

# **CORRIB GAS DEVELOPMENT**

**Report for PMC Meeting on 20<sup>th</sup> October 2010.**

**Prepared by Mr. Padraic Walsh, Senior Engineer,  
Project Manager for Mayo County Council.**

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## **Water Quality – Carrowmore Lake**

- Mayo County Council's Project Team has continued to monitor the surface waters in and around the Bellanaboy site. Summaries of the most recent verified results are attached, which are available on Mayo County Council Website [www.mayococo.ie](http://www.mayococo.ie).
- The results show that in the last monitoring period the discharge of surface water from the Terminal Site has had no significant impact on the water quality of the Bellanaboy River and Carrowmore Lake.
- The results also show that the discharge of surface water from the Terminal Site has had no adverse impact on the quality of drinking water produced at the Erris Regional Water Supply Scheme at Barnatra.

## **Environmental Issues at the Bellanaboy Site**

- Construction work at the terminal site is ongoing. Nitrogen/Helium testing has been completed. The main activity at present is systems testing and handover. Construction work is now about 98% complete.
- Surface water runoff from the terminal footprint, the carrier drain road and other roads outside the terminal footprint, is treated by the axonics unit prior to discharge to the site drainage system.
- During this reporting period monitoring on site by the developer recorded one exceedance of the total aluminium parameter at SP 1 (the main site discharge point) on 8/9/10. Monitoring on site by Mayo County Council staff confirmed the exceedance. This exceedance followed an intense rainfall event on 7/9/10. Values returned quickly to normal levels after the rainfall event. Noise levels on site were within the permitted noise ranges.
- Specific work activities outside normal hours are ongoing from time to time, subject to noise level restriction and the developer providing continuous noise monitoring which is submitted to Mayo County Council.

## **Community Fund**

Works have been completed on all projects for which funding was allocated. A close out report covering these projects is attached.

## **Transportation/Roads**

Road surfacing works have recently been completed on the L1204 Srahmore to Bellanaboy; L1202 Bellanaboy to Glengad and L1204/R314 Bellanaboy junction. 3.2Km of pavement strengthening works have also been carried out on the L5244 Bellanaboy to Aughoose road. The total cost of these works is €1.25m.

**Results from 25/06/2010 to 28/09/2010 (14 Samples taken)**

**Analysis by ELS Laboratory, Co. Cork**

<b>Parameter</b>	<b>Units</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>
<b>Suspended Solids</b>	<b>mg/l</b>	<5	<5	<5
<b>Turbidity</b>	<b>N.T.U</b>	5.1	14	1.5
<b>pH</b>	<b>pH units</b>	7.5	7.8	7.2
<b>Conductivity</b>	<b>uS/cm</b>	117	135	96
<b>Phosphate</b>	<b>mg/l P</b>	0.01	0.015	<0.009
<b>Total Phosphorous</b>	<b>mg/l P</b>	0.03	0.07	<0.01
<b>Ammonia</b>	<b>mg/l NH<sub>3</sub>-N</b>	0.2	2	<0.013
<b>Nitrate</b>	<b>mg/l NO<sub>3</sub>-N</b>	0.13	0.19	<0.12
<b>Nitrite</b>	<b>mg/l NO<sub>2</sub>-N</b>	0.016	0.044	<0.013
<b>Total Aluminium</b>	<b>ug/l Al</b>	35	129	18

**ERRIS REGIONAL WATERWORKS (Final Treated Water)**

**Results from 01/07/2010 to 15/10/2010 (108 Samples)**

**Analysis carried out at Erris Regional Waterworks**

<b>Parameter</b>	<b>Units</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>	<b>Drinking Water Limits</b>
<b>Colour</b>	<b>mg/l</b>	2	8	0	<10 Haz
<b>Turbidity</b>	<b>N.T.U</b>	0.14	0.57	0.02	<2.0 NTU
<b>Ph</b>	<b>pH units</b>	7.1	8.4	6.5	6.5 – 8.5
<b>Free Chlo/Res</b>	<b>mg/l</b>	0.86	1.28	0.44	>0.3
<b>Total Chlo/Res</b>	<b>mg/l</b>	1.1	1.5	0.6	>0.3
<b>Flourine</b>	<b>ppm</b>	0.69	0.9	0.16	0.6-0.8
<b>Total Aluminium</b>	<b>ug/l</b>	38	150	0	200

