wind dominates noise data		
25/04/2012 15:00	1:00:00	8.6		350.8	68.8	82.2	51.6			
25/04/2012 16:00	1:00:00	8.0		344.0	68.7	83.2	50.4			
25/04/2012 17:00	1:00:00	8.6		341.0	70.1	84.4	52.5			
NSR1	6.7	9.9	26/04/2012 07:00	1:00:00	4.7	256.5	67.1	88.8	46.0	Site monitors confirm that noise is not from site
			26/04/2012 08:00	1:00:00	7.6	250.0	66.9	88.8	49.8	Wind dominates noise data
			26/04/2012 09:00	1:00:00	5.7	262.3	66.2	83.7	49.7	
			26/04/2012 12:00	1:00:00	6.7	264.0	66.6	88.7	50.2	Outside measurement parameters - no unusual activities onsite. Site monitors confirm that noise is not from site
			26/04/2012 13:00	1:00:00	5.6	237.0	66.6	85.7	48.6	
			26/04/2012 14:00	1:00:00	6.0	175.3	65.3	89.2	46.8	
			26/04/2012 15:00	1:00:00	7.1	248.3	64.7	85.7	46.7	
			26/04/2012 16:00	1:00:00	5.4	340.5	63.2	82.1	46.4	
			26/04/2012 17:00	1:00:00	3.8	264.3	64.0	84.9	44.5	
			26/04/2012 18:00	1:00:00	6.1	262.0	62.6	77.8	42.5	
NSR2	26/04/2012 07:00	1:00:00	6.7	327.5	68.7	86.1	50.6	Site monitors confirm that noise is not from site		
	26/04/2012 08:00	1:00:00	6.6	326.5	69.6	87.8	52.3			
	26/04/2012 10:00	1:00:00	8.0	321.8	69.5	86.6	53.2	Wind dominates noise data		
	26/04/2012 12:00	1:00:00	6.8	320.0	69.5	86.4	52.1	Site monitor shows noise not from site		
	26/04/2012 13:00	1:00:00	8.2	327.5	69.5	86.7	51.7	Wind dominates noise data		
	26/04/2012 14:00	1:00:00	6.7	318.8	67.4	84.5	50.7	Site monitors confirm that noise is not from site		
	26/04/2012 15:00	1:00:00	6.3	319.3	65.0	82.3	50.2			
	26/04/2012 16:00	1:00:00	5.8	312.3	64.9	83.4	51.1			
	26/04/2012 17:00	1:00:00	5.6	317.0	65.0	83.3	50.7	Site monitors confirm that noise is not from site		
	26/04/2012 18:00	1:00:00	5.6	299.5	63.9	80.2	49.0			
NSR1	4.8	10.5	27/04/2012 10:00	1:00:00	5.0	96.3	61.5	77.6	39.9	
			27/04/2012 16:00	1:00:00	3.4	9.8	61.8	77.7	35.9	
NSR2			27/04/2012 09:00	1:00:00	4.7	332.3	59.1	77.0	45.1	
NSR1	6.0	10.8	28/04/2012 10:00	1:00:00	6.3	27.0	60.9	76.4	36.6	
			28/04/2012 13:00	1:00:00	3.2	185.8	62.0	76.7	33.5	
			28/04/2012 14:00	1:00:00	3.1	35.0	62.0	78.6	34.9	
NSR2			28/04/2012 17:00	1:00:00	4.5	332.3	61.9	90.3	43.6	
NSR1	7.3	14.5	30/04/2012 08:00	1:00:00	3.3	102.3	60.3	83.4	43.2	
			30/04/2012 09:00	1:00:00	6.0	17.0	63.7	82.7	43.9	
			30/04/2012 10:00	1:00:00	5.8	31.8	60.9	81.9	40.4	
			30/04/2012 11:00	1:00:00	5.7	34.8	61.1	79.1	42.3	
			30/04/2012 12:00	1:00:00	3.1	30.8	60.6	76.4	42.9	
			30/04/2012 13:00	1:00:00	7.1	33.8	65.1	82.8	42.4	Wind dominates noise data
			30/04/2012 14:00	1:00:00	4.3	30.3	64.5	84.8	43.1	
			30/04/2012 15:00	1:00:00	5.0	40.3	61.4	81.1	42.9	
NSR2	30/04/2012 16:00	1:00:00	3.1	98.3	60.2	79.9	43.8			
	30/04/2012 08:00	1:00:00	6.7	177.3	61.2	76.0	46.7			
	30/04/2012 09:00	1:00:00	7.3	268.0	63.9	81.5	46.3			
	30/04/2012 10:00	1:00:00	7.0	267.5	61.8	75.6	45.9			
	30/04/2012 11:00	1:00:00	6.7	352.5	61.3	74.5	46.6			
	30/04/2012 12:00	1:00:00	8.0	92.5	60.7	79.4	45.0			
	30/04/2012 13:00	1:00:00	8.5	5.0	63.3	78.0	45.3			
	30/04/2012 14:00	1:00:00	9.0	269.8	66.2	81.2	47.6	Wind dominates noise data		
30/04/2012 15:00	1:00:00	7.5	176.0	65.2	77.7	48.6				
30/04/2012 16:00	1:00:00	7.6	352.8	64.2	78.3	48.3				
30/04/2012 17:00	1:00:00	7.2	178.0	62.5	75.0	48.2				
* Wind dominates noise data with wind speeds in excess of 7 m/s										
**Allowance of +/- 1.5dB accuracy of sound level meter (ref: IEC 61672 (2002-2005))										
The results show Laeq(1hr) for maximum daily values or values over 60dB for each day of monitoring										
NSR1										
NSR2										

