



MCERTS TDV Report

Efailnewydd WwTW

04 December 2024

Report No. CFS/16593



Site Name:	Efailnewydd WwTW
Consent/Permit Holder:	Dŵr Cymru Welsh Water
Site Address:	Efailnewydd Pwllheli Gwynedd LL53 5TJ
Site Contact:	Morgan Rees-Godwin
Contact Phone Number:	07387 548820
Site Ref or Postcode:	802
Grid Ref:	SH 35029 35636
Consent/Permit No:	CG0014001
Location of Flow Measurement:	Flow to Filter
Number of flow meters:	This is the only meter as part of the certified system
Type of flow meter:	Siemens Mag 6000
Meter Serial Number(s):	N1S7305254
Sensor Serial Number(s):	464103H314
Date of Inspection:	04 December 2024
Inspector:	Phil Rose - MI 10 018
Inspection Report No:	CFS/ 16593
Survey Pack:	D
Total daily uncertainty:	5.42%

* Kit Inventory and calibration data recorded on central QMS database

Site Compliance: Following a site inspection the measurement system was found to meet the requirements of the Environment Agency Minimum Requirements for the self-monitoring of flow: MCERTS performance standards - Published 28th August 2024

Site Details

Site Description
Efailnewydd WwTW is a filter sewage treatment works.

Location of Flow meter(s)
Flow measurement is located at the Flow to Filter and consists of a magnetic flow meter, Siemens Mag 6000

Emission point(s) requiring flow measurement
MCERTS TDV DWF Consent = 45 m ³ /d.

Verification/Calibration
A portable clamp-on ultrasonic meter was installed on the pipe crown to prove full pipe conditions, and to compare flow rates. The diagnostic readings confirmed the data as suitable. Spot readings and total were recorded and the error assessed.

Site maintenance arrangements, evidence and suitability
A routine maintenance schedule has been implemented as part of the consent holders Quality Management System, as audited by SIRA. The flow measurement system was found to be in a satisfactory condition at the time of the Inspection. The inside of the pipe was not inspected and no evidence was presented as to the condition in the pipe.

Comments about the installation and/or MI judgement



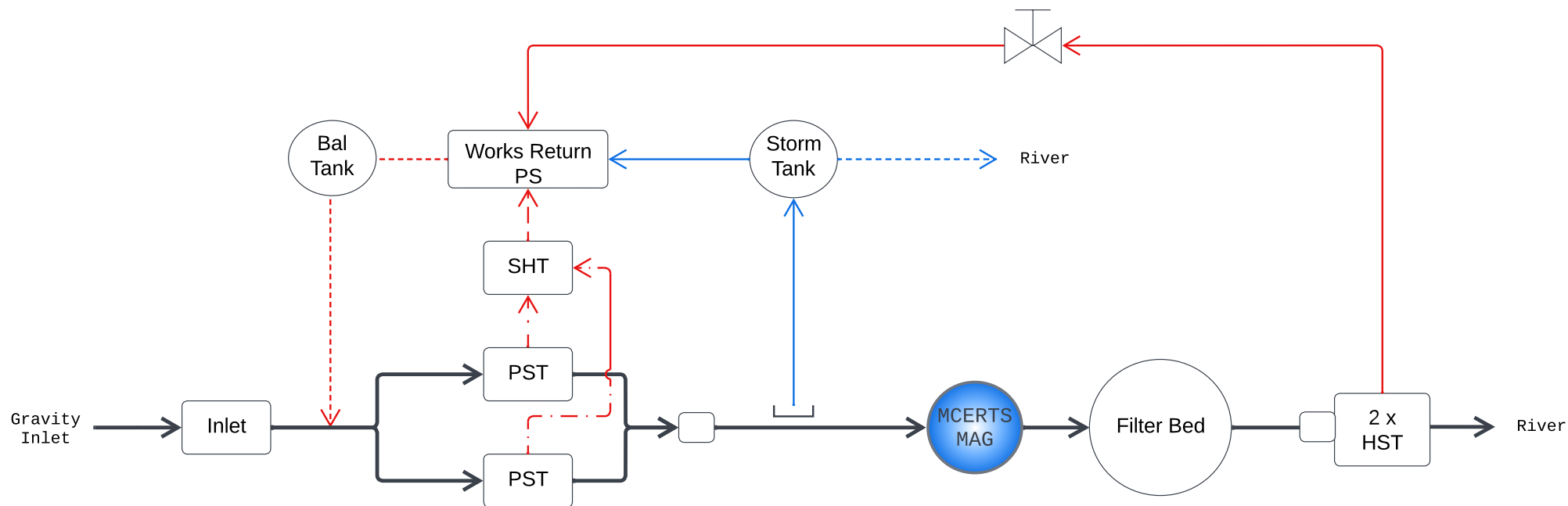
N1S7305254



464103H314

Flow Meter Location and Serial Number	Sensor Location and Serial Number
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Humus Returns have now been locked off. The humus tanks will now be tankered away. The operational procedure for the site has been updated and a sign will be positioned at the valve spindles to illustrate the significance of them being locked off.

