

# 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>	Ballindaggin
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	3300PUB1390
<b>County</b>	Wexford
<b>Site Visit Reference No.</b>	SV30708

Report Detail	
<b>Issue Date</b>	13/12/2024
<b>Prepared By</b>	Lorcan Farrell

Site Visit Detail			
<b>Date Of Inspection</b>	27/11/2024	<b>Announced</b>	No
<b>Time In</b>	11:05	<b>Time Out</b>	13:20
<b>EPA Inspector(s)</b>	Lorcan Farrell Noel Cosgrove		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Neville Collier, Denis McGrath  Wexford County Council (Working in partnership with Uisce Éireann): John Breen, Neville Shaw.		

## > Summary of Key Findings

1. On 20/11/2024 Ballindaggin Water Treatment Plant (WTP) experienced a series of spontaneous plant restarts after shutting down when the high final water turbidity setpoint was triggered. The spontaneous restarts were found to be caused by a PLC programming glitch and resulted in inadequately treated water entering Ballindaggin Public Water Supply over a combined time of approximately 30-45 minutes. The incident was not escalated as per the Uisce Éireann Water Incident Communication Response Guidance Form in place at the treatment plant which prevented a timely assessment of the potential risk to human health to be carried out.
2. The UV disinfection system recently installed in the treatment plant providing primary disinfection does not have automatic changeover between duty and standby reactors and is not fully commissioned.
3. A source and sanitary survey has yet to be completed to confirm the assigned 3-log protozoal treatment requirement at the treatment plant.

## > Introduction

Ballindaggin Public Water Supply serves a population of 193 (EDEN figure) and is supplied by Ballindaggin WTP. The treatment plant produces approximately 60-80 m<sup>3</sup>/day and sources its water from a single borehole located at the treatment plant. Treatment consists of pH adjustment, UV disinfection and chlorination.

## > Supply Zones Areas Inspected

The audit included a site tour of Ballindaggin WTP.



## 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?	No
<b>Comment</b>	
<p>1. A review of trended data submitted before the audit indicated a period of time (2:15am - 8:15am) on 20/11/2024 where final water turbidity exceeded the disinfection limit of 1 NTU at Ballindaggin WTP. The trended data provided appeared to show that the plant restarted and shut down a number of times before turbidity levels reduced below the turbidity shutdown setpoint of 0.95 NTU. It could not be established at the audit whether treated water above 1 NTU entered the supply network.</p> <p>2. Uisce Éireann conducted an investigation of the incident after the audit and confirmed that the treatment plant shut down as expected when the high turbidity shutdown setpoint was triggered. However, the treatment plant restarted spontaneously for a short period of time before shutting down again. Spontaneous starting and stopping occurred four times in total before treated water turbidity fell below the high turbidity shutdown setpoint at which time the plant continued to operate continuously. Uisce Éireann confirmed that approximately 2m<sup>3</sup> of inadequately treated water with turbidity in excess of the 1 NTU disinfection limit entered the supply network. This volume is approximately equivalent to 30-45 minutes of treatment plant production. The supply network is directly fed by the treatment plant with no appreciable treated water storage.</p> <p>3. Uisce Éireann confirmed after the audit that the issue had been investigated by a specialist contractor and the cause of the spontaneous treatment plant restarts was found to be a PLC programming glitch within the process control system at the treatment plant. It was also confirmed that the issue has been repaired and tested to confirm that treatment plant shutdown setpoints are operating as they should without spontaneous restart occurring.</p> <p>4. The incident was not escalated to Uisce Éireann as per the Uisce Éireann Water Incident Communication Response Guidance Form in place at the treatment plant at the time of occurrence. This resulted in a delay in consulting with the HSE to assess the potential risk to human health, and a delay in notifying the EPA. The incident was notified to the EPA on 06/12/2024 and consultation with the HSE occurred on 04/12/2024 following the audit of the treatment plant.</p> <p>5. In follow up to the audit, Uisce Éireann confirmed that the PLC programming glitch was similar to one that was experienced at Ballyhogue WTP following an incident that occurred there in October 2024. It was confirmed that a wider investigation of water treatment plants in Co. Wexford is to be conducted to assess if this programming issue is present at other plants with similar process control systems. No date was available for when this wider investigation is to be completed.</p>	



## 2. Source Protection

2.1

	Answer
Is the abstraction source(s) adequately protected against contamination?	No
<b>Comment</b>	
<p>1. It was confirmed at the audit that Ballindaggin WTP had been experiencing issues with elevated raw water turbidity since March 2022 when flooding occurred resulting in a boil water notice being issued for the supply. A number of remedial works were undertaken at the time including the installation of new gullies to redirect surface water from the road and surrounding area away from the water treatment plant. A CCTV survey of the borehole at the treatment plant concluded that the borehole should be re-lined and grouted to a depth of between 3-4 meters. These works were completed in April 2022.</p> <p>2. Wexford County Council staff confirmed that turbidity levels since the flooding event in 2022 and subsequent remedial works have continued to spike in response to heavy rainfall. A second CCTV survey was carried out on the borehole and it confirmed that no clear reason has been found for why turbidity spikes after heavy rainfall but it is believed that the borehole is being influenced by surface water during these times.</p> <p>3. Uisce Éireann confirmed after the audit that a source and sanitary survey has yet to be completed to confirm the assigned 3-log protozoal treatment requirement at the treatment plant. No date was available for when a source and sanitary survey would be completed.</p> <p>4. No operational raw water monitoring is currently taking place at the treatment plant. Uisce Éireann confirmed that the treatment plant is due to be included under the Uisce Éireann Monitoring Programme in 2025. No specific date was available for when monitoring would begin.</p>	



### 3. Alarms, Inhibits & Oversight Audits 2024

	<b>Answer</b>
3.1 Were online monitors within their calibration dates?	No
<b>Comment</b>	
1. Out of date service/calibration stickers 01/11/2024 were present for both UV reactors. No date was available for when service/calibration was due to take place.	

