

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	Boyle Regional
Organisation	Uisce Éireann
Scheme Code	2600PUB1027
County	Roscommon
Site Visit Reference No.	SV34902

Report Detail	
Issue Date	01/05/2026
Prepared By	Veronica Boland

Site Visit Detail			
Date Of Inspection	02/03/2026	Announced	Yes
Time In	13:10	Time Out	16:30
EPA Inspector(s)	Veronica Boland Mary Grimes		
Additional Visitors			
Company Personnel	Uisce Éireann: Marie Finneran Glanua (DBO contractor working in co-operation with Uisce Éireann): Chris Shrihane.		

> Summary of Key Findings

1. There are no shutdown alarms on the boreholes nor on the blended raw water tank supplying raw water to the Water Treatment Plant (WTP).
2. The turbidity and chlorine shutdown time delay setpoints did not align with the *EPA Water Treatment Manuals: Filtration and Disinfection*.
3. The UV disinfection unit installed at the WTP as a protozoal barrier was operating beyond its validated lamp hours, consequently the reliability of the UV unit as an effective protozoal barrier could not be verified at the audit.
4. The bulk chemical storage tanks for coagulant, sodium hypochloride and hydrofluorosilicic acid fill-points were not adequately bunded to prevent overspill. The bulk chemical storage tanks do not contain level sensors or alarms.

Uisce Éireann should submit a report to the EPA on or before 03/06/2026 detailing the actions taken and planned, with timescales, to close out the 17 recommendations in this audit report.

> Introduction

The Boyle Regional PWS serves a population of 7,565 with an average output of 2,776 m³/day of treated water. Raw water is abstracted from two sources comprising three boreholes at Rockingham WTP and three boreholes at Hughestown. Treatment consists of raw water blending, flocculation, coagulation, clarification, rapid gravity filtration, UV treatment, chlorination and fluoridation. There are two reservoirs in the network at Carrickmore and Ardcarne.

This audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the operational practices in place for the treatment plant.

> Supply Zones Areas Inspected

Treatment processes and chemical storage facilities at the WTP site.



1. Treatment Process Chemicals

	Answer
1.1 Are treatment process chemicals appropriately managed and stored?	No
Comment	
<ol style="list-style-type: none">1. The bulk coagulant, hydrofluorosilicic acid and sodium hypochlorite tanks are located outside. The delivery fill-points were not located within a bund and not properly protected from overspill during filling.2. The hardstand area of the hydrofluorosilicic acid tank showed evidence of historical spillage underneath the fill-point splash plate.3. Bulk chemical storage tanks were not equipped with appropriate level sensors and high/low level alarms, which may limit the timely detection of chemical depletion or overfilling.	
Recommendation:	
<ol style="list-style-type: none">1. Review all chemical delivery and storage arrangements at the treatment plant including fill points and implement measures to prevent the potential for chemical spills, or discharge offsite. Ensure fill points for storage tanks are within bunded areas. Install appropriate level sensors and dial out alarms on the chemical bulk storage tanks and day tanks. Refer to EPA guidance document "<i>IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities</i>".	



		Answer
2.1	Is there a documented alarm response procedure?	No
Comment		
<ol style="list-style-type: none"> 1. There was no documented alarm response procedure available on site. 2. An incident response form displayed at the Boyle Regional WTP displayed shutdown setpoint details for chlorine residual that were different to those displayed on the onsite PLC and the staff contact details in the form were out of date. <p>Recommendations:</p> <p>2. Put in place a site specific documented procedure at the WTP for: (i) responding to and escalating all alarms generated at the water treatment plant and, (ii) verifying alarms and inhibits status following maintenance or other work at the WTP. The procedure should clearly document the corrective actions and set out delegation of responsibilities. All relevant staff must be trained on the documented alarm response procedures.</p> <p>3. Review and update the one page incident escalation procedure at the WTP to include: (i) appropriate alarm setpoint settings for the Boyle Regional WTP and (ii) up-to-date staff contact details for the purpose of alarm notification, escalation and response.</p>		

