MCERTS Site Inspection Report

Report Prepared by:	Trueflow Surveys Ltd
Consent/Permit Holder:	Georgia Pacific GB Ltd
Site Name:	Georgia Pacific Ltd Bridgend
Site Address:	Llangynwyd Bridgend Mid Glam
Site Ref/Postcode:	CF34 9RS
Grid Ref:	SN882873
Inspection Report No:	TFS220/D1/1
Consent/Permit No:	BJ5805 IX
Date of Site Inspection:	11/04/11
Site Contact **Tel:**	David Lomax 01656 684500
Audit Carried out by:	O Bright
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Summary of Audit Findings

The site at Georgia Pacific GB Ltd Bridgend was originally issued with an MCERTS certificate in May 2006. This report details the MCERTS site inspection to re-certify the installation undertaken in April 2011. The inspection was commissioned by Georgia Pacific UK Ltd through SIRA Environmental.

The paper mill discharges treated effluent to the River Llynfi. The effluent treatment plant includes facilities for recording the flow rates of the effluent discharged to the river and for effluent that is recycled for further use at the plant.

Flow rates are measured using two rectangular weirs that have been fitted with Endress and Hauser Prosonic FMU 861 ultrasonic flow measurement instruments. The weirs are in good condition and have been fitted with new stainless steel thin plate weirs in accordance with BS ISO 1438:2008.

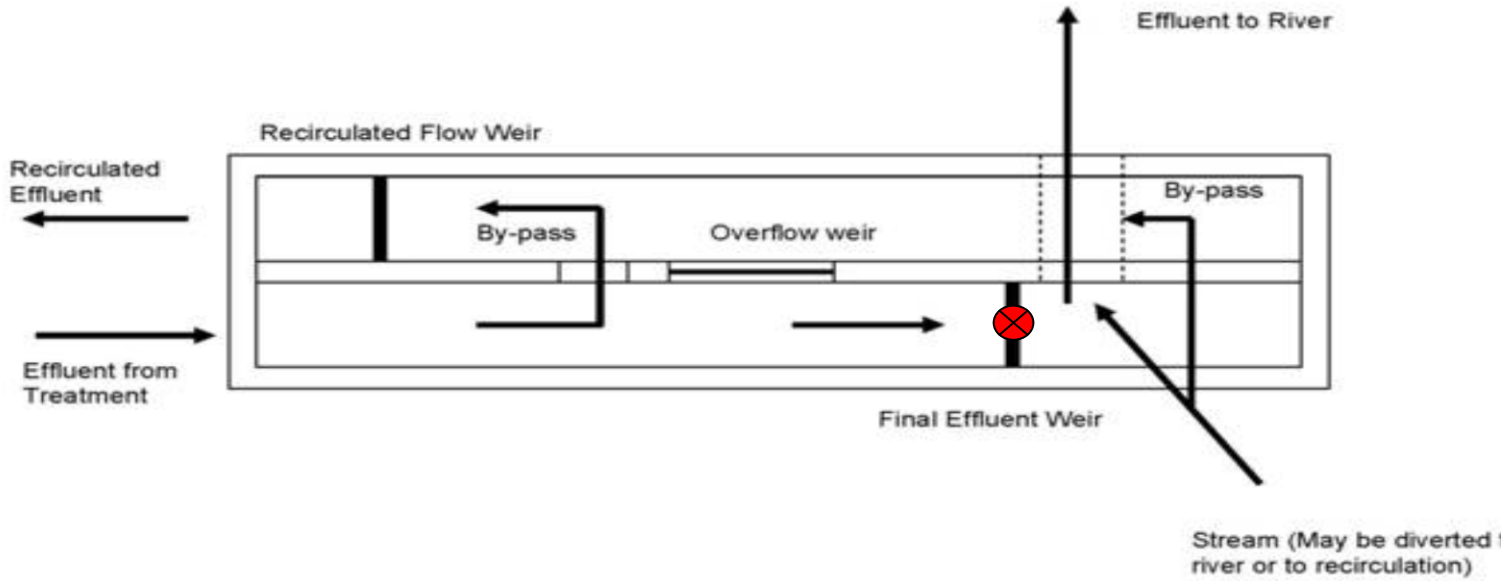
Calibration checks carried out at the time of the audit show that the flow measurement instruments are correctly set up and are capable of measuring flow rates to the required accuracy levels. There is no double counting of effluent flow due to the monitoring location.