**BELLANABOY RIVER**

**(Upstream and Downstream of discharge from Terminal site)**

**Results from 25/06/2010 to 28/09/2010 (14 Samples taken)**  
**Analysis by ELS Laboratory, Co. Cork**

Parameter	Units	BEL 1 (upstream)			BEL 2 (downstream)		
		Average	Max	Min	Average	Max	Min
Temp.	°C	13.7	15.2	11.1	13.7	15	11
Dissolved Oxygen	% Sat.	92	99	81	90	99	80
Suspended Solids	mg/l	<5	<5	<5	5	9	<5
Turbidity	N.T.U	2.4	5.1	0.6	2.8	6.5	0.9
pH	pH units	6.8	7.4	5.7	6.8	7.5	5.8
Conductivity	uS/cm	149	347	58	154	277	66
Total Dissolved Solids	mg/l	125	215	45	127	230	50
Phosphate	mg/l P	0.02	0.04	<0.009	0.02	0.06	<0.009
Total Phosphorus	mg/l P	0.05	0.1	<0.01	0.05	0.1	0.02
Ammonia	mg/l NH <sub>3</sub> -N	0.1	0.5	<0.007	0.12	0.56	<0.007
Nitrate	mg/l NO <sub>3</sub> -N	0.12	0.152	<0.12	0.14	0.25	<0.12
Nitrite	mg/l NO <sub>2</sub> -N	0.02	0.05	<0.013	0.019	0.045	<0.013
Total Aluminium	ug/l Al	115	277	19	117	293	65

**SP1 (Discharge point from terminal site)**  
**Results from to 25/06/2010 to 28/09/2010 (14 Samples)**  
**Analysis by ELS Laboratory, Co. Cork**

Parameter	Units	SP 1		
		Average	Max	Min
Suspended Solids	mg/l	<5	<5	<5
Turbidity	N.T.U	2.4	16.7	0.6
pH	pH units	7.6	8.2	6.8
Conductivity	uS/cm	278	373	156
Total Dissolved Solids	mg/l	203	285	140
Phosphate	mg/l P	0.01	0.022	<0.009
Total Phosphorus	mg/l P	0.02	0.07	<0.01
Ammonia	mg/l NH <sub>3</sub> -N	0.05	0.155	<0.007
Nitrate	mg/l NO <sub>3</sub> -N	0.13	0.201	<0.12
Nitrite	mg/l NO <sub>2</sub> -N	0.012	0.045	<0.013
Total Aluminium	ug/l Al	96	648	17

**Axonics Water Treatment Units (Post-treatment Results)**  
**Results from 25/06/2010 to 28/09/2010 (12 samples)**

**Analysis by ELS Laboratory, Co. Cork**

<b>Post-Treatment (12Samples)</b>				
<b>Parameter</b>	<b>Units</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>
<b>Suspended Solids</b>	<b>mg/l</b>	6	13	<5
<b>Turbidity</b>	<b>N.T.U</b>	1.7	3.3	0.4
<b>pH</b>	<b>pH units</b>	6.9	7.1	6.8
<b>Conductivity</b>	<b>uS/cm</b>	300	349	188
<b>Total Dissolved Solids</b>	<b>mg/l</b>	198	270	135
<b>Phosphate Total</b>	<b>mg/l P</b>	0.009	0.017	<0.009
<b>Phosphorus Total</b>	<b>mg/l P</b>	0.014	0.04	<0.01
<b>Ammonia</b>	<b>mg/l NH<sub>3</sub>-N</b>	0.03	0.07	<0.007
<b>Nitrate</b>	<b>mg/l NO<sub>3</sub>-N</b>	0.2	0.48	<0.12
<b>Nitrite</b>	<b>mg/l NO<sub>2</sub>-N</b>	0.016	0.047	<0.013
<b>*Total Aluminium</b>	<b>ug/l Al</b>	322	630	146

**MAYO COUNTY COUNCIL**

**Memo**

To: Padraic Walsh S.E.

From: Tom McDonnell E.E.

Date: 23/09/2010

Re: Peat haulage route community fund – Close out report

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As part of the peat haulage operation from the Corrib Gas Terminal site SEPIL were required to pay €1 per cubic metre of peat transported. In total 450,000cu.m of peat was transported from the site in Ballinaboy to a Bord Na Mona operated peat deposition site at Srahmore 11km away.

Applications were invited from community groups for development projects along the peat haulage route. All application were assessed by a committee consisting of representatives of Mayo County Council, local representatives and councillors.

Four applications were approved for funding:

1. Ballinaboy residents €145,000
2. Glencullen river community group €60,000
3. Bangor Angling Club €185,000

4. Attawalla residents	€60,000
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Total	€450,000
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All projects are complete.

The projects are outlined as follows:

**Ballinaboy residents** **€145,000**

This project involved the construction of a footpath along the start of the L1204 Ballinaboy to Bangor road. This project is the first phase of a footpath linking both parts of the village together to allow residents to walk along this heavily trafficked route. Phase 2 will be carried out a later date when funds become available. The works were carried out by Mayo County Council Belmullet area office outdoor staff.



Photograph – Post-Construction

**Glencullen river community group                      €60,000**

This project involved the upgrade of the Glencullen river banks to improve both fishing access and farming practices in the Glencullen area. A total of 4,140 tonnes of large rock were put in place which restored a total of four miles of river and protected a total of 2,047 metres of riverbank with rock armour (rip rap). This created 35 new holding pools and 683 metres of new spawning area

The works were carried out by the North Western Regional Fishery Board (NWFRB) in conjunction with Mayo County Council. The North Western Regional Fishery Board (NWFRB) contributed funds matching the value of the community fund to the project. A total of €20,000 was spent on the river banks.