		Answer
2.2	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
Comment		
<ol style="list-style-type: none"> 1. The final (treated) water turbidity monitor is located post filtration and prior to the UV unit. 2. At the audit, the final water turbidity shutdown setpoint displayed on the WTP PLC was 0.95 NTU with a time delay of 600 seconds (10 minutes). Following the audit, Uisce Éireann advised that the turbidity shutdown setpoint time delay was amended to 300 seconds. These shutdown time delays are not in accordance with the three consecutive minutes time delay specified in the <i>EPA Water Treatment Manual: Filtration</i>. 3. At the audit, the final water chlorine residual high and low shutdown setpoint time delays were 900 seconds (15 minutes). These shutdown time delays are not in accordance with the recommended 5 minute time delay set out in the <i>EPA Water Treatment Manual: Disinfection</i>. Following the audit, Uisce Éireann advised that the chlorine residual alarm setpoints were amended to 5 minutes (300 seconds). 4. There is no final water pH alarm installed at the WTP. <p>Recommendations:</p> <p>4. Review and amend as appropriate the final water turbidity shutdown setpoint and time delays to align with the <i>EPA Water Treatment Manual: Filtration</i>. Submit a screenshot of the amended alarm setpoints for turbidity and chlorine residual to the EPA.</p> <p>5. Install low and high pH alarms on the final water.</p>		

		Answer
2.3	Are suitable controls in place to prevent accidental or unauthorised changes to alarm or inhibit settings?	No

Comment

1. The WTP operator can change the alarm/shutdown settings locally. It could not be demonstrated to the EPA inspector that there was any version history or audit trail of when alarm/shutdown setting changes are made. Operational staff advised that management review alarms history at the WTP on a daily basis, however it was not clear at the audit whether management are aware of any changes made to alarm/shutdown setpoints or alarm/shutdown overrides at the WTP.

Recommendation:

6. Establish a secure process to prevent alarms from being changed or disabled/overridden without appropriate authorization and oversight. Provide for an audit trail/documentary record of the dates, times and reasons for changes of alarm/shutdown settings that can be made available for review.

2.4

Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?

Answer

No

Comment

1. There are 6 no. boreholes (3 no. at Rockingham and 3 no. at Hughestown) that supply raw water which blends into a common raw water tank prior to treatment. Operational staff stated that the turbidity in the raw water increases rapidly following heavy rain. A review of the operator log book and raw water turbidity trends indicated that the raw water turbidity can rise to above 30 NTU.
2. There are no warning or shutdown alarms installed on individual boreholes, with the result that changes in raw water quality, such as increases in turbidity, may not be detected until after blending. This can reduce the stability of the raw water entering treatment, challenge filtration performance, and limit the ability to effectively control and optimize treatment processes.
3. While warning alarms are installed post the blended raw water tank for turbidity 10 NTU, colour of 30 Hazen and UVT of 59% all with time delays of 1200 seconds, the absence of a shutdown alarm on the blended raw water supply may reduce the effective control and optimization of the drinking water treatment process.
4. There is no pH monitor nor a turbidity monitor on the coagulation, flocculation, clarification (CFC) treatment process to enable optimization of these treatment processes and to alert operators to any potential issues that may need addressing and prevent carryover to the filtration stage. Refer to the *EPA Manual: Coagulation, Flocculation & Clarification*.
5. Automatic backwashing of the filters at the WTP is on a timed basis only and not linked to turbidity or headloss as recommended in the log performance approach outlined in the *EPA Water Treatment Manual: Filtration*. Operational staff advised that the Corix water treatment system installed at the plant has inbuilt presets to trigger backwashing of the filters linked to headloss and to turbidity of 0.4 NTU without any time delays. The EPA inspector was advised that these presets were switched off over a year ago as the turbidity monitors on the filters were triggering backwashes every few hours (as soon as turbidity reached 0.4NTU in any filter) and interrupting the timed sequence of backwashing.
6. Following backwash the filters automatically run to waste for 800 seconds and then return to service after 300 seconds and not linked to turbidity.

Recommendations:

7. Examine the feasibility of installing automatic shutdown of the raw water linked to turbidity or colour to improve the resilience of the supply.
8. Install appropriate warning alarms on the CFC treatment processes to alert operators of deteriorating water quality or problems with a critical treatment process before a plant shutdown occurs.
9. Ensure automatic backwashing is linked to turbidity and headloss alarm setpoints in accordance with the *EPA Water Treatment Manual: Filtration*.

Answer

2.5	Are instrument calibrations within date?	Yes
Comment		
<ol style="list-style-type: none"> Following an EPA audit in 2023, Uisce Éireann advised the EPA that 'Uisce Éireann's DBO contractor can confirm that all monitors are calibrated monthly. A calibration sticker will now be provided for all monitors and these will be located above the HMI in the control room'. However, at the audit the monitors did not have calibration stickers and records of instrument calibrations were not available. Operational staff advised that calibrations are carried out in-house and recorded via QR code. Following the audit, a record of all monitor calibrations and servicing was submitted to the EPA. 		
Recommendations:		
10. Ensure that records of monitor and pump calibrations and service are available on-site.		

