

# 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>	Killaloe PWS
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	0300PUB1002
<b>County</b>	Clare
<b>Site Visit Reference No.</b>	SV27820

Report Detail	
<b>Issue Date</b>	08/06/2023
<b>Prepared By</b>	Orla Harrington

Site Visit Detail			
<b>Date Of Inspection</b>	16/05/2023	<b>Announced</b>	Yes
<b>Time In</b>	10:00	<b>Time Out</b>	10:40
<b>EPA Inspector(s)</b>	Orla Harrington		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Tommy Roche, Denis Hayes, James Fraher, Duncan Pateman. Clare County Council (working in partnership with Uisce Éireann): Michael McNamara, Sinead McDonnell, Denis Maloney.		

## > Summary of Key Findings

1. There is no dial out chlorine alarm in place to alert operators to inadequate chlorine levels in the final water. There is no automatic shutdown linked to chlorine levels in the final water in order to prevent inadequately treated water entering the supply.
2. There is no turbidity monitor with alarms and inhibits in place at Killaloe Water Treatment Plant to prevent inadequately treated water entering the supply.
3. There was no documented incident response and escalation procedure in place at the treatment plant.

## > Introduction

Killaloe Public Water Supply (PWS) supplies a population of 1,738 with a volume of approximately 918 m<sup>3</sup>/day (EPA EDEN figures). Raw water is sourced from the on-site Creeroe borehole (9 m<sup>3</sup>/hr) and the Garraunboy spring source (45 m<sup>3</sup>/hr) located approximately 1 km north east of the Water Treatment Plant (WTP). Treatment of the combined water consists of chlorination disinfection.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the alarms and inhibits at the WTP and the procedures in place to ensure appropriate oversight of the treatment processes.

## > Supply Zones Areas Inspected

The audit included an inspection of the water treatment plant and its critical monitoring equipment and controls. The Creeroe borehole and Garraunboy spring sources were also inspected.



## 1. Management and Control

		Answer
1.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No
<b>Comment</b>		
1. An assessment of the protozoal log treatment requirement for the ground water and spring sources has not been completed by Uisce Éireann. Clare County Council advised that monitoring for <i>Cryptosporidium</i> is carried out twice a year. There have been no detections to date.		



## 2. Alarms, Inhibits & Oversight Audits 2023

	Answer	
2.1	Is there a documented site specific incident response and incident escalation process?	No
<b>Comment</b>		
1. Uisce Éireann's incident escalation flow chart with site specific contacts and trigger levels was not on display at the WTP.		

	Answer	
2.2	Did staff confirm they have received training on the site specific incident response and incident escalation process?	No
<b>Comment</b>		
1. Staff at the WTP confirmed that training on the site specific incident response and incident escalation process had not been received.		

	Answer	
2.3	Is suitable continuous monitoring in place to verify treatment performance?	No
<b>Comment</b>		
1. There is no continuous turbidity monitor on the raw or final water at the WTP.		
2. There is no chlorine monitor in place after chlorine dosing to alert operators to the failure of critical treatment processes.		
3. Uisce Éireann stated that the plant is to be prioritised under the Uisce Éireann Disinfection Programme, however a timeframe for completion was not provided on the day of the audit. Uisce Éireann advised that the upgrade will address the lack of turbidity and chlorine monitors and associated necessary alarms/shutdowns.		

	Answer	
2.4	Is continuous monitoring located appropriately to verify treatment performance?	No
<b>Comment</b>		
1. Refer to section 2.3 above.		