Photograph – Pre-Construction



Photograph – Post-Construction

**Bangor Angling Club**

**€185,000**

This project involved the construction of a 21 berth marina facility on the shores of Carrowmore Lake. The project was brought forward by the members of the Bangor Angling Club to improve fishing access onto the lake and to improve safety for all anglers in all weathers. The works were carried out by Mayo County Council Belmullet area office outdoor staff in conjunction with a local ground works contractor Peter Winters plant hire Ltd and an Offaly company Inland and Coastal Ltd who manufactured the pontoon. The marina facility is proving extremely popular with both local and visiting anglers and is very heavily used.



Photograph – Pre-Construction



Photograph – Post-Construction

**Attawalla residents**

**€60,000**

This project involved the construction of a footpath along the end of the L1204 Ballinaboy to Bangor road. This project is the first phase of a footpath linking the village of Attawalla to Bangor town 1.5km away. Phase 2 will be carried out a later date should funds become available. The works were carried out by Mayo County Council Belmullet area office outdoor staff.



Photograph – Post-Construction

The construction of all four projects is now complete and they are of immense value to all four community groups.

Regards

*Tom McDonnell*

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Tom McDonnell  
Executive Engineer,  
Mayo County Council

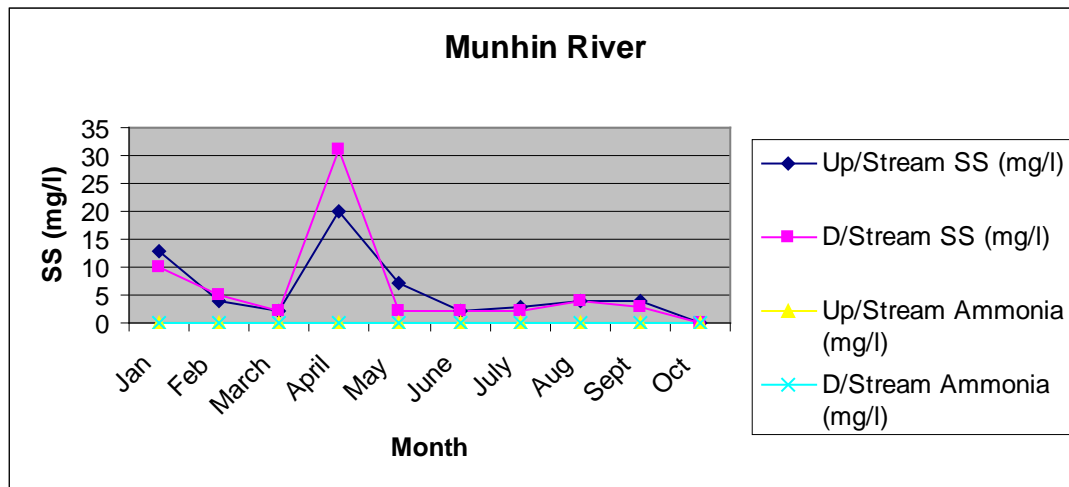
Srahmore Peat Repository  
WL 0199-01  
**Environmental Management System Up-Date No. 47 (20/10/10)**