Day Time Noise Monitoring / Max Hourly or above 60dB L <sub>Aeq</sub> Record Sheet										
Determinant Results										
Location	Air Temp. (Min)	Air Temp. (Max)	Start Date and Time	Duration	Wind		Results dB			
					Speed (m/s)*	Direction (Degrees)	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>	
AN1	5.8	12.6	02/04/2012 07:00	1:00:00	0.6	142.8	70.0	91.8	47.1	
			02/04/2012 08:00	1:00:00	0.8	180.0	71.6	91.2	56.6	
			02/04/2012 09:00	1:00:00	1.1	165.8	75.2	94.6	54.6	
			02/04/2012 10:00	1:00:00	1.3	174.3	73.6	91.7	51.1	
			02/04/2012 11:00	1:00:00	1.4	290.5	72.4	90.9	55.2	
			02/04/2012 12:00	1:00:00	2.2	328.3	68.9	92.8	54.3	
			02/04/2012 13:00	1:00:00	2.7	309.3	71.2	93.3	52.9	
			02/04/2012 14:00	1:00:00	2.5	312.0	65.0	92.0	49.8	
			02/04/2012 15:00	1:00:00	3.5	321.8	68.5	90.0	54.9	
			02/04/2012 16:00	1:00:00	2.7	298.5	72.5	92.6	54.2	
			02/04/2012 17:00	1:00:00	2.1	301.3	65.1	88.4	52.7	
			02/04/2012 18:00	1:00:00	3.8	289.0	63.3	91.0	47.1	
			AN2	02/04/2012 17:00	1:00:00	2.1	301.3	55.9	75.1	36.6
			AN3	02/04/2012 18:00	1:00:00	3.8	289.0	48.0	64.4	31.7
GN1	02/04/2012 09:00	1:00:00	1.1	165.8	55.2	92.0	31.2			
GN2	02/04/2012 08:00	1:00:00	0.8	180.0	60.1	80.2	49.3			
	02/04/2012 09:00	1:00:00	1.1	165.8	61.9	84.0	48.5			
	02/04/2012 11:00	1:00:00	1.4	290.5	63.0	79.6	51.3			
	02/04/2012 15:00	1:00:00	3.5	321.8	61.5	86.0	50.5			
RN1	02/04/2012 08:00	1:00:00	0.8	180.0	59.6	83.6	26.0			
AN1	3.6	9.0	03/04/2012 07:00	1:00:00	3.1	85.0	68.5	94.0	47.3	
			03/04/2012 08:00	1:00:00	4.0	259.5	70.3	95.7	51.2	
			03/04/2012 09:00	1:00:00	5.9	182.5	69.2	93.9	50.3	
			03/04/2012 10:00	1:00:00	5.1	262.3	68.1	94.0	49.4	
			03/04/2012 11:00	1:00:00	5.0	254.8	70.3	92.5	52.1	
			03/04/2012 12:00	1:00:00	5.3	181.5	67.8	94.2	48.9	
			03/04/2012 13:00	1:00:00	4.8	184.0	67.8	89.3	49.6	
			03/04/2012 14:00	1:00:00	3.9	268.5	66.7	90.9	49.2	
			03/04/2012 15:00	1:00:00	4.7	172.3	68.6	93.4	51.0	
			03/04/2012 16:00	1:00:00	4.3	188.8	70.7	93.7	52.0	
			03/04/2012 17:00	1:00:00	5.8	113.0	69.2	93.5	49.7	
			03/04/2012 18:00	1:00:00	6.0	170.8	66.1	94.0	41.6	
			03/04/2012 19:00	1:00:00	4.4	265.5	64.7	89.0	41.3	
			AN2	03/04/2012 16:00	1:00:00	4.3	188.8	61.7	79.6	43.6
			AN3	03/04/2012 16:00	1:00:00	4.3	188.8	55.6	73.9	41.5
			GN1	03/04/2012 11:00	1:00:00	5.0	254.8	60.1	77.7	41.9
				03/04/2012 12:00	1:00:00	5.3	181.5	63.9	81.0	46.1
				03/04/2012 13:00	1:00:00	4.8	184.0	63.7	80.9	43.5
				03/04/2012 14:00	1:00:00	3.9	268.5	61.8	78.2	43.6
				03/04/2012 15:00	1:00:00	4.7	172.3	61.5	77.7	45.2
				03/04/2012 16:00	1:00:00	4.3	188.8	60.4	79.8	43.1
			GN2	03/04/2012 19:00	1:00:00	4.4	265.5	63.3	82.3	39.9
				03/04/2012:08:00	1:00:00	4.0	259.5	64.9	85.1	50.5
				03/04/2012:09:00	1:00:00	5.9	182.5	66.7	82.4	51.5
03/04/2012:10:00	1:00:00	5.1		262.3	65.0	81.8	51.2			
03/04/2012:11:00	1:00:00	5.0		254.8	65.3	85.6	54.7			
03/04/2012:12:00	1:00:00	5.3		181.5	66.9	81.2	55.8			
RN1	03/04/2012:13:00	1:00:00	4.8	184.0	65.1	82.9	55.4			
	03/04/2012:14:00	1:00:00	3.9	268.5	64.4	84.0	52.5			
	03/04/2012:15:00	1:00:00	4.7	172.3	67.6	86.9	53.4			
	03/04/2012:16:00	1:00:00	4.3	188.8	62.8	82.1	52.0			
	03/04/2012:17:00	1:00:00	5.8	113.0	60.2	78.4	51.4			
	03/04/2012:08:00	1:00:00	4.0	259.5	60.6	81.8	33.7			
	03/04/2012:09:00	1:00:00	5.9	182.5	61.8	80.0	36.1			
	03/04/2012:10:00	1:00:00	5.1	262.3	63.3	82.1	39.6			
	03/04/2012:11:00	1:00:00	5.0	254.8	64.0	83.1	42.0			
	03/04/2012:12:00	1:00:00	5.3	181.5	63.8	79.8	37.7			
	03/04/2012:13:00	1:00:00	4.8	184.0	64.2	79.1	41.3			
	03/04/2012:14:00	1:00:00	3.9	268.5	63.5	84.2	39.5			
	03/04/2012:15:00	1:00:00	4.7	172.3	63.4	81.4	40.6			
	03/04/2012:16:00	1:00:00	4.3	188.8	62.9	79.4	44.8			
03/04/2012:17:00	1:00:00	5.8	113.0	62.1	86.0	33.1				
03/04/2012:19:00	1:00:00	4.4	265.5	62.7	80.8	34.2				
AN1	2.9	8.4	04/04/2012 07:00	1:00:00	3.3	22.8	67.8	91.5	41.8	
			04/04/2012 08:00	1:00:00	3.2	117.5	68.9	94.7	49.7	
			04/04/2012 09:00	1:00:00	4.7	23.0	63.1	91.1	50.1	
			04/04/2012 10:00	1:00:00	4.3	179.5	62.6	87.2	49.2	
			04/04/2012 11:00	1:00:00	4.8	100.0	68.1	92.5	53.4	
			04/04/2012 12:00	1:00:00	4.8	36.3	73.0	95.4	53.8	
			04/04/2012 13:00	1:00:00	5.1	23.0	70.6	95.9	50.6	
			04/04/2012 14:00	1:00:00	3.6	254.8	66.6	92.6	48.0	
			04/04/2012 15:00	1:00:00	4.0	102.0	68.2	94.0	50.3	
			04/04/2012 16:00	1:00:00	4.4	166.5	64.2	91.2	50.8	
			04/04/2012 17:00	1:00:00	3.9	189.5	68.6	95.6	47.3	
			04/04/2012 18:00	1:00:00	3.4	18.5	69.4	95.7	39.7	
			04/04/2012 12:00	1:00:00	4.8	36.3	57.6	76.5	42.7	
			04/04/2012 12:00	1:00:00	4.8	36.3	51.1	73.6	33.1	
AN2	04/04/2012 14:00	1:00:00	3.1	296.5	58.6	99.3	37.4			
AN3	04/04/2012 08:00	1:00:00	3.2	117.5	68.5	86.8	52.0			
GN1	04/04/2012 09:00	1:00:00	4.7	23.0	67.5	83.3	51.8			
GN2	04/04/2012 10:00	1:00:00	4.3	179.5	62.1	85.9	50.8			
	04/04/2012 11:00	1:00:00	4.8	100.0	68.2	92.3	55.2			
	04/04/2012 12:00	1:00:00	4.8	36.3	64.6	84.8	53.5			
	04/04/2012 13:00	1:00:00	5.1	23.0	67.4	85.4	50.4			
	04/04/2012 14:00	1:00:00	3.6	254.8	63.5	90.5	49.0			
	04/04/2012 15:00	1:00:00	4.0	102.0	67.6	89.5	57.3			
	04/04/2012 16:00	1:00:00	4.4	166.5	67.7	92.3	52.2			
	04/03/2012 14:00	1:00:00	2.6	336.0	60.6	89.6	49.4			
	04/04/2012 08:00	1:00:00	3.2	117.5	60.0	81.9	34.5			
	04/04/2012 18:00	1:00:00	3.4	18.5	60.9	88.2	33.4			
AN1	-0.2	11.3	05/04/2012:07:00	1:00:00	0.7	174.3	66.5	93.2	45.3	
			05/04/2012:08:00	1:00:00	1.0	137.0	71.3	93.4	55.8	
			05/04/2012:09:00	1:00:00	1.8	146.5	71.0	93.0	55.9	
			05/04/2012:10:00	1:00:00	1.4	169.3	65.4	91.7	50.3	
			05/04/2012:11:00	1:00:00	1.3	243.0	67.5	84.5	56.1	
			05/04/2012:13:00	1:00:00	2.4	254.8	72.6	98.0	53.2	
05/04/2012:14:00			1:00:00	3.4	239.8	67.8	93.7	41.0		
05/04/2012:12:00			1:00:00	2.0	310.8	56.8	75.1	37.5		
05/04/2012:14:00			1:00:00	3.4	239.8	48.7	65.0	29.5		
05/04/2012:15:00			1:00:00	2.2	189.0	53.9	87.8	35.1		
04/05/2012:08:00			1:00:00	1.0	137.0	63.6	88.7	49.0		
04/05/2012:09:00			1:00:00	1.8	146.5	65.1	85.1	47.8		
04/05/2012:10:00			1:00:00	1.4	169.3	61.6	85.0	46.9		
04/05/2012:11:00			1:00:00	1.3	243.0	65.4	90.3	53.6		
05/04/2012:13:00			1:00:00	2.4	254.8	66.6	89.8	45.9		
RN1			05/04/2012:18:00	1:00:00	4.2	327.0	56.2	84.4	25.7	
AN1	4.9	10.9	06/04/2012:16:00	1:00:00	3.6	300.3	59.8	78.5	44.2	
AN2			06/04/2012:17:00	1:00:00	4.3	305.0	52.4	70.3	35.5	
AN3			06/04/2012:08:00	1:00:00	1.5	322.5	47.3	67.0	26.5	
GN1			06/04/2012:12:00	1:00:00	2.8	290.8	50.9	75.5	35.2	
GN2			06/04/2012:18:00	1:00:01	3.7	319.8	59.3	77.2	53.3	
RN1			06/04/2012:07:00	1:00:00	1.1	293.3	65.0	89.2	21.7	
			06/04/2012:18:00	1:00:00	3.7	319.8	60.3	85.8	29.0	
* Wind dominates noise data with wind speeds in excess of 7 m/s										
**Allowance of +/- 1.5dB accuracy of sound level meter (ref: IEC 61672 (2002-2005))										
The results show LAeq(1hr) for maximum daily values or values over 60dB for each day of monitoring										
	AN1		AN2		AN3		GN1		RN1	
	GN2	*Air temperature taken from Aughooose weather station.								



