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	Riverstown PWSS
Organisation	Uisce Éireann
Scheme Code	2700PUB2708
County	Sligo
Site Visit Reference No.	SV28016

Report Detail

Issue Date	29/08/2023
Prepared By	Lisa Noone

Site Visit Detail

Date Of Inspection	26/07/2023	**Announced**	Yes
Time In	14:00	**Time Out**	15:45
EPA Inspector(s) **Additional Visitors**	Lisa Noone Maria O'Connell		
Company Personnel	Uisce Éireann: Fionnuala Bonner Sligo County Council (in partnership with Uisce Éireann): Sean Collery, Peter Duignan		

Summary of Key Findings

1. The audit found a lack of control over treatment at Riverstown Water Treatment Plant (WTP) due to inadequate alarm setpoints and controls and the lack of automatic shutdowns in place for UV, turbidity and chlorine residual.

2. Residual chlorine monitoring is not carried out by Sligo County Council several times a week at different points of the network potentially risking a failure to detect inadequately treated water in the Riverstown network.

3. Key operational staff familiar with the Riverstown WTP were not available at the time of the audit leading to limited knowledge or availability of information pertinent to the audit. In addition, information provided to the EPA following the audit did not provide sufficient detail to facilitate a prompt assessment of the alarms/inhibits and management oversight at the plant.

Introduction

Riverstown Public Water Supply (PWS) serves a population of approximately 618 people in County Sligo. The plant has an average daily output of 246 m3/day. Riverstown's raw water supply is from a well with duty and standby pumps abstracting from the spring source on site. Water treatment at the WTP includes primary treatment via UV disinfection and secondary treatment via chlorination and storage of treated water at Riverstown Reservoir with a capacity of approximately 400m3.

The audit of Riverstown WTP was carried out to assess the performance of Uisce Éireann in providing clean and wholesome drinking water, focusing mainly on alarms, inhibits and management oversight.

Supply Zones Areas Inspected

All treatment processes on site and the well source were inspected as part of the audit. The offsite reservoir at Riverstown was not inspected during the audit.

1. Disinfection

		Answer
1.1	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	No

Comment

1. Network chlorine residual monitoring records were requested for assessment as part of the audit.

2. Following the audit, Uisce Éireann notified the EPA that residual chlorine monitoring is not carried out by Sligo County Council in the network bar monitoring at treated water reservoirs.

2. Alarms, Inhibits & Oversight Audits 2023

		Answer
2.1	Is there a documented site specific incident response and incident escalation process?	No

Comment

1. There is no documented site-specific incident response detailing contacts for escalation and relevant trigger levels at the WTP.

2. Relief staff were not aware of the site specific trigger levels or inhibits in place at the plant.

		Answer
2.2	Did UÉ confirm the target residual for chlorine contact time?	No

Comment

1. UV is used as the primary disinfectant for the plant. Chlorine contact time (CT) was not assessed as part of the audit due to the use of UV as the primary disinfectant.

2. According to the Uisce Éireann alarm and inhibit review (Section 2.6) provided to the EPA following the audit, a chlorine CT calculation has been completed for Riverstown WTP.

3. Chlorine residual results at the CT validation point were provided after the audit covering the period 21/07/2023 to 27/07/2023.

		Answer
2.3	Were online monitors within their calibration dates?	No

Comment

1. The calibration sticker for the Wedeco Spektron 180e Fan UV unit stated that the unit was last serviced on 23/08/2022 with the next service due in February 2023.

		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. Key information pertinent to the audit regarding alarms and inhibits and the general operation of the plant was unknown and unavailable on the day of the audit.

2. Based on the information provided following the audit, alarms are in place for chlorine residual and UVT. There is no turbidity alarm in place at Riverstown WTP.

3. A 10 minute time delay was in place for UVT and high/low chlorine residual alarms. This does not meet the 5 minute time delay recommended in the *EPA Water Treatment Manual: Disinfection.*

4. It could not be determined if the UV alarm setpoints in place were in accordance with the UV unit validation criteria as the UV validation certificate was not available on the day of the audit and was not provided subsequent to the audit.

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

Comment

1. Critical alarms are dialled-out to two members of staff. Alarms are responded to on a hierarchical basis, however there is no way of verifying that they have been responded to.

		Answer
2.6	Has UÉ carried out an alarm and inhibit review at the water treatment plant?	Yes

Comment

1. An alarm and inhibit review was carried out at Riverstown WTP on 26/04/2022.

2. The review found that there was no adequate *Cryptosporidium* barrier due to a lack of automatic shutdowns in place for the UV unit.

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

Comment

1. Findings of the alarm and inhibit review have not yet been implemented by Uisce Éireann.

		Answer
2.8	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No

Comment

1. Information provided by Uisce Éireann subsequent to the audit confirmed that there is no automatic plant shutdown for Riverstown WTP in the event of UV failure, elevated turbidity or high/low residual chlorine.

2. Uisce Éireann confirmed that suitable plant shutdowns/inhibits are not in place to provide an adequate *Cryptosporidium* barrier.

3. Due to the lack of appropriate shutdowns for UV as the primary disinfectant, Riverstown WTP should achieve an adequate chlorine contact time (CT) to ensure water is appropriately disinfected prior to entry into the Riverstown distribution network. The plant's chlorine CT calculation was not provided as part of the audit or subsequently and it could not be determined if water is adequately disinfected prior to entering the distribution network.

		Answer
2.9	Are plant performance trends accessible remotely?	No

Comment

1. Caretakers do not have remote access to SCADA trends to inform their work when off-site. If an alarm is raised at the WTP, caretakers have to attend the site to access the HMI.

		Answer
2.10	Is there a documented alarm response procedure?	No

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

Recommendations

Subject	Riverstown PWS Audit Recommendations	Due Date	29/09/2023
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. Establish appropriate alarm and shutdown set-points for turbidity, chlorine and UV to ensure adequate disinfection and a *Cryptosporidium* barrier in accordance with the *EPA Water Treatment Manual: Disinfection.* 2. Submit a copy of (i) the UV validation certificate (ii) the chlorine CT calculation. 3. Carry out residual chlorine monitoring in the extremities of the network several times a week. 4. Ensure that the Uisce Éireann Incident Communication Response Guidance Form is displayed at Riverstown WTP with site specific trigger levels protecting critical processes at the WTP. Provide training to all operational and relief staff on incident response and escalation. 5. Put a documented procedure in place for responding to and escalating all alarms generate d at the water treatment plant. The procedure should clearly document the corrective actions and set out delegation of responsibilities for operational and relief staff. 6. Examine the feasibility of upgrading the current SCADA system at Riverstown WTP to ensure access to critical plant process information and trended performance data by all operational and supervisory staff including relief personnel. 7. 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. 8. Ensure the UV unit is maintained and calibrated in according with the manufacturer's instructions. **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 29/08/2023 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.		