	<b>Answer</b>
<b>2.5</b>	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?
	No
<b>Comment</b>	
<p>1. There is a chlorine monitor after contact time has been achieved to verify satisfactory chlorination, however the chlorine monitor is not alarmed with a dial out to ensure an immediate response is made in the event of inadequate levels of chlorine in the final water. Clare County Council stated that the caretaker carries out daily visual checks of the residual chlorine monitor.</p> <p>2. There are no turbidity alarms in place at the Killaloe WTP to prevent inadequately treated water from entering the supply.</p>	

	<b>Answer</b>
<b>2.6</b>	Are critical alarms dialled out to operators?
	No
<b>Comment</b>	
<p>1. Critical alarms are not dialled out to operators.</p>	

	<b>Answer</b>
<b>2.7</b>	Are dial out arrangements suitable to allow a timely response?
	No
<b>Comment</b>	
<p>1. There is no cascade system in place at the plant.</p>	

	<b>Answer</b>
<b>2.8</b>	Has UÉ carried out an alarm and inhibit review at the water treatment plant?
	No
<b>Comment</b>	
<p>1. The alarm and inhibit review has not been carried out.</p>	

	<b>Answer</b>
<b>2.9</b>	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?
	No
<b>Comment</b>	

1. There are no shutdowns based on low or high chlorine in the final water or based on high turbidity in the raw and final water.

		Answer
2.10	Are plant performance trends accessible by operational staff at the water treatment plant?	No
<b>Comment</b>		
1. There is no trend information available to operational staff.		

		Answer
2.11	Is there appropriate oversight of plant performance trends?	No
<b>Comment</b>		
1. On the day of the audit, there was no information available on how plant performance trend data is reviewed by supervisory staff.		

		Answer
2.12	Is there appropriate oversight of alarm responses?	No
<b>Comment</b>		
1. There are no turbidity and chlorine alarms in place at the Killaloe WTP, therefore there is no appropriate oversight of alarm responses.		

		Answer
2.13	Is there a documented alarm response procedure?	No
<b>Comment</b>		
1. On the day of the audit, there was no documented alarm response procedure.		

Answer
--------

2.14	Did staff confirm they have been trained on the alarm response procedure?	No
<b>Comment</b>		
1. On the day of the audit, staff did not confirm that they had been trained on the alarm response procedure.		

		<b>Answer</b>
2.15	Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?	No
<b>Comment</b>		
1. There are no turbidity and chlorine alarms in place at the Killaloe WTP, therefore there are no procedures covering verification of alarms and inhibits status following maintenance on site.		

## Recommendations

<b>Subject</b>	Killaloe PWS - Audit Report	<b>Due Date</b>	10/07/2023
<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. Prioritise the Killaloe Public Water Supply for upgrade under the Uisce Éireann Disinfection Programme. Provide a scope of works and timeframe for completion.</li> <li>2. Undertake an Alarm and Inhibit Review of the plant and submit the findings.</li> <li>3. Install (i) appropriate alarms/shutdowns on verified chlorine residuals after contact time and (ii) appropriate high and low shutdown setpoints based on residual chlorine level post dosing at the treatment plant.</li> <li>4. Install a turbidity monitor with appropriate alarm settings and inhibits.</li> <li>5. Confirm (i) the protozoal log treatment requirement for the raw water sources and (ii) confirm how any protozoal log treatment deficit will be addressed.</li> <li>6. Ensure that the Uisce Éireann Incident Communication Response Guidance Form with site specific information including contacts for escalation and relevant trigger levels protecting critical processes at the water treatment plant is in place and displayed at the Killaloe water treatment plant and staff are trained on its use.</li> <li>7. Ensure that (i) there is an appropriate cascade system for responding to alarms generated at the plant which allows for verification that an alarm has been responded to (ii) there are documented site specific alarm response procedures (iii) there are appropriate procedures covering verification of alarms and inhibits status following maintenance of other work at the plant and (iv) training is provided to all relevant staff on the procedures.</li> <li>8. Ensure that (i) the treatment plant is connected to the county SCADA system, (ii) that plant process information and trended performance data are available to operational and supervisory staff via SCADA, (iii) that there are robust systems of reviews and checks on water treatment plant performance data which should include regular review of SCADA trends by operational and supervisory staff.</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 10/07/2023 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>		