

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	Baltinglass Public Supply
Organisation	Uisce Éireann
Scheme Code	3400PUB1017
County	Wicklow
Site Visit Reference No.	SV28383

Report Detail	
Issue Date	11/12/2023
Prepared By	Derval Devaney

Site Visit Detail			
Date Of Inspection	16/11/2023	Announced	Yes
Time In	11:00	Time Out	13:30
EPA Inspector(s)	Derval Devaney David O'Malley		
Additional Visitors			
Company Personnel	Uisce Éireann: Jessica Evans Wicklow County Council (working in partnership with UÉ): Noel Doody, Damien Byrne, Billy Cully.		

> Summary of Key Findings

1. There is no plant shutdown/inhibit on many critical treatment processes at the water treatment plant to prevent inadequately treated water entering the network.
2. The alarm setpoint for UVT appeared to be outside the UV unit's operational criteria for adequate disinfection and the UVT sensor was not providing accurate readings.
3. The validation certificate for the UV unit was unavailable to facilitate an assessment of the alarms/inhibits settings at the plant to ensure there is adequate control and protection of the disinfection process.

> Introduction

Baltinglass Public Water Supply (PWS) produces approximately 64 m³/hour serving a population of 2,442. Raw water is abstracted from two springs (at Bawnogues) and two wells (at Tinoran and Parkmore). The Parkmore well is currently out of service while awaiting installation of an arsenic filter. Treatment consists of UV and chlorination disinfection and fluoridation.

The audit of Baltinglass 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

The disinfection treatment processes on site were inspected as part of the audit.



1. Source Protection

	Answer
1.1	Is the abstraction source(s) adequately protected against contamination? Comment <p>1. Raw water is currently abstracted from two springs (at Bawnogues) and a well (at Tinoran). The Parkmore well is currently out of service while awaiting installation of an arsenic filter. It is expected to bring the Parkmore Well into production by the end of 2023 at which point the spring sources will no longer be used to source the supply.</p> <p>2. UÉ could not demonstrate that landowners were advised in writing of the setback distances set out in the Good Agricultural Practice (GAP) Regulations 2022 to prevent water pollution from fertilisers and certain agricultural activities.</p> <p>3. There is no raw water quality monitoring programme in place for the sources of this water supply.</p> <p>4. UÉ has not yet identified the log treatment requirement of the source waters, and it was not known what log treatment is being provided by the UV treatment system at the plant.</p> <p>5. The Baltinglass PWS serves a population of 2,442 however the EPA's EDEN database documents that the supply serves a population of 2,459.</p>



2. Alarms, Inhibits & Oversight Audits 2023

		Answer
2.1	Is there a documented site specific incident response and incident escalation process?	No
Comment		
The Uisce Éireann Incident Communication Response Guidance Form was displayed at the site but it did not include contacts for escalation to UÉ and relevant site specific trigger levels to protect critical processes at the water treatment plant.		

		Answer
2.2	Did UÉ confirm the target residual for chlorine contact time?	Yes
Comment		
1. It was confirmed that the target residual for chlorine contact time (Ct) is 0.5mg/l. This is monitored on the outlet of the reservoir by chlorine monitor CL002 which read 0.45 mg/l during the audit.		
2. The target Ct for the plant is 23.40 mg.min/l. The Ct calculation, dated 06/07/2022, provided to the EPA in advance of the audit specifies a minimum free chlorine concentration 0.35 mg/l is required at the Ct validation point which gives a minimum effective Ct of 80.43 mg.min/l. The latter figure is based on a maximum flow of 47m ³ /hr. However, during the audit there was a flow of 63 m ³ /hour to the reservoir and it was stated that the pumps can provide a maximum flow of 68 m ³ /hour. Therefore an accurate maximum flow was not included in the Ct calculation to verify the minimum effective Ct provided by the water treatment plant.		

		Answer
2.3	Were online monitors operational?	No
Comment		
1. The UVT online monitor on the UV treatment system was reading > 100 % during the audit. The SCADA printouts submitted in advance of the audit also show periods where UVT readings were above 100 % from 12/10/2023 to 07/11/2023 (Max 102.23%).		
2. There was no calibration sticker on the UVT monitor to show when it was last serviced.		

		Answer
2.4	Was there a plan in place for repair of any monitor not in operation during the audit?	No
Comment		
There was no plan to service the UVT monitor, there appeared to be a lack of awareness that this monitor was malfunctioning.		