Decommissioning and Rehabilitation

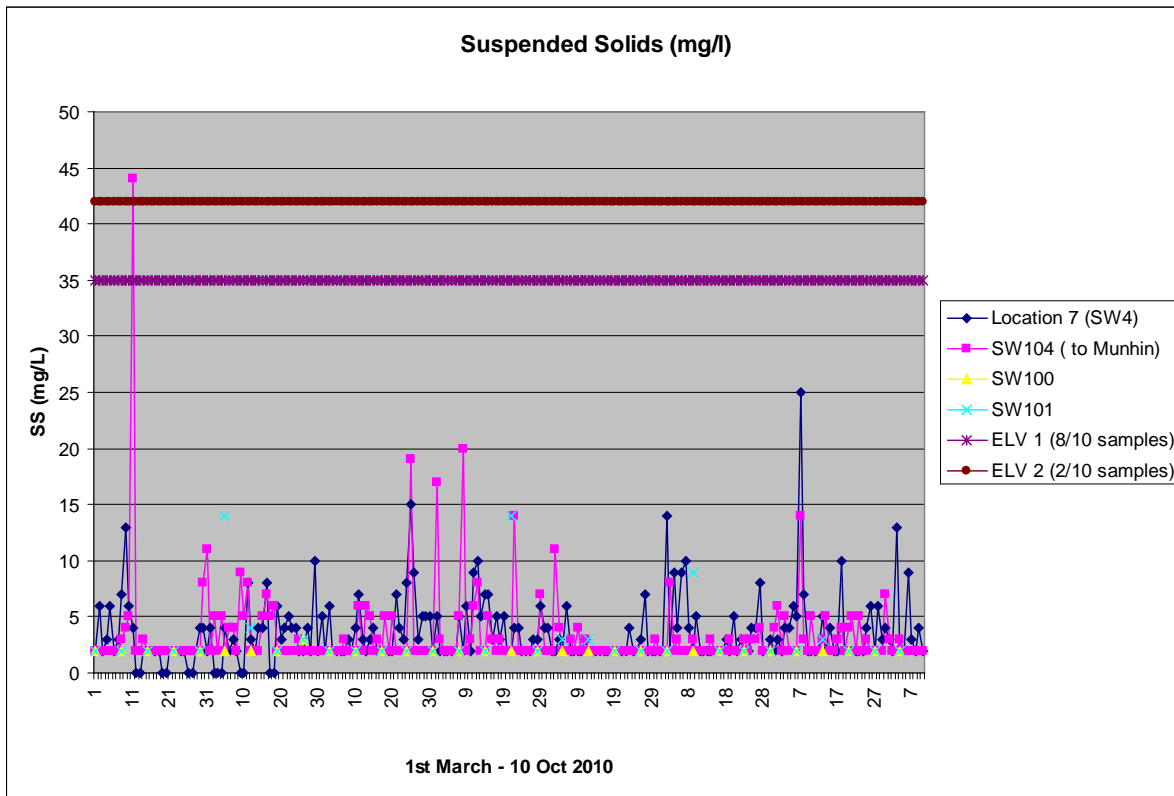
Environmental Monitoring:

- The site was fully compliant since the last meeting.
- There were no complaints received at the site since the last meeting.
- There were no incidents recorded at the site since the last meeting.

**Monitoring Results: Munhin River (2010)**



## Monitoring Results: SW4/104/100&101 (2010)



The average Suspended Solids for 2010 to date is 3.9 mg/l at SW 4 and 3.2mg/l at the discharge from the site to the Munhin at SW104.

### Srahmore Site Update:

#### Personnel:

##### On Site

		Tractor & General Oper.		Environmental	0
BnM (Engineering)	0	Fitters	1	Archaeological	0
Site Admin & Mgt.	1	Electricians	0		
		Site Supervisors	1		
		Excavator & Shovel	3		
<b>TOTAL EMPLOYED</b>					<b>6</b>

##### Contractors

Security	0	Catering	0		
<b>TOTAL EMPLOYED</b>					<b>0</b>

##### Off Site

Head Offices Staff	1			BnM (Support)	1
Environmental Officer	1				
<b>TOTAL EMPLOYED</b>					<b>3</b>

<b>OVERALL TOTAL EMPLOYED</b>					<b>9</b>
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**Srahmore Site Operations:**

The Srahmore site is now operating under a new waste Licence ( W0199-02), available at <http://www.epa.ie/terminalfour/waste/waste-search>.

Ongoing maintenance of existing silt ponds ,and internal road network.

**As of the 10th October 2010, the Srahmore site is compliant with Waste Licence W0199-02.**

# Bellanaboy Bridge Site

## Report to the Project Monitoring Committee

20<sup>th</sup> October 2010

### Works Undertaken

The following construction and related operations are ongoing:

- Operation of Axonics plant, Environmental and geotechnical monitoring
- Civil's and foundations works
- Scaffolding erection and dismantling
- Insulation on tanks and pipework.
- Building works.
- Electrical and Instrumentation works including cable rack installation, cable installation and cable termination.
- Equipment deliveries and equipment installation.
- Installation of pipework
- Testing and cleaning of pipe work
- Tankage, pipework and steelwork grit blasting and painting.
- Testing and operational qualification of systems including leak testing
- Transfer of Shell Operations team into the terminal Administration block.

### Outlook from October 2010 Onwards:

- Continuation of environmental monitoring, geotechnical monitoring and Axonics plant operation.
- Continuation of civil's and foundation works.
- Continuation of scaffolding erection and dismantling.
- Continuation of insulation works on tanks and pipework
- Continuation of building works
- Continuation of electrical and instrumentation works including cable rack installation, cable installation and cable termination.
- Continuation of equipment deliveries and equipment installation
- Continuation of piping installation
- Continue testing and cleaning of pipe work.
- Continuation of tankage, pipework and steelwork grit blasting and painting.
- Continued testing and operational qualification of systems.
- Phased demobilisation of contractor facilities, equipment and personnel.

### ENVIRONMENTAL REPORT

**Dust** - Dust deposition results of 58, 54 43 and 75 mg/ m<sup>2</sup>/day were recorded at D1, D2, D3 and D4 respectively for July. Dust deposition results of 127, 405, 72 and 53 mg/ m<sup>2</sup>/day were recorded at D1, D2, D3 and D4 respectively for the month of August. Dust deposition results of 109, 118, 67 and 85 mg/ m<sup>2</sup>/day were recorded at D1, D2, D3 and D4 respectively for September.

