

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	Kiltimagh PWS
Organisation	Uisce Éireann
Scheme Code	2200PUB1017
County	Mayo
Site Visit Reference No.	SV30450

Report Detail	
Issue Date	10/10/2024
Prepared By	Veronica Boland

Site Visit Detail			
Date Of Inspection	09/09/2024	Announced	Yes
Time In	14:05	Time Out	16:45
EPA Inspector(s)	Veronica Boland		
Additional Visitors			
Company Personnel	Uisce Eireann: Vinny McGrath, Marie Finneran, Philip Sheridan. Mayo County Council (working in partnership with Uisce Éireann): William McDermott, Mark O'Donnell.		

> Summary of Key Findings

1. An appropriate cascade system and associated procedures are not in place for responding to alarms generated at the Kiltimagh Water Treatment Plant (WTP) and there is no designated person in place to provide oversight for plant and trend data.
2. There is no treatment of sludge at Kiltimagh WTP prior to discharge to Glore River. The discharge of water treatment sludge to the Glore river should cease immediately.
3. Treated water storage capacity at the Kiltimagh WTP is limited with a maximum of 4 to 6 hours supply in the event of plant shutdown posing a risk to the continuity of supply on activation of critical process shutdowns.

> Introduction

The Kiltimagh WTP abstracts water from the River Glore, produces approximately 764 m³/day (40 m³/hour and plant design capacity is 55m³/hr) and serves a population of approximately 1,720 (EDEN figure). The water treatment process comprises of coagulation, flocculation, clarification, pressure filtration, disinfection with sodium hypochlorite and softener and fluoridation. A source and sanitary survey was carried out in 2021 and Kiltimagh WTP has a required Log 3 requirement. The treated water is pumped to Kiltimagh reservoir with a capacity of approximately 276m³, equivalent to 4-5 hours treated water storage.

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 WTP and the procedures in place to ensure appropriate oversight of treatment processes.

> Supply Zones Areas Inspected

The raw water abstraction source and treatment processes were inspected on the day of the audit. The treated water reservoir was not inspected.



1. Management and Control

		Answer
1.1	Is the water treatment plant resilient enough to cope with significant variations in raw water quality or demand?	No
Comment		
1. The treated water reservoir has a capacity of 4-6 hours storage which may lead to a risk of supply outage in the event of a shutdown on critical WTP processes.		

		Answer
1.2	Have the recommendations from the previous EPA audit been satisfactorily addressed?	No
Comment		
1. A recommendation remains unaddressed from previous EPA audits on 14/10/2021 and 03/02/2022, relating to management of sludge from Kiltimagh WTP which is currently discharged to the River Glore.		



2. Alarms, Inhibits & Oversight Audits 2024

	Answer	
2.1	Is there a documented site specific incident response and incident escalation process?	No
Comment		
1. The Uisce Éireann Incident Communication Response Guidance chart displayed at the WTP did not contain up-to-date site specific contact details and relevant alarm and inhibit trigger levels and time delay setpoints to protect critical processes at the WTP.		

	Answer	
2.2	Did staff confirm they have received training on the site specific incident response and incident escalation process?	No
Comment		
1. Operational staff with alarm response duties stated that no training has been received on the Uisce Éireann Incident Communication Response Guidance chart.		

	Answer	
2.3	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	Yes
Comment		
1. The chlorine residual monitor CL002 is located after contact time, post the clear water tank (CWT) for verification of primary disinfection.		
2. The CL002 sample point is located at the top of the entrance road to the plant. Due to the unusual configuration of the pipe network, a shutdown in production at the plant could lead to the water returning from the network to the CWT (returning back past CL002). In such an event whereby network water would return to the CWT following a plant outage, the CL002 monitor would be providing residual chlorine values for the returning network water and not forward flow plant produced water.		

	Answer	
2.4	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No
Comment		

1. At the audit, the final water turbidity 'Hi Hi' warning alarm setpoint was 1.5 NTU for 60 seconds and is not accordance with the *EPA Treatment Manual: Filtration*.
2. After the audit, Uisce Éireann advised that on the 17th September 2024 the final water 'Hi Hi' warning alarm was changed to 0.5 NTU for 180 seconds and is in accordance with the *EPA Treatment Manual: Filtration*.
3. The time delays in place (10 minutes) for high and low chlorine do not meet the 5 minute time delay recommended in the *EPA Water Treatment Manual: Disinfection*.