		Answer
2.5	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No
Comment		
<p>1. Alarms are in place for chlorine residual, turbidity and UVT. Flow on the inlet to the UV units is not alarmed.</p> <p>2. The time delay associated with the generation of alarms for turbidity and UVT were not provided. A 600 second (10 minute) time delay was in place for high and low chlorine residual alarms. This does not meet the 5 minute time delay recommended in the EPA Water Treatment Manual: Disinfection.</p> <p>3. It could not be determined if the UV alarm set points in place were in accordance with the UV unit validation criteria, as the UV validation certificate was not available in advance of the audit or on the day of the audit and was not provided subsequent to the audit despite requests from the EPA.</p> <p>4. The plate for the UV unit (Wedeco Specktron 250e fan) was inspected during the audit and it specifies a minimum UVT of 90 %. The low alarm for UVT was set lower than this, at 70% UVT, which appears to be outside the specification for adequate UV treatment provided by this unit.</p>		

		Answer
2.6	Were all findings of the UÉ alarm and inhibit review implemented?	No
Comment		
<p>UÉ carried out an alarm and inhibit review of the plant in July 2022 and the implementation of those recommendations are in progress.</p>		

		Answer
2.7	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
Comment		
<p>1. There is no plant shutdown/inhibit on critical treatment processes at the water treatment plant. For example there is no inhibit on a low or high chlorine residual, high turbidity, the UV dose or on flow to the disinfection process.</p> <p>2. There is a UV shutdown if the UVT falls below 70%, but it has not been demonstrated that this inhibit setting is sufficient to prevent inadequately disinfected water entering supply (as outlined in Point 2.5 above).</p>		

		Answer
2.8	Is there a documented alarm response procedure?	No
Comment		

There is a documented alarm response procedure for responding to a chlorine alarm, but its site specific alarm settings were out of date. There was no procedure for responding to additional alarms that are in place at the water treatment plant.

Recommendations

Subject	Baltinglass Audit Recommendations	Due Date	11/01/2024
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> <p>1. Source:</p> <ol style="list-style-type: none"> 1. Liaise with Wicklow County Council to ensure that local landowners are written to in relation to their obligations under the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022, as amended; 2. Put in place a raw water monitoring programme for the Baltinglass PWS; 3. Conduct appropriate arsenic monitoring during the commissioning stage to demonstrate that the new filters are producing compliant water prior to the reintroduction of the Parkmore well into supply. Devise and implement an operational monitoring programme to demonstrate that the filters continue to operate optimally in the removal of arsenic for compliant drinking water purposes. 4. Provide (i) the protozoal log treatment requirement for the source waters following completion of a sanitary survey; (ii) details on how a protozoal log deficit, if identified, will be addressed. <p>2. Disinfection:</p> <ol style="list-style-type: none"> 1. Adjust the contact time (Ct) calculation to incorporate the maximum plant flow. Amend the alarms and plant inhibit settings, if warranted, due to any changes arising from the revised Ct time, to ensure only adequately disinfected water enters supply. 2. Submit a copy of the validation certificate for the UV disinfection system and outline what log treatment is provided by the UV unit. Ensure the UV alarms and inhibits, including that for UVT, are set in accordance with the validation certificate requirements for UV treatment at the plant. <p>3. Management:</p> <ol style="list-style-type: none"> 1. Calibrate and maintain equipment and monitors (such as the UVT monitor) in accordance with the manufacturer's instructions. 2. Implement the recommendations from Uisce Éireann's alarm and inhibits review of the Baltinglass water treatment plant. 3. Establish and implement appropriate alarm setpoints and plant shutdowns (including time delays) for turbidity, chlorine, and UV treatment to ensure adequate disinfection and a Cryptosporidium barrier in accordance with the EPA Water Treatment Manual: Disinfection. 4. Update the Uisce Éireann Incident Communications Response Guidance Form with site specific information including contacts for escalation and relevant trigger levels protecting critical processes at the water treatment plant. 5. Update the alarm response procedure to account for responding to and escalating all alarms generated at the water treatment plant. The procedure should clearly document the corrective actions and set out delegation of responsibilities. Ensure that all staff are trained on the amended alarm response procedure. 6. Update EDEN to reflect the correct population served by the Baltinglass PWS. <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>		