Day Time Noise Monitoring / Max Hourly or above 60dB L <sub>Aeq</sub> Record Sheet										
Determinant Results										
Location	Air Temp. (Min)	Air Temp. (Max)	Start Date and Time	Duration	Wind		Results dB			
				Speed (m/s)*	Direction (Degrees)	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>		
AN1	5.7	11.0	16/04/2012:07:00	1:00:00	2.8	144.3	75.1	88.7	46.6	
			16/04/2012:08:00	1:00:00	3.4	132.0	77.3	94.3	57.2	
			16/04/2012:09:00	1:00:00	2.9	130.3	68.1	84.2	56.6	
			16/04/2012:10:00	1:00:00	3.5	94.3	73.7	93.8	58.5	
			16/04/2012:12:00	1:00:00	2.6	132.3	73.0	93.0	62.1	
			16/04/2012:13:00	1:00:00	4.5	150.8	71.1	81.1	62.4	
			16/04/2012:14:00	1:00:00	4.3	172.8	68.4	100.7	54.6	
			16/04/2012:15:00	1:00:00	6.3	173.8	76.3	93.0	55.8	
			16/04/2012:16:00	1:00:00	3.7	145.3	75.3	94.6	60.2	
			16/04/2012:17:00	1:00:00	3.7	153.8	74.5	88.4	60.4	
			16/04/2012:18:00	1:00:00	2.9	163.8	70.0	90.5	47.7	
			16/04/2012:19:00	1:00:00	3.9	145.3	61.4	86.7	46.9	
			AN2	16/04/2012:12:00	1:00:00	2.6	132.3	56.4	78.9	37.0
			AN3	16/04/2012:19:00	1:00:00	3.9	145.3	53.2	80.4	32.1
			GN1	16/04/2012:19:00	1:00:00	5.1	118.0	59.7	85.8	35.8
			GN2	16/04/2012:09:00	1:00:00	4.4	100.0	60.7	87.9	47.8
16/04/2012:11:00	1:00:00	4.5		106.8	61.4	81.1	49.6			
16/04/2012:19:00	1:00:00	5.1		118.0	62.5	88.2	49.1			
16/04/2012:08:00	1:00:00	3.4		132.0	60.2	85.8	34.7			
GN1	16/04/2012:09:00	1:00:00	2.9	130.3	60.6	82.4	35.4			
AN1	4.2	9.4	17/04/2012:07:00	1:00:00	4.3	251.0	75.0	93.8	53.7	
			17/04/2012:08:00	1:00:00	4.3	216.0	69.6	92.7	59.6	
			17/04/2012:09:00	1:00:00	4.6	206.8	69.3	87.3	54.2	
			17/04/2012:10:00	1:00:00	6.8	201.3	68.6	89.2	52.8	
			17/04/2012:11:00	1:00:00	5.2	211.0	71.4	93.8	59.5	
			17/04/2012:12:00	1:00:00	4.1	230.0	69.9	89.9	56.5	
			17/04/2012:13:00	1:00:00	5.1	240.0	72.6	92.0	57.0	
			17/04/2012:14:00	1:00:00	4.5	188.0	71.8	93.0	54.0	
			17/04/2012:15:00	1:00:00	4.1	187.3	71.1	93.4	57.5	
			17/04/2012:16:00	1:00:00	5.4	183.8	72.1	94.0	59.5	
			17/04/2012:17:00	1:00:00	5.2	158.3	71.7	95.1	57.7	
			17/04/2012:18:00	1:00:00	2.8	145.3	65.9	94.2	46.2	
			AN2	17/04/2012:13:00	1:00:00	5.1	240.0	58.9	80.1	35.0
			AN3	17/04/2012:13:00	1:00:00	5.1	240.0	54.4	72.7	33.1
			GN1	17/04/2012:07:00	1:00:00	6.6	183.0	61.4	78.3	47.3
				17/04/2012:08:00	1:00:00	7.8	179.3	62.6	79.8	47.8
17/04/2012:09:00	1:00:00	7.3		169.0	60.1	90.0	46.4			
17/04/2012:10:00	1:00:00	7.4		164.0	60.0	76.6	44.3			
17/04/2012:12:00	1:00:00	5.7		187.5	60.3	79.1	45.9			
17/04/2012:13:00	1:00:00	7.3		182.0	62.9	79.7	46.9			
17/04/2012:15:00	1:00:00	7.4		160.5	63.3	81.6	44.6			
17/04/2012:08:00	1:00:00	7.8		179.3	63.7	84.8	55.3			
GN2	17/04/2012:09:00	1:00:00	7.3	169.0	63.8	88.6	52.6			
	17/04/2012:11:00	1:00:00	6.8	169.5	62.0	82.8	54.7			
	17/04/2012:12:00	1:00:00	5.7	187.5	62.0	85.6	55.1			
	17/04/2012:13:00	1:00:00	7.3	182.0	64.7	89.0	53.5			
	17/04/2012:14:00	1:00:00	5.5	166.0	60.1	83.4	52.6			
	17/04/2012:15:00	1:00:00	7.4	160.5	73.1	98.3	60.8			
	17/04/2012:16:00	1:00:00	6.4	139.8	74.4	104.6	53.1			
	17/04/2012:17:00	1:00:00	5.2	158.3	60.1	83.9	41.8			
GN1	17/04/2012:18:00	1:00:00	2.8	145.3	60.4	85.3	35.8			
AN1	6.1	11.1	18/04/2012:07:00	1:00:00	2.4	340.5	70.7	89.9	49.1	
			18/04/2012:08:00	1:00:00	2.5	264.8	72.8	93.0	54.3	
			18/04/2012:09:00	1:00:00	2.1	259.0	72.4	93.3	49.3	
			18/04/2012:10:00	1:00:00	2.3	251.8	61.5	88.2	41.8	
			18/04/2012:11:00	1:00:00	3.9	324.0	71.0	95.6	54.1	
			18/04/2012:12:00	1:00:00	3.8	322.0	73.8	94.4	56.0	
			18/04/2012:13:00	1:00:00	3.2	320.5	72.4	95.2	51.7	
			18/04/2012:14:00	1:00:00	4.0	311.5	65.2	90.2	45.2	
			18/04/2012:15:00	1:00:00	4.0	326.5	70.0	94.4	52.7	
			18/04/2012:16:00	1:00:00	4.5	340.0	71.3	94.5	54.4	
			18/04/2012:17:00	1:00:00	5.2	338.5	70.9	90.8	52.6	
			18/04/2012:18:00	1:00:00	2.7	318.5	64.8	93.9	42.4	
			18/04/2012:19:00	1:00:00	5.9	324.3	65.0	82.7	47.0	
			AN2	18/04/2012:18:00	1:00:00	2.7	318.5	59.2	75.6	33.9
			AN3	18/04/2012:19:00	1:00:00	5.9	324.3	50.9	71.3	35.6
			GN1	18/04/2012:17:00	1:00:00	6.2	269.0	56.8	92.9	44.0
GN2	18/04/2012:08:00	1:00:00	3.2	301.0	68.1	90.7	55.6			
	18/04/2012:09:00	1:00:00	2.7	325.8	65.7	96.5	54.9			
	18/04/2012:11:00	1:00:00	4.5	252.0	69.2	102.9	55.0			
	18/04/2012:12:00	1:00:00	2.4	248.5	62.5	94.1	54.5			
	18/04/2012:13:00	1:00:00	3.3	239.3	69.9	100.0	53.1			
	18/04/2012:14:00	1:00:00	3.6	239.3	62.7	86.7	53.0			
	18/04/2012:15:00	1:00:00	5.4	266.0	63.4	90.9	55.9			
	18/04/2012:16:00	1:00:00	5.6	274.5	62.6	85.4	54.6			
GN1	18/04/2012:08:00	1:00:00	2.5	264.8	58.7	87.1	26.0			
AN1	4.9	12.3	19/04/2012 07:00	1:00:00	1.9	320.8	64.4	97.3	48.0	
			19/04/2012 08:00	1:00:00	2.3	310.5	69.9	91.4	51.8	
			19/04/2012 09:00	1:00:00	2.6	303.3	71.3	93.1	59.0	
			19/04/2012 10:00	0:43:51	3.0	287.8	68.9	87.3	45.1	
			19/04/2012 12:00	1:00:00	3.0	294.5	69.5	91.1	55.4	
			19/04/2012 13:00	0:16:43	4.1	288.3	69.2	86.7	57.7	
			19/04/2012 14:00	1:00:00	4.2	306.3	67.0	85.4	51.6	
			19/04/2012 15:00	1:00:00	4.9	280.8	70.5	91.8	53.5	
			19/04/2012 16:00	1:00:00	4.0	290.8	72.0	90.9	58.4	
			19/04/2012 17:00	1:00:00	4.5	300.5	76.2	90.6	56.3	
			19/04/2012 18:00	1:00:00	4.6	300.3	70.8	92.8	47.6	
			19/04/2012 15:00	1:00:00	4.9	280.8	56.4	75.0	39.6	
			19/04/2012 08:00	1:00:00	2.3	310.5	53.5	74.2	29.8	
			19/04/2012 08:00	1:00:00	2.9	248.5	56.6	94.3	39.0	
			19/04/2012 08:00	1:00:00	2.9	248.5	61.2	80.6	52.0	
			19/04/2012 11:00	1:00:00	3.1	238.5	61.7	83.6	54.7	
GN1	19/04/2012 12:00	1:00:00	3.1	238.3	60.6	80.8	54.3			
	19/04/2012 15:00	1:00:00	3.6	238.3	61.3	75.8	53.9			
	19/04/2012 16:00	1:00:00	3.8	232.0	61.8	80.7	50.9			
	19/04/2012 08:00	1:00:00	2.3	310.5	54.9	82.5	23.6			
AN1	5.7	12.0	20/04/2012 07:00	1:00:00	3.4	255.8	68.4	90.9	51.1	
			20/04/2012 08:00	1:00:00	2.2	267.8	70.0	88.4	60.8	
			20/04/2012 09:00	1:00:00	2.3	253.5	68.8	91.0	56.3	
			20/04/2012 10:00	1:00:00	3.1	273.5	71.2	91.4	54.1	
			20/04/2012 11:00	1:00:00	2.3	305.0	71.5	96.4	56.7	
			20/04/2012 12:00	1:00:00	2.5	295.5	71.0	90.4	52.8	
			20/04/2012 13:00	1:00:00	2.2	268.5	71.5	89.2	49.8	
			20/04/2012 14:00	1:00:00	3.2	338.8	69.2	89.7	51.8	
			20/04/2012 15:00	1:00:00	3.5	319.8	66.8	94.3	49.3	
			20/04/2012 16:00	1:00:00	3.9	336.0	63.9	92.4	45.8	
			20/04/2012 08:00	1:00:00	2.2	267.8	54.5	72.5	39.9	
			20/04/2012 18:00	1:00:00	3.2	328.5	54.1	75.4	27.4	
			20/04/2012 15:00	1:00:00	4.1	265.8	51.7	83.7	38.2	
			GN1	20/04/2012 08:00	1:00:00	5.6	214.8	63.2	91.9	52.4
				20/04/2012 09:00	1:00:00	4.4	207.8	74.1	96.7	52.2
				20/04/2012 10:00	1:00:00	3.2	212.5	66.0	90.7	51.9
20/04/2012 11:00	1:00:00	3.2		233.3	64.3	88.0	52.4			
20/04/2012 12:00	1:00:00	2.6		247.0	60.4	83.6	50.7			
20/04/2012 13:00	1:00:00	2.7		302.3	71.4	100.7	54.7			
20/04/2012 15:00	1:00:00	4.1		265.8	65.9	86.6	51.5			
20/04/2012 16:00	1:00:00	3.7		263.8	66.0	91.8	52.7			
GN2	20/04/2012 18:00	1:00:00	3.2	328.5	62.7	90.4	25.6			
* Wind dominates noise data with wind speeds in excess of 7 m/s										
**Allowance of +/- 1.5dB accuracy of sound level meter (ref: IEC 61672 (2002-2005))										
The results show LAeq(1hr) for maximum daily values or values over 60dB for each day of monitoring										
	AN1		AN2		AN3		GN1		RN1	
	GN2	*Air temperature taken from Aughooose weather station.								