		Answer
2.5	Are dial out arrangements suitable to allow a timely response?	No
Comment		
<p>1. Critical alarms are dialed out via text message on a group-basis to the site caretaker and operational personnel. Alarms are responded to solely by the caretaker. There is no way of verifying that alarms have been responded to and it was not clear what contingency is in place should an alarm not be responded to.</p>		

		Answer
2.6	Has UÉ carried out an alarm and inhibit review at the water treatment plant?	Yes
Comment		
<p>1. An alarm and inhibit review was carried out in 2022. Uisce Eireann advised that another Alarm and Inhibit review is scheduled to be undertaken at the end of 2024 following the recent upgrade works that have been undertaken at Kiltimagh WTP.</p>		

		Answer
2.7	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	Yes
Comment		
<p>1. At the audit, the final water turbidity plant inhibit alarm settings were 'Hi Hi' 2 NTU for 60 seconds and 'High' alarm of 1 NTU for 3 minutes.</p> <p>2. Post audit, Uisce Éireann advised that on the 17th September 2024 the final water turbidity plant inhibit alarm settings at Kiltimagh WTP were changed to 'Hi Hi' alarm of 0.8 NTU for 180 seconds and 'High' alarm of 0.7 NTU for 180 seconds, which are in accordance with the <i>EPA Treatment Manual: Filtration</i>.</p>		

		Answer
2.8	Did plant performance trends demonstrate that data was being captured and recorded at all times?	No
Comment		

1. At the audit, the auditor was unable to view SCADA trends as there was no PC or laptop provided at the site to review plant performance trends. The trends available to view on the plant HMI/PLC only dated back to beginning of September, as they are automatically updated/erased by the system on a monthly basis.

		Answer
2.9	Is there appropriate oversight of plant performance trends?	No
Comment		
<p>1. There is no system for supervisory checks of Kiltimagh WTP performance trends based and monitoring data.</p> <p>2. At the audit, the auditor noted following review of the Operators Daily Log book that there were recurring issues with the chlorine dosing system in August 2024 (pumps tripping, dosing lines blocking/partially blocking).</p> <p>3. In a previous EPA audit carried out in 2022, failure of chlorine pumps to restart related to chlorine analyzer reagents causing blockages within the sample lines.</p>		

		Answer
2.10	Is there appropriate oversight of alarm responses?	No
Comment		
<p>1. At the audit, staff advised that oversight of alarms is by the National Operations Management Centre (NOMC). Supervisors receive notification of alarm dial outs via text message but there is no routine review of alarm responses made.</p>		

		Answer
2.11	Is there a documented alarm response procedure?	Yes
Comment		
<p>1. The documented alarm response procedure in place at Kiltimagh Water Treatment Plant dated 2021 requires updating to reflect the current site specific treatment processes at Kiltimagh PWS. The Kiltimagh WTP was upgraded in 2022 and included upgrade of the clarifier system with tube settlers and replacement of the filtration system from two rapid gravity filters to five pressure filters.</p>		

Recommendations

Subject	EPA Audit Kiltimagh PWS 2024	Due Date	07/11/2024
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. (a) Put in place an appropriate cascade system for responding to alarms generated at the Kiltimagh plant which allows for verification that an alarm has been responded to. (b) Review the documented procedure for responding to and escalating all alarms generated at the WTP. The procedure should clearly document the corrective actions and set out delegation of responsibilities for operational and relief staff. (c) Ensure all operational staff are trained on the procedure. 2. (a) Update the Uisce Éireann Incident Communication Response Guidance chart displayed at the Kiltimagh WTP with site specific information including contacts for escalation and the site specific alarm and time delay setpoints protecting critical processes at the WTP. (b) Provide training to all operational and relief staff on the incident response and escalation procedure. 3. Ensure the review and oversight by supervisory staff of plant performance trends and alarm responses is undertaken regularly to assist in the operation of the Kiltimagh WTP. 4. Review and implement alarm and inhibit delay set points for chlorine, as detailed in the <i>EPA Water Treatment Manual: Disinfection</i>. 5. Investigate the feasibility of locating the sample point for free chlorine residual monitor CL002 to another location to ensure a representative reading of the free chlorine residual for validation purposes. 6. Uisce Éireann should provide a sludge management plan for Kiltimagh WTP to ensure the protection of the Glore River. The plan should include interim sludge management measures until sludge management infrastructure is installed and commissioned on-site. 7. Uisce Éireann should consider the provision of additional treated water storage to enhance the resilience and security of the Kiltimagh PWS. <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 07 November 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>		