



MCERTS TDV Report

Mortimer STW

11 June 2024

Report No. CFS/15163





Site Information



Site Name:	Mortimer STW	
Consent/Permit Holder:	Thames Water	
Site Address:	Off The Street Mortimer Reading RG7 3AB	
Site Contact:	██████████	
Contact Phone Number:	██████████	
Site Ref or Postcode:	MORTS1ZZ	
Grid Ref:	SU 67427 64513	
Consent/Permit No:	CNTW.0404	
Location of Flow Measurement:	Final Effluent	
Number of flow meters:	This is the only meter in the certified measurement system	
Type of flow meter:	ABB Watermaster	
Meter Serial Number(s) :	3K220000986672	
Sensor Serial Number(s):	3K220000986672	
Date of Inspection:	11 June 2024	
Inspector:	Phil Rose - MI 10 018	
Inspection Report No:	CFS/15163	
Survey Pack:	Kit D	* Kit Inventory and calibration data recorded on central QMS database
Site Total Daily Uncertainty:	3.97%	
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 standard - Published 24 July 2022	

Site Details

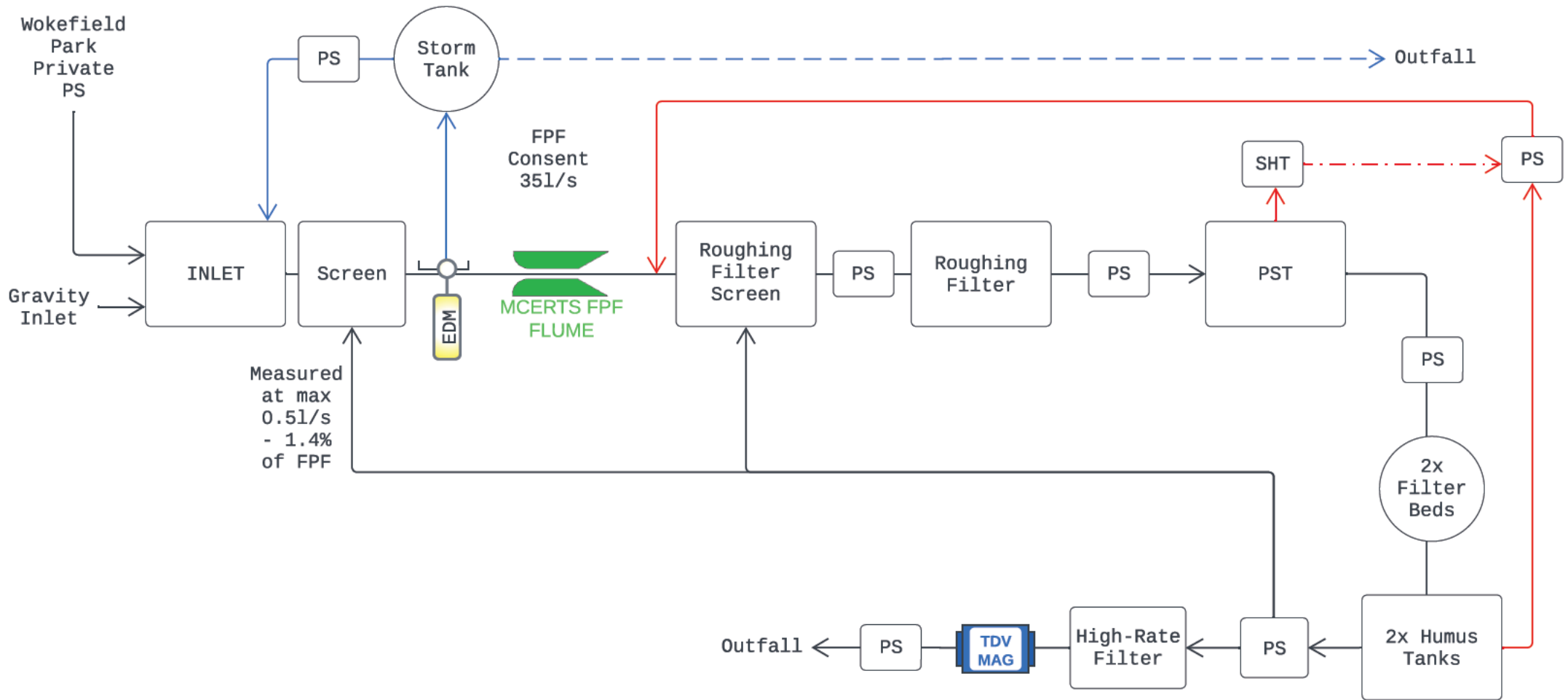
Site Description
Mortimer STW is a biological sewage treatment works.
Location of Flow meter(s)
Flow measurement is located at the Final Effluent and consists of a magnetic flow meter, ABB Watermaster
Emission point(s) requiring flow measurement
MCERTS TDV DWF Consent = 1358 m ³ /Day
Verification/Calibration
Nivus PCM Pro with Wedge was inserted into a part filled pipe in line with the flow meter. Diagnostic profile confirmed as suitable. Spot readings and totals were recorded. 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
Verified in downstream chamber using Nivus flow meter.



