

Site Visit Report

Under the *European Union (Drinking Water) Regulations 2023*, the Environmental Protection Agency (EPA) is the supervisory authority in relation to Uisce Éireann and its role in the provision of public drinking water supplies. This audit was carried out to assess the performance of Uisce Éireann in providing clean and wholesome water to the public water supply named below.

The audit process is a sample of the performance of a water treatment plant and public water supply on a given date.

Water Supply Zone	
Name of Installation	Kiltrough/Bettystown
Organisation	Uisce Éireann
Scheme Code	2300PUB2041
County	Meath
Site Visit Reference No.	SV27993

Report Detail	
Issue Date	03/08/2023
Prepared By	Lorcan Farrell

Site Visit Detail			
Date Of Inspection	11/07/2023	Announced	Yes
Time In	10:30	Time Out	12:30
EPA Inspector(s)	Lorcan Farrell David O'Malley		
Additional Visitors	Maria O'Connell		
Company Personnel	Uisce Éireann: Daniel Behan. Meath County Council (Working in partnership with Uisce Éireann): Gavin Diamond, Linda Doran, Helen McDonnell, Norbert McMahon.		

> Summary of Key Findings

1. The outlet of the water tower located beside Kiltrough Water Treatment Plant (WTP) is not an appropriate point to verify adequate chlorine contact time has been achieved at the treatment plant. This is due to the water tower receiving treated water from Staleen WTP in addition to the treated water supplied by Kiltrough WTP.
2. There was no treatment plant shutdown setpoint in place to prevent treated water with a turbidity in excess of the 1 NTU limit from entering the distribution network.
3. Periodic lapses in trend data for the treatment plant were observed in the month prior to the audit. Meath County Council confirmed that during these time periods treatment plant warning alarms would not have been dialed out to operational staff via the county SCADA system.

> Introduction

Kiltrough/Bettystown Public Water Supply (PWS) serves a population of 17,532 people (EDEN figures). Kiltrough WTP produces approximately 2,500 m³/day with the remainder of the supply volume (approximately 2,500 m³/day) being received via rising main from Staleen WTP. Kiltrough WTP is supplied by two boreholes located in close proximity to the treatment plant. Treatment of the combined output of the boreholes consists of chlorination and fluoridation.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the alarms and inhibits in place at the treatment plant and the procedures in place to ensure appropriate oversight of treatment processes.

> Supply Zones Areas Inspected

The audit included a site tour of Kiltrough WTP.



1. Alarms, Inhibits & Oversight Audits 2023

		Answer
1.1	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No
	Comment	
	<p>1. The chlorine contact time validation calculation submitted before the audit identifies the outlet of the water tower located at the treatment plant as the point of chlorine contact time validation. The tower receives water from both Kiltrough WTP and Stalleen WTP (approx 110 m³/hr from each plant) and so can not be considered an appropriate point for verification of primary disinfection for Kiltrough WTP.</p> <p>2. There are chlorine residual monitors located on the inlet and outlet of the water tower. Meath County Council confirmed that there are high and low (1.6 mg/l and 0.5 mg/l) plant shutdown setpoints in place on the inlet and high and low (1.0 mg/l and 0.3 mg/l) warning alarm setpoints on the outlet of the tower.</p>	
		Answer
1.2	Were all findings of the UÉ alarm and inhibit review implemented?	No
	Comment	
	<p>1. An alarm and inhibit review was carried out at the treatment plant in May 2023. The findings of the review have yet to be issued. Kiltrough WTP is included under the Uisce Éireann Water Treatment Plant Upgrade Programme. No scope of works or timescales for completion of works under the Water Treatment Plant Upgrade Programme were available at the audit.</p>	
		Answer
1.3	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
	Comment	
	<p>1. There are turbidity monitors located at both of the boreholes that supply Kiltrough WTP. A high turbidity alarm setpoint of 1 NTU was in place based on the output of both turbidity monitors. However, there was no plant shutdown setpoint in place to prevent treated water with a turbidity in excess of the 1 NTU limit from entering the distribution network.</p>	
		Answer
1.4	Is there a documented alarm response procedure?	No
	Comment	
	<p>1. While there are informal procedures in place covering the response to alarms, there was no documented site specific alarm response procedure in place at the treatment plant. Meath County Council stated that a new alarm response procedure was in development and is due to be introduced by Q3 2023. Meath County Council confirmed that staff training on the new procedure will also be delivered.</p>	



