

Tywi liming progress report, April – June 2011

1. Summary

This report presents the work undertaken and the progress made on the Tywi liming project in the period from April – June 2011. Approximately 55 tonnes of lime was dosed in the period from April – June. The rainfall adjusted target for the period was 108 tonnes.

The water quality remains on target to achieve the objectives for Good Ecological Potential in the Afon Tywi, as required by the Water Framework Directive.

Priorities for Q2 will be to progress the lime powder delivery pipe extension at the Camddwr, utilise the telemetry system to minimise doser downtime, the installation of a methanol generator at the Tywi doser, and the completion of fish monitoring surveys within the Tywi.

2. Lime doser operation, maintenance & safety

The rainfall-adjusted liming target for this quarter was 108 tonnes. The April - June 2011 (Q1) total rainfall at Ystradffin was 72% of the quarterly total rainfall average (January 06 – March 2011). The rainfall adjusted target is calculated as 72% of the nominal quarterly target of 150 tonnes (Fig. 2).

Two deliveries of 27.5 were made to the Tywi doser. The doser has been operated on the flow dependant 'auto' setting throughout the period. It has been necessary to run a generator to recharge the voltage periodically to maintain operation. A gravel shoal which had built up immediately upstream of the Tywi doser and was thought to be deflecting flow and therefore limiting the flow available for generating power and mixing the lime discharged from the hopper has been partially removed by contractors working for Operations Delivery. It is anticipated that a further removal may need to be undertaken and potentially further works completed at the site to prevent the shoal re-establishing.

The Camddwr doser experienced a mechanical fault early in the quarter whereby the feeder mechanism became jammed. MEICA and Operations delivery staff identified a large piece of un-crushed limestone which had become lodged in the mechanism and were able to remove it. The doser was subsequently operational and focus was placed on ensuring the hopper was completely emptied to facilitate the pipeline extension trial which was carried out on the 6th July 2011. The trial which was conducted by staff from Operations Delivery involved constructing a temporary delivery pipe which extended 150m to the top of the current access track. Lime powder was then discharged to the doser using an articulated lorry by our delivery contractors.

The trial demonstrated that constructing a fixed delivery pipe to the top of the access track is a viable delivery method, which negates the need for the lorries to descend the access track. This will allow the larger 30 tonne articulated lorries to be used for delivering to the site safely, reducing costs and the carbon footprint associated with having to use smaller 20 tonne ridged lorries to deliver more frequently.



Fig 1. Lime being delivered from a 30 tonne articulated vehicle through a temporary pipe from the top of the Camddwr access track. 06/07/11.

The Hydrometry and Telemetry team have installed a system due to be available early in Q2 which will allow us to monitor the operation of the dosers remotely via the Wales Regional Telemetry system. We will therefore be able to identify and react to downtime caused by low voltage, mechanical problems or empty silo levels as they occur. It is anticipated that this will improve our ability to achieve our dosing targets.

A methanol generator has been procured and is due to be installed in Q2 at the Tywi doser. This will provide an efficient and low carbon emission method of maintaining voltage and therefore doser operation during periods when there is insufficient flow and sunshine available to sustain voltage using the solar and hydro-generating facilities already installed.