		Answer
2.6	Did process trends indicate satisfactory water treatment plant performance?	No
Comment		
<ol style="list-style-type: none"> SCADA trends inspected during the audit showed spikes in final water turbidity greater than 1 NTU on 19/02/2026, 21/02/2026, and 25/02/2026 ranging in length of time from 5 minutes to almost 8 minutes. Schedule 2 of the Drinking Water Regulations 2023 Regulations states 'turbidity at the water supply plant shall not exceed 0.3 NTU in 95 % of samples and none to exceed 1 NTU'. SCADA final water turbidity trend data for the 25/02/2026 indicated that turbidity was above 1 NTU from 18:13 hours for almost 8 minutes and in response, the WTP shutdown at 18:24 hours. The alarm history on the WTP PLC indicated that the alarm was triggered at 18:47 hours, and the plant operator received the alarm notification via mobile phone at 18:50 hours. The difference in the actual plant shutdown displayed on SCADA and the alarm shutdown indicated on the PLC, and the delay in the plant operator receiving the notification indicates that there may be a communication issue between the PLC, SCADA and dial out system. Staff could not explain the cause of these spikes nor any remedial measures undertaken to address the spikes in turbidity. The operators daily log book did not contain a section to record any operational issues at the WTP, nor details on alarms triggered or remedial measures implemented at the WTP. The spikes in the final water above 1 NTU may indicate operational issues with the CFC treatment system and potential carryover onto the filters. Jar testing is not carried out to determine the optimum coagulant dose and pH when the raw water quality changes. 		
Recommendations:		
11. Investigate communication issues between the PLC, local and countywide SCADA, resolve any issues identified to ensure plant performance trend data and alarms generated are captured and are aligned on both the PLC, local and countywide SCADA at all times.		
12. Maintain an operational log book/record that includes details of operational issues at the WTP, alarms triggered and remedial action implemented.		
13. Ensure there is a robust system of reviews and checks on water treatment plant performance and act on any issues identified to maintain drinking water quality and protect public health.		
14. Carry out jar testing in accordance with the <i>EPA Water Treatment Manual: Coagulation, Flocculation and Clarification</i> to determine the optimum chemical coagulant dose and pH for the treatment of the water.		



3. Site Specific Issues

3.1

Is the UV unit appropriately maintained and operated operating within it's validation envelope?

Answer

No

Comment

1. A single UV disinfection unit (Spektron 900e) is installed at the Boyle Regional WTP which Uisce Éireann advised provides a protozoal barrier.
2. Following an EPA audit in 2023, Uisce Éireann advised that 'Uisce Éireann's DBO contractor confirmed that UV units are serviced once a year and bulbs are changed at 11,000hrs. A sensor verification is completed every 3 months and this will now be displayed on a calibration sticker on the control unit for the UV unit.'
3. At the audit, the UV unit displayed operational lamp hours of 19,180 and displayed a 'wiper blade' warning alarm. Operation at 19,800 hours significantly exceeds both manufacturer and Uisce Éireann's recommended lamp replacement interval of 11,000 hours and the ageing assumptions referred to in the UV validation envelope. Consequently, the UV unit was operating outside its validated conditions and the effectiveness of the UV unit as a robust protozoal barrier could not be verified during the audit.
4. There was no UV service or calibration sticker details on the UV unit.
5. Following the audit, Uisce Éireann advised that the UV lamps were replaced the day after the audit and calibration/service records were provided for the UV system.

Recommendations:

15. Verify UV system performance following lamp replacement to confirm operation with manufacturers guidelines and in accordance with the validation envelope.

16. Ensure UV lamps are replaced at or before the manufacturer specified operating hours to ensure that they do not exceed their validated service life. Maintain a record of lamp operating hours, lamp replacement and all calibration and servicing to the UV unit.

17. Assess the feasibility of installing a standby UV unit to enable the UV disinfection system to operate in a duty and standby arrangement.

Recommendations

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 is responsible for ensuring a clean and wholesome supply of drinking water and should implement the recommendations raised in this report without delay.

Response to Audit Report

Uisce Éireann should submit a report to the EPA on or before the date specified in the Summary of Key Findings detailing the actions taken and planned, with timescales, to close out the recommendations in this audit report.

The EPA advises that the findings and recommendations from this report should, where relevant, be addressed at other public water supplies.

Publication of Reports

Audit reports are published to the EPA's website, www.epa.ie, typically 1 month after the audit report is issued to Uisce Éireann.