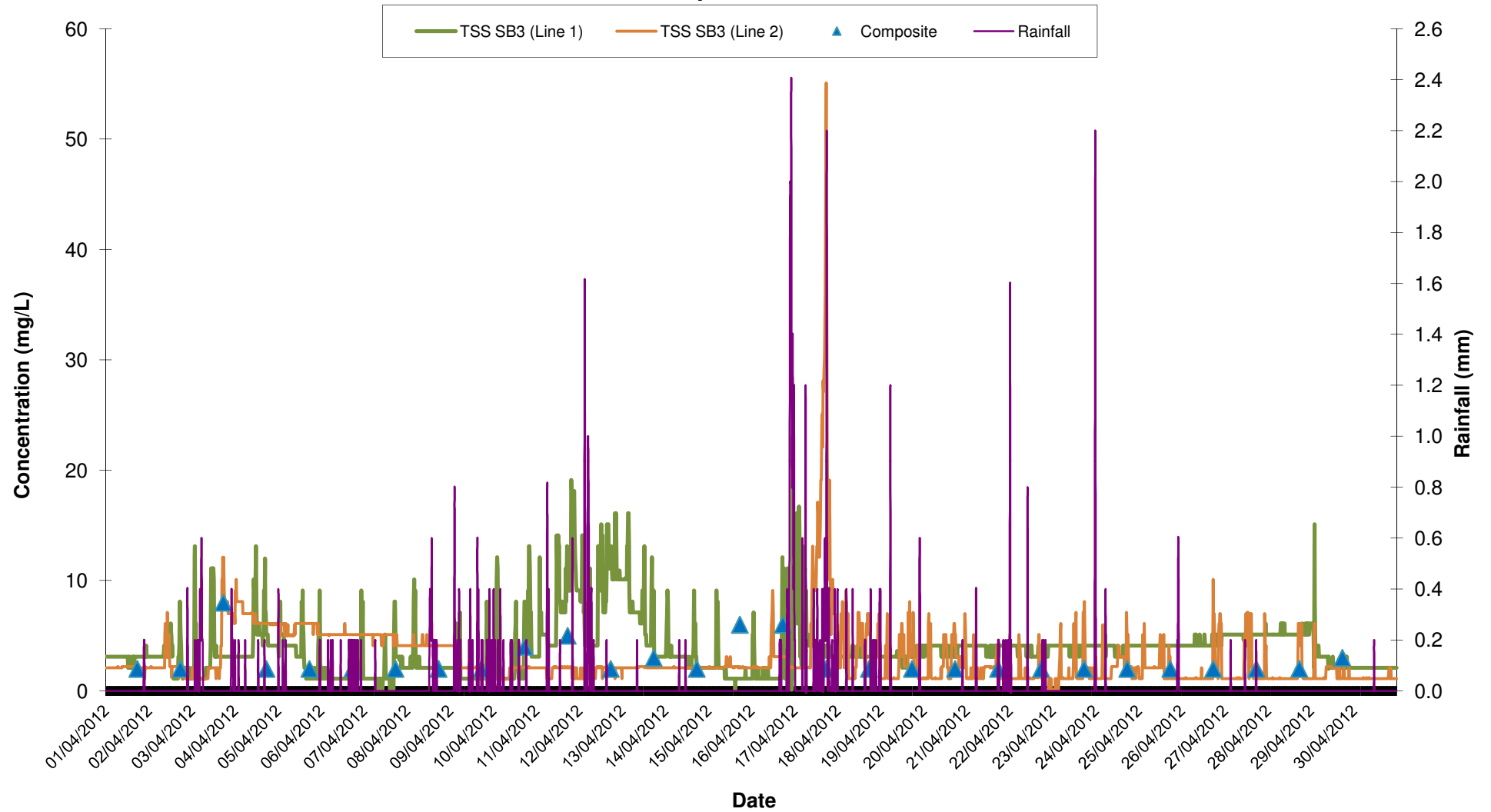






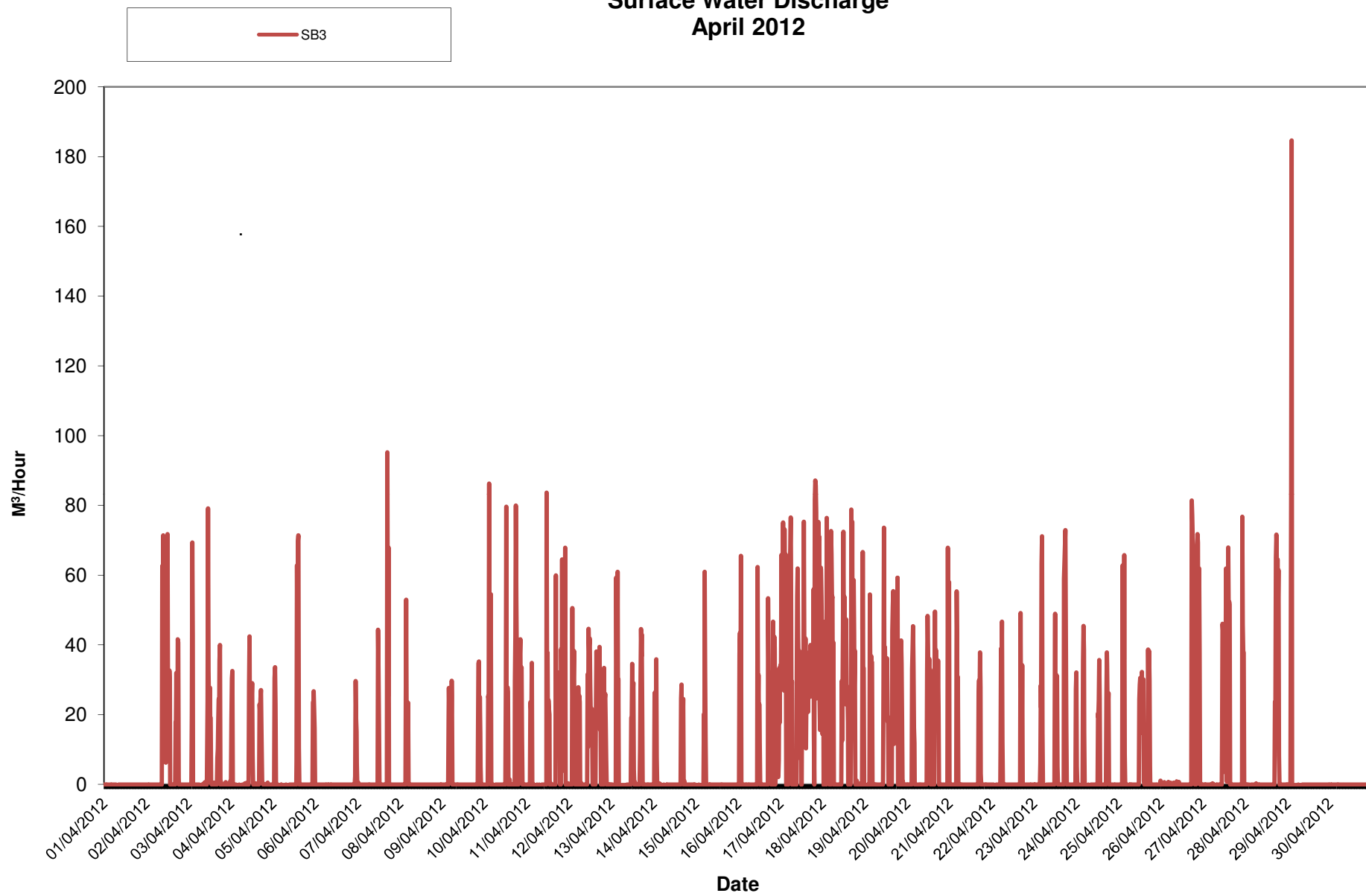
Vibration Monitoring Record Sheet				
Minimum Criterion 8mm/s				
Date	Location	PPV max (mm/s)	Location	PPV max (mm/s)
02/04/2012	V3	0.48	V2*	3.70
03/04/2012	V3	0.32	V2	0.40
04/04/2012	V3	0.40	V2	4.98
05/04/2012	V3	0.40	V2	5.30
06/04/2012	V3	0.40	V2	0.48
07/04/2012	V3	0.48	V2	0.40
09/04/2012	V3	0.40	V2	0.40
10/04/2012	V3	0.40	V2	1.04
11/04/2012	V3	0.88	V2	4.82
12/04/2012	V3	0.40	V2	1.04
13/04/2012	V3	0.40	V2	1.37
14/04/2012	V3	0.40	V2	0.32
16/04/2012	V3	0.40	V2	3.13
17/04/2012	V3	0.40	V2	4.42
18/04/2012	V3	0.40	V2	1.53
19/04/2012	V3	0.40	V2	1.04
20/04/2012	V3	0.40	V2	1.77
21/04/2012	V3	0.40	V2	0.32
23/04/2012	V3	0.48	V2	3.21
24/04/2012	V3	0.40	V2	1.45
25/04/2012	V3	0.40	V2	1.98
26/04/2012	V3	0.72	V2	3.61
27/04/2012	V3	0.40	V2	2.81
28/04/2012	V3	0.40	V2	0.64
30/04/2012	V3	0.48	V2	4.90
*Vibration events due to personnel activity in and around cage in which V2 is located have been excluded from this data				