Site Flow Meter Location



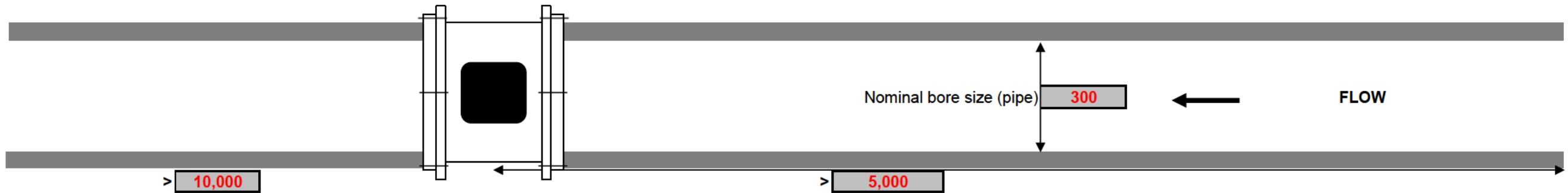
Site Flow Meter Display



<ul style="list-style-type: none"> → Treated Flow → Storm Flow → Storm Overflow → Humus Returns → Top Liquors → De-Sludge → Washwater 	<p><i>Process interpreted from site visit and has not been confirmed</i></p> <p>Comments -</p>		<p>Process Diagram - Mortimer STW</p>	<p>Site Owner - Thames Water</p>	<p>Date - 11/06/24</p>																			
		<table border="1"> <thead> <tr> <th>Rev</th> <th>Date</th> <th>Drawn By</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>17/06/24</td> <td>EM</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Rev	Date	Drawn By	Notes	A	17/06/24	EM															
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A	17/06/24	EM																						

Site Survey Data

Site Name	Mortimer STW			Flow Meter	ABB Watermaster		Location	Final Effluent	
Date	11-Jun-24								
Profile	FE Grav.	B	Daily uncertainty	3.97%	CUV	67 CuM :8%			



Sensor Installation			
Suitable location?	Y	Full pipe?	Y
Accessible?	NC2	Entrapped air?	N
4/20mA rescaled?	N	Stable flow conditions?	Y
Profibus used?	N	Correct alignment?	Y
4/20mA range (l/s)	55.0001	Integrated earthing?	N
Expected maximum flow (l/s)	30	Earthing rings fitted?	Y
Pumped/pulsed flow?	N	Cable damaged?	N
Transmission error (%)	2	Est. of scum lining (mm)	1

Verification	
Verified?	Y
Instantaneous flow rate error	0.72%
Totalised flow rate error	

Sensor (label)	
Cal.factor	2500 / 200
Sensor size	300
Transmitter	
Cal. factor	2500 / 200
Sensor size	300

Installation & set-up (limits taken from flow meter specifications)			
Q (l/s) > 0.5 at 10% of Qmax	Ok	Full pipe	Ok
Qmax < 705.0 l/s	Ok	Stable flow conditions	Ok
4/20mA range	Ok	Correct alignment	Ok
Suitable location	Ok	Entrapped air	Ok
Upstream length > 5 X diameter	Ok	Cable condition	Ok
Downstream length > 2 X diameter	Ok	Correct earthing	Ok
Matching calibration factors	Ok	Earthing method	Earthing rings
Programmed sensor size	Ok		

Version No. 23.3

Dimensions in mm unless otherwise stated

Verification Details

Site	Mortimer STW	Flow Meter	ABB Watermaster
Location	Final Effluent	Date	11-Jun-24

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

Details
Nivus PCM Pro with Wedge was inserted into a part filled pipe in line with the flow meter. Diagnostic profile confirmed as suitable. Spot readings and totals were recorded. Error assessed.

