

# 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>	Granard
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	2000PUB1006
<b>County</b>	Longford
<b>Site Visit Reference No.</b>	SV29618

Report Detail	
<b>Issue Date</b>	19/12/2024
<b>Prepared By</b>	Derval Devaney

Site Visit Detail			
<b>Date Of Inspection</b>	07/11/2024	<b>Announced</b>	Yes
<b>Time In</b>	11:20	<b>Time Out</b>	14:20
<b>EPA Inspector(s)</b>	Derval Devaney		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann (UÉ): John Gavin, Joseph Moran, Karina O'Grady, Niamh Conroy. Longford County Council (working in partnership with UÉ): Eugene Caherly.		

## > Summary of Key Findings

1. The protozoal compliance log treatment requirement for Lough Kinale water treatment plant was unavailable. This information is being sought by the EPA since 2021.
2. There is no raw water monitoring programme in place for the Lough Kinale source.
3. The final water pH and UVT monitors were not alarmed to protect statutory limits and water quality targets.
4. Procedures relating to alarm response and verification of alarm settings post work on-site need to be put in place.

## > Introduction

The Granard public water supply serves approximately 2,578 people in County Longford. The raw water is abstracted from Lough Kinale and receives the following treatment at Lough Kinale water treatment plant:

- pH correction with sulphuric acid,
- coagulation with aluminium sulphate coagulant,
- clarification in a dissolved air floatation unit,
- filtration across three rapid gravity filters,
- disinfection with sodium hypochlorite, and
- final water pH correction with sodium hydroxide.

The water treatment plant has a design capacity of 2000m<sup>3</sup>/day and is currently treating an approximate volume of 1400m<sup>3</sup>/day.

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

## > Supply Zones Areas Inspected

The audit assessed alarm and automatic shutdown set-points for each step of the water treatment process and process verification data and trends from continuous online monitors. The disinfection process and chemical handling was also inspected in addition to procedures relating to the management and oversight of the water treatment process.



## 1. Disinfection

	Answer
1.1	Is there a chlorine residual $\geq 0.1$ mg/l throughout the network?
	Yes
<b>Comment</b>	
<ol style="list-style-type: none"><li>1. Chlorine residual concentration records for the network were reviewed during the audit and all were above the 0.1 mg/l.</li><li>2. The Water Supplier should continue to take chlorine residual readings frequently (at a minimum twice per week) and ensure end of lines and potentially problematic areas are included.</li></ol>	



## 2. Treatment Process Chemicals

2.1

Are treatment process chemicals appropriately managed and stored?

**Answer**

No

**Comment**

1. The Sodium Hypochlorite bulk tanks are stored within a bund. However liquid was evident on the base of the bund and the pipe leading to one tank appeared to be leaking into the bund.



### 3. Management and Control

		Answer
3.1	Is the water treatment plant resilient enough to cope with significant variations in raw water quality or demand?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. On the day of the audit the plant appeared to be coping with the water presented however it is unclear if the WTP is resilient enough to cope with the raw water quality as UÉ does not have a raw water monitoring programme in place for the lake source.</li><li>2. The Water Supplier stated during the audit that it abstracts approximately 1,400 m<sup>3</sup> / day of raw water from its lake source. This does not correlate with the Water Supplier's submission on the EPA's Abstraction Register, which states that 2,755 m<sup>3</sup> / day is abstracted.</li></ol>		

		Answer
3.2	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. UÉ completed a source and sanitary survey for the source.</li><li>2. The protozoal log treatment required for the source and the log credit provided by the water treatment plant (WTP) was unavailable during the audit, despite a request for this information to be submitted in response to the EPA's 2021 audit and again, in advance of this audit.</li><li>3. <i>Cryptosporidium</i> monitoring is not being undertaken at the WTP. In the EPA's 2021 audit UÉ stated that <i>Cryptosporidium</i> monitoring was being carried out monthly until the log treatment requirement is finalised.</li></ol>		



## 4. Alarms, Inhibits & Oversight Audits 2024

		Answer
4.1	Is there a documented site specific incident response and incident escalation process?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. The Uisce Éireann Incident Communication Response Guidance Form is displayed at Lough Kinale WTP.</li> <li>2. Personnel contacts displayed in the procedure need to be updated to reflect staff currently associated with the WTP's operations, management and oversight.</li> </ol>		

		Answer
4.2	Were online monitors within their calibration dates?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. Many critical online monitors were due to be calibrated on the day of the audit (due on 07/11/2024).</li> <li>2. There were old calibration stickers on some critical equipment (e.g. the DAF turbidity and pH monitor).</li> <li>3. There is no chlorine boosting in the network, but there are chlorine monitors on two of the four reservoirs in the network (Corbaun and Rathcronan Reservoirs). While chlorine trends at the reservoirs were checked on-site, the reservoir monitors were not checked during the audit to determine if they were within their calibration dates.</li> </ol>		