All values, with the exception of the D2 value of 405 mg/m<sup>2</sup>/day in August were within the limit of 350 mg/ m<sup>2</sup> /day. The D2 value was found to be due to algal growth within the sample.

**Noise** – All construction related noise levels recorded were below the agreed noise limits and any unusual values were attributed to instrumentation or weather conditions.

**Traffic** - There were approximately 918 traffic movements during July, August and September.

**Fuel** – Approximately 271 m<sup>3</sup> of fuel was delivered to site during July, August and September.

**Waste** – The following waste quantities were removed from site during July, August and September: 16 skips of refuse (Canteen waste, etc.), 15 skips of cardboard/plastics, 1 skip of metal waste, 16 skips of timber and 3 skips of rubble.

There were 13 hazardous and oily waste collections for the removal of oily waste and chemical waste for the same period.

The effluent holding tanks were emptied of approximately 2236 m<sup>3</sup> of sewage during the same period.

**Water Quality** – A summary of the main surface water parameters measured for grab sampling during July, August and September (available range of lowest to highest) at SP1 is presented below:

pH (pH Units)

6.4 to 7.5

Suspended Solids (mg/l)

2 to 9

Orthophosphate (µg/l P)

<10

Nitrite (mg/l NO<sub>2</sub>)

<0.017

Conductivity (µS/cm)

158 to 342

Turbidity (NTU)

1.4 to 5.2

Groundwater samples were taken and borehole monitoring equipment was downloaded for the months of July, August and September. A summary of the main groundwater parameters measured (range of lowest to highest) follows:

pH (pH Units)

5.3 to 7.5

Conductivity (µS/cm)

173 to 431

Nitrate (mg/l NO<sub>3</sub>)

<0.44 to 4.89

Total Dissolved Solids (mg/l)

55 to 431

**Complaints** – There were no written construction activity related environmental complaints logged with SEPIL during July, August and September.

**Incidents** – There were no environmental incidents during July, August and September.

**Exceedances** – There was one surfacewater exceedance during July, August and September. There was a value of 775 ug/l for total aluminium against the limit of 200 ug/l on the 8<sup>th</sup> September 2010. The exceedance occurred as a result of a high intensity storm rainfall event during the preceding day when over 80mm of rain fell during the 24 hour period. The reserve settlement pond was immediately engaged when the storm occurred which ensured a quick recovery within the system and conditions quickly returned to normal after the rainfall subsided.

### **Necessary Environmental Works**

- Continue operation of on-site surface water treatment plant.
- Removal of all waste and effluent from site on an as needs basis.
- Inspect, repair (when required) and recalibrate all in situ monitoring equipment.
- Monitor/sample and download water (surface and ground) quality monitoring devices.

### **Water Quality Monitoring Graphs**

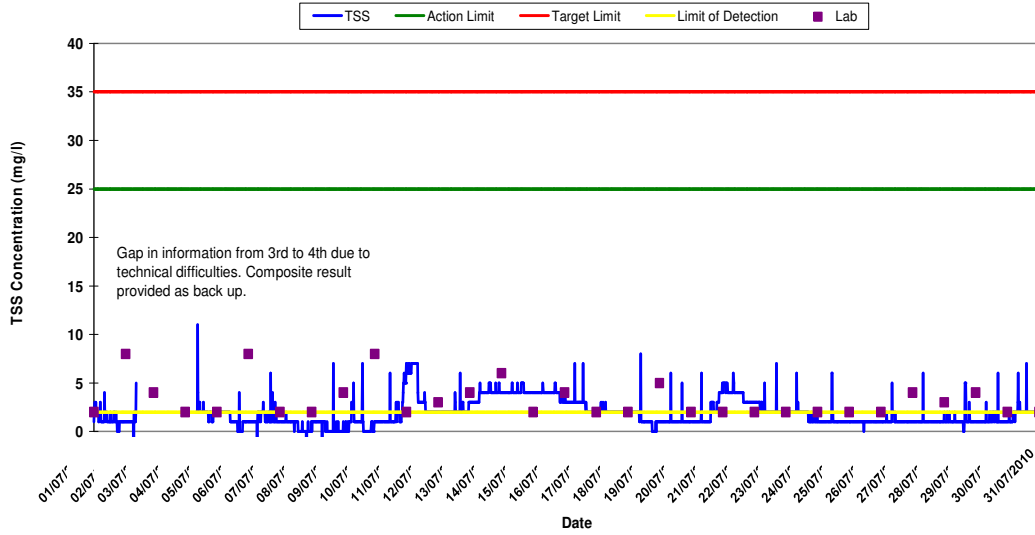
Graphs are attached for monthly continuous monitoring data at SP1 during July, August and September for total suspended solids, turbidity, and orthophosphate. Please see commentary below for each graph.

