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	Ballyhogue
Organisation	Uisce Éireann
Scheme Code	3300PUB1399
County	Wexford
Site Visit Reference No.	SV30736

Report Detail

Issue Date	21/01/2025
Prepared By	Lorcan Farrell

Site Visit Detail

Date Of Inspection	03/12/2024	**Announced**	Yes
Time In	11:00	**Time Out**	12:53
EPA Inspector(s)	Lorcan Farrell Noel Cosgrove		
Additional Visitors			
Company Personnel	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 17/10/2024 Ballyhogue Water Treatment Plant (WTP) experienced a series of spontaneous plant restarts after shutting down when the low chlorine shutdown setpoint was triggered after a sodium hypochlorite dosing failure occurred. The spontaneous restarts were found to be caused by a PLC programming glitch and resulted in inadequately treated water entering Ballyhogue Public Water Supply over a 90 minute period. The incident was escalated as per the Uisce Éireann Water Incident Communication Response Guidance Form as soon as it was discovered. However, a delay in the detection of the issue due to the abnormal nature of the PLC issue prevented a timely assessment of the potential risk to human health to be carried out.

2. The Uisce Éireann Communications Response Guidance Form in place at the water treatment plant requires updating.

3. The existing caustic soda dosing system used for pH correction has been refurbished and is due to be re-commissioned and returned to service by Q1 2025.

Introduction

Ballyhogue Public Water Supply serves a population of 342 (EDEN figure) and is supplied by Ballyhogue WTP. The treatment plant produces approximately 80 m3/day and sources its water from two boreholes located at the treatment plant. Treatment consists of pH adjustment and chlorination.

Supply Zones Areas Inspected

The audit included a site tour of Ballyhogue WTP.

1. Incident Management

		Answer
1.1	Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	No

Comment

1. At approximately 1pm on 17/10/2024 Ballyhogue WTP experienced a malfunction of a valve within the sodium hypochlorite dosing system leading to the plant shutting down the low chlorine shutdown setpoint was triggered. Warning and shutdown alarms alerted operational staff who arrived at the plant at approximately 3pm. Operational staff identified the issue, changed to the standby sodium hypochlorite dosing pump, restarted the plant and left the site. Shortly thereafter, the sodium hypochlorite dosing system began to dose higher than normal until the high shutdown setpoint point was reached.

2. The operator noted in the morning that the network chlorine residual monitor located at the Ballyhogue reservoir, which is not alarmed, was reading higher than expected. This alerted the operator that there had been an issue at the treatment plant overnight and an investigation was begun. The investigation initially focused on the high chlorine residual and found that no warning alarms or plant shutdown were triggered and the plant continued to dose sodium hypochlorite at a higher than normal rate from the evening of 17/10/2024 until the issue was discovered on the morning of 18/10/2024.

3. During the course of the investigation into the high chlorine event it was found that the treatment plant spontaneously restarted by itself after it had shutdown and ran for the duration of the low chlorine shutdown time delay (10 minutes) before shutting down based on the low chlorine shutdown setpoint upon where the plant restarted again by itself. This cycle of restarting, running, shutting down and restarting again continued for approximately 90 minutes until the caretaker initially arrived on-site. Upon confirming that inadequately treated water had entered the supply network over the 90 minute period Wexford County Council escalated the low chlorine incident to Uisce Éireann on 18/10/2024 who consulted with the HSE, who determined that no boil water notice was necessary.

4. A specialist contractor attended site on 18/10/2024 to investigate why the treatment plant had restarted spontaneously during the low chlorine event and the subsequent high chlorine event. It was found that a programming glitch affected the PLC within the process control system causing the treatment plant to spontaneously restart as it did, ignoring further warning alarm and shutdown limits, and subsequently not dialing warning and shutdown alarms out to operational staff thereafter. Wexford County Council confirmed that the issue has been repaired and tested to confirm that treatment plant alarm and shutdown setpoints are operating as they should without spontaneous restart occurring.

5. It was also confirmed that the PLC programming glitch encountered was similar to one that was experienced at Ballindaggin WTP following an incident that occurred there in November 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 would be completed.

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 Water Incident Communication Response Guidance Form in place at Ballyhogue WTP did not contain site specific warning alarm or treatment plant shutdown setpoints and the contact details for Uisce Éireann and Wexford County Council required updating.

		Answer
2.2	Were all findings of the UÉ alarm and inhibit review implemented?	No

Comment

1. An alarm and inhibit review was completed at the treatment plant on 11/05/2023. The findings of the review included the need to recommission the disused caustic soda dosing system in place at the treatment plant for adjustment of pH levels in final water. 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 plant when revised alarm/shutdown setpoints are confirmed.

		Answer
2.3	Is there a documented alarm response procedure?	No

Comment

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.

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

3. Site Specific Issues

		Answer
3.1	Are network chlorine residuals being taken at sufficient frequencies within the supply network?	No

Comment

1. 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
3.2	Are treatment process chemical bunds clean and free of water/chemical residue?	No

Comment

1. The bund containing the sodium hypochlorite day tank contained liquid pooled at the bottom of the bund. Bunds should be kept clean to allow for detection of leaks from the day tank.

Recommendations

Subject	Ballyhogue Audit Recommendations (2024)	Due Date	21/02/2025
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.** 1. Incident: (i) review and update the incident response procedure at Ballyhogue Water Treatment Plant 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. 2. Update the Uisce Éireann Incident Communications Response Guidance Form with site specific information including updated contacts for escalation and relevant trigger levels protecting critical processes at the treatment plant. 3. 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 revised setpoints are included on the Uisce Éireann Water Incident Communication Response Guidance Form in place at the treatment plant. 4. Install appropriate warning alarms on the residual chlorine monitor at Ballyhogue Reservoir to alert operational staff in the event of high or low chlorine residual levels being encountered. 5. 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. 6. Ensure that residual chlorine levels are monitored within the supply network, including extremities, several times per week to ensure a minimum residual chlorine of 0.1 mg/l is maintained. 7. Ensure chemical storage bunds at the treatment plant are kept clean and free of water/chemical residue. **Actions required by Uisce Éireann** 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. Uisce Éireann should submit a report to the EPA on or before 21/02/2025 detailing the actions taken and planned, with timescales, to close out the above recommendations. The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.		