# Total Suspended Solids April 2012





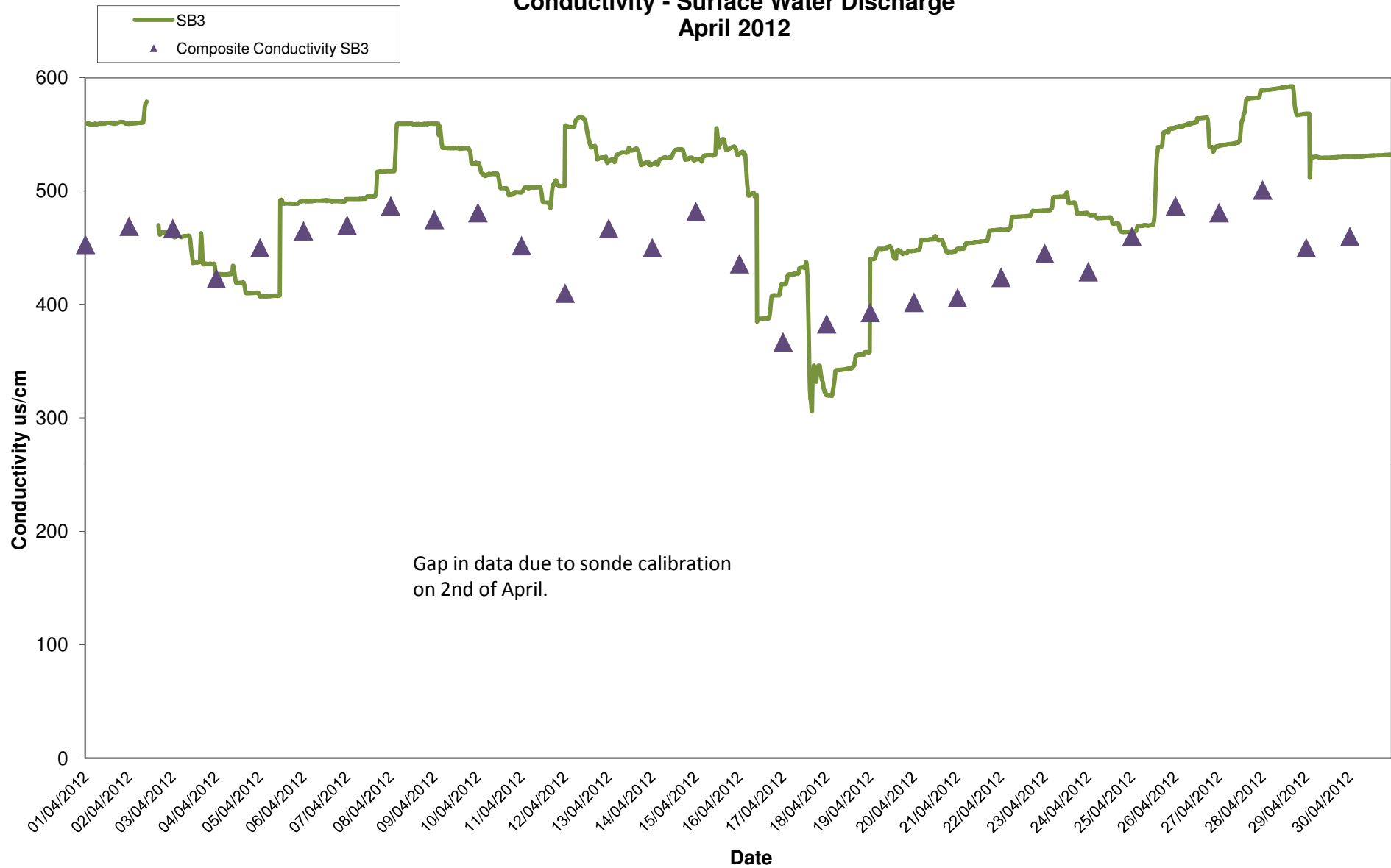
## Surface Water Discharge April 2012



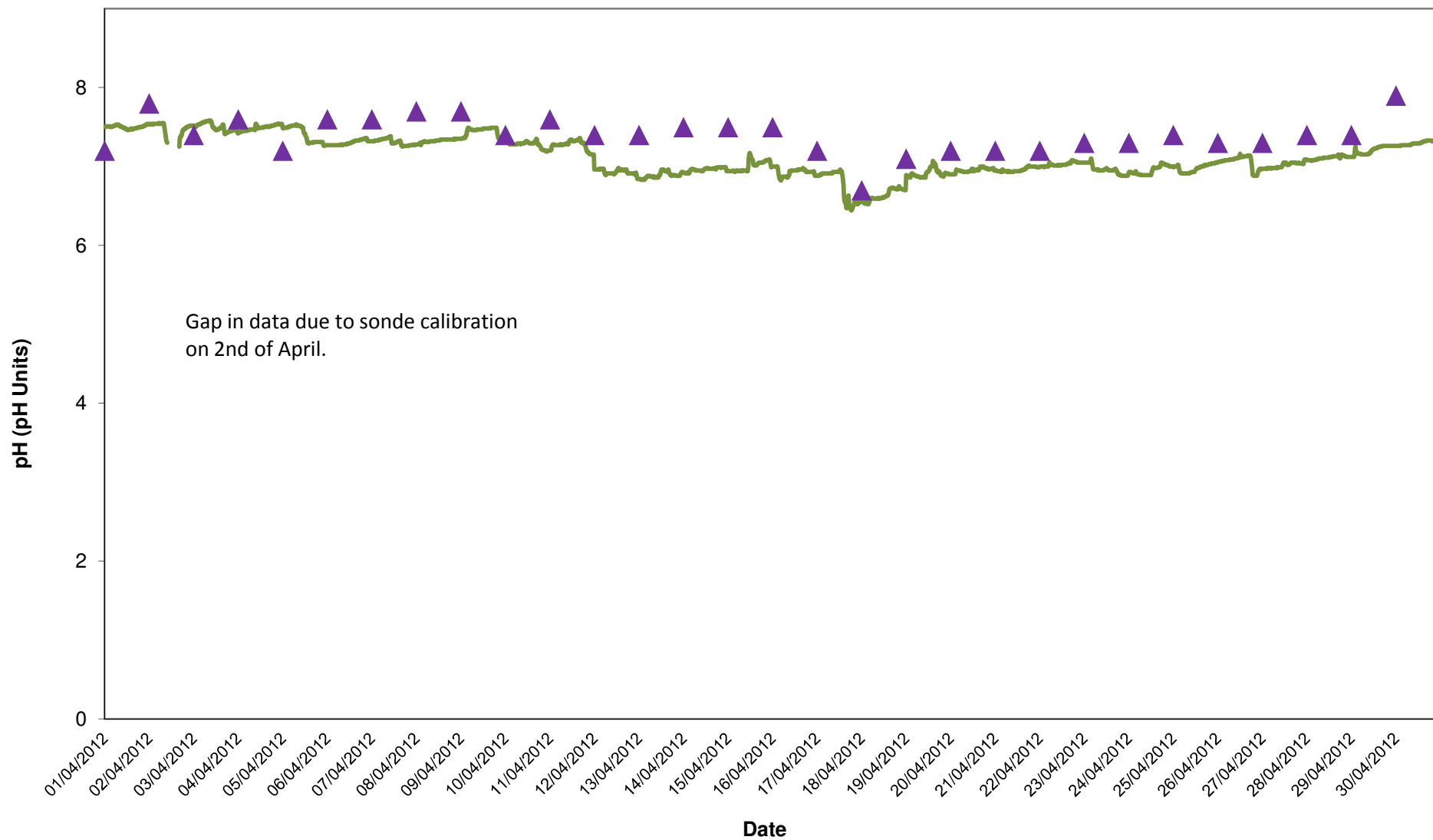
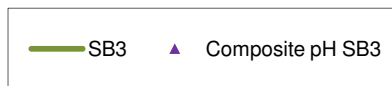
# Temperature - Surface Water Discharge April 2012



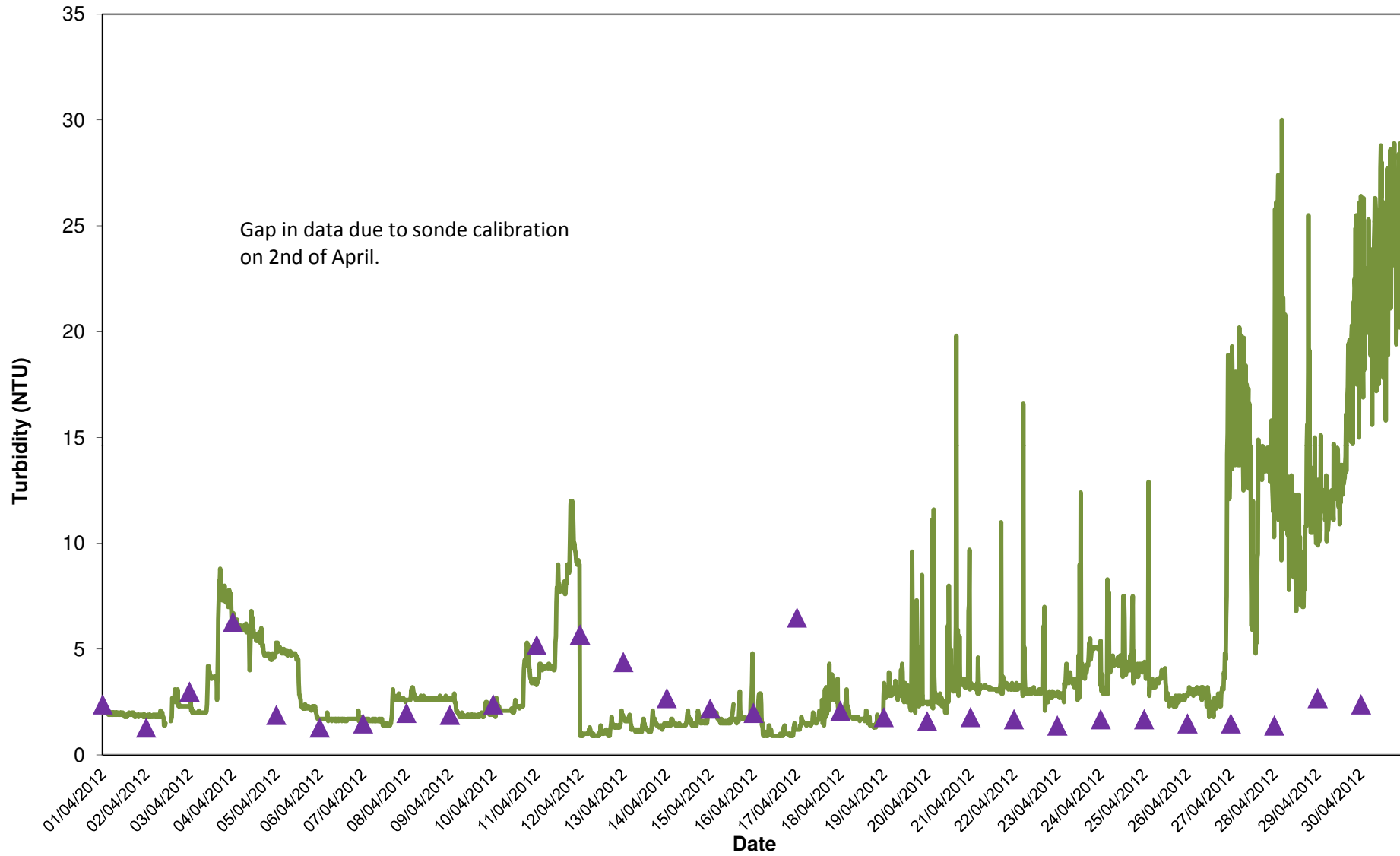
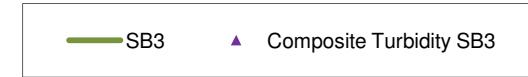
## Conductivity - Surface Water Discharge April 2012



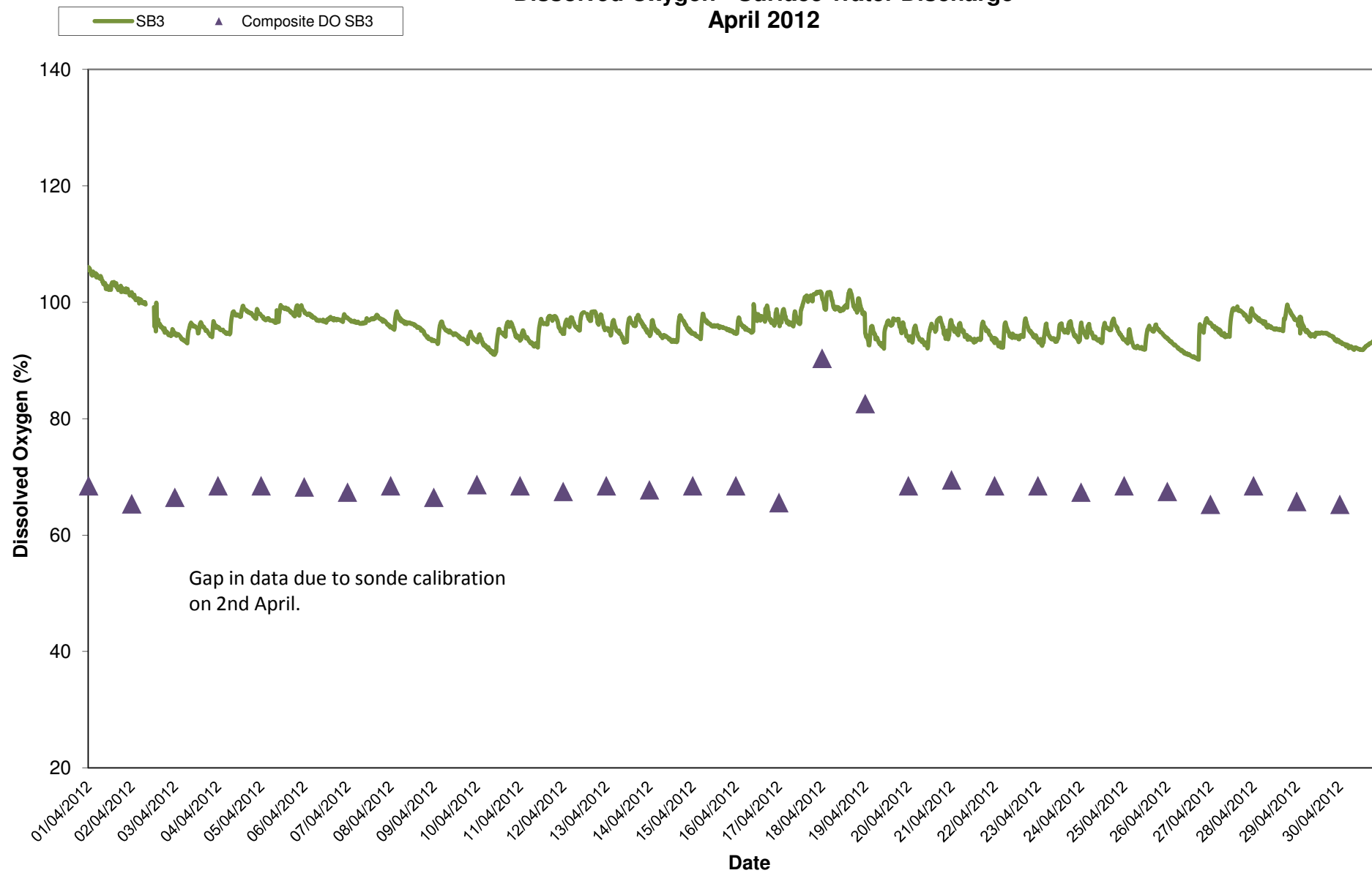
# pH - Surface Water Discharge April 2012



