

# **CORRIB GAS DEVELOPMENT**

**Report for PMC Meeting on 12<sup>th</sup> January 2011.**

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## **Water Quality – Carrowmore Lake**

- Mayo County Council's Project Team continues 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 substantially complete. The terminal footprint within the pallisade fence line was handed over to Shell Operations in late December and they will carry out the operational qualification phase of the project.
- 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 recorded two exceedances of the total aluminium parameter at SP 1 (the main site discharge point). These occurred on 2<sup>nd</sup> and 8<sup>th</sup> November 2010. These exceedances followed intense rainfall events on 1<sup>st</sup> and 8<sup>th</sup> November. Values returned quickly to normal levels after the rainfall events.  
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.

## Transportation/Roads

- No works in progress at present.

**CARROWMORE LAKE**  
**Results from 29/09/2010 to 31/12/2010 (10 Samples taken)**  
**Analysis by ELS Laboratory, Co. Cork**

Parameter	Units	Average	Max	Min
Suspended Solids	mg/l	5	7	<5
Turbidity	N.T.U	4	5	3
pH	pH units	7.1	7.4	6.8
Conductivity	uS/cm	92	108	60
Phosphate	mg/l P	0.013	0.027	<0.009
Total Phosphorous	mg/l P	0.028	0.06	<0.01
Ammonia	mg/l NH <sub>3</sub> -N	0.04	0.133	<0.009
Nitrate	mg/l NO <sub>3</sub> -N	<0.12	<0.12	<0.12
Nitrite	mg/l NO <sub>2</sub> -N	<0.013	<0.013	<0.013
Total Aluminium	ug/l Al	35	82	34

**ERRIS REGIONAL WATERWORKS (Final Treated Water)**  
**Results from 16/10/2010 to 31/12/2010 (89 Samples)**  
**Analysis carried out at Erris Regional Waterworks**

Parameter	Units	Average	Max	Min	Drinking Water Limits
Colour	mg/l	2	8	0	<10 Haz
Turbidity	N.T.U	0.11	0.39	0.03	<2.0 NTU
Ph	pH units	6.88	7.77	6.45	6.5 – 8.5
Free Chlo/Res	mg/l	1.06	1.51	0.7	>0.3
Total Chlo/Res	mg/l	1.2	1.64	0.9	>0.3
Flourine	ppm	0.73	1	0.6	0.6-0.8
Total Aluminium	ug/l	68	150	23	200

**BELLANABOY RIVER**  
**(Upstream and Downstream of discharge from Terminal site)**  
**Results from 29/09/2010 to 31/12/2010 (10 Samples taken)**  
**Analysis by ELS Laboratory, Co. Cork**

<b>Parameter</b>	<b>Units</b>	<b>BEL 1 (upstream)</b>			<b>BEL 2 (downstream)</b>		
		<b>Average</b>	<b>Max</b>	<b>Min</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>
<b>Suspended Solids</b>	<b>mg/l</b>	<5	<5	<5	<5	<5	<5
<b>Turbidity</b>	<b>N.T.U</b>	2.9	5.5	1.6	3.1	5.6	1.5
<b>pH</b>	<b>pH units</b>	6.6	7.2	5.7	6.6	7.1	5.9
<b>Conductivity</b>	<b>uS/cm</b>	121	176	57	129	190	62
<b>Total Dissolved Solids</b>	<b>mg/l</b>	103	345	15	113	320	20
<b>Phosphate</b>	<b>mg/l P</b>	0.03	0.128	<0.009	0.019	0.05	<0.009
<b>Total Phosphorus</b>	<b>mg/l P</b>	0.05	0.08	<0.02	0.04	0.06	<0.02
<b>Ammonia</b>	<b>mg/l NH<sub>3</sub>-N</b>	0.12	0.331	<0.007	0.08	0.22	<0.007
<b>Nitrate</b>	<b>mg/l NO<sub>3</sub>-N</b>	0.16	0.52	<0.12	0.15	0.41	<0.12
<b>Nitrite</b>	<b>mg/l NO<sub>2</sub>-N</b>	0.01	0.02	<0.013	<0.013	<0.013	<0.013
<b>Total Aluminium</b>	<b>ug/l Al</b>	97	222	43	109	227	54

