

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	Fanad East (Shannagh)
Organisation	Uisce Éireann
Scheme Code	0600PUB1043
County	Donegal
Site Visit Reference No.	SV31979

Report Detail	
Issue Date	18/06/2025
Prepared By	Veronica Boland

Site Visit Detail			
Date Of Inspection	13/05/2025	Announced	Yes
Time In	11:00	Time Out	13:05
EPA Inspector(s)	Veronica Boland		
Additional Visitors			
Company Personnel	Uisce Éireann: Geraldine Friel, John Gallagher, Donegal County Council (working in partnership with Uisce Éireann): John Duffy, James McHugh.		

> Summary of Key Findings

1. There is no verified protozoal barrier in place at Shannagh WTP due to the absence of appropriate filter turbidity alarms/inhibits. Alarms set points and inhibits are required in accordance with the log turbidity performance criteria as set out in the *EPA Water Treatment Manual: Filtration* to verify the Cryptosporidium barrier.

> Introduction

The Fanad East Public Water Supply (PWS) is supplied by the Shannagh WTP which produces 604m³/day (EDEN figure). Raw water is abstracted from Lough Shannagh. Treatment processes include pre-treatment pH correction, coagulation, flocculation, clarification, rapid gravity filtration, post-treatment pH correction and chlorination. The treated water goes to Ballincrick reservoir with a treated water storage capacity of 230m³.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on Protozoal Barriers.

> Supply Zones Areas Inspected

The site areas inspected during the audit included the:

- Raw water abstraction point.
- WTP treatment processes.



1. Protozoal Barriers Audits 2025

	Answer
1.1	Has UÉ identified the protozoal compliance log treatment requirement for the water treatment plant?
	Yes
Comment	
1. A source and sanitary survey was carried out, and a protozoal log 3 requirement is assigned to Shannagh WTP.	

	Answer
1.2	Is the log treatment requirement achieved at the water treatment plant?
	No
Comment	
1. There is no turbidity monitor with alarms and inhibits for the combined filtered water at the WTP and therefore the plant is not being operated in accordance with the log credit performance approach.	

	Answer
1.3	Did UÉ confirm whether <i>Cryptosporidium</i> monitoring under the Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water Supplies is being carried out?
	Yes
Comment	
1. Uisce Éireann commenced <i>Cryptosporidium</i> monitoring at Shannagh WTP in April 2025.	

	Answer
1.4	Are online monitors operational?
	No
Comment	
1. At the audit the raw water turbidity monitor displayed readings of 0.000 NTU and 0.002 NTU. Staff advised that the monitor is not giving a correct reading as it is old and that there is a long distance between the location of the sample pot and the raw water monitor.	

	Answer
1.5	Are the filters designed and managed in accordance with EPA guidance?
	No
Comment	

1. There are two circular dual media rapid gravity filters (RGF) at the Shannagh WTP. Both filters media was refurbished in 2023, and have a filter media depth of 1,440mm (carbon 660mm and sand 780mm), which meets the recommended minimum requirement of 1,000mm as per the *EPA Treatment Manual: Filtration*.
2. The WTP is old and the RGFs had been cracking due to their age and corrosion. Uisce Éireann representatives advised that in 2023 the filter shells were wrapped in fibreglass to prevent further deterioration of the RGF shells, and there is a plan to potentially upgrade the whole treatment plant but the plan is only at the scoping of ideas stage.

1.6

		Answer
Does continuous turbidity monitoring indicate that the filters are operating effectively?		Yes
Comment		
<ol style="list-style-type: none"> 1. At the audit, the settled water turbidity, post clarification and pre the RGF was 0.229 NTU. The RGF turbidity readings were: RGF 1 was 0.05 NTU, RGF 2 was 0.09 NTU, and final water turbidity was 0.015 NTU, indicating that the filters were operating effectively at removing turbidity. 2. Turbidity trends reviewed at the audit indicate that final water turbidity is consistently below 0.1 NTU. 		

1.7

		Answer
Are coagulant residual monitoring results compliant in final water?		Yes
Comment		
<ol style="list-style-type: none"> 1. At the audit, the coagulant residual (aluminium) results in the final water were reviewed and were compliant. 2. The aluminium residual monitoring is undertaken manually approximately 3 times a week. Aluminium residual monitoring should be undertaken on a daily basis. 		

1.8

		Answer
Are alarms and inhibits on each filter, on the combined filtered water and final water in accordance with the EPA Filtration Manual?		No
Comment		
<ol style="list-style-type: none"> 1. There is no turbidity monitor with associated alarms and inhibits in place for the combined filtered water. 2. There is automatic backwashing of the RGFs triggered by headloss only. The <i>EPA Treatment Manual: Filtration</i> recommends that filter backwash is triggered based on filter turbidity, time and headloss. 3. Uisce Éireann advised that an Alarm and Inhibit review was carried out at the end of 2024 for Shannagh WTP. One of the recommendations related to the requirement for an alarm and inhibit linked to filter turbidity which is scheduled to be completed by the end of 2025. 4. There is no run to waste or slow start following backwash at the Shannagh WTP. 5. The final water turbidity has a plant alarm inhibit setpoint of 0.5 NTU with a time delay of 15 minutes. This time delay may be too long, and is more aligned with an upper operational alarm limit time delay. 		

Recommendations

Subject	Fanad East PWS (Shannagh WTP) - Audit 2025 (Protozoal Barriers) Recommendations	Due Date	18/07/2025
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> <ol style="list-style-type: none"> 1. Inform the HSE that the Cryptosporidium barrier cannot be verified until the appropriate turbidity alarms and shutdowns have been put in place on the individual filters and combined filtered water as outlined in the <i>EPA Water Treatment Manual: Filtration</i>. 2. Continue monitoring of the supply for Cryptosporidium in accordance with the Irish Water <i>Rationale for Monitoring of Cryptosporidium in Public Water Supplies</i> until a verified protozoal barrier is in place at the treatment plant that is reflective of the log treatment requirement. 3. (i) Install appropriate turbidity alarm settings and inhibits for the individual filters and (ii) install a turbidity monitor on the combined filtered water with appropriate turbidity alarm settings and inhibits, to ensure the 0.3 NTU Cryptosporidium barrier is not compromised and to verify that the plant operates in accordance with the log credit approach as set out in the <i>EPA Water Treatment Manual: Filtration</i>. 4. Investigate the feasibility of installing a slow start following backwash. 5. Progress the scoping of the proposed Shannagh WTP upgrade and provide details to the EPA of the proposed works. 6. Investigate the feasibility of replacing the raw water monitor and/or relocating the raw water monitor or the raw water sample pot, and provide details to the EPA. 7. Carry out aluminium residual monitoring on a daily basis and record the results. 8. Update EDEN with the correct supply volume and population served in the Fanad East PWS, taking into account increase in population during peak holiday periods. <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 18/07/2025 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>		