Maintenance procedures appeared to be adequate at the time of the inspection.

The installation is considered to meet the site requirements for MCERTS certification.

Overall maximum uncertainty	*<4.81 %*
QMS certification No	*N/A*
Maintenance procedures adequate?	*Yes*
Meets MCERTS site audit requirements	*Yes*

Schematic



Schematic Layout of Effluent Channels

MCERTS Measurement Location

CONTENTS

1.0 SURVEY INFORMATION

Date/Time	***02/03/11***	Next Calibration Due
Level Serial No	***58882***	23/06/11
Trueflow Surveying Staff	***Ref TF11***	01/09/11
Trueflow Steel Rule	***Ref TF3***	01/09/11
Tape measure Serial No	***Ref TF2***	01/09/11
Weather/Personnel	***Dry***	***D Bright, O Bright***

2.0 SITE INFORMATION

Site Name	***Georgia Pacific GB Ltd Bridgend***
Site Address	***Llangynwyd, Bridgend, Mid Glam, CF34 9RS***
Consent Holder	***Georgia Pacific GB Ltd***
Consent / PPC Number	***BJ5805 IX***
Location of Measurement Structure	***Final Effluent***
Type of Measurement Structure	***Rectangular thin plate weir***
Measurement Device	***Ultrasonic***
Method of Recording	***SCADA***

2.1 Flow Rate Information

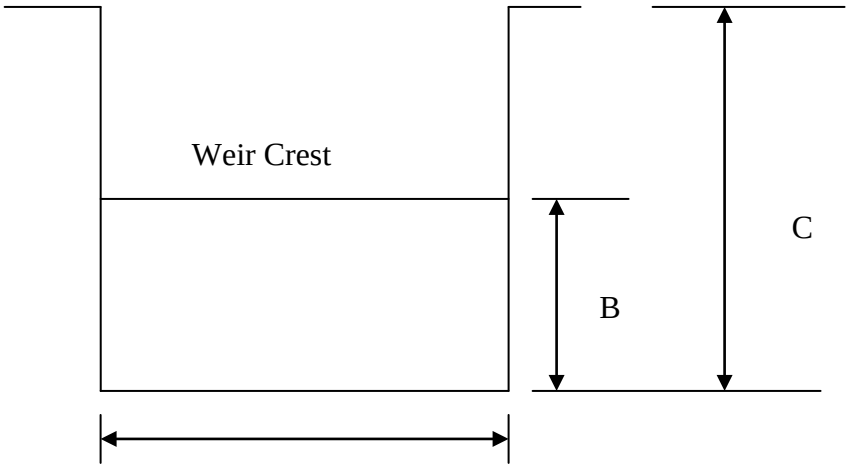
Consented DWF	***N/A***
Consented Qmax (daily)	***17,500 m^3/day***
Consented instantaneous Qmax	***N/A***
Flow rate at time of audit	***1176 m^3/day***
Average flow from scum marks	***N/A***
Maximum flow from scum marks	***N/A***

Design Values

Q min meter	***< 2000 m^3/day***	
Q max meter	***> 21,000 m^3/day***	*1.2 times maximum consented value*

3.0 MEASUREMENT INSTALATION ASSESSMENT

3.1 Rectangular Weirs- on Site Measurements



Measurement.		*Effluent Weir*	*Recirc Weir*
A	Weir Width	*810*	*810*
B	Weir Height	*402*	*291*
C	Channel Height	*1210*	*1210*
	Weir thickness	*2*	*2*

	Effluent Weir	*Recirc Weir*
Height	*1210*	*1210*
Width	*810*	*810*
Scum line: normal	*N/A*	*N/A*
Scum line: maximum	*N/A*	*N/A*
Overall length of chamber	*13650*	*13650*
Uninterrupted approach	*4800*	*4800*
Sensor location	*1480*	*1480*
Sensor height	*1210*	*1210*

3.2 Measurement Instrument

	Effluent Weir	Recirculation Weir
Manufacturer	Endress and Hauser	Endress and Hauser
Model Number	Prosonic FMU 861	Prosonic FMU 861
Serial No	*9XR0250 EP18 (FE)*	*N/A9XR0249 EP18*
Maximum Range	1250 m3/hour	1250 m3/hour
Calculation method	Absolute	Absolute
Weir Width	0.810 m	0.810 m
Sensor Height	1.197 m	1.218 m
Empty Distance	0.842 m	0.934 m
Weir Type	1	1

Calibration Measurement Checks

Effluent Weir	Effluent Weir	Recirculation Weir
Datum Level	0.823 m	0.985
Measured Level	0.120	0.112
Indicated Level	0.121	0.111

Notes.