**SP1 (Discharge point from terminal site)**  
**Results from to 29/09/2010 to 31/12/2010 (10 Samples)**  
**Analysis by ELS Laboratory, Co. Cork**

<b>SP 1</b>				
<b>Parameter</b>	<b>Units</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>
Suspended Solids	mg/l	6	10	<5
Turbidity	N.T.U	5	30	1
pH	pH units	7.4	7.8	6.8
Conductivity	uS/cm	236	313	135
Total Dissolved Solids	mg/l	150	195	95
Phosphate Total	mg/l P	0.015	0.024	<0.009
Phosphorus	mg/l P	0.037	0.12	<0.01
Ammonia	mg/l NH <sub>3</sub> -N	0.038	0.1	<0.007
Nitrate	mg/l NO <sub>3</sub> -N	<0.12	<0.12	<0.12
Nitrite	mg/l NO <sub>2</sub> -N	<0.013	<0.013	<0.013
Total Aluminium	ug/l Al	169	515	37

**Axonics Water Treatment Units (Post-treatment Results)**  
**Results from 29/09/2010 to 31/12/2010 (9 samples)**  
**Analysis by ELS Laboratory, Co. Cork**

<b>Post-Treatment (9Samples)</b>				
<b>Parameter</b>	<b>Units</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>
Suspended Solids	mg/l	8	36	<5
Turbidity	N.T.U	1	1.7	0.3
pH	pH units	6.6	6.9	6.1
Conductivity	uS/cm	311	393	234
Total Dissolved Solids	mg/l	166	230	70
Phosphate Total	mg/l P	0.009	0.01	<0.009
Phosphorus	mg/l P	0.011	0.02	<0.01
Ammonia	mg/l NH <sub>3</sub> -N	0.06	0.156	<0.007
Nitrate	mg/l NO <sub>3</sub> -N	0.19	0.28	0.12
Nitrite	mg/l NO <sub>2</sub> -N	<0.013	<0.013	<0.013
*Total Aluminium	ug/l Al	405	1332	121

# Bellanaboy Bridge Site

## Report to the Project Monitoring Committee

12<sup>th</sup> January 2011

### Works Undertaken

The following construction and related operations are ongoing:

- Operation of Axonics plant, Environmental and geotechnical monitoring
- Civil's and foundations works
- Scaffolding dismantling
- Insulation on tanks and pipework.
- Building works.
- Electrical and Instrumentation works and cable termination.
- Testing and cleaning of pipe work
- Testing and operational qualification of systems including leak testing

### Outlook from January 2011 Onwards:

- Continuation of environmental monitoring, geotechnical monitoring and Axonics plant operation.
- Continuation of scaffolding dismantling.
- Continuation of electrical and instrumentation works.
- Close out of minor snags and un-finished mechanical, electrical and civil works.
- Continued testing and operational qualification of systems.
- Phased demobilisation of contractor facilities, equipment and personnel.

### ENVIRONMENTAL REPORT

**Dust** - Dust deposition results of 155, 196 165 and 242mg/ m<sup>2</sup>/day were recorded at D1, D2, D3 and D4 respectively for November. Dust deposition results of 84, 74, 85 and 89 mg/ m<sup>2</sup>/day were recorded at D1, D2, D3 and D4 respectively for the month of December.

**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 200 traffic movements during November, and 141 in December. .

**Fuel** – Approximately 47.4m<sup>3</sup> of fuel was delivered to site during November and December.

**Waste** – The following waste quantities were removed from site during November and December: 12 skips of refuse (Canteen waste, etc.), 4 skips of cardboard/plastics, 8 skip of metal waste, 12 skips of timber and 3 skips of rubble.

There were 3 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 1170m<sup>3</sup> of sewage during the same period.

