

# 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	
<b>Name of Installation</b>	Inniskeen
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	2400PUB1009
<b>County</b>	Monaghan
<b>Site Visit Reference No.</b>	SV28333

Report Detail	
<b>Issue Date</b>	24/11/2023
<b>Prepared By</b>	Lorcan Farrell

Site Visit Detail			
<b>Date Of Inspection</b>	26/10/2023	<b>Announced</b>	Yes
<b>Time In</b>	10:35	<b>Time Out</b>	12:30
<b>EPA Inspector(s)</b>	Lorcan Farrell Veronica Boland		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Fionnuala Bonner. Veolia (operating under DBO contract to Uisce Éireann): John Cronin, Aaron Murray, Gary Lee, Robert McCann.		

## > Summary of Key Findings

1. There is no verified protozoal barrier in place at Inniskeen Water Treatment Plant (WTP). No monitoring is taking place at the treatment plant for *Cryptosporidium*.
2. A deterioration in raw water turbidity due to heavy rainfall and an inadequate high turbidity shutdown setpoint led to water with a final water turbidity in excess of 1 NTU entering supply for a period of time on 21/10/2023.
3. The chlorine residual monitor located on the outlet of Inniskeen reservoir which provides chlorine contact time verification at the treatment plant was not operational on the day of the audit.

## > Introduction

Inniskeen Public Water Supply (PWS) supplies a population of 517 (EDEN figure) and is supplied by Inniskeen WTP. The treatment plant sources its water from the River Fane and produces approximately 186 m<sup>3</sup>/day. Treatment at the plant consists of coagulation, flocculation, dissolved air flotation, rapid gravity filtration, and chlorination.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the protozoal barriers in place at the treatment plant.

## > Supply Zones Areas Inspected

The audit included a site tour of Inniskeen WTP.



## 1. Protozoal Barriers Audits 2023

	Answer	
1.1	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	Yes
<b>Comment</b>		
<p>1. A chlorine residual monitor is located on the outlet of Inniskeen reservoir and provides chlorine contact time verification for the treatment plant. This chlorine residual monitor was not operational on the day of the audit and Veolia staff confirmed that it had not been operational for the previous two weeks. Veolia staff confirmed that a replacement chlorine residual monitor has been ordered but no date was available for when the monitor would be installed. There is a second chlorine residual monitor located on the outlet of the reservoir controlled and monitored by Monaghan County Council. Monaghan County Council make contact with Veolia staff if the chlorine residual is outside of expected concentrations.</p> <p>2. High and low warning alarm and shutdown setpoints are in place based on the output of the chlorine residual monitor located on the outlet of the reservoir. However, alarm and shutdown setpoints, including time delays, are not set in accordance with the guidance provided in Appendix 2.1 of the <i>EPA Water Treatment Manual: Disinfection</i>.</p> <p>3. Veolia staff indicated that they do not have remote access to the output of the chlorine residual monitor located on the outlet of the reservoir and have to attend site to monitor the chlorine residual levels leaving the reservoir.</p>		

	Answer	
1.2	Has UÉ identified the protozoal compliance log treatment requirement for the water treatment plant?	No
<b>Comment</b>		
<p>1. The protozoal log treatment requirement assigned for the supply is a 3 log requirement. A source and sanitary survey has not been completed to confirm the calculated log treatment value for the supply. Uisce Éireann confirmed after the audit that a source and sanitary survey will be completed by 01/12/2023.</p>		

	Answer	
1.3	Did UÉ confirm whether <i>Cryptosporidium</i> monitoring under the Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water Supplies is being carried out?	No
<b>Comment</b>		
<p>1. No monitoring for <i>Cryptosporidium</i> in line with Uisce Éireann's Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water Supplies is taking place at the treatment plant.</p> <p>2. Uisce Éireann confirmed that raw water monitoring for <i>E.coli</i> trigger levels under the Uisce Éireann operational monitoring programme began in September 2023.</p>		

		Answer
1.4	Are the filters designed and managed in accordance with EPA guidance?	No
<b>Comment</b>		
<p>1. There is one rapid gravity filter in place at the treatment plant. Veolia staff confirmed that filter media depth is approximately 800mm which is less than the recommended minimum media depth of one meter specified in the <i>EPA Water Treatment Manual: Filtration</i>. Veolia staff confirmed that the filter media is scheduled to be replaced by Q4 2023.</p> <p>2. There is no turbidity monitor on the outlet of the filter at the treatment plant.</p> <p>3. There is no run to waste system in place at the treatment plant to prevent inadequately treated water entering supply if high turbidity conditions occur.</p> <p>4. While filter operation and filter backwashes are visually assessed by staff, there are regular operational checks outlined in Table 5.4 of the <i>EPA Water Treatment Manual: Filtration</i>, that are not being completed regularly at the treatment plant. These include optimisation of high-rate backwash, backwash expansion assessment, and filter media integrity assessment.</p>		

		Answer
1.5	Are there suitable plant controls to prevent inadequately treated water entering the distribution network?	No
<b>Comment</b>		
<p>1. Final water turbidity trends submitted by Uisce Éireann before the audit indicated that final water with a turbidity in excess of 1 NTU entered the supply network on 21/10/2023 for a period of less than an hour.</p> <p>2. Veolia staff confirmed high levels of rainfall led to an increase in raw water turbidity which in turn caused treated water turbidity to increase. There is no raw water turbidity monitor in place at the treatment plant.</p> <p>3. A high final water turbidity shutdown setpoint of 1.5 NTU for 15 minutes is in place at the treatment plant. This shutdown setpoint and time delay are not in accordance with the 1 NTU limit and 3 minute delay specified in the <i>EPA Water Treatment Manual: Filtration</i>.</p>		

## Recommendations

Subject	Inniskeen Audit Recommendations	Due Date	26/12/2023
Action Text	<p><b>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</b></p> <ol style="list-style-type: none"> <li>1. Complete: (i) a source and sanitary survey to confirm the log treatment requirement for the supply and (ii) undertake monitoring for Cryptosporidium at the treatment plant in accordance with the Uisce Éireann Rationale for Determining the Frequency of Cryptosporidium in Public Water Supplies until a protozoal barrier at the plant can be verified.</li> <li>2. Ensure that appropriate alarms/shutdowns are in place to protect the regulatory 1 NTU limit on final water turbidity specified in the <i>EPA Water Treatment Manual: Filtration</i>.</li> <li>3. Ensure that: (i) the chlorine contact time verification monitor located on the outlet of the Inniskeen Reservoir is replaced and (ii) warning alarms/plant shutdowns based on verified residuals after contact time are reviewed and amended in accordance with the <i>EPA Water Treatment Manual: Disinfection</i>.</li> <li>4. In accordance with the <i>EPA Water Treatment Manual: Filtration</i>, ensure that: (i) filter media is replaced and a minimum filter media operating depth of 1m is maintained, (ii) a turbidity monitor is installed on the outlet of the filter with appropriate warning alarms/plant shutdowns in place, (iii) an assessment is completed to ascertain the need for a run to waste system at the treatment plant and (iv) regular operational filter checks are carried out at specified intervals.</li> <li>5. Assess the feasibility of making the output of the chlorine residual verification monitor located at Inniskeen Reservoir visible to operational staff remotely.</li> <li>6. Assess the feasibility of installing a raw water turbidity monitor with appropriate warning alarms/plant shutdowns at the treatment plant.</li> </ol> <p><b>Actions required by Uisce Éireann</b></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 26/12/2023 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>		