	<b>Answer</b>
3.2 Were all findings of the UÉ alarm and inhibit review implemented?	No
<b>Comment</b>	
<p>1. An alarm and inhibit review was completed in January 2024. The findings of the review included the need to install a UV disinfection system and the recommissioning of the disused caustic soda dosing system in place at the treatment plant.</p> <p>2. A UV disinfection system has recently been installed at the treatment plant. The system was found to be operating within its validated range during the audit. Appropriate UV system warning alarm and treatment plant shutdown setpoints were in place to prevent inadequately treated water entering the supply network. Wexford County Council confirmed that the UV system is considered to be the primary disinfection system at the treatment plant and provides the plants protozoal barrier.</p> <p>3. Wexford County Council confirmed that the UV disinfection system has not been fully commissioned with a number of outstanding items remaining to be addressed including the provision of automatic changeover between duty and standby reactors and provision of training on the operation/maintenance of the system. Wexford county council staff confirmed that it is envisaged that the UV disinfection system would be fully commissioned by Q2 2025 with contractor availability potentially affecting this timeframe.</p> <p>4. It was also noted at the audit that the manufacturers plates on both UV reactors were obscured by the reactor retaining brackets and that the UV intensity shutdown setpoint (65.6 W/m<sup>2</sup>) indicated on the Uisce Éireann Water Incident Communication Response Guidance Form in place at the treatment plant did not match the shutdown setpoint (32.9 W/m<sup>2</sup>) for the UV disinfection system.</p> <p>5. A caustic dosing system for pH adjustment is in place at the treatment plant but has not been operational for a number of years. The dosing system has been refurbished and is due to be recommissioned and returned to operation by Q1 2025. High/Low warning alarm and shutdown setpoints based on pH were in place at the treatment plant but are due to be revised during the recommissioning of the caustic dosing system. Wexford County Council confirmed that these warning alarm and shutdown setpoints would be included on the Uisce Éireann Water Incident Communication Response Guidance Form in place at the treatment when revised alarm/shutdown setpoints are confirmed.</p>	

	<b>Answer</b>
3.3 Is there a documented alarm response procedure?	No
<b>Comment</b>	
1. While there were informal procedures covering the response to alarms at the treatment plant, there was no documented site specific alarm response procedure in place at the treatment plant.	

3.4

Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?

**Answer**

No

**Comment**

1. There are informal procedures covering verification of alarms and inhibits status following works carried out at the treatment plant however, there was no formal procedure or system in place such as a tag in/tag out system or alarm/shutdown testing following completion of works on-site.



## 4. Site Specific Issues

	Answer	
4.1	Were network chlorine residual records available for the supply network?	No
<b>Comment</b>		
1. Network residual chlorine records were not available at the audit or when requested after the audit had taken place. Wexford County Council confirmed that network chlorine residuals are taken once per week at the end of the network which is not of a sufficient frequency.		

	Answer	
4.2	Is there a functional run to waste facility in place at the treatment plant?	No
<b>Comment</b>		
1. A manual run to waste system has recently been installed at the treatment plant but is awaiting works to be completed before it is brought into operation. A run to waste system will aid in the restart of the treatment plant in conditions when elevated turbidity in excess of the 1 NTU disinfection limit are experienced at the treatment plant.		

## Recommendations

Subject	Ballindaggin Audit Recommendations (2024)	Due Date	13/01/2025
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. Incident: (i) review and update the incident response procedure at Ballindaggin WTP to ensure that there is prompt and timely consultation with the HSE to facilitate assessment of potential risk to human health and that incidents are notified to the EPA without delay, (ii) provide refresher incident identification, response and escalation training to all staff with an emphasis on trended data analysis, and (iii) complete wider investigation of other treatment plants within Co. Wexford so that similar potential programming issues are detected and repaired to ensure similar incidents do not occur.</li> <li>2. UV Disinfection: (i) complete commissioning of UV disinfection system in place at the treatment plant, (ii) install automatic changeover between duty and standby reactors, (iii) service/calibrate UV disinfection system, (iv) ensure that manufacturers plates are fully visible on both reactors and, (v) ensure the correct UV intensity shutdown setpoint is included on the Water Incident Communication Response Guidance Form.</li> <li>3. Complete a source and sanitary survey to confirm the assigned log treatment requirement for the supply.</li> <li>4. pH adjustment: (i) complete re-commissioning of pH adjustment system in place at the treatment plant, (ii) provide training to staff on the operation/maintenance of the pH adjustment system and, (iii) revise pH alarm/shutdown setpoints in place at the treatment plant and ensure that pH alarm/shutdown setpoints are included on the Uisce Éireann Water Incident Communication Response Guidance Form in place at the treatment plant.</li> <li>5. Begin monitoring under the Uisce Éireann Operational Monitoring Programme.</li> <li>6. Develop and implement: (i) a documented site specific alarm response procedure for confirming treatment plant alarms have been responded to and, (ii) an appropriate documented procedure covering verification of alarms/inhibits status following maintenance or other work completed at the treatment plant. Provide training to all staff on the new procedures.</li> <li>7. Distribution network: (i) Submit network chlorine residual readings for the following period: 01/11/2024 - 27/11/2024 and, (ii) ensure that residual chlorine levels are monitored within the network, including extremities, several times per week to ensure a minimum residual chlorine of 0.1 mg/l is maintained.</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 13/01/2025 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>		