**Water Quality** – A summary of the main surface water parameters measured for grab sampling during November & December (available range of lowest to highest) at SP1 is presented below:

pH (pH Units)

6.7 to 7.2

Suspended Solids (mg/l)

2 to 14

Orthophosphate (µg/l P)

<10

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

<0.017

Conductivity (µS/cm)

134 to 346

Turbidity (NTU)

0.9 to 25.7

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

pH (pH Units)

5.3 to 6.9

Conductivity ( $\mu\text{S}/\text{cm}$ )

187 to 432

Nitrate ( $\text{mg}/\text{l NO}_3$ )

<0.44

Total Dissolved Solids ( $\text{mg}/\text{l}$ )

109 to 220

**Complaints** – There were no written construction activity related environmental complaints logged with SEPIL during November and December.

**Incidents** – There were no environmental incidents during November and December.

**Exceedances** – There were two surface water exceedance during November. A value of  $1370\mu\text{g}/\text{l}$  was recorded for total aluminium at SP1 on the 2<sup>nd</sup> November 2010. Also a value of  $292\mu\text{g}/\text{l}$  was recorded for total aluminium at SP1 on the 8<sup>th</sup> November 2010. The increase resulted from intense rainfall events which had occurred from the 1<sup>st</sup> to 8<sup>th</sup> of November with a total of 136.20mm of rain after dry periods. Levels returned to  $109\mu\text{g}/\text{l}$  and  $91\mu\text{g}/\text{l}$  the subsequent weeks which are within the limit.

**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 for total suspended solids, turbidity, and orthophosphate. Please see commentary below for each graph.

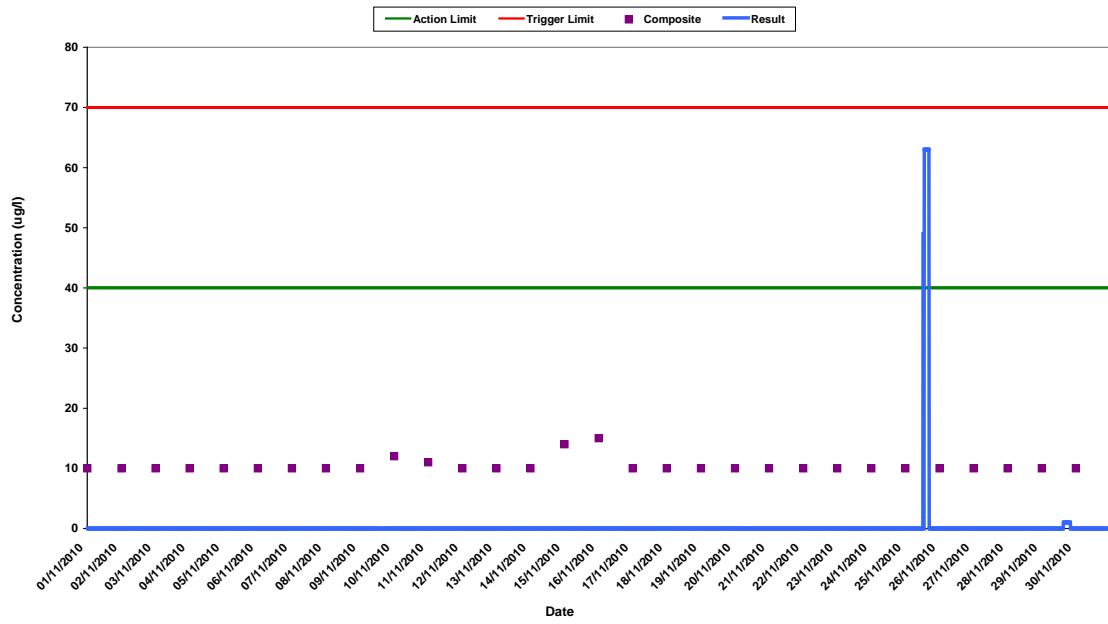
**Total Suspended Solids:** The TSS graphs for July and August show the majority of readings were negligible with some occasional short duration spikes. The November graph demonstrates the sudden short duration spike resulting from the intense rainfall followed by the recovery phase after mitigation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

**Turbidity:** All values for November and December are below the limit and any occasional spikes are short term in nature. These spikes are caused by minor probe interference. The probe is