1. No additional factors were identified that could impact on measurement accuracy during the lifetime of this certification.

2. No adverse hydraulic conditions or disturbances were noted within the area of influence of the flow meter.

3. Site maintenance arrangements appear to be adequate to ensure that the accuracy of the measurement installation is maintained.

3.3 Rectangular Weir Assessment

Rectangular Weir Assessment

Final Effluent Weir

Installation Details			
Consented Q max m3/day	17,500	Consented Q max l/s	203
Max Design Range l/s	243	Actual max range	347
Min Design Range l/s	23.2	Actual min range	16.89
Maximum head h_{max} m	0.287	Minimum head h_{min} m	0.05
Weir Width	0.810 m	Notch thickness mm	2
Weir height	0.355	Chamber width B	0.81
Height of zero above bed "p"	0.355	Chamber Length L	5000
Distance to sensor	1.48	Sensor Dead Band	N/R
Range at Zero head	0.855	Available head range	N/A

BSISO 1438:2008 Limitations

Kindsvarter Carter	**Standard**	**Installation**	**Pass/Fail**
Weir width	> 0.20 m	0.81	Pass
Plate edge thickness	1 to 2 mm	*2 mm*	Pass
Head Gauging	2 to 4 times h max*	*5.2*	Pass
Chamber width m	Should be > 0.15 m	*0.81*	Pass
p	Should be > 0.10 m	*0.355*	Pass
h/p	Should be < 2.5	*0.808*	Pass
h	Should be > 0.030 m	*> 0.050*	Pass
Common Limitations			
Verticality of weir	Must be vertical*	*Vertical*	
Weir plate deflection	Must be straight*	*Straight*	
Amount of skew	Must be square*	*Square*	
Centrality of weir	Must be central*	*Central*	
Deviation of weir from a horizontal plane	Must be true and level*	*Level*	
Approach channel level (in direction of flow)	Must be level*	*Level*	

Rectangular Weir Assessment

Recirculation Weir

Installation Details			
Consented Q max m3/day	17,500	Consented Q max l/s	203
Max Design Range l/s	243	Actual max range	347
Min Design Range l/s	23.2	Actual min range	16.89
Maximum head h_{max} m	0.287	Minimum head h_{min} m	0.05
Weir Width	0.810 m	Notch thickness mm	2
Weir height	0.284	Chamber width B	0.81
Height of zero above bed "p"	0.284	Chamber Length L	5000
Distance to sensor	1.48	Sensor Dead Band	N/R
Range at Zero head	0.855	Available head range	N/A

BSISO 1438:2008 Limitations

Kindsvarter Carter	**Standard**	**Installation**	**Pass/Fail**
Weir width	> 0.20 m	0.81	Pass
Plate edge thickness	1 to 2 mm	*2 mm*	Pass
Head Gauging	2 to 4 times h max*	*5.2*	Pass
Chamber width m	Should be > 0.15 m	*0.81*	Pass
p	Should be > 0.10 m	*0.284*	Pass
h/p	Should be < 2.5	*1.011*	Pass
h	Should be > 0.030 m	*> 0.050*	Pass
Common Limitations			
Verticality of weir	Must be vertical*	*Vertical*	
Weir plate deflection	Must be straight*	*Straight*	
Amount of skew	Must be square*	*Square*	
Centrality of weir	Must be central*	*Central*	
Deviation of weir from a horizontal plane	Must be true and level*	*Level*	
Approach channel level (in direction of flow)	Must be level*	*Level*	

3.4 Dry Day Diurnal Flow Pattern and Uncertainty

Measurement Uncertainty

Software version Rectangular Full width Weir V1.1 January 2010

Spreadsheet for calculating stage discharge relationship for a Full Width Weir to BS ISO 1438: 2008

