

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	Ballyclough & Mount North
Organisation	Uisce Éireann
Scheme Code	0500PUB1316
County	Cork
Site Visit Reference No.	SV31935

Report Detail	
Issue Date	14/02/2025
Prepared By	Paul Buckley

Site Visit Detail			
Date Of Inspection	23/01/2025	Announced	Yes
Time In	11:20	Time Out	11:50
EPA Inspector(s)	Paul Buckley		
Additional Visitors			
Company Personnel	Uisce Éireann: Claire Hurley, Sharon O'Dwyer, Criona Doyle, Anthony Barrett, John Sheahan. Cork County Council (working in partnership with Uisce Éireann): Pauline McAree.		

> Summary of Key Findings

1. The Ballyclough and Mount North Public Water Supply 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 disinfection system and associated alarms and inhibits at the Ballyclough water treatment plant. In addition, Uisce Éireann have carried out a telemetry upgrade at the Ballyclough water treatment plant with the UVT and turbidity monitors being linked to the countywide SCADA system, upgrades under the disinfection programme have been completed including updates to the time delays associated with chlorine and UV-related shutdowns and the installation of a shutdown linked to high chlorine, and the installation of a new continuous pH monitor.
2. The audit found that the new Ultraviolet disinfection system installed by Uisce Éireann was operating satisfactorily, with appropriate alarms and inhibits in place to ensure no inadequately disinfected water enters the supply.
3. Based on the findings of this audit, and the audit of the Mount North water treatment plant, the EPA is satisfied to remove the Ballyclough and Mount North PWS from the Remedial Action List in the Q4 2024 update.

> Introduction

The Ballyclough and Mount North Public Water Supply (PWS) serves a population of 2,129 with an average output of 1,463 m³/day. The supply is served by 2 no. separate water treatment plants. This audit relates to the Ballyclough water treatment plant (WTP).

Raw water is obtained from a spring located adjacent to the water treatment plant. Treatment consists of ultraviolet (UV) disinfection and chlorination. There is no storage of treated water at the Ballyclough WTP.

The Ballyclough and Mount North 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 Ultraviolet (UV) disinfection system with associated alarms and inhibits at the Ballyclough WTP. Construction and commissioning is now complete and the UV disinfection system is operational.

The audit was undertaken to assess the suitability of the Ballyclough and Mount North PWS for removal from the EPA's RAL.

> Supply Zones Areas Inspected

The ultraviolet disinfection system and the chlorination system were inspected.



1. Disinfection

1.1

Is the UV system suitably validated?

Answer

Yes

Comment

1. A new UV disinfection system has been installed to address the previously identified inadequate treatment for *Cryptosporidium*. The system installed at the water treatment plant is a Wedeco Spectron 25 disinfection system consisting of duty/standby units with automatic switchover in the event of a duty UV unit failure for any reason.

2. The units are validated under the DVGW/ONORM protocols and Uisce Éireann provided a validation certificate prior to the audit, confirming that the UV system is validated within a specified range. The UV units are validated to operate at a minimum UVT of 80% for a maximum design flow of 32.46 m³/hour. The UV units are linked to continuous UVT and UVI monitors. On the day of the audit, the following readings were taken for the duty UV unit (unit No. 2): UVT: 95%, UVI: 362 W/m², and flow: 16.91 m³/hour. The UV disinfection system was operating within its validated range during the audit.

3. The minimum validated UVT is 80% and the plant is alarmed if the UVT falls below 90% and is programmed to automatically shutdown if the UVT falls below 86% (delay of 300 seconds). There is also an alarm if the UVI falls below 108.7 W/m² and the plant is programmed to automatically shutdown if the UVI falls below 103.5 W/m² (delay of 300 seconds).

4. Uisce Éireann stated that the source for the Ballyclough water treatment plant has a 3 log protozoal treatment requirement and that the units in place are certified to provide a 40 mJ/cm² UV Dose that is required to achieve 3 log inactivation. A text alert system, with 3 members, is in place to alert staff in the event of an alarm being triggered.

5. The trends for the UV units are available to view at the plant and on the countywide SCADA. It was noted that the top of the scale for the UVI is 200 W/m², which is less than the actual UVI reading. The UVI warning alarm and shutdown levels are visible on the graph. A copy of two months of trend data provided by Uisce Éireann in advance of the audit demonstrates that the UV units were operating effectively.



2. Management and Control

2.1

Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?

Answer

Yes

Comment

Uisce Éireann have installed duty/standby UV disinfection units at the water treatment plant with associated shutdowns based on UV transmittance (UVT), UV Irradiance (UVI) and flow, with appropriate alarms associated with these parameters in place to alert staff of reduced UVT, UVI, or elevated flow.



3. Supply on the Remedial Action List

3.1

Do the audit findings support progress made with the Remedial Action List upgrades?

Answer

Yes

Comment

The EPA audit found that Uisce Éireann have installed the following at the Ballyclough water treatment plant; i) a new UV disinfection system with duty/standby units and associated alarms and inhibits to address the inadequate treatment for *Cryptosporidium*; ii) the completion of telemetry upgrades at the water treatment plant, iii) upgrades to the plant alarm and shutdown set points for chlorine and all UV-related parameters, and iv) the installation of a new continuous pH monitor.

Based on the findings of this audit, and the audit of the Mount North water treatment plant, the EPA is satisfied to remove the Ballyclough and Mount North PWS from the Remedial Action List in the Q4 2024 update.

Recommendations

Subject	Ballyclough WTP Audit 2025 - Recommendations	Due Date	14/03/2025
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 the display scale for the UVI is updated to reflect the actual monitored values.2. Continue to operate the plant so that adequately treated water enters the supply. <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 14/03/2025 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>		