

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	Piltown-Fiddown PWS
Organisation	Uisce Éireann
Scheme Code	1500PUB1013
County	Kilkenny
Site Visit Reference No.	SV28024

Report Detail	
Issue Date	31/08/2023
Prepared By	Orla Harrington

Site Visit Detail			
Date Of Inspection	08/08/2023	Announced	Yes
Time In	09:55	Time Out	10:25
EPA Inspector(s)	Orla Harrington David O'Malley Emma Smith (Intern)		
Additional Visitors			
Company Personnel	Uisce Éireann: Denis McGrath, Patrick Duggan. Kilkenny County Council (working in partnership with Uisce Éireann): David O'Brien, Denis Lawlor, Kevin Hogan, David McArdle, Eoin Molloy.		

> Summary of Key Findings

1. The Piltown-Fiddown Public Water Supply was placed on the EPA's Remedial Action List in Q2 2019 due to inadequate treatment for *Cryptosporidium*. Uisce Éireann have installed a new ultraviolet disinfection system at the Piltown-Fiddown water treatment plant which provides primary disinfection. Secondary disinfection is achieved by chlorination to maintain an adequate level of residual disinfection in the distribution network. The use of both disinfection methods is a multi-barrier approach which provides full-spectrum pathogen control, to help safeguard drinking water quality.
2. The audit found that the new ultraviolet disinfection system was operating within its validated range, and there were appropriate alarms and controls in place to ensure adequate disinfection of the water supply from Piltown-Fiddown water treatment plant.
3. Based on the findings of the audit, the EPA has removed the Piltown-Fiddown Public Water Supply from the Remedial Action List in the Q2 2023 update.

> Introduction

Piltown-Fiddown Public Water Supply (PWS) supplies a population of 2,913 with a volume of approximately 685m³/day. The raw water source is a mixture of two boreholes located within the treatment plant site. Treatment consists of pH correction and disinfection (chlorination and UV).

Piltown-Fiddown PWS was placed on the EPA's Remedial Action List (RAL) in Quarter 2 2019 due to inadequate treatment for *Cryptosporidium*. Uisce Éireann's RAL action programme involved the installation of UV disinfection at the Piltown-Fiddown water treatment plant (WTP) to provide multi barrier disinfection control. Construction and commissioning is complete and the UV disinfection system was in operation at the time of the audit.

The purpose of the audit was to assess the suitability of the Piltown-Fiddown PWS for removal from the EPA's RAL.

> Supply Zones Areas Inspected

The audit comprised of an inspection of the new UV disinfection system at Piltown-Fiddown water treatment plant.



1. Disinfection

		Answer
1.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	No
Comment		
<p>1. Secondary disinfection is provided by dosing of sodium hypochlorite. The target chlorine dose is 0.85mg/l to achieve a chlorine residual of 0.1mg/l at the end of the network. The low (0.6 mg/l) and low low (0.5 mg/l) chlorine alarm setpoints are well below the target of 0.85mg/l chlorine residual concentration in the final water. The alarms are not set at an appropriate level to ensure treated water at the extremities of the distribution network contains at least 0.1 mg/l to ensure adequate disinfection.</p>		

		Answer
1.2	Is the UV system suitably validated?	Yes
Comment		
<p>1. The new UV disinfection system comprises of two Trojan Swift SC D06 UV units in a duty - standby arrangement with automatic switchover if the duty UV fails for any reason. There is also a scheduled changeover of the UV units once per week.</p> <p>2. The UV systems are validated under the USEPA UV Manual. Uisce Éireann provided a validation letter from the UV manufacturer subsequent to the audit, confirming that the UV system is validated to operate within a specified range. The UV units are validated to operate at a minimum UVT of 68.5% for a maximum design flow of 58.6 m³/hr. The UV units are linked to a continuous UVT and dose monitor. On the day of the audit, the HMI displayed the following for duty unit No. 2: UVT 94.6%, UV Dose 166.7 mJ/cm² and flow 36 m³/hr. The UV disinfection system was operating within its validated range during the audit.</p> <p>3. The minimum validated dose is 40 mJ/cm² and the plant is alarmed and programmed to automatically shutdown if the UV dose falls below 42 mJ/cm² (delay of 120 seconds). There is also automatic shutdown of the UV system if the UVT reaches 75% (delay of 120 seconds).</p> <p>4. Uisce Éireann stated that the Piltown-Fiddown water supply sources have a 3 log protozoal treatment requirement and the UV disinfection system provides 3 log credits if operated within its validated range.</p> <p>5. The trends for the UV units are available to view on the countywide SCADA which is accessible to all plant operators on their mobile devices. A copy of two months of trend data was provided by Uisce Éireann in advance of the audit and demonstrates that the UV units are operating effectively. A cascade system is in place to alert staff in the event of an alarm being triggered.</p>		



2. Supply on the Remedial Action List

	Answer
2.1 Do the audit findings support progress made with the Remedial Action List upgrades?	Yes
Comment	
1. The EPA audit found that Uisce Éireann have installed a new UV disinfection system to address the lack of a <i>Cryptosporidium</i> barrier and based on audit findings the EPA is satisfied to remove Piltown-Fiddown PWS from the RAL.	



3. Site Specific Issues

		Answer
3.1	Is the plant operator fully trained on the operation and control of the UV disinfection system?	No
Comment		
<p>1. Glan Aqua were contracted by Uisce Éireann to deliver the new UV disinfection system. Uisce Éireann confirmed that training and standard operating procedures relating to the routine maintenance of the UV disinfection system will be provided to the plant operators prior to the formal handover from Glan Aqua estimated to be in 12 months time.</p>		

Recommendations

Subject	Piltown-Fiddown PWS - Audit Report	Due Date	02/10/2023
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. Ensure operators of Piltown-Fiddown water treatment plant are fully trained in the operation and control of the UV disinfection system.2. Ensure that there are standard operating procedures in place for routine and periodic check and maintenance activities to be undertaken by the plant operator on the UV system.3. Ensure that the low and low low chlorine alarm setpoints are set at an appropriate level to ensure that the target residual chlorine concentration in the final water leaving the plant is met. <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 02/10/2023 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>		