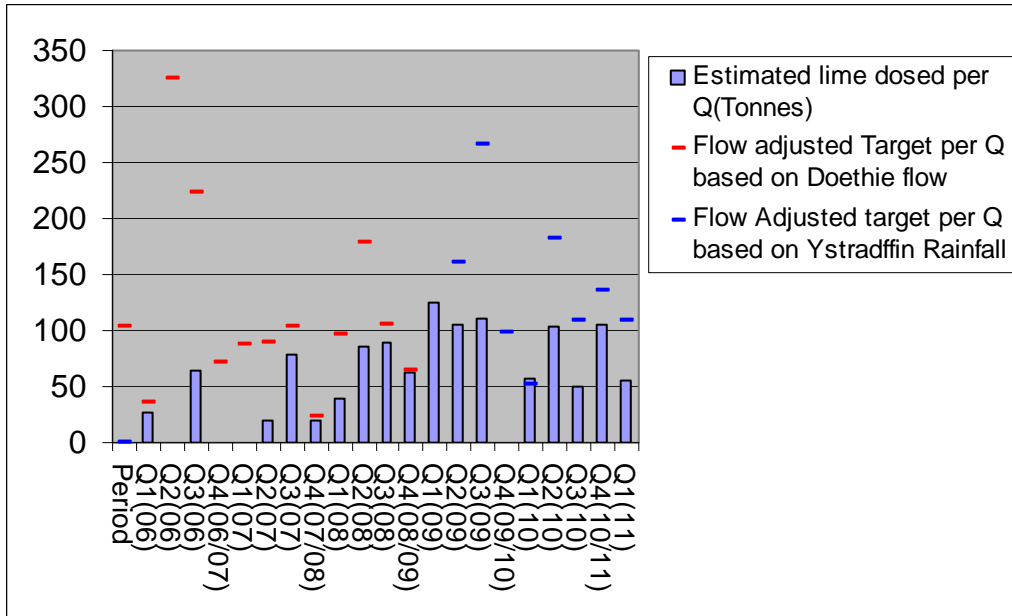


Fig. 2: Lime dosed per Quarter 2006 – June 2011.

3. Water quality

pH values recorded in the Tywi at Ystradffin, 1.5 km downstream of Llyn Brianne Reservoir, were 6.88 and 6.89 for laboratory-derived data and between 6.24 and 7.27 for field meter data during this quarter (*Fig 3 and Table 1*). The values remain within the target range to achieve the objectives for Good Ecological Potential in the Afon Tywi, as required by the Water Framework Directive.

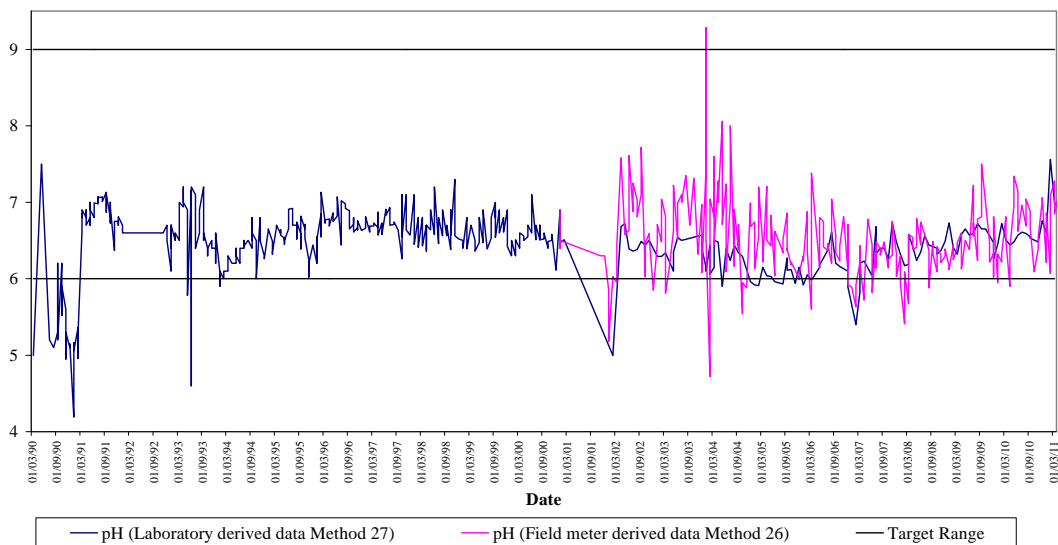


Fig. 3: pH of the Afon Tywi at Ystradffin, 1.5km downstream of Llyn Brianne Reservoir from March 1990 to June 2011.