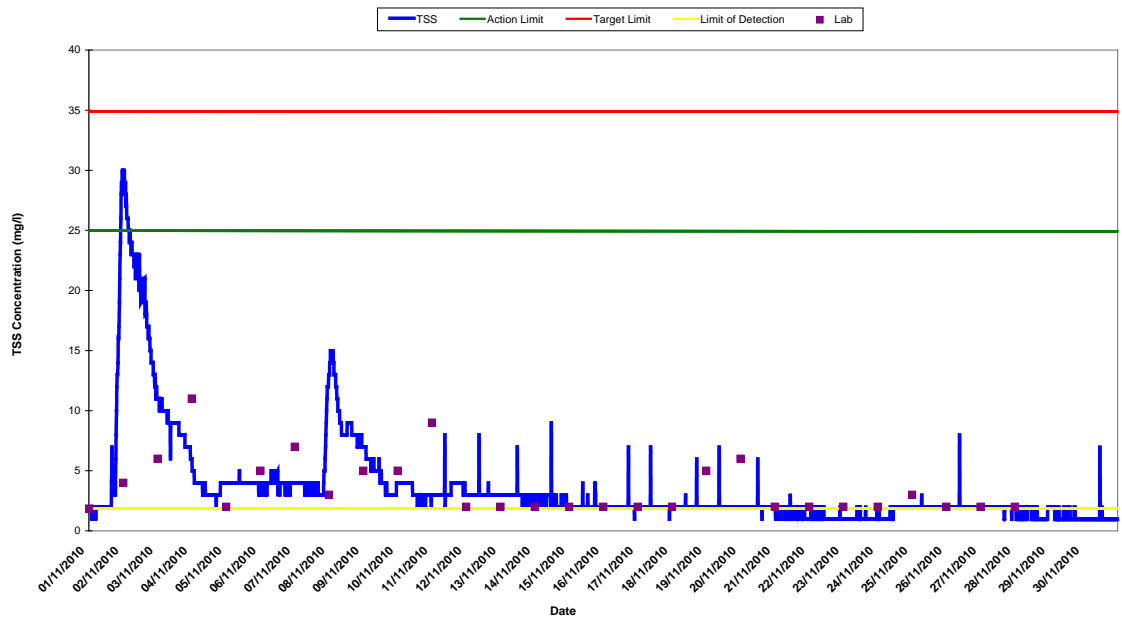
checked and cleaned twice a day however it is sensitive to occasional random particles in the water stream.

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

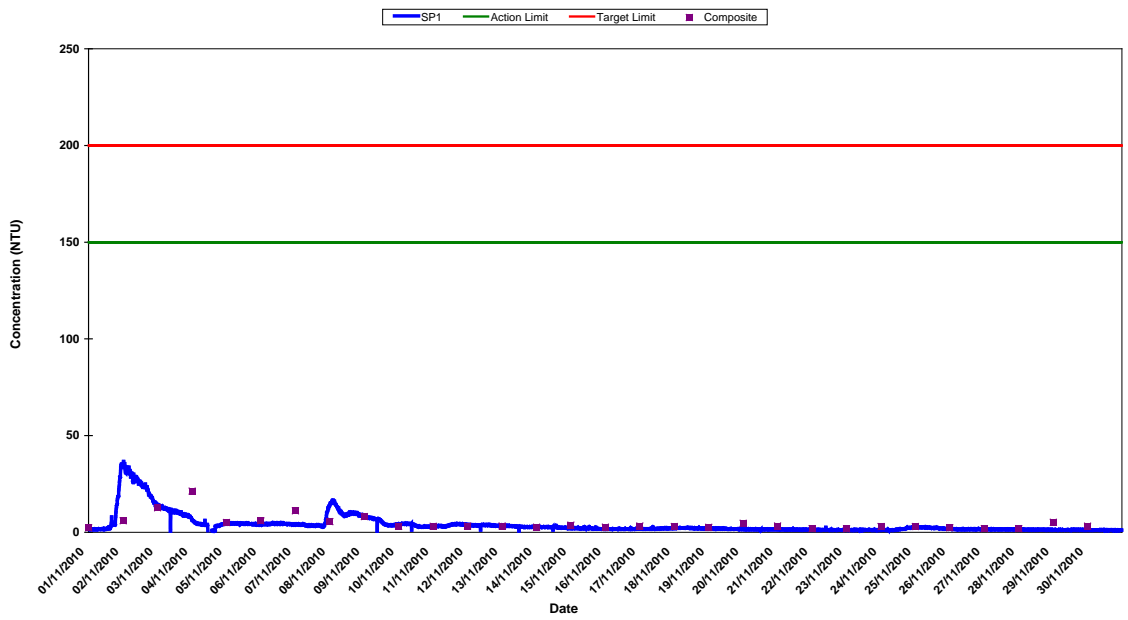
Orthophosphate Results at SP1  
November 2010