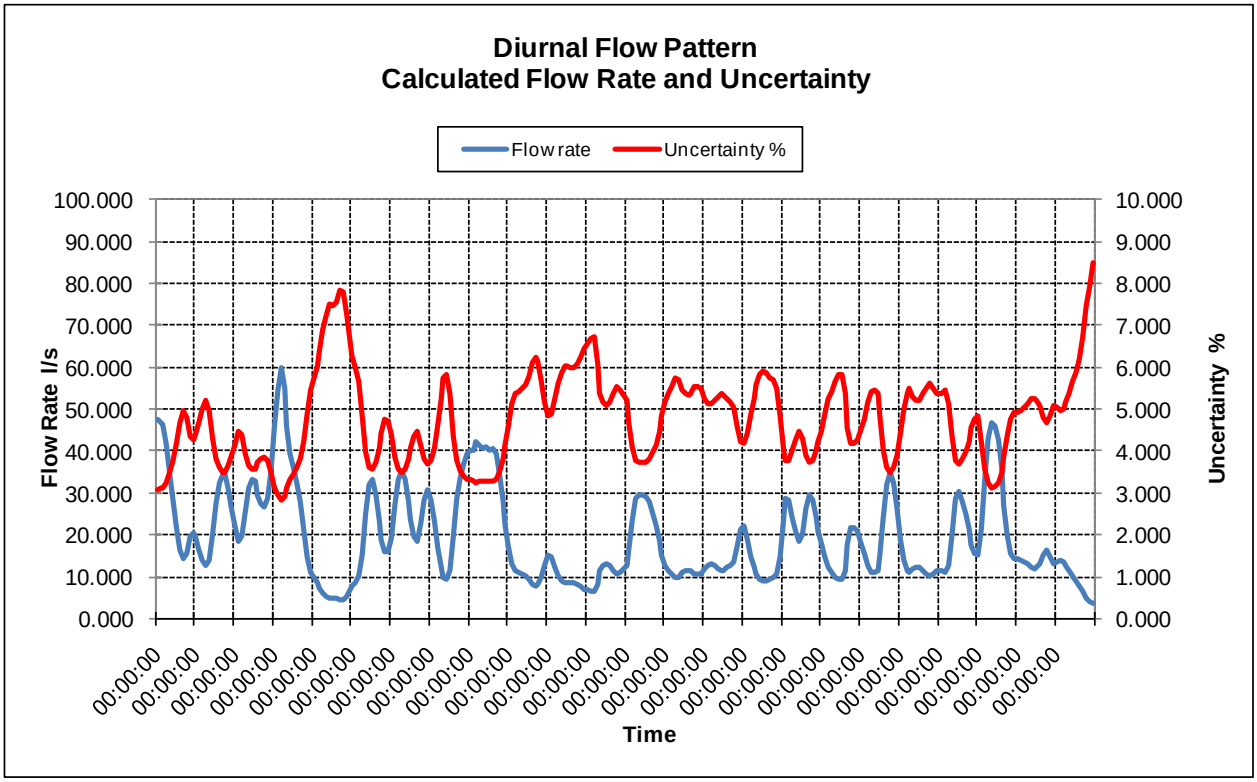
b (m) =	**0.810**	h/p not greather than 1
P (m) =	**0.355**	h not greater than 0.80 m

Uncertainties

Standard Dev h	**0.050**	**mm**	
Cd	**1.500**	**%**	For h/p <1
Error in head	**1.000**	**mm**	
Error in zero	**1.000**	**mm**	
Error in width	**0.500**	**mm**	
Head correction	**0.3**	**mm**	
Width correction	**0.3**	**mm**	