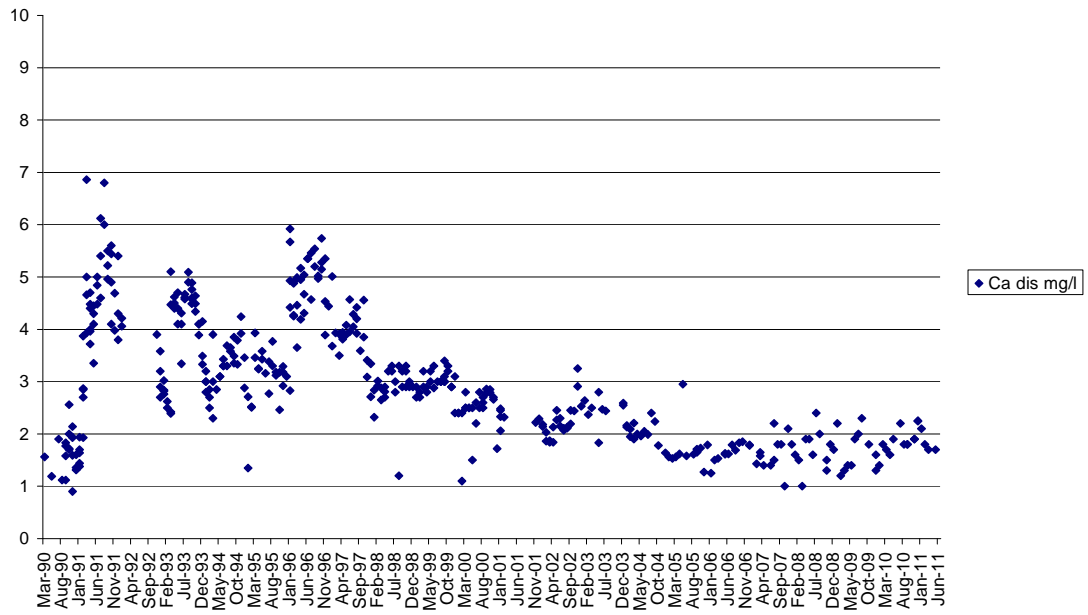


Fig. 4: Dissolved calcium in the Afon Tywi at Ystradffin, 1.5km downstream of Llyn Brienne Reservoir from March 1990 to June 2011.

Period	When Sampled	pH (laboratory)	pH (Field meter)	Dissolved Ca (mg/l)
Q1(10/11)	27-Apr-10	6.44	5.9	1.6
	30-Apr-10		6.41	
	26-May-10		6.95	
	27-May-10	6.48	7.34	1.9
	24-Jun-10	6.57	7.15	
	30-Jun-10		6.62	
Q2(10/11)	22-Jul-10	6.61	6.96	2.2
	02-Aug-10	6.59		1.8
	03-Aug-10		6.69	
	25-Aug-10		7.04	
	21-Sep-10	6.55	6.88	1.8
	22-Sep-10		6.74	
	30-Sep-10	6.53	6.66	1.8
Q3(10/11)	06-Oct-10		6.09	
	02-Nov-10	6.48	6.39	1.9
	19-Nov-10		6.55	
	06-Dec-10	6.76	7.01	2.25
	10-Dec-10		7.06	
Q4(10/11)	11-Jan-11	6.6	6.21	2.1
	19-Jan-11		6.86	
	17-Feb-11	7.56	6.07	1.8
	24-Feb-11		7.09	
	16-Mar-11		7.28	
	24-Mar-11	6.99	6.85	1.7
Q1(11/12)	19-Apr-11		7.1	
	18-May-11	6.88	6.24	1.7
	24-May-11		6.54	
	28-Jun-11	6.89	6.66	
	29-Jun-11		7.27	

Table 1. pH and dissolved Ca in the Afon Tywi at Ystradffin, 1.5km downstream of Llyn Brianne Reservoir for period April 2010– June 2011.

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