

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	Killavullen
Organisation	Uisce Éireann
Scheme Code	0500PUB1310
County	Cork
Site Visit Reference No.	SV30255

Report Detail	
Issue Date	01/08/2024
Prepared By	Paul Buckley

Site Visit Detail			
Date Of Inspection	17/07/2024	Announced	No
Time In	10:25	Time Out	11:35
EPA Inspector(s)	Paul Buckley Sean O'Leary		
Additional Visitors			
Company Personnel	Uisce Éireann - Claire Hurley, Áine Butler, Billy Taylor, Cormac Begin, Ciarán Connolly, Anthony Barrett. Cork County Council (working in partnership with Uisce Éireann) - Jason O'Donoghue, Pauline McAree.		

> Summary of Key Findings

1. The Killavullen Water Treatment Plant was placed on the EPA's Remedial Action List in Q3 2022 due to poor turbidity removal. Uisce Éireann have installed an automatic run to waste based on turbidity for borehole BH1 and alarms and automatic shutdowns based on turbidity for borehole BH2, installed a new 300 m3 reservoir on the site, and installed a duty/standby Ultraviolet disinfection unit.
2. The audit found that the new run-to-waste system installed by Uisce Éireann was operating satisfactorily, and the Ultraviolet disinfection system was operating within its validated range, 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 Killavullen PWS from the Remedial Action List in the Q2 2024 update.

> Introduction

The Killavullen Public Water Supply (PWS) supplies an average of 440 m3/day of water, serving a population of 791 people.

The supply is sourced from 2 No. boreholes, one located adjacent to the treatment plant, and one located in the village approximately 1 km from the treatment plant. Treatment consists of ultraviolet (UV) disinfection and chlorination.

Killavullen PWS was placed on the EPA's Remedial Action List (RAL) in Q3 2022 due to poor turbidity removal. Uisce Éireann's RAL action programme involved the installation of an automatic run to waste system, the provision of additional treated water storage at the site, and an upgrade to disinfection systems on site. 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 Killavullen PWS for removal from the EPA's RAL.

> Supply Zones Areas Inspected

The 2 No. boreholes, the Ultraviolet treatment system, the chlorination disinfection system, and the 2 No. reservoirs were inspected.



1.1

	Answer
Is the UV system suitably validated?	Yes
<p>Comment</p> <p>1. A new UV disinfection system has been installed to address the previously identified protozoal log treatment deficit. It is provided by a VISADES T-860F UV disinfection system consisting of duty/standby units with automatic switchover every 5 days, or in the event of a duty UV unit failure for any reason.</p> <p>2. The units are validated under the European ONORM protocol manual 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 74.1% for a maximum design flow of 83.8 m3/hour. The UV units are linked to a continuous UVT and UVI monitor. On the day of the audit, the following readings were taken for the duty unit No. 2: UVT 94.4%, UVI 118.90 W/m2, and flow 19.9 m3/hour. The UV disinfection system was operating within its validated range during the audit.</p> <p>3. The minimum validated UVI is 68.8 W/m2 and the plant is alarmed and programmed to automatically shutdown if the dose falls below 68.8 W/m2 (delay of 600 seconds). There is also an alarm for the UV system is the UVT reaches 75% (delay of 900 seconds).</p> <p>4. Uisce Éireann stated that the Killavullen water supply sources have 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 protozoan inactivation. A text alert system, with 4 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>	



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

1. Uisce Éireann have installed an automatic run to waste facility linked to high turbidity (> 1 NTU) for the No. 1 borehole, located in the village, and an automatic shutdown linked to high turbidity (> 1 NTU) has been installed for the No. 2 borehole, located at the water treatment plant. Alarms are also in place to alert staff to elevated turbidity for both boreholes.

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



3. Supply on the Remedial Action List

	Answer
3.1 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 the following; i) a new automatic run to waste line linked to elevated turbidity from the No. 1 borehole associated with the supply, ii) alarms and automatic shutdown for the No. 2 borehole linked to elevated turbidity; iii) a 300 m3 reservoir to improve the treated water storage capacity for the supply, and iv) a new UV disinfection system to address the log deficit identified at the previous audit. It was stated that the long-term plan is to rationalise the Killavullen supply however no timeframe was provided during the audit.</p> <p>Based on the findings of the audit, the EPA will consider the removal of the Killavullen PWS from the Remedial Action List in the Q2 2024 update.</p>	

Recommendations

Subject	EPA Audit Recommendations - Killavullen PWS 17/07/2024	Due Date	02/09/2024
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. Provide an update on the progress of the rationalisation of the Killavullen Public Water Supply, including a timeframe. <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 02/09/2024 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>		