

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	Rahan-Tully PWS
Organisation	Uisce Éireann
Scheme Code	2500PUB1016
County	Offaly
Site Visit Reference No.	SV29584

Report Detail	
Issue Date	25/10/2024
Prepared By	Lisa Noone

Site Visit Detail			
Date Of Inspection	20/09/2024	Announced	Yes
Time In	14:00	Time Out	16:00
EPA Inspector(s)	Lisa Noone Cormac MacGearailt		
Additional Visitors			
Company Personnel	Uisce Éireann: Linda Doran, Shadreck Mavengano, John Daly, Rodger Larkin Offaly County Council (working in partnership with Uisce Éireann): Jimmy Groome, Joe Coleman		

> Summary of Key Findings

1. The audit found a lack of appropriate oversight by Uisce Éireann of works carried out by external contractors, specifically in relation to the disconnection of old monitoring equipment and disabling of alarms and inhibits.
2. Potential incidents relating to apparent turbidity spikes were not appropriately escalated to Uisce Éireann.
3. Rahan-Tully Water Treatment Plant is currently undergoing a Uisce Éireann Disinfection Programme upgrade. The audit found that measures currently in place were not adequate to prevent inadequately treated water entering the distribution network including a lack of automatic shutdown and inadequate alarm and inhibit setpoints for chlorine residual and turbidity.

> Introduction

Rahan-Tully Public Water Supply (PWS) produces circa. 500m³/day of water serving a population of approximately 1,050 people. Raw water is abstracted from two boreholes located at the water treatment plant (WTP) and treatment consists of primary disinfection via chlorination. Rahan-Tully WTP is currently going through the Uisce Éireann Disinfection Programme with contractors on site implementing upgrades to monitoring equipment and the installation of alarms and inhibits.

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. The EPA were notified of a potential incident at the WTP prior to the audit which was also assessed as part of the audit

> Supply Zones Areas Inspected

Both boreholes and the treatment processes on-site were inspected, borehole 2 was out of commission at the time of the audit.



1. Incident Management

1.1

	Answer
Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	Yes
Comment	
<p>1. Uisce Éireann stated that they became aware of a potential incident relating to elevated turbidity trends prior to the EPA audit as an apparent result of ongoing works at Rahan-Tully WTP. The plant is currently undergoing a disinfection upgrade by external contractors which includes upgrades of monitoring equipment and the installation of new alarms and inhibits.</p> <p>2. As part of the disinfection upgrade works, existing monitoring equipment for turbidity and chlorine were disconnected by the external contractor in June 2024 before new monitoring equipment had been fully commissioned. Apparent spikes in turbidity were causing frequent shutdowns of the plant. As a result of this, the alarms and inhibits in place for turbidity were disabled by the external contractor without prior approval or communication with Uisce Éireann or Offaly County Council operators.</p> <p>3. The Uisce Éireann incident management process was not triggered upon discovery by operational staff. Uisce Éireann were made aware of absence of alarms and apparent turbidity spikes on 18/09/2024.</p> <p>4. It was noted that the apparent spikes in turbidity above 1NTU were recorded by a monitor which had not yet been fully commissioned. These turbidity spikes were reported over a number of weeks, and existing equipment could not be utilised for verification of these results as they had been previously disconnected. As the results could not be verified, Uisce Éireann had considered that these spikes could represent a breakdown in the disinfection process at the plant which relies on a turbidity of less than 1NTU prior to chlorination, and the HSE were consulted on 19/09/2024.</p> <p>5. Offaly County Council and Uisce Éireann plant operators stated that handheld samples taken for turbidity and chlorine residual had been compliant. In addition, existing turbidity monitors which were calibrated and reinstated on the 18/09/2024 showed compliant results. Microbiological sampling had not been carried out at the WTP or in the network to confirm the provision of safe drinking water.</p> <p>6. At the audit it was identified that the SCADA system used to graph the turbidity results was scaled incorrectly and it was demonstrated that the apparent spikes in turbidity were not exceedances of the 1NTU turbidity limit. As such, and in agreement with the HSE Uisce Éireann, no water restriction was required for Rahan-Tully PWS.</p>	



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 alarm trigger levels for contact time (Ct) validation in incident response and escalation document did not reflect the interim Ct calculation for the WTP.		

		Answer
2.2	Is continuous monitoring located appropriately to verify treatment performance?	No
Comment		
1. It was noted at the audit that the location of the turbidity monitor installed as part of the disinfection upgrades appeared to be located near a bend in the pipework which could cause interference with turbidity results.		

		Answer
2.3	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No
Comment		
1. The following setpoints are in place at Rahan-Tully WTP for chlorine residual and turbidity: Chlorine residual at Ct verification point (3 minute time delay):		
<ul style="list-style-type: none"> • Low low: 0.4mg/l • Low 0.46mg/l • High 1mg/l 		
Turbidity (5 minute time delay)		
<ul style="list-style-type: none"> • High high 		
2. According to the WTPs site-specific Ct calculation, a minimum chlorine residual of 0.42mg/l is required at the Ct validation point to achieve adequate disinfection. The low low alarm set point for chlorine residual does not reflect the WTPs Ct calculation requirement.		
3. The 5 minute time delay for turbidity is considered too long to allow a timely and effective response by operational staff		

		Answer
2.4	Are dial out arrangements suitable to allow a timely response?	No
Comment		

1. Critical alarms are dialled-out on a group-basis to five operational personnel. Alarms are responded to on a hierarchical basis, depending on who is on-call, however there is no way of verifying that alarms have been responded to.

		Answer
2.5	Has UÉ carried out an alarm and inhibit review at the water treatment plant?	No
Comment		
1. An alarm and inhibit review has not yet been carried out by Uisce Éireann and is planned once disinfection upgrades and process proving is complete.		

		Answer
2.6	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
Comment		
1. There is no plant shutdown/inhibit in place at Rahan-Tully WTP at present - this is currently being addressed as part of the disinfection programme upgrade.		

		Answer
2.7	Is there a documented alarm response procedure?	No

		Answer
2.8	Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?	No

Recommendations

Subject	Rahan-Tully PWS Audit Recommendations	Due Date	28/11/2024
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. Put in place measures to ensure appropriate oversight by Uisce Éireann of works being carried out by external contractors, specifically in relation to the disconnection of the old monitoring equipment and disabling of alarms and inhibits during plant upgrade and commissioning works. 2. Ensure that the incident management and escalation process is enacted in the event of apparent exceedances of critical parameters. Ensure that all relevant staff have been trained on the site-specific incident response and reporting procedures. 3. Carry out microbiological sampling to confirm the provision of clean drinking water to the Rahan-Tully PWS. 4. Install automatic shutdown linked to the high and low chlorine alarms and final water turbidity. 5. Review alarm set points and time delays in place for chlorine residual and turbidity, and ensure that the Uisce Éireann Incident Communication Response Guidance Form accurately reflects these trigger levels. 6. Review the location of the new turbidity monitor to ensure that it is located appropriately and giving representative results. 7. Carry out an Alarm and Inhibit Review post disinfection upgrade works and implement the findings to protect treatment processes and treated water quality. 8. Develop a procedure and deliver appropriate training (i) covering the verification of alarms/shutdowns status following maintenance or other works completed at the treatment plant, and (ii) for responding to and escalating all alarms generated at the water treatment plant. Both procedures should clearly document the corrective actions and set out delegation of responsibilities. 9. Put in place an appropriate cascade system for responding to alarms generated at the plant which allows for verification that an alarm has been responded to. <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 the above due 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>		