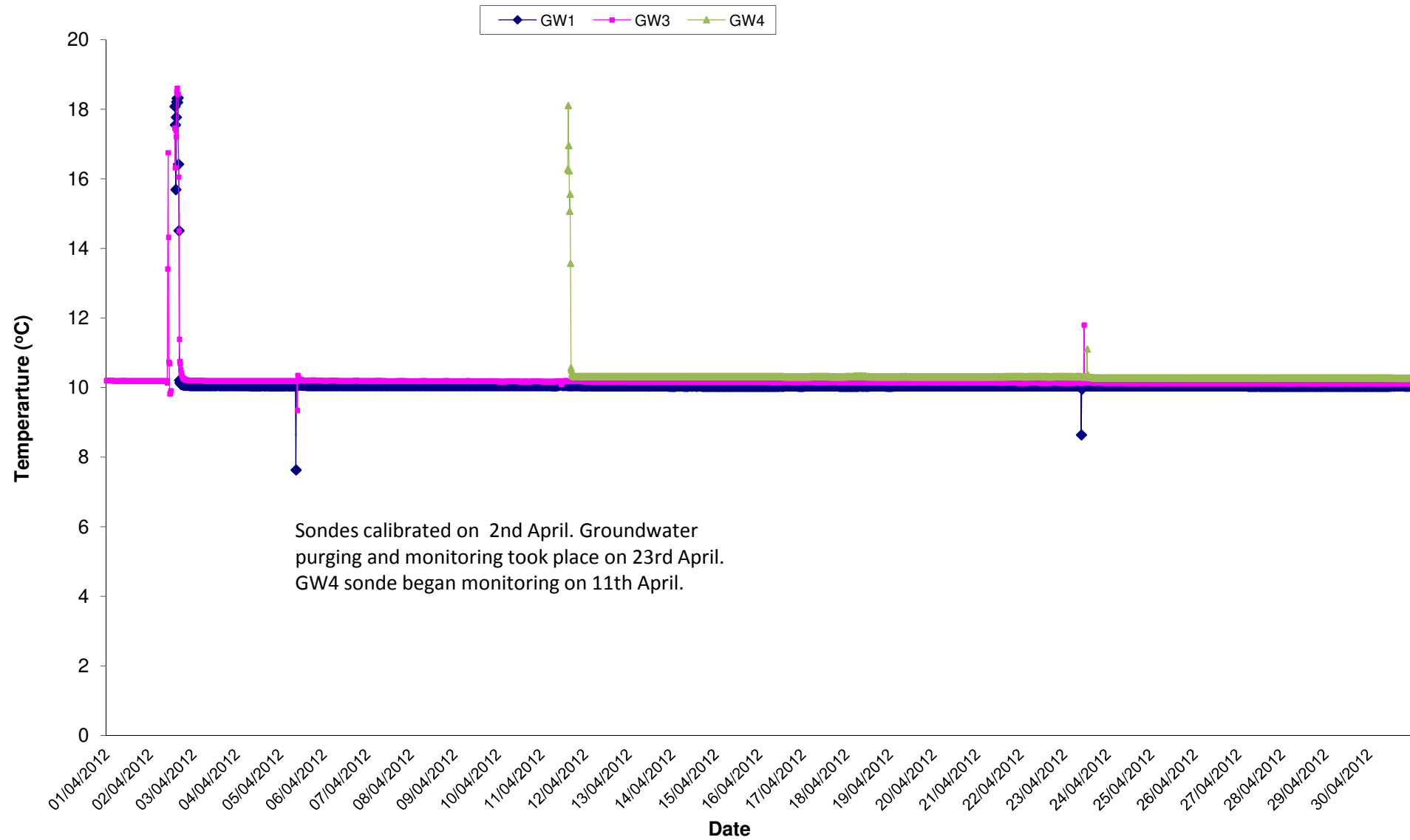
# Turbidity- Surface Water Discharge April 2012



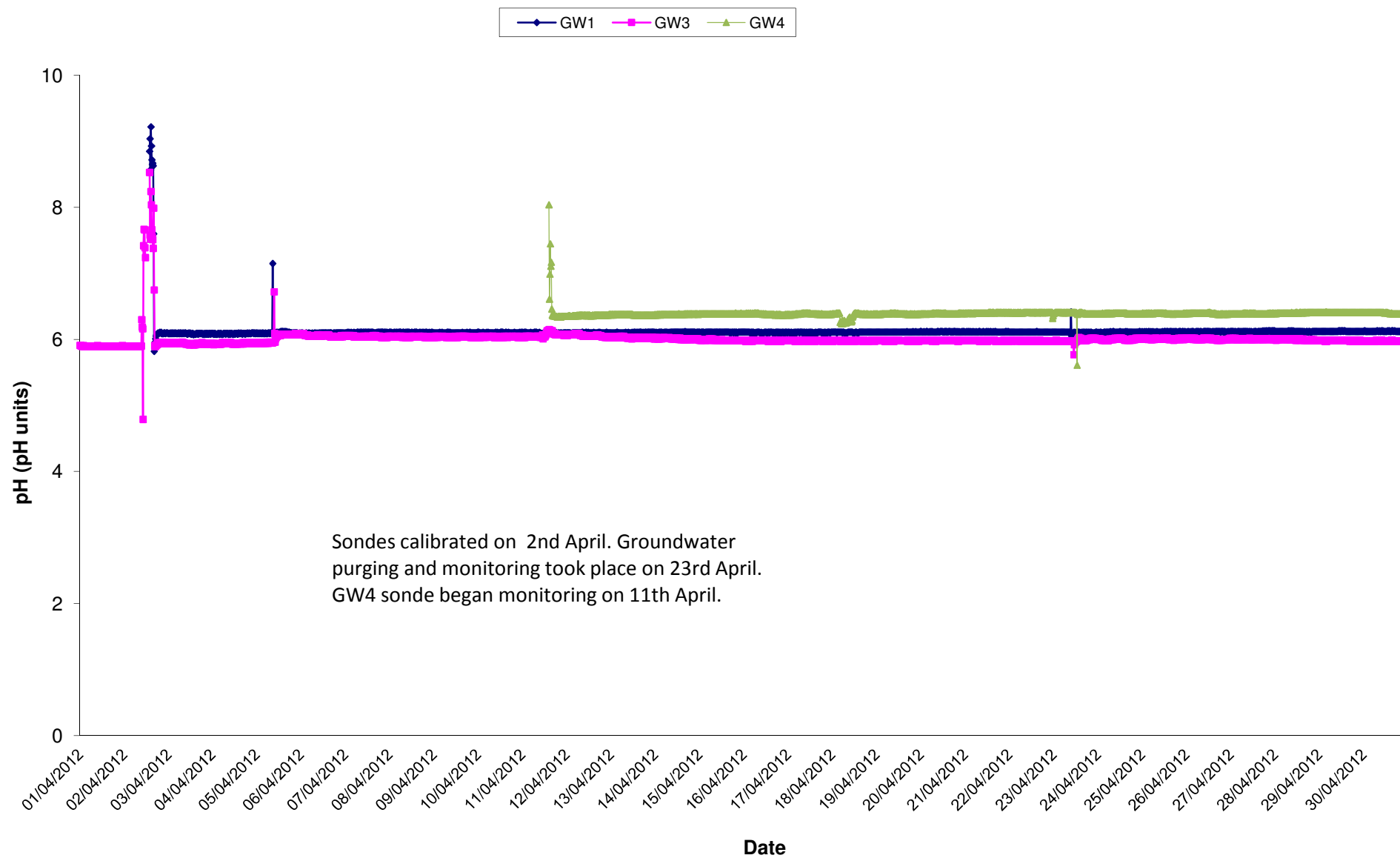
## Dissolved Oxygen - Surface Water Discharge April 2012