Instantaneous Readings (5 Min)

	ABB Watermaster	Nivus Wedge
1	12.4	12.3
2	12.6	12.7
3	12.7	12.7
4	12.6	12.5
5	12.6	12.5
6	12.5	12.4
7	12.4	12.7
8	12.8	12.6
9	13.2	13.4
10	12.9	13.4
11	13.2	13.4
12	12.9	13.3
13		
14		
15		
16		
17		
18		
19		
20		

Totaliser

ABB Watermaster	Nivus Wedge	
		Start
		Finish

Totaliser

ABB Watermaster	Nivus Wedge	
		Start
		Finish

Totaliser

ABB Watermaster	Nivus Wedge	
		Start
		Finish

Ave.	12.7	12.8
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Instantaneous Error
0.72%

Totalised Error

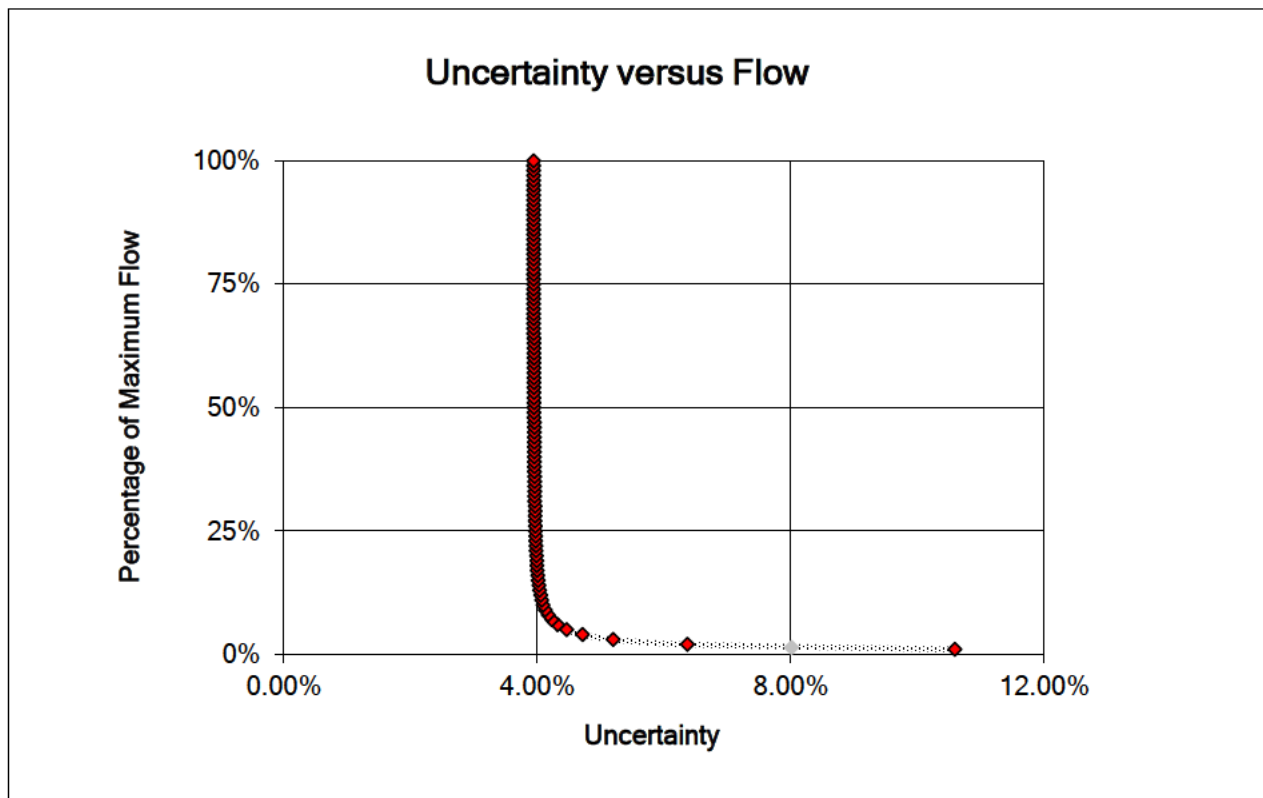
Combined total variation.
0.7%

Comments

Uncertainty Analysis

Site	Mortimer STW	Flow Meter	ABB Watermaster
Location	Final Effluent	Date	11-Jun-24

Error	Symbol	% of Total Flow			
		25%	50%	75%	100%
Velocity Measurement	X_v	0.39%	0.19%	0.03%	0.02%
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}	1.33%	1.33%	1.33%	1.33%
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	$X_{pr(u)}$	0.86%	0.86%	0.86%	0.86%
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}	3.97%	3.95%	3.94%	3.94%



The total daily uncertainty for this site is:	3.97%
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The Critical Uncertainty Volume is:	67 CuM :8%
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