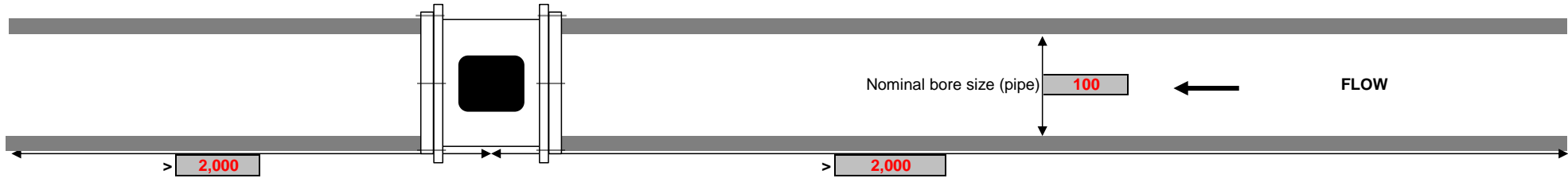


TREATED FLOW
 STORM FLOW
 STORM OVERFLOW
 HUMUS RETURNS
 TOP LIQUORS
 DE SLUDGE
 Process interpreted from site visit
 and has not been confirmed

		Critical Flow Systems Ltd	
Efailnewydd WwTW			
23/10/24		SITE OWNER	
Rev .		DCWW	
	B		

Site Survey Data

Site Name		Efailnewydd WwTW		Flow Meter		Siemens Mag 6000		Location		Flow to Filter	
Date		04-Dec-24		Sensor type		Mag 5100W					
Profile	Grav.	A	Daily uncertainty		5.42%	CUV	14 CuM :8%	Sensor Potted		Y	
								Chamber Flooded		N	



Sensor Installation			
Suitable location?	Y	Full pipe?	Y
Accessible?	Y	Stable flow conditions?	Y
4/20mA rescaled?	N	Correct alignment?	Y
Profibus used?	N	Integrated earthing?	Y
4/20mA range (I/s)	10	Earthing rings fitted?	N
Expected maximum flow (I/s)	2	Cable damaged?	N
Pumped/pulsed flow?	N		
The calibrated maximum flow rate is high compared to the expected maximum flow rate			
Transmission error (%)	2	Excitation frequency (Hz)	6.25
		Est. of scum lining (mm)	1

Verification	
Verified?	Y
Instantaneous flow rate error	2.41%
Totalised flow rate error	

Sensor (label)	
Cal.factor	5.888652
Sensor size	100
Transmitter	
Cal. factor	5.888652
Sensor size	100
Sensorprom installed	Y

Installation & set-up (limits taken from flow meter specifications)			
Q (I/s) >	0.1	at 10% of Qmax	Ok
Qmax <	78.0	I/s	Ok
4/20mA range			Ok*
Suitable location			Ok
Upstream length >	5 X	diameter	Ok
Downstream length >	2 X	diameter	Ok
Matching calibration factors			Ok
Programmed sensor size			Ok
		Full pipe	Ok
		Stable flow conditions	Ok
		Correct alignment	Ok
		Entrapped air	Ok
		Cable condition	Ok
		Correct earthing	Ok
		Earthing method	Transducer
		Sensorprom installation	Ok
		Excitation frequency	Ok

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Dimensions in mm unless otherwise stated

Verification Details

Site	Efainewydd WwTW	Flow Meter	Siemens Mag 6000
Location	Flow to Filter	Date	04-Dec-24

Method of Verification	
Nivus Wedge	
Nivus Tube	
Clamp on FM	Y
Tank Fill	
Drop Test	
Two channel	
Other	

Details
A portable clamp-on ultrasonic meter was installed on the pipe crown to prove full pipe conditions, and to compare flow rates. The diagnostic readings confirmed the data as suitable. Spot readings and total were recorded and the error assessed.