**Total Suspended Solids:** The TSS graphs for July and August show the majority of readings were negligible with some occasional short duration spikes. The September graph demonstrates the sudden short duration spike resulting from the intense rainfall followed by the recovery phase after mitigation measures were taken.

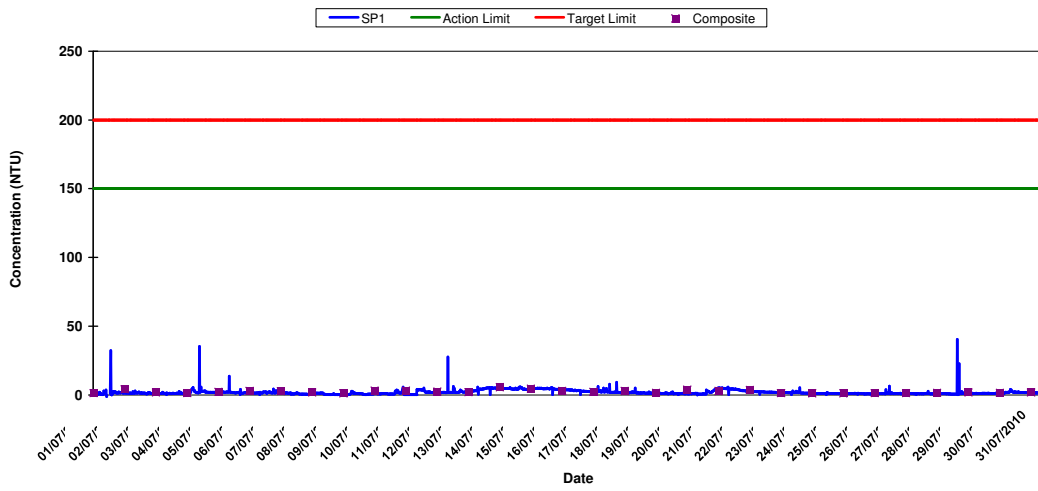
**Turbidity:** All values for July and August are well below the limit and any occasional spikes are short term in nature. These spikes are caused by minor probe interference. The September graph shows some recurrent issues with probe interference however the composite results demonstrate that water quality remained good. The probe is checked and cleaned twice a day however it is sensitive to occasional random particles in the water stream.

**Orthophosphate:** The results yielded for July, August and September were all well within the limits for discharge. Composite sample data is also presented on the graphs for reference.

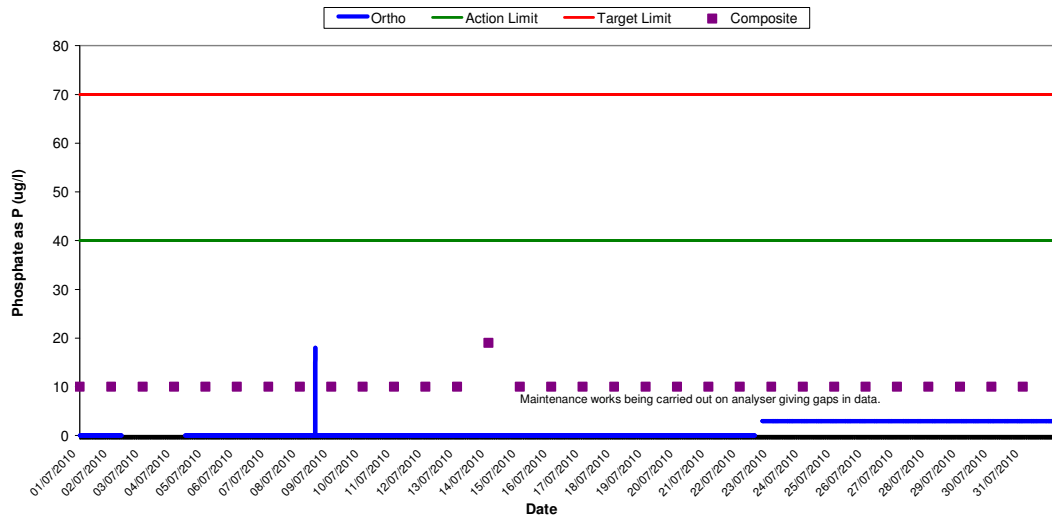
**Total Suspended Solids Results at SP1  
July 2010**