## Temperature - Groundwaters April 2012

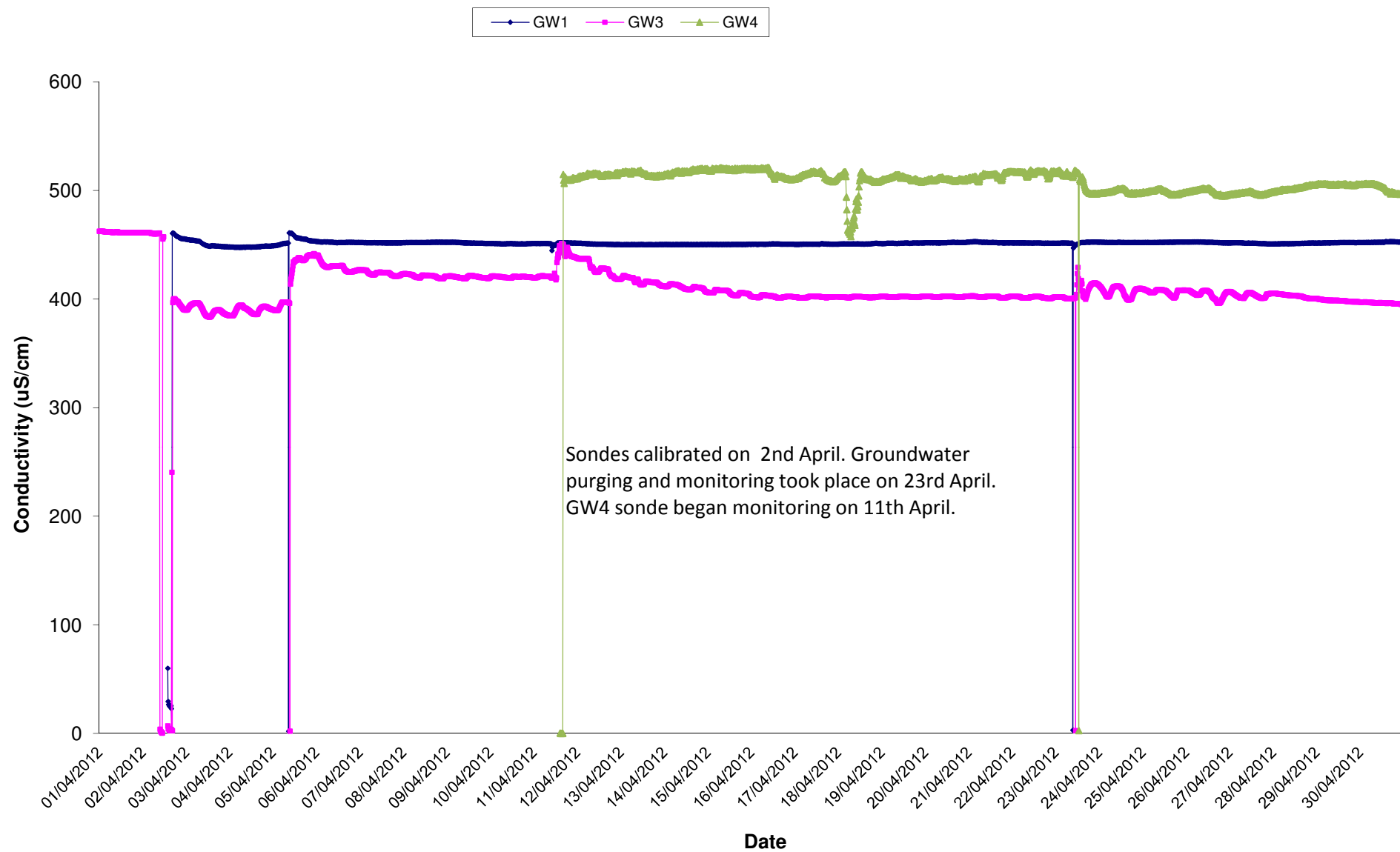


## pH - Groundwaters April 2012





## Conductivity - Groundwaters April 2012



## **Appendix 1**

**Appendix 1: Surface Water Monitoring Record Sheet- Onsite Monitoring**

	Date	Temp	DO	Cond.	Turbidity	pH
		oC	% Sat	μS/cm	NTU	
<b>Grab samples</b>						
DL 2	02/04/2012	11.1	93.6	579	3.6	7.5
DL 2	03/04/2012	10.9	88.4	561	3.1	6.9
DL 2	04/04/2012	7.3	93.7	547	6.4	7.0
DL 2	05/04/2012	10.6	98.1	509	3.0	7.7
DL 2	10/04/2012	9.2	65.1	488	4.0	7.3
DL 2	11/04/2012	10.7	94.2	491	9.2	7.7
DL 2	12/04/2012	10.2	95.0	465	6.0	6.8
DL 2	13/04/2012	10.7	96.1	453	6.0	7.8
DL 2	16/04/2012	9.2	84.6	474	4.0	7.6
DL 2	17/04/2012	9.7	94.1	418	13.0	6.5
DL 2	18/04/2012	11.7	87.2	402	17.4	6.7
DL 2	19/04/2012	12.0	92.4	441	3.8	7.1
DL 2	20/04/2012	10.3	94.7	438	3.3	7.1
DL 2	23/04/2012	9.9	67.5	431	1.0	6.4
DL 2	24/04/2012	11.8	85.1	441	3.0	6.5
DL 2	25/04/2012	11.3	89.8	535	2.0	6.6
DL 2	26/04/2012	9.6	56.5	573	3.0	7.7
DL 2	27/04/2012	10.0	95.2	595	2.7	7.5
DL 2	30/04/2012	8.7	67.9	508	3.0	7.2
<b>Sruwaddaon Bay</b>						
Sbay 1	14/03/2012	9.6	100.9	>LOD	2.6	7.1
Sbay 3	14/03/2012	9.5	97.6	>LOD	5.3	7.6
Sbay 4	14/03/2012	9.6	96.7	>LOD	6.1	7.8
Sbay 6	14/03/2012	9.6	100.6	>LOD	8.4	7.9
	= Indicative Only					
I.P.	= In Progress					
< LOD	= Below Limit of Detection					
> LOD	= Above Limit of Detection					

## **Appendix 2**

## 1. MONITORING PERIOD

Ecological monitoring activities undertaken during April 2012 included:

- Site inspections at the Aughooose and Glengad construction compounds;
- Ongoing weekly bird monitoring of the Sruwaddacon Bay area and onshore pipeline area in general;
- Ongoing non-avian faunal checks at known burrows at Glengad;
- Walkover of lands at SC2 Glengad prior to mowing.

## 2. AUGHOOSE SITE INSPECTIONS

Site visits at Aughooose included an inspection of the external perimeter by associate specialists on 18<sup>th</sup> April, and a walkover inspection of the compound (interior and exterior) on 24<sup>th</sup> April by the Project Ecologist, in the company of SEPIL Environmental Advisors and the National Parks and Wildlife Service (NPWS). On both occasions, the current situation in respect of ecological mitigation was noted in comparison with the previous site visits. As with previous visits, the purpose was to:

- Inspect the condition of the stored surface vegetation layer in the peat storage areas.
- Check the avian and non-avian mitigation measures, including: fencing, screening and wildlife proofing on the perimeter security fence; and others such as the status of covers on the settlement ponds / silt traps etc.
- Discuss findings with site personnel.

Weekly inspections of the exterior of the perimeter fence were also made during the weekly bird survey visits in April with regard to faunal (avian and non-avian) mitigation measures.

During the site inspections, and weekly bird surveys, it was noted that items previously flagged as requiring attention had been addressed (see also 5.1 below), and that maintenance was ongoing.

### 2.1 Peat storage areas - vegetation layer

Further small signs of spring growth were noted on the surface vegetation layer in the peat storage areas. This is consistent with what would be expected in view of the fact that the main growth period for most blanket bog plant species is late spring to summer, ie. much later than for other vegetation types in general.

### 3. GLENGAD SITE INSPECTIONS

Walkover inspections of the construction compounds were conducted at Glengad by associate specialists on 19<sup>th</sup> April, and by the Project Ecologist, in the company of a SEPIL Environmental Advisor and the National Parks and Wildlife Service (NPWS) on 24<sup>th</sup> April. Observations in relation to faunal (avian and non-avian) mitigation measures at the site compound were also made during the weekly bird survey visits in April.

On each occasion, the current situation in respect of ecological mitigation was noted in comparison with the previous site visits.

The purpose of the site walkovers was to:

- Check faunal (avian and non-avian) mitigation measures - screening and mammal gates;
- Conduct a general site inspection in relation to the condition of adjacent SAC habitats to the north of, compound
- Check known faunal burrows for evidence of activity.

During the site inspections, and weekly bird surveys in April, it was noted that items which had been previously flagged as requiring attention had been addressed.

In addition to these, a walkover of lands to check for the presence of ground nesting birds prior to the mowing of lands at SC2 was undertaken by associate specialist ornithologists in early April. (See 4.3 below)

#### 3.1 SAC Habitats

No change in habitat quality or condition was noted in respect of adjacent SAC habitats during the site inspection visits.

### 4. BIRDS

#### 4.1 Sruwaddacon Bay area – water birds and waders

Weekly low water and high water counts continued in the Sruwaddacon Bay area throughout April, as scheduled. Summary of findings:

- Brent Goose numbers peaked in the first week of April with 186 individuals recorded – a marginal increase on the previous week (185). Similar numbers of Brent Geese were recorded in the study area on 10<sup>th</sup> April – 181 individuals. As in previous years, the numbers of Brent Geese rapidly decreased from mid-April onwards with peak numbers of 38 individuals present on April 18<sup>th</sup> and 14 Brent Geese recorded on April 24<sup>th</sup>.

- Two colour ringed birds were observed with the rings successfully read. These records will be submitted to the IBGRG<sup>1</sup>.
  - No construction-related disturbance of Brent Geese was recorded at all. Brent Geese distribution and behaviour was consistent with past observations.
- As noted in March, the number of small wading birds is low in the study area at this time of year. A small number of Godwits (<15) principally Bar-tailed Godwits, was recorded during Low Water counts. A flock of 39 Sanderling was recorded on Rinroe strand on 11<sup>th</sup> April, presumably on passage.
- Sandwich Tern were observed in the study area on the 10<sup>th</sup> April - the first record for this species in 2012. Numbers of which typically increase to more than 100 individuals during the summer months.
- Two Comic Terns were observed at Rinroe Strand on 24<sup>th</sup> April – sightings on Common/Arctic Terns have been very infrequent in the study area during intensive field surveys of recent years.
- Black Guillemot, another infrequently recorded species, was observed on three dates in April.

#### **4.2 Sand Martin Monitoring**

Sand Martins were recorded on April 19<sup>th</sup>, having not been on site observed previously this year. This is the latest return date recorded for Glengad in recent years. However, the return of trans-Saharan migrants to Ireland has been somewhat later than average this year. Weekly surveys of the colonies at Glengad will continue throughout the breeding season.

#### **4.3 Glengad – walkover of lands at SC 2**

A walkover of a field at the location of site compound 2 (SC2, tunnel reception pit compound) was undertaken again in early April in advance of mowing. The purpose of this was to check for the presence of ground nesting birds.

In the absence of any ground nesting birds, clearance was given for mowing to be done.

