

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	Kilmessan
Organisation	Uisce Éireann
Scheme Code	2300PUB1013
County	Meath
Site Visit Reference No.	SV28374

Report Detail	
Issue Date	08/12/2023
Prepared By	Lorcan Farrell

Site Visit Detail			
Date Of Inspection	16/11/2023	Announced	Yes
Time In	10:30	Time Out	12:00
EPA Inspector(s)	Lorcan Farrell		
Additional Visitors			
Company Personnel	Uisce Éireann: Daniel Behan. Meath County Council (Working in partnership with Uisce Éireann): John Carroll, Helen McDonnell, Seamus Quinn.		

> Summary of Key Findings

1. There were no shutdown setpoints in place at Kilmessan Water Treatment Plant (WTP) based on verified chlorine residuals after contact time.
2. Treatment plant shutdown setpoints protecting the validation envelope of the UV disinfection system were not available to review on the day of the audit.

> Introduction

Kilmessan PWS serves a population of 1,123 (EDEN figure) and is supplied by Kilmessan WTP. The treatment plant produces approximately 377 m³/day and sources its water from two boreholes located at the treatment plant. Treatment consists of chlorination prior to filtration for manganese and iron oxidation, pressure filtration, UV disinfection and final water chlorination.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water.

> Supply Zones Areas Inspected

The audit included a site tour of Kilmessan WTP.



1. Disinfection

		Answer
1.1	Is the UV disinfection system operating within its validated range?	Yes
Comment		
<p>1. The UV system in place at the treatment plant is validated under the USEPA validation protocol. A plant shutdown setpoint was in place for treated water UVT. However, it was not possible to verify the other shutdown setpoints in place protecting the validation envelope of the UV system as they could not be accessed by operational staff on the UV system control panel.</p> <p>2. There was no manufacturer's plate attached to the UV reactor unit or control panel.</p>		

		Answer
1.2	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	Yes
Comment		
<p>1. Meath County Council confirmed that free chlorine residual monitoring takes place daily within the supply network. A map of network sampling points provided before the audit indicates there are sections of the network, particularly at the extremities, where free chlorine residuals are not sampled regularly.</p>		



2. Treatment Process Chemicals

	Answer
2.1 Are treatment process chemicals appropriately managed and stored?	No
Comment	
1. Empty cans of sodium hypochlorite were stored at the treatment plant in an unbunded area.	



3. Management and Control

3.1

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

Answer

No

Comment

1. There were no treatment plant shutdown setpoints in place based on the output of the chlorine residual monitor located at Kilmessan Reservoir which is the point of chlorine contact time verification indicated on the chlorine contact time validation calculation. High and low warning alarm setpoints are in place based on the output of this monitor.

2. There are no plant shutdown setpoints in place based on the output of the chlorine residual monitor located after sodium hypochlorite dosing at the treatment plant to prevent inadequately chlorinated water leaving the treatment plant in the event of a chlorine dosing failure. There are high and low warning alarm setpoints in place based on the output of this monitor.

3. A plant shutdown setpoint of 1 NTU with a 15 minute time delay is in place based on the output of the final water turbidity monitor. This shutdown time delay is not in accordance with the 3 minute delay specified in Section 5.5.1 of the *EPA Water Treatment Manual: Filtration*.

Recommendations

Subject	Kilmessan Audit Recommendations	Due Date	08/01/2024
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. Install (i) appropriate plant shutdowns based on verified chlorine residuals after contact time has been achieved and (ii) appropriate high and low plant shutdown setpoints based on residual chlorine level post dosing at the treatment plant.2. Ensure that the plant shutdown based on final water turbidity leaving the treatment plant is controlled by the regulatory 1 NTU (with a maximum delay of 3 minutes) as detailed in the <i>EPA Water Treatment Manual: Filtration</i>.3. Uisce Éireann should: (i) submit plant alarm/shutdown setpoints protecting the UV disinfection system validation envelope (flow, minimum UV intensity/dose) and (ii) install a manufacturer's plate on the UV disinfection system.4. Review the network chlorine residual monitoring programme to ensure that sample locations are sufficient to verify the residual chlorine levels in the network, including at dead ends/network extremities.5. Review chemical storage arrangements at the treatment plant and provide appropriate storage for empty chemical drums. <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 08/01/2024 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>		