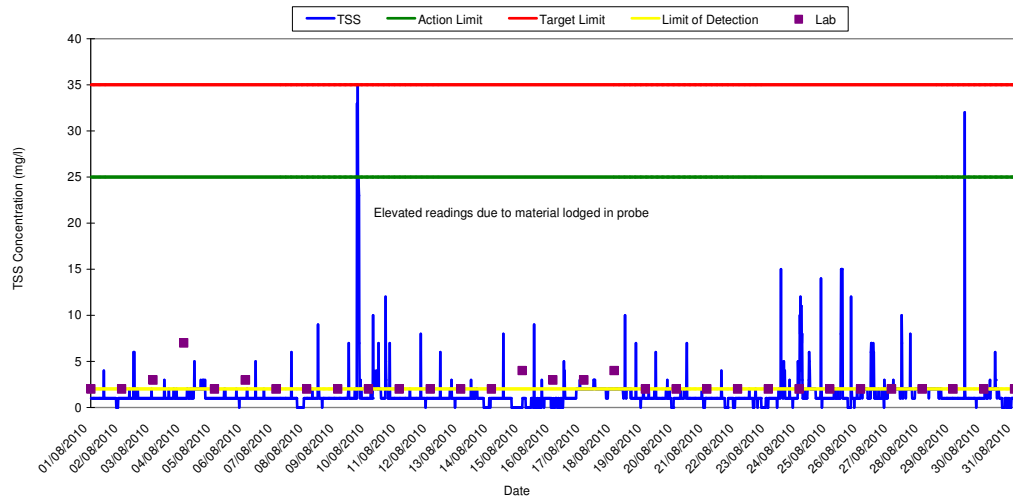
**Turbidity Results at SP1  
July 2010**



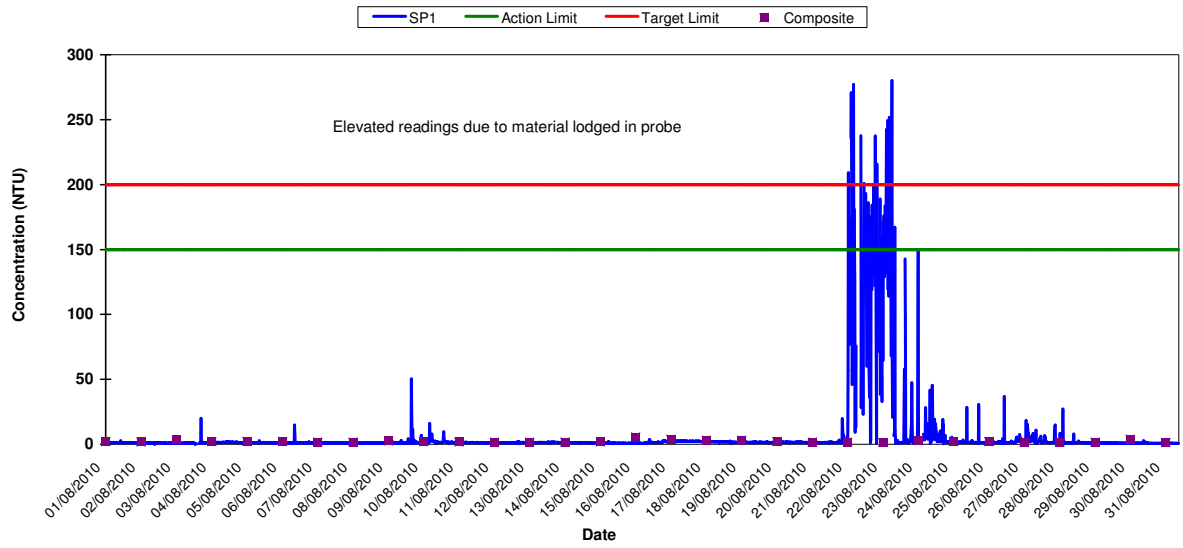
### Orthophosphate Results at SP1 July



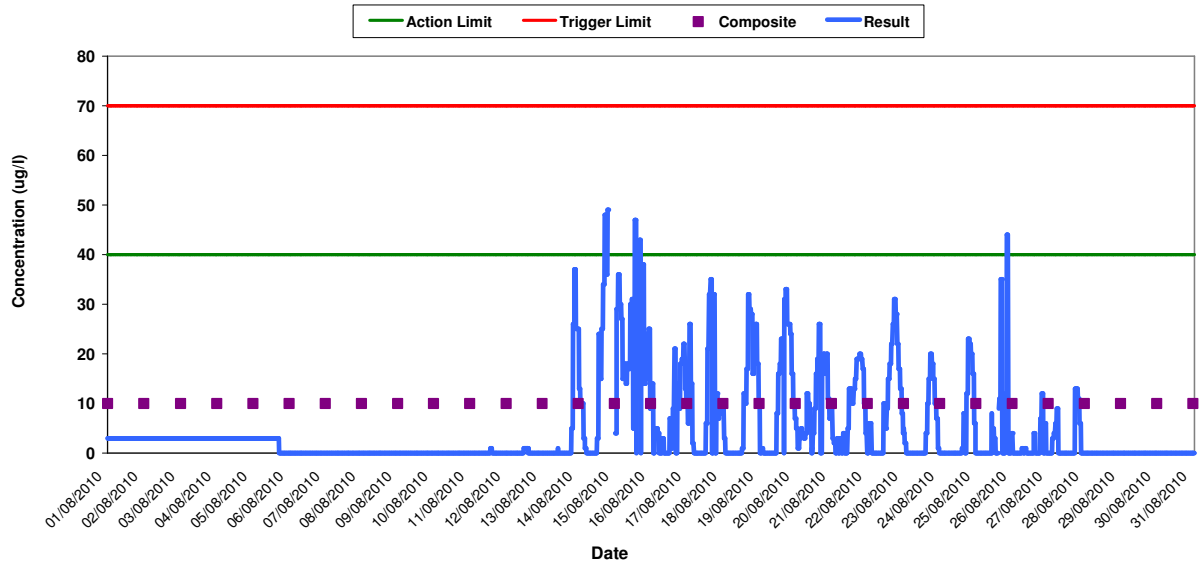
### Total Suspended Solids Results at SP1 August 2010