Head	Flow (l/s)	C	Error in Cd %	Xbe %	Xhe %	Xq %
0.025	6.045	0.6395013	1.50	0.07	5.80	8.82
0.030	7.908	0.6363882	1.50	0.07	4.83	7.40
0.050	16.890	0.6316962	1.50	0.07	2.90	4.60
0.070	27.994	0.6320478	1.50	0.07	2.07	3.45
0.090	40.965	0.6344292	1.50	0.07	1.61	2.84
0.103	50.324	0.6365803	1.50	0.07	1.41	2.59
0.130	71.957	0.6419338	1.50	0.07	1.11	2.25
0.150	89.801	0.6463654	1.50	0.07	0.97	2.09
0.170	109.127	0.6510140	1.50	0.07	0.85	1.97
0.190	129.884	0.6557780	1.50	0.07	0.76	1.89
0.210	152.029	0.6605874	1.50	0.07	0.69	1.82
0.230	175.525	0.6653930	1.50	0.07	0.63	1.77
0.250	200.335	0.6701597	1.50	0.07	0.58	1.74
0.270	226.427	0.6748625	1.50	0.07	0.54	1.70
0.287	249.592	0.6787963	1.50	0.07	0.50	1.68
0.310	282.341	0.6840110	1.50	0.07	0.47	1.66
0.330	312.106	0.6884359	1.50	0.07	0.44	1.64
0.350	343.043	0.6927531	1.50	0.07	0.41	1.63
0.370	375.127	0.6969595	1.50	0.07	0.39	1.61
0.390	408.334	0.7010535	1.50	0.07	0.37	1.60

Dry Day Diurnal Flow Pattern and Uncertainty



Average Flow	5-min volume	Cumulative Volume	Uncertainty	Uncertainty Based on
l/s	(m3)	(m3)	(+/-%)	Daily Volume %
59.889	17.967		8.468	0.031
3.556	1.067		2.831	0.005
19.304	5.821		4.775	0.015
N/A	1676.349	1676.349	N/A	4.26

Rectangular Full width Weir and Prosonic FMU 861	**Uncertainties**
Calculated overall uncertainty from diurnal flow pattern	4.26
Assessed risk of fouling(Surface deposition)*	2.00
Overall meter uncertainty (In Quadrature)	**4.71**
Declared telemetry conversion error as detailed in QMS	**1.00**
Overall meter and telemetry uncertainty (In Quadrature)	**4.81**
Any additional errors due to over or undercounting of flows**	**0.00**
Overall measurement uncertainty	**4.81**
* Impact assessed by inspector.	
**Volume is given as a % of Consented DWF	

Uncertainty Calculations

Uncertainty calculations in this report are based on the following assumptions:-

- Maximum measurement uncertainty is taken to occur at the minimum flow rate.
- If a site is fully pumped, then the measurement uncertainty will be based on the typical pumping rate.
- Telemetry and data transmission uncertainty is controlled by procedures contained within the Quality Management System
- Where the maximum measurement uncertainty is < 7.0 %, it is not considered necessary to produce a diurnal flow pattern and uncertainty calculation.
- Where a diurnal flow and uncertainty pattern is required and no flow data has previously been recorded, an estimated diurnal flow pattern will be provided and uncertainty calculations will be based on this estimated pattern. The total daily discharge for the diurnal flow pattern will be based on the consented dry weather flow discharge. The maximum flow rate will be taken to be twice the mean flow rate and the minimum flow rate will be taken to be half the mean flow rate.
- Uncertainty values for flume and v-notch installations will be derived in accordance with BS ISO 4359: 1983 and BS ISO 1438: 2008. Allowance will be made for the uncertainty of the secondary device in line with the manufacturer's specifications.
- Uncertainty of magflow meters will be based on the product sizing software provided by the manufacturers used in conjunction with the manufacturer's calibration certificate.
- Manufacturer's magflow calibration certificates will be provided for each meter.
- Where more than one measurement installation is used to derive the total discharge, the overall uncertainty calculations will be pro rata based on the proportion of flow measured by each installation.
- Where there is "double counting" of process return liquors, the volume of the liquors will be based on information provided by the discharger.
- Any error due to "double counting" will be added to the calculated overall measurement uncertainty value. It should be noted that the error due to "double counting" will always be positive, and lead to an overestimation of the true flow rate.

4.0 DATA TRAIL / DATA INSPECTION

The Quality Management System (QMS) drawn up by Georgia Pacific UK Ltd includes procedures to cover the collection, processing and reporting of flow data from the site.

The procedures have been inspected previously by SIRA Environmental and found to meet the MCERTS requirements.

Appendix 1 Photographs

Final Effluent Weir

Recirculation Weir

Flow Meter Converters