		Answer
4.3	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>		
<ol style="list-style-type: none"> <li>1. While the final pH monitor was in place and monitoring final water quality, it was not linked to SCADA for recording purposes and did not have an alarm and plant inhibit in place. The Water Supplier stated there was an issue with the signal which is being investigated.</li> <li>2. The time delay on the chlorine monitors CL001 (20 minutes), CL002 (10 minutes) and CL003 (10 minutes) is not in line with the 5 minutes time delay recommended in the EPA's <i>Water Treatment Manual: Disinfection</i> and the 3 minutes time delay outlined in UÉ's <i>Disinfection: Primary Chlorination Document No. UÉ-TEC-900-05-01</i>.</li> <li>3. The final water UVT monitor in place is not alarmed. In the EPA's 2021 audit, UÉ stated the Lough Kinale WTP was upgraded to achieve THM compliance for RAL removal. UÉ reported as part of the 2021 audit that these upgrade works included the installation of an online final water UVT monitor which was alarmed at a set-point below 85% UVT.</li> </ol>		

		Answer
4.4	Were all findings of the UÉ alarm and inhibit review implemented?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. The implementation of an alarm and plant inhibit linked to the final water pH monitor remains outstanding.</li> </ol>		

	<b>Answer</b>
4.5	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?
	No
<b>Comment</b>	
<ol style="list-style-type: none"> <li>As outlined in Q 4.3 above: <ul style="list-style-type: none"> <li>there is no plant inhibit linked to final water pH, and</li> <li>the time delay on the plant inhibits associated with the chlorine monitors CL001, CL002 and CL003 is too long.</li> </ul> </li> </ol>	

	<b>Answer</b>
4.6	Are plant performance trends accessible remotely?
	No
<b>Comment</b>	
<ol style="list-style-type: none"> <li>The final water pH monitor is the only monitor not linked to SCADA for remote access to monitoring data.</li> </ol>	

	<b>Answer</b>
4.7	Is there a documented alarm response procedure?
	No
<b>Comment</b>	
<ol style="list-style-type: none"> <li>There is no formal site specific procedure setting out how alarms are responded to in order to protect water quality and public health.</li> </ol>	

	<b>Answer</b>
4.8	Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?
	No
<b>Comment</b>	
<ol style="list-style-type: none"> <li>There is no procedure setting out how alarms and plant inhibit settings are verified as accurate and operational following works which can affect the systems on-site.</li> </ol>	

	<b>Answer</b>
4.9	Is the chlorine contact time calculation correct?
	No
<b>Comment</b>	

1. The maximum flow on site was stated to be approximately 90 m<sup>3</sup>/hour and the contact time calculation uses a volume of 81 m<sup>3</sup>/hour.



## Recommendations

Subject	Granard Audit Recommendations	Due Date	31/01/2025
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. Ensure the Uisce Éireann Incident Communication Response Guidance Form displayed at Lough Kinale WTP is updated to reflect staff currently associated with the WTP's operations and oversight.</li> <li>2. Put in place a raw water monitoring programme for Granard PWS lake source; Lough Kinale.</li> <li>3. Confirm:               <ol style="list-style-type: none"> <li>i. the protozoal compliance log treatment requirement for Lough Kinale water treatment plan,</li> <li>ii. the protozoal log treatment in place at Lough Kinale WTP, and</li> <li>iii. how any deficit will be met.</li> </ol> </li> <li>4. Calibrate online monitors onsite and at the reservoirs in accordance with manufacturer's instructions and ensure old calibration stickers are removed from monitors.</li> <li>5. Put in place a procedure for:               <ol style="list-style-type: none"> <li>i. site-specific alarm response,</li> <li>ii. verification of alarms and plant inhibits following maintenance or other work on-site, and</li> <li>iii. ensure training is provided to all relevant staff on the procedures.</li> </ol> </li> <li>6.               <ol style="list-style-type: none"> <li>i. Link the final water pH monitor to SCADA and install appropriate alarm and plant inhibits;</li> <li>ii. Review the alarm and inhibit settings (for example for the UVT and chlorine monitors) to ensure critical treatment processes and water quality targets are protected and settings align with EPA Guidance (e.g. the <i>EPA Water Treatment Manual: Disinfection</i>), UÉ's Disinfection Specification, and statutory limits;</li> <li>iii. Implement the findings of UÉ's alarm and inhibit review of the water treatment plant and incorporate this audit's findings.</li> </ol> </li> <li>7. Revise the Ct Calculation taking account of maximum flow through the plant (m3/hr).</li> <li>8. Continue to monitor and document chlorine residual concentrations in the network, including the end of the line, on a frequent basis.</li> <li>9. Address the discrepancy (and make changes where necessary) in the daily volume (m3/day) provided to the EPA via EDEN and via the EPA's Abstraction Register for Granard PWS.</li> <li>10. Fix the leaking pipe to the sodium hypochlorite bulk tank and ensure there is no liquid in tanks' bund.</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 the above date 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>		