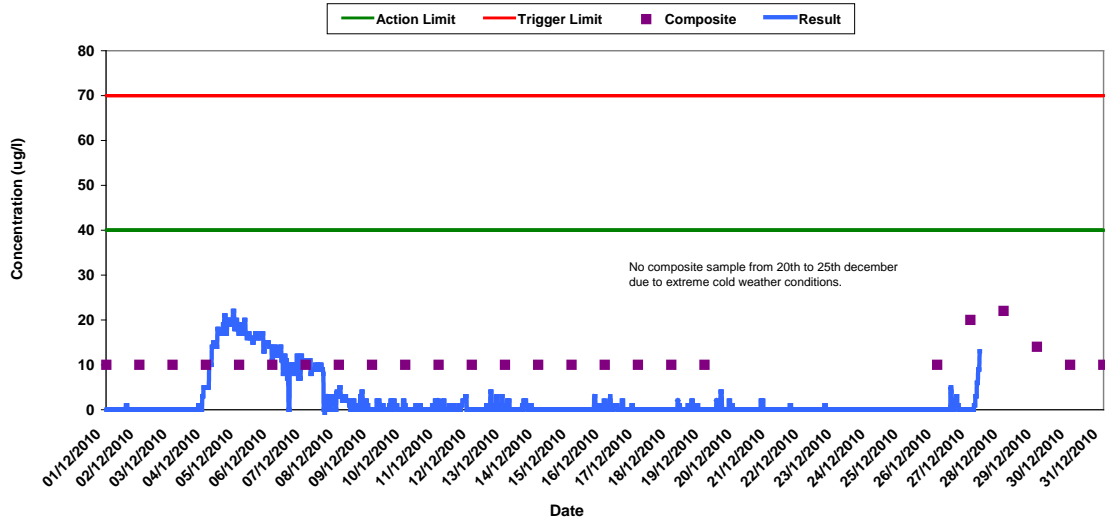
**Total Suspended Solids Results at SP1  
November 2010**



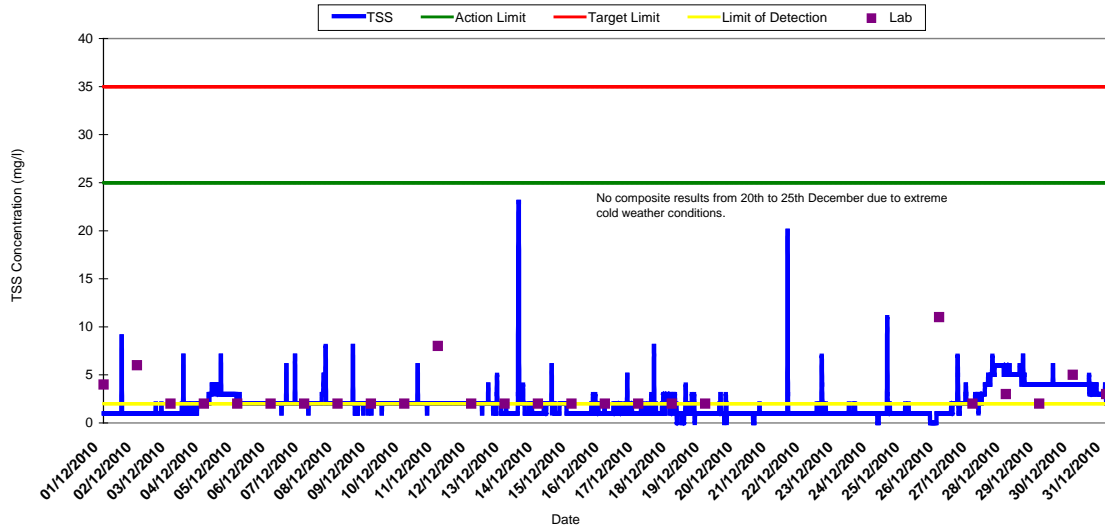
**Turbidity Results at SP1  
November 2010**



