

# 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>	Kill/Ballylaneen
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	3100PUB1106
<b>County</b>	Waterford
<b>Site Visit Reference No.</b>	SV28442

Report Detail	
<b>Issue Date</b>	05/01/2024
<b>Prepared By</b>	Paul Buckley

Site Visit Detail			
<b>Date Of Inspection</b>	13/12/2023	<b>Announced</b>	Yes
<b>Time In</b>	10:50	<b>Time Out</b>	12:30
<b>EPA Inspector(s)</b>	Paul Buckley Regina Campbell		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Denis McGrath, Áine Butler.  Waterford City and County Council (working in partnership with Uisce Éireann): David Hourigan, David Whelan, James Dineen.		

## > Summary of Key Findings

1. There is no continuous online chlorine residual monitor located on the outlet of the Ballyvadden Reservoir to verify that contact time has been achieved.
2. Uisce Éireann has indicated that the Kill/Ballylaneen Public Water Supply source has a protozoal log credit requirement of 3.5 log. Currently treatment at the plant provides 3 log credit if operated in accordance with the log credit performance approach. This gives a -0.5 log treatment deficit and Uisce Éireann should identify how the protozoal log deficit at the plant will be addressed. Uisce Éireann should monitor the supply in accordance with the Uisce Éireann Rationale for Determining the Frequency of *Cryptosporidium* Monitoring in Public Water Supplies.
3. Residual chlorine monitoring in the network is carried out by Waterford City and County Council two times per week however records are not maintained.

## > Introduction

The Kill/Ballylaneen Public Water Supply (PWS) supplies an average of 370 m<sup>3</sup>/day of water, serving a population of 1,207 people.

The source for the supply is the River Mahon. Treatment consists of pH correction, coagulation, flocculation, 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 water treatment plant.

## > Supply Zones Areas Inspected

The intake, flocculation chemical dosing units, rapid gravity filter, and chlorination dosing system at the water treatment plant were inspected.



## 1. Disinfection

1.1

Is there a suitable monitoring frequency for residual chlorine in the network with records available?

**Answer**

No

**Comment**

Network chlorine residual monitoring results were requested as part of the audit. Waterford City and County Council indicated that monitoring is conducted two times per week but no written records are maintained.



## 2. Protozoal Barriers Audits 2023

		Answer
2.1	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No
<b>Comment</b>		
The contact time calculation provided by Uisce Éireann included the Ballyvadden Reservoir in the calculation. There is no chlorine monitor located at the outlet of the reservoir to verify that adequate contact time has been achieved.		

		Answer
2.2	Has UÉ identified the protozoal compliance log treatment requirement for the water treatment plant?	Yes
<b>Comment</b>		
Uisce Éireann confirmed that the protozoal compliance log treatment requirement for the water treatment plant has been determined to be 3. The treatment processes at the plant system provide 3 log credits if operated in accordance with the log credit performance approach and this indicates that there is a -0.5 log deficit at the plant.		

		Answer
2.3	Are the filters designed and managed in accordance with EPA guidance?	No
<b>Comment</b>		
There is a single media rapid gravity filter in place at the treatment plant. There is no filter media depth gauge in place to visually assess filter media depth. Waterford City and County Council stated that the combined depth of the filter media and the gravel support layer is approximately 1.3 m but could not confirm the depth of the filter media.		
Waterford City and County Council confirmed that the filter media had been replenished in the month prior to the audit.		
The filter is manually backwashed once every 24 hours. There is no filter backwash initiated by turbidity. There is shutdown of the filter if turbidity >2.5 NTU.		

		Answer
2.4	Are service due/ instrument calibration for the UV units within date?	Yes
<b>Comment</b>		
Calibration labels on the turbidity monitors and chlorine monitors at the treatment plant noted a "Next Calibration Date" of December 2023.		



### 3. Site Specific Issues

	Answer
3.1 Are final water pH results compliant with parametric values?	No
<b>Comment</b>	
<p>The daily monitoring results for the final water between 27/11/2023 and 13/12/2023 were reviewed. Monitoring results for pH were consistently below the parametric value of 6.5.</p> <p>Uisce Éireann indicated that no operational sampling programme for pH is in place for the supply. The supply is not on the Uisce Éireann National pH file.</p>	

## Recommendations

<b>Subject</b>	Kill/Ballylaneen Audit Recommendations 13/12/2023	<b>Due Date</b>	05/02/2024
<b>Action Text</b>	<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. i) Install a chlorine monitor after contact time to verify that adequate disinfection is being achieved, ii) confirm the chlorine contact time calculation, and iii) conduct manual residual chlorine sampling after the reservoir to verify that adequate disinfection is being achieved until such a time that the permanent monitor has been installed.</li> <li>2. i) Submit details of how the log treatment deficit identified will be addressed, and ii) continue to monitor the supply as per the Uisce Éireann Rationale for Determining the Frequency of <i>Cryptosporidium</i> Monitoring in Public Water Supplies.</li> <li>3. 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 &gt; 0.1 mg/L in the network.</li> <li>4. Ensure that i) filter media depth is at a minimum of 1m operating depth, ii) a filter media depth gauge is installed on the filter, and iii) a filter media assessment is completed.</li> <li>5. Assess the feasibility of installing automatic backwashing of the filter based on turbidity, headloss and time.</li> <li>6. Ensure all plant monitors are calibrated in accordance with manufacturers instructions, and clearly labelled to show the date of calibration and the next 'calibration due by' date.</li> <li>7. pH – i) undertake manual pH monitoring of the final water at the plant and in the network to verify compliance post reservoir and maintain records of results, ii) install a continuous pH monitor on the final water with high and low alarms, iii) review the findings of the pH operational monitoring programme and if required add the supply to Uisce Éireann's National pH file, and iv) provide details of any remedial actions required to restore compliance with the pH parametric value.</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 05/02/2024 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>		