### **5. NON-AVIAN FAUNA**

The next cycle of faunal monitoring surveys of the wider Bay area, including targeted otter surveys, which had been scheduled to start in late April/early May will now commence during the first full week in May. Monitoring will focus initially on areas in the vicinity of the construction compounds at Glengad and Aughoose, including shorelines and the Leenamore inlet, with surveys of the wider Bay area to follow

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<sup>1</sup> Irish Brent Goose Research Group

### **5.1 Aughoose**

- A frog translocation was made on one occasion in April, in accordance with the current wildlife licence.
- Some gaps with potential for mammal access into the Aughoose compound had been identified previously. However inspections during April showed these to have been addressed and the gaps closed off satisfactorily.
- Further to the sighting of a Common Lizard at the end of March during a period of unseasonably warm weather, a further observation was made in early April.

### **5.2 Glengad**

Faunal burrows were checked regularly in April, including during the above mentioned site inspection visits. No apparent change in faunal activity at, and in the vicinity of, the burrows since previous surveys/inspections was noted.

### **5.3 Casual Observations**

Casual observations in the wider area during April included:

- Stoat crossing the haul road (R314) on 3<sup>rd</sup> April;
- Adult Fox was observed foraging on the shore in Bird Count Section 6 on April 18<sup>th</sup>.



## **Appendix 3**

**Corrib Onshore Pipeline**  
Monthly Archaeological Report

**Aughoose, Glengad and pipeline investigations**

DAHG Licence Reference: 11E0214  
DAHG Metal Detection Licence Reference: 11R0090

Director: James Kyle

Month Ending: 30<sup>th</sup> April 2012

**COURTNEYDEERY**   
Heritage Consultancy

**IAC** Irish Archaeological  
Consultancy

## **1.0 General Review of Works**

### **1.1 Works**

Works commenced Monday the 25<sup>th</sup> of July 2011 at the Aughoose Compound.

Works commenced Monday the 6<sup>th</sup> of February 2012 at the Glengad Compound.

Works commenced Monday the 23<sup>rd</sup> April for the site investigation phase of the pipeline in Bellagelly townland.

## **2.0 Staffing Levels**

The following licenced archaeologists are present to monitor all ground breaking and excavation:

Site Director: James Kyle,  
Archaeologist: David Bayley.

## **3.0 Areas Investigated**

### **3.1 Aughoose**

Construction works were carried out at several areas of the Aughoose site, these were monitored under strict archaeological supervision. These works (Figure 1) comprised:

- Bulk excavation of mineral soil (3m below present ground level) from the filter press area (Plate 1) located between IR 3 and IR 4 continued throughout April.
- Monitoring of core piling was undertaken within the compound area on site. Piles were drilled to between 11m and 14m deep. The monitoring of the piling was limited to inspection of the excavated material as it was deposited into a series of skips (Plate 2) within the compound area.
- Bulk excavation facilitating the construction of foundations for the retaining walls in the corner of IR 1 & 2. This involved the excavation of the overlying peat stone matrix employed as part of the construction of IR 1 & 2 and the subsequent removal of 0.5m of mineral soil from the foundation (Plate 3).
- Bulk excavation facilitating the construction of a culverted services corridor beneath the line of IR 3. This involved the excavation of the overlying peat stone matrix employed as part of the construction of IR 3 and the subsequent removal of 0.5m of mineral soil from the foundation level (Plate 4).

In addition to the above; all construction works which had any impact on the peat and the underlying residual ground substrate were monitored and nothing of archaeological significance was revealed.

### **3.2 Glengad**

Construction works were carried out at several areas of the Glengad site; these were monitored under strict archaeological supervision. These works (Figure 2) comprised:

- The removal of the topsoil layer (0.4-0.5m in depth) in advance of the excavation of the backfilled offshore pipeline pulling head (Plate 5).
- The excavation of the backfilled material from an area 32m E-W x 22m N-S x 3m in depth, located above the offshore pipeline pulling head (Plate 6).
- The excavation of topsoil (0.4-0.5m in depth) and subsoil to a depth of 2m below present ground level from an area measuring 20m x 10m, adjacent to the northern fence line to facilitate the construction of a settlement lagoon in this location (Plate 7).
- The excavation of topsoil (0.2-0.38m in depth) to construct an access route (5m in width, Plate 8) to the silt buster area from the main access road.
- The excavation of topsoil (0.4-0.65m in depth) from an area measuring 20m x 7m oriented northwest-southeast. This was located adjacent to the site fence line and excavated to facilitate the construction of the silt buster (Plate 9).
- The excavation of topsoil (0.4-0.65m in depth) and subsoil to a depth of 2.7m below present ground level from an area measuring 10m x 10m (Plate 10), adjacent to the silt buster area, to facilitate the construction of a series of manhole chambers, with a further 4.5m x 4.5m to the north of this excavated to a depth of 4m to be used as a soak-away (Plate 11) chamber for the silt buster.
- No further excavation or construction works of any kind were carried at the southern end of the access road in the vicinity of the enclosure site (MA004-015) this month. Archaeological monitoring has taken place on two separate occasions in the vicinity of this site, (Frazer 2002 and Kieran 2009)<sup>1</sup>. No archaeological features or finds were revealed.

In addition to the above; all construction works which had any impact on the underlying residual ground substrate were monitored and nothing of archaeological significance was revealed.

### **3.3 Pipeline Investigations**

Preparation for site investigation works commenced along the pipeline in Bellagelly South townland. The works will comprise a series of boreholes, test pits and other investigative works (shear vanes and hand probes). All works are confined to a working corridor in a plantation forested area in Bellagelly South townland. All excavation works are being monitored under archaeological supervision. These works for the month of April comprised:

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<sup>1</sup> Monitoring of topsoil removal Glengad (Licence Ref. 02E0568, W. Frazer) Margaret Gowen Ltd. Archaeological monitoring of construction works associated with the Corrib Gas Pipeline at Broadhaven Bay (Licence Ref. 09E176 and 09E177, E. Kieran) Moore Marine.

- Borehole nos. INC 8 & INC 9 and PZ9.
- Test pit nos. TP SR1 (Plate 12) and TP SR2. Excavation of these pits revealed a fibrous firm peat. No archaeological features, sites or material were revealed as a result of investigations to date.

#### **4.0 Projected Future Work and Staff**

Archaeological monitoring, and where deemed necessary metal detection, will be undertaken during the construction phase of the project to determine the presence (if any) of below ground archaeological features or the presence of artefacts of an archaeological nature. This will be conducted by two licenced archaeologists, James Kyle and David Bayley, on a rotational basis between Aughooose, Glengad and Bellagelley townlands.

#### **5.0 Reporting**

The monthly report records the extent of works requiring archaeological monitoring and metal detection. In the event of archaeological material being revealed, archaeologists will record, photograph and map any new discovery. As part of the licensing requirement a final report will be completed upon the cessation of ground breaking and excavation works. This report will describe in detail the results of the archaeological monitoring programme and will be sent to the statutory authorities in accordance to the licensing agreement.

#### **6.0 Location of Artefacts and Samples**

To date no artefacts or samples have been retrieved from Aughooose, Glengad or Bellagelley townlands where investigations have occurred.

#### **7.0 Information any Unforeseen Difficulties**

N/A

#### **8.0 Health and Safety Issues**

Both on-site archaeologists have been inducted after receiving the requisite conflict management training and manual handling training.

#### **Summary**

Nothing of an archaeological significance has been uncovered as a result of monitoring or metal detection of materials excavated from construction works on either site to date.



Plate 1 Aughooose: Excavation of mineral soil from the filter press area, facing southeast.



Plate 2 Aughooose: Excavated material from core piling from compound, facing west.





Plate 3 Aughooose: Excavation of material from retaining walls.



Plate 4 Aughooose: Bulk excavation from retaining walls, facing west.

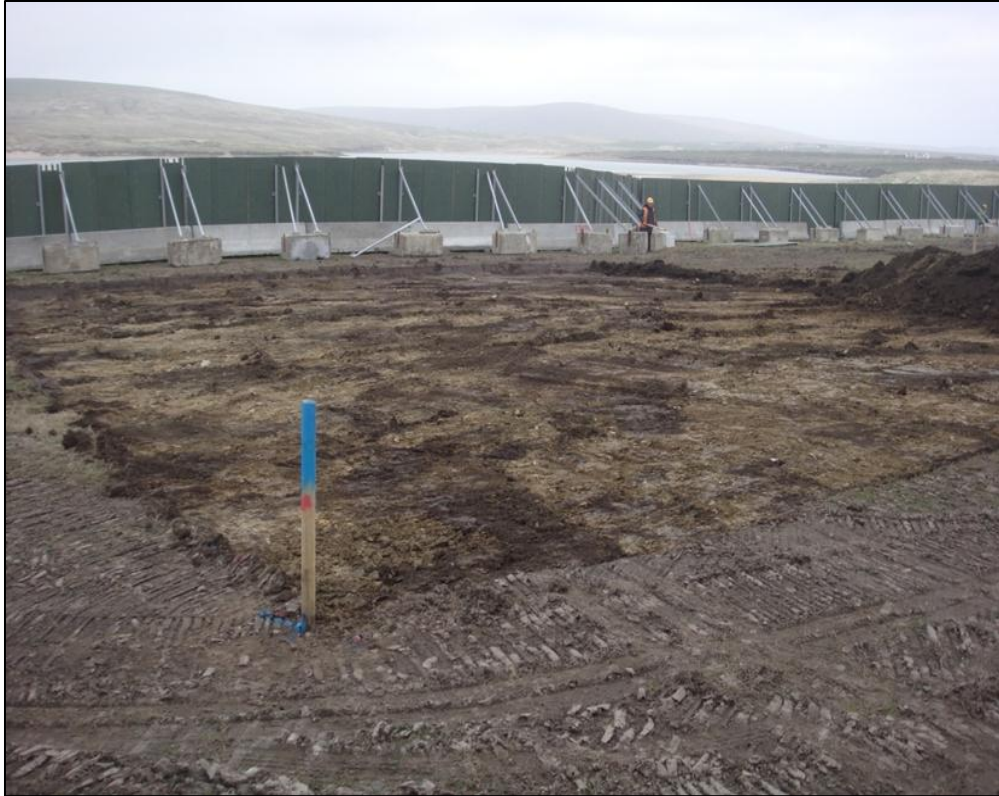


Plate 5 Glengad: Topsoil removal



Plate 6 Glengad: Bulk excavation, facing east.





Plate 7 Glengad: Topsoil stripping of settlement lagoon, facing west.



Plate 8 Glengad: Topsoil stripping of silt buster access way, facing west.





Plate 9 Glengad: Topsoil stripping of silt buster area, facing southeast.



Plate 10 Glengad: Excavation of manhole chamber, facing northwest.





Plate 11 Glengad: Excavation of soakaway pit, facing northeast.



Plate 12 Pipeline investigations TP SR 1.

