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	Bundoran Urban
Organisation	Uisce Éireann
Scheme Code	0600PUB1108
County	Donegal
Site Visit Reference No.	SV32174

Report Detail

Issue Date	16/04/2025
Prepared By	Veronica Boland

Site Visit Detail

Date Of Inspection	01/04/2025	**Announced**	Yes
Time In	11:10	**Time Out**	13:30
EPA Inspector(s) **Additional Visitors**	Veronica Boland		
Company Personnel	Uisce Éireann: Geraldine Friel, Conor Foxe, Aisling Callaghan, Adrian Gillespie, Benny McGarrigle. Donegal County Council (working in partnership with Uisce Éireann): Chris McSherry, Brendan Gavigan, Eddie McGrane, Gerry Gallagher.		

Summary of Key Findings

1. There is no verified protozoal barrier in place at Bundoran Urban 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 Bundoran Urban WTP has a design capacity of 2,500m3/day and produces 2,300 m3/day of treated water for distribution to the network. Raw water is abstracted from Lough Melvin. The treatment process comprises of coagulation, flocculation and clarification, rapid gravity filtration, pH correction and chlorination. Treated water is pumped to Derryherk reservoir with a storage capacity of 4,860m3.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on protozoal barriers at the WTP.

Supply Zones Areas Inspected

The site areas inspected during the audit:

- Abstraction point
- WTP treatment processes
- Sludge management lagoon.

1. Protozoal Barriers Audits 2025

		Answer
1.1	Has UÉ identified the protozoal compliance log treatment requirement for the water treatment plant?	No

Comment

1. The raw water abstraction is from Lough Melvin, a Special Area of Conservation.
2. Clarifier supernatant and filter backwash water are directed to an on-site sludge lagoon. The overflow from this lagoon is directed to the raw water pump sump and blended with the raw water abstracted from Lough Melvin.
3. Uisce Éireann advised that a source and sanitary survey has been carried out and is being finalised. The Treatment Log requirement for Bundoran Urban PWS must factor the blending of the lagoon overflow (lagoon contains supernatant & filter washwater) with the raw water as this potentially increases the *Cryptosporidium* load to the Bundoran Urban WTP.
4. The raw water turbidity monitor is on the 'raw water' plus 'lagoon overflow' combined flow. There is no individual turbidity monitor on the 'lagoon overflow' prior to blending with the raw water abstracted from Lough Melvin. A potential control measure outlined in Appendix A of the *EPA Water Treatment Manual: Filtration* (Appendix A - Drinking Water Safety Planning Hazards associated with Filtration) is to monitor turbidity and flow rate on the recycled flow line (lagoon overflow).

		Answer
1.2	Did UÉ confirm whether Cryptosporidium monitoring under the Rationale for Determining the Frequency of Cryptosporidium in Public Water Supplies is being carried out?	Yes

Comment

1. *Cyptosporidium* monitoring is carried out on a monthly basis in the Bundoran Urban PWS.

		Answer
1.3	Are online monitors operational?	No

Comment

1. The final water pH monitor was offline. Staff advised that a new pH probe had been ordered and awaiting delivery.

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

Comment

1. The are three mono media (sand) rapid gravity filters (RGF) at Bundoran Urban WTP. The media depth of the filters were: RGF1=950 mm, RGF2=925mm, and RGF=950mm. All three filters were below the 1000 mm depth as recommended in the *EPA Water Treatment Manual: Filtration*.
2. Backwash at Bundoran Urban WTP is air-water sequence and is on a timed basis only and not linked to headloss or turbidity. Each filter is backwashed on a set time every 24 hours. As lagoon overflow (filter backwash water and clarifier supernatant) is returned to the head of works (blended with raw water) and carbon dosing often takes place during summer months to prevent impact from potential algae, it is recommended that the backwash trigger also be linked to headloss and/or turbidity as per the E*PA Water Treatment Manual: Filtration*.
3. Following backwash the filters automatically run to waste for 6 minutes before they are returned to service and not linked to turbidity.

		Answer
1.5	Does continuous turbidity monitoring indicate that the filters are operating effectively?	Yes

Comment

1. The filter turbidity readings on the day of the audit were RGF1=0.134 NTU, RGF2=0.084 NTU and RGF3=0.056 NTU.
2. A review of filter turbidity trends indicated that RGF1 was not performing as well as the other two filters. RGF1 had turbidity spikes above 0.5 NTU, whereas RGF 2 and RGF 3 turbidity trended between 0.2 and 0.3 NTU. Staff advised that turbidity spikes for RGF1 may be related to small cracks in the filter wall or an issue with the filter outlet valve and that the cause of the turbidity spikes will be investigated when the RGF1 media filter is refurbished.

		Answer
1.6	Are there suitable plant controls to protect the protozoal barrier(s) and prevent inadequately treated water from entering the distribution network?	No

Comment

1. See sections 1.4 and 1.7 of this audit report.

		Answer
1.7	Are alarms and inhibits on each filter, on the combined filtered water and final water in accordance with the EPA Filtration Manual?	No

Comment

1. While there were turbidity warning alarms on each filter set at 0.3 NTU for 900 seconds, there was no inhibit on each filter as is recommended in the *EPA Water Treatment Manual: Filtration*.
2. The final water turbidity has a warning alarm of 0.8 NTU for 180 seconds and a plant inhibit setpoint of 1 NTU with a time delay of 3 minutes.

Recommendations

Subject	Audit 2025 Protozoal Barriers - Bundoran Urban PWS	Due Date	16/05/2025
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. 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 *EPA Water Treatment Manual: Filtration*. 2. (a) Confirm the protozoal log treatment requirement for the supply, (b) provide details of how any protozoal log treatment deficit, if identified, will be addressed and (c) continue monitoring of the supply for *Cryptosporidum* in accordance with the *Irish Water Rationale for Monitoring of Cryptosporidium in Public Water Supplies* until a verified protozoal barrier is in place at the treatment plant that is reflective of the log treatment requirement. 3. Install appropriate turbidity alarm settings and inhibits for the individual filters and combined filtered water to verify critical treatment performance and to ensure the 0.3 NTU *Cryptosporidum* barrier is not compromised and is in accordance with the *EPA Water Treatment Manual: Filtration.* 4. Install a turbidity monitor and flow monitor on the return sludge supernatant line as per Table 2.1 and Appendix A of the *EPA Water Treatment Manual:Filtration*. 5. Ensure that: (i) filter media depth in each filter is at a minimum of 1000mm operating depth and (ii) a filter media assessment is completed and (iii) examine the feasibility of installing a continuous headloss monitor on each rapid gravity filter and automatic backwashing linked to a turbidity alarm setpoint in accordance with the EPA Water Treatment Manual: Filtration. 6. Replace the final water pH probe and reinstate the final water pH monitor immediately. **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 16/05/2025 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.		