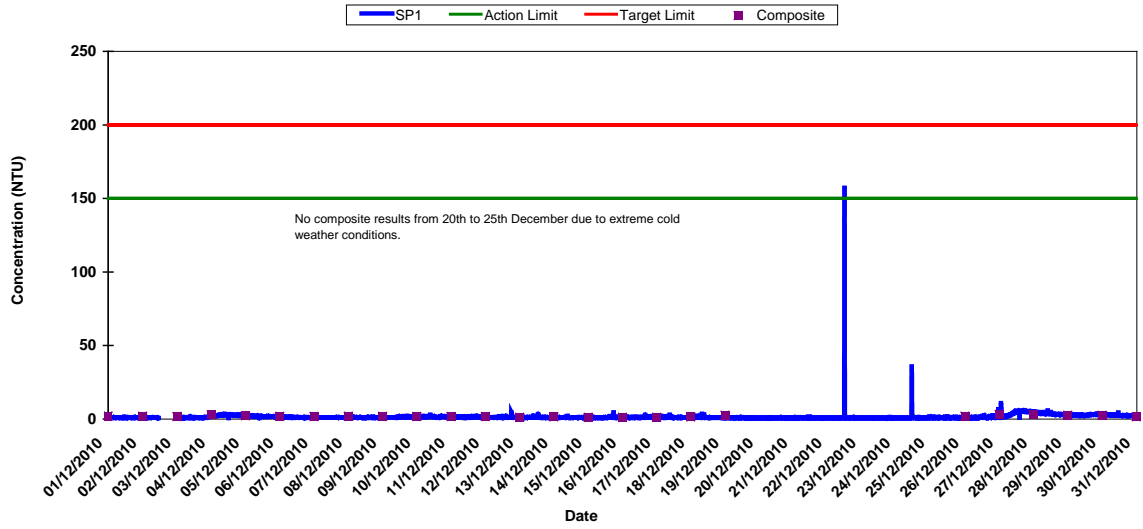
**Orthophosphate Results at SP1  
December 2010**



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



Turbidity Results at SP1  
December 2010



## Srahmore Peat Repository

WL 0199-01

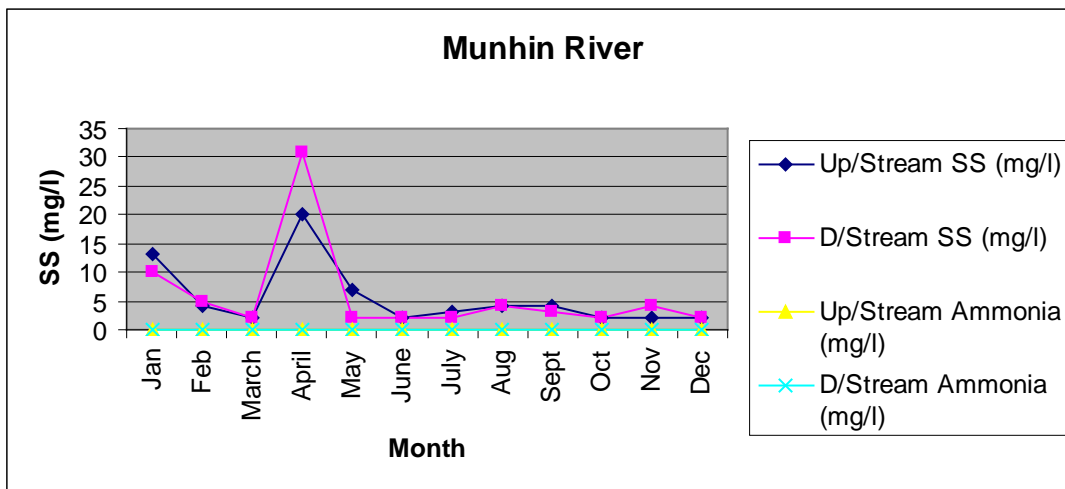
### Environmental Management System Up-Date No. 48 (12/01/11)