2. Site Specific Issues

		Answer
2.1	Are there adequate warning alarm setpoints in place at the treatment plant based on fluoride residual levels?	No
Comment		
<p>1. There is a continuous fluoride residual monitor in place at the treatment plant. However, there are no warning alarm setpoints in place based on the output of this monitor to indicate a failure of the hydrofluorosilicic acid dosing system.</p>		

		Answer
2.2	Did treatment process trends demonstrate that data was being captured and recorded by the county SCADA system at all times?	No
Comment		
<p>1. Residual chlorine and fluoride trends for Kiltrough WTP submitted before the audit contained three periods of time where a flat line was observed indicating data had not been recorded accurately. Periods of approximately 20, 24 and 72 hours where a flat line was observed occurred on 02/06/2023, 06/06/2023 and between 17/06/2023 and 19/06/2023 respectively.</p> <p>2. Meath County Council stated that the contractor who manages the county SCADA system had experienced issues with the server from which the SCADA system operates at these times. Meath County Council staff stated that when a flat line on SCADA trends was identified by the caretaker, the issue was escalated to Meath County Council supervisory staff and from there communicated to Uisce Éireann and the contractor operating the system. Meath County Council confirmed that the issue affected a number of other Meath County Council sites connected to the county SCADA system and that regular consultation with Uisce Éireann and the contractor operating the County SCADA was ongoing concerning this issue.</p> <p>3. Meath County Council confirmed that alarms generated at the treatment plant would not have been available to be dialed out through the county SCADA system to operational staff during these time periods.</p> <p>4. Meath County council also confirmed that plant inhibits would have been unaffected by the issue and should have worked as intended if a shutdown setpoint was reached. This is due to shutdown setpoints being controlled locally at the treatment plant before an alarm is generated and sent to the county SCADA system.</p> <p>5. Since the audit, Uisce Éireann has confirmed interim site-specific measures are being taken at Kiltrough WTP to assist in managing the risks to alarm dial outs and effective remote oversight.</p>		

Recommendations

Subject	Kiltrough/Bettystown Audit Recommendations	Due Date	04/09/2023
Action Text	<p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</p> <ol style="list-style-type: none">1. Provide a revised location and system for verification of chlorine contact time that is representative of the treated water produced at Kiltrough Water Treatment Plant. This should include the provision of continuous chlorine monitoring and appropriate warning alarm and plant shutdown setpoints to ensure target contact time is achieved and verified at all times.2. Ensure that appropriate warning alarms and plant shutdowns are in place to protect the 1 NTU limit on final water turbidity.3. Assess and resolve the issues being experienced with the SCADA system to ensure that: (i) alarms are dialed out to alert operational staff in the event of a failure of a critical plant process and (ii) treatment plant process trends are recorded at all times.4. Implement the new alarm response procedure and include the provision of training to staff on the new procedure.5. Install appropriate warning alarms based on the output of the continuous fluoride residual monitor at the treatment plant.6. Progress works at the treatment plant under the Uisce Éireann Water Treatment Plant Upgrade Programme. <p>Actions required by Uisce Éireann</p> <p>During the audit, Uisce Éireann representatives were advised of the audit findings and that action must be taken by Uisce Éireann to address the issues raised.</p> <p>Uisce Éireann should submit a report to the EPA on or before 04/09/2023 detailing the actions taken and planned, with timescales, to close out the above recommendations.</p> <p>The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.</p>		