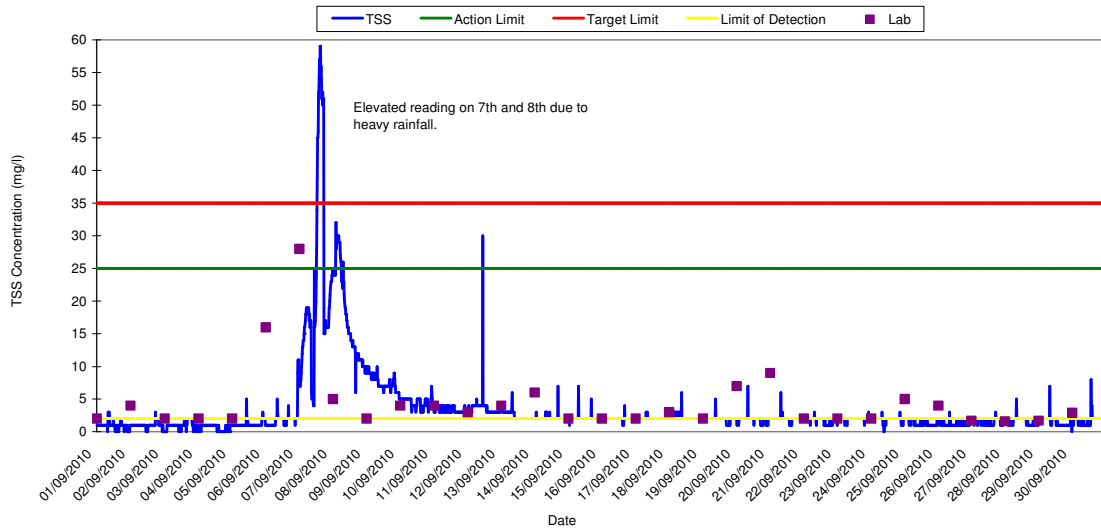
### Turbidity Results at SP1 August 2010



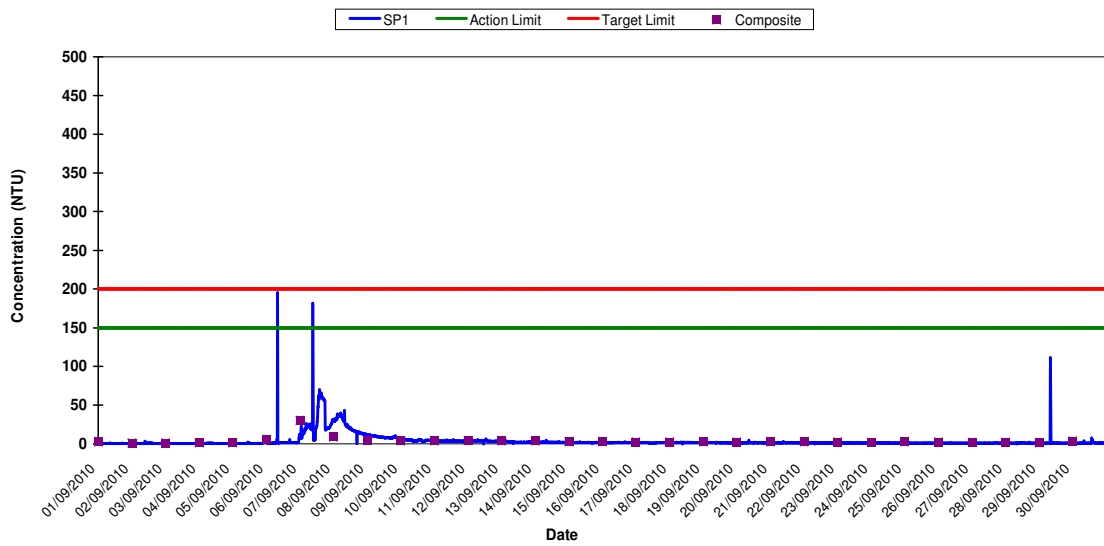
### Orthophosphate Results at SP1 August 2010



**Total Suspended Solids Results at SP1  
September 2010**



**Turbidity Results at SP1  
September 2010**



### Orthophosphate Results at SP1 September 2010

