

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	Fermoy
Organisation	Uisce Éireann
Scheme Code	0500PUB1207
County	Cork
Site Visit Reference No.	SV29668

Report Detail	
Issue Date	21/08/2024
Prepared By	Paul Buckley

Site Visit Detail			
Date Of Inspection	25/07/2024	Announced	Yes
Time In	10:30	Time Out	12:00
EPA Inspector(s)	Paul Buckley		
Additional Visitors			
Company Personnel	Uisce Éireann - Áine Butler, Ciarán Connolly, Denis Hayes, Anthony Barrett, Claire Hurley, Sharon O'Dwyer. Cork County Council (working in partnership with Uisce Éireann) - John Sisk, Pauline McAree.		

> Summary of Key Findings

1. The Fermoy Water Treatment Plant was placed on the EPA's Remedial Action List in Q1 2023 due to inadequate treatment for *Cryptosporidium*. Uisce Éireann have installed a duty/standby ultraviolet (UV) disinfection system with alarms and automatic shutdowns based on turbidity, flow rate and UV Dose.
2. The audit found that the new UV disinfection system installed by Uisce Éireann was operating within its validated range and with appropriate alarms and inhibits in place to ensure no inadequately disinfected water enters the supply.
3. Based on the findings of the audit, the EPA will consider the removal of the Fermoy Public Water Supply from the Remedial Action List in the Q2 2024 update.

> Introduction

The Fermoy Public Water Supply (PWS) supplies an average of 3,872 m³/day of water, serving a population of 7,381 people.

The supply is sourced from an infiltration gallery, located at Cregg, on the River Blackwater, and from a borehole, also located at Cregg. Uisce Éireann indicated that in drier weather, both sources flow to a water sump before being pumped to the water treatment plant at Coolrue, which is approximately 1.2 km from the raw water sources.. In wetter weather conditions the borehole pumps directly to the water treatment plant. The high lift pumps in the raw water sump are controlled by the reservoir level in Coolrue. Treatment consists of ultraviolet (UV) and chlorination disinfection and fluoridation.

The Fermoy PWS was placed on the EPA's Remedial Action List (RAL) in Q1 2023 due to inadequate treatment for *Cryptosporidium*. Uisce Éireann's RAL action programme involved the installation of a duty/standby UV disinfection system at the Coolrue water treatment plant. Construction and commissioning is now complete and the UV disinfection system was in operation at the time of the audit.

The audit was undertaken to assess the suitability of the Fermoy PWS for removal from the EPA's RAL.

> Supply Zones Areas Inspected

The ultraviolet treatment system, the chlorination disinfection system, the fluoride dosing system, and the run-to-waste system were inspected.



1. Disinfection

		Answer
1.1	Is the UV system suitably validated?	Yes
Comment		
<p>1. A new UV disinfection system has been installed to address the inadequate treatment for <i>Cryptosporidium</i>. A WEDECO LBX-400E UV disinfection system has been installed, consisting of duty/standby units with automatic switchover every 72 hours, or in the event of a duty UV unit failure for any reason.</p> <p>2. The units are verified under the US EPA protocol and Uisce Éireann provided a validation certificate prior 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 60% for a maximum design flow of 365 m³/hr. The UV units are linked to continuous UV Dose, UVT and UVI monitors. On the day of the audit, the following readings were taken for the duty unit No. 2: UV Dose - 26.31 mJ/cm², UVT - 95.8%, UVI - 174.5 W/m², and flow - 176.3 m³/hr. The UV disinfection system was operating within its validated range.</p> <p>3. The minimum validated UV Dose is 16.8 mJ/cm² and the plant is programmed to alarm if the dose falls below 18.7 mJ/cm², and automatically shut down if the dose falls below 17.00 mJ/cm² (delay of 180 seconds). There is also an alarm for the UV system if the UVT reaches 60% (delay of 600 seconds).</p> <p>4. Uisce Éireann stated that the Fermoy water supply sources have a 3 log protozoal treatment requirement and that UV is the secondary treatment at the plant, chlorination is the primary disinfection method. The UV units in place are certified to provide 16.8 mJ/cm² UV dose that is required to achieve 3 log protozoan inactivation. A text alert system, with 3 members, is in place to alert staff in the event of an alarm being triggered.</p> <p>5. The trends for the UV units are available to view at the plant and on the countywide SCADA. 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.</p>		

		Answer
1.2	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	No
Comment		
<p>There were no network monitoring results recorded for the supply between 07/06/2024 and 16/06/2024.</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	
<p>The EPA audit found that Uisce Éireann have installed a new UV disinfection system with associated alarms and inhibits to address the inadequate treatment for <i>Cryptosporidium</i>.</p> <p>Based on the findings of the audit, the EPA will consider the removal of the Fermoy PWS from the Remedial Action List in the Q2 2024 update.</p>	

Recommendations

Subject	EPA Audit Fermoy PWS 25/07/2024	Due Date	20/09/2024
Action Text	<p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendation(s) without delay.</p> <ol style="list-style-type: none">1. Ensure that monitoring of residual chlorine is undertaken several times a week at different points of the network to include network extremities, and that records of the monitoring results are maintained, ensuring chlorine is > 0.1 mg/L in the network. <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 20/09/2024 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>		