#### Decommissioning and Rehabilitation

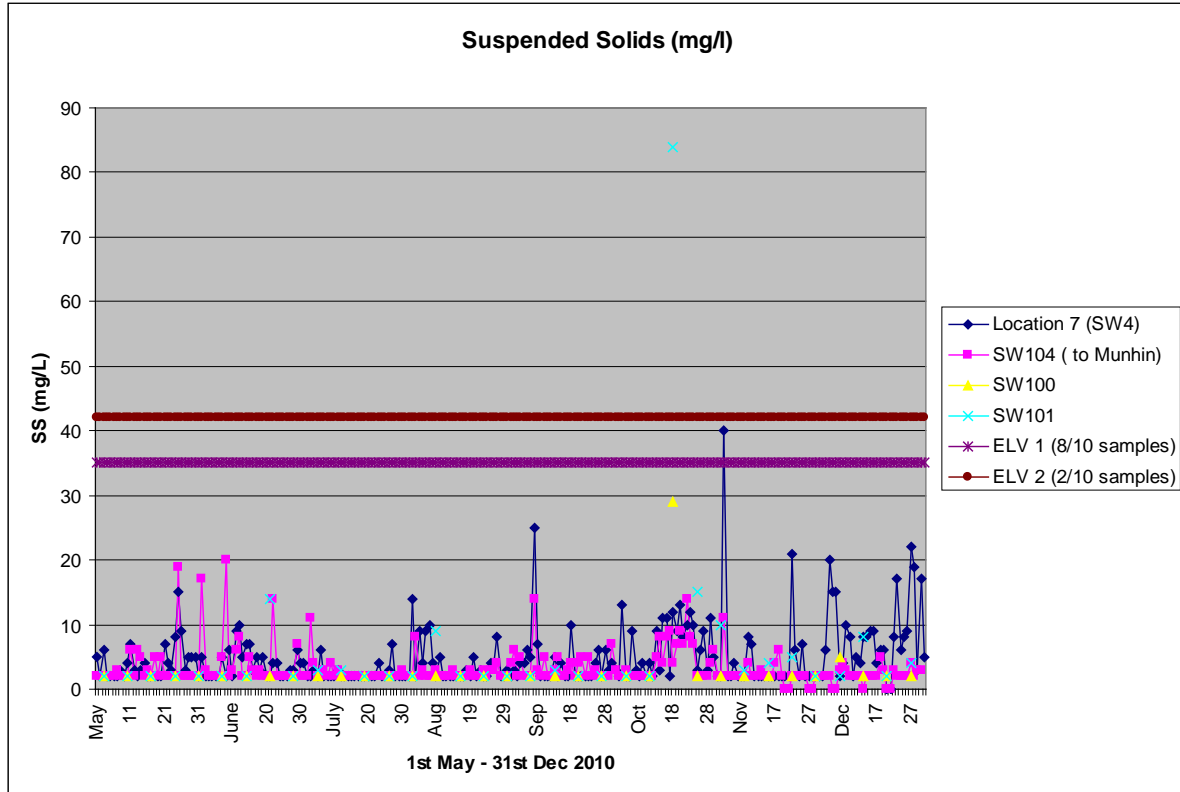
##### Environmental Monitoring:

- There was one exceedance in the Emission Limit Value at SW101 on the 18<sup>th</sup> October which discharges to the Owenmore River. A Suspended Solids result of 84mg/l against and limit of 42mg/l was recorded. This was notified to the EPA with appropriate corrective action. Subsequent results for this site have been compliant.
- 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 was 4.5 mg/l at SW 4 and 3.1mg/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>.

**As of the 30th December 2010, the Srahmore site is compliant with Waste Licence W0199-02.**