Instantaneous Readings (5 Min)

	Siemens Mag 6000	Clamp on FM
1	1.05	1.07
2	1.05	1.09
3	1.08	1.1
4	1.09	1.14
5	1.1	1.16
6	1.11	1.17
7	1.17	1.19
8	1.18	1.21
9	1.19	1.2
10	1.21	1.2
11	1.23	1.23
12	1.24	1.27
13		
14		
15		
16		
17		
18		
19		
20		

Totaliser

Siemens Mag 6000	Clamp on FM	
		Start
		Finish

Totaliser

Siemens Mag 6000	Clamp on FM	
		Start
		Finish

Totaliser

Siemens Mag 6000	Clamp on FM	
		Start
		Finish

Ave.	1.1	1.2
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				Ave.
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Instantaneous Error
2.41%

Totalised Error

Combined total variation.
2.41%

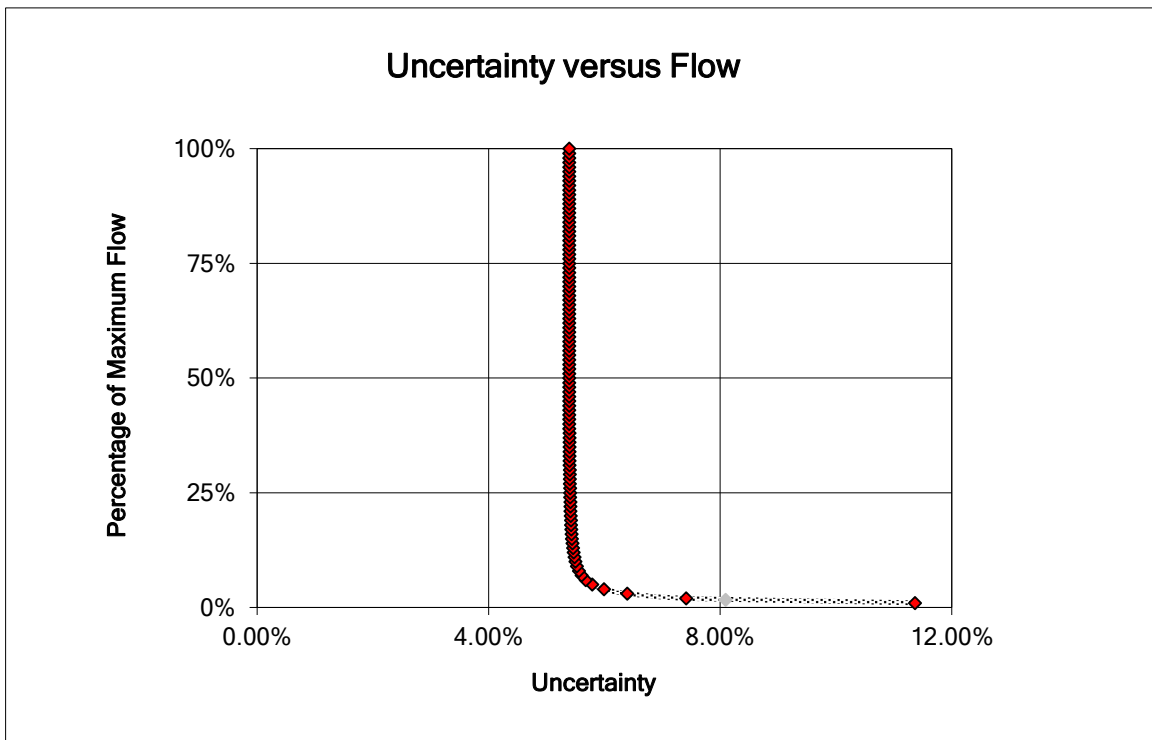
Comments

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Uncertainty Analysis

Site	Efailnewydd WwTW	Flow Meter	Siemens Mag 6000
Location	Flow to Filter	Date	04-Dec-24

Error	Symbol	% of Total Flow			
		25%	50%	75%	100%
Velocity Measurement	X_v	0.39%	0.25%	0.25%	0.25%
Analogue Output	X_o	0.10%	0.07%	0.05%	0.04%
Transmitter + Analogue temp.	$X_{t(t)} + X_{t(o)}$	0.16%	0.16%	0.16%	0.16%
Cross Sectional Area	X_{area}	3.96%	3.96%	3.96%	3.96%
Sensor temp.	$X_{t(s)}$	0.03%	0.03%	0.03%	0.03%
Pressure effect	X_p	0.15%	0.15%	0.15%	0.15%
Transmission Errors		2.00%	2.00%	2.00%	2.00%
Upstream Profile	$X_{pr(u)}$	0.52%	0.52%	0.52%	0.52%
Downstream Profile	$X_{pr(d)}$	0.00%	0.00%	0.00%	0.00%
Electronic Cal. Cert.		3.00%	3.00%	3.00%	3.00%
Pumped Flow (ramp up/down)		0.00%	0.00%	0.00%	0.00%
Arbitrary		0.00%	0.00%	0.00%	0.00%
Total	X_{total}	5.41%	5.39%	5.39%	5.39%



The total daily uncertainty for this site is: 5.42%

The Critical Uncertainty Volume is: 14 CuM :8%

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