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	Lough Mourne
Organisation	Uisce Éireann
Scheme Code	0600PUB1076
County	Donegal
Site Visit Reference No.	SV31981

Report Detail

Issue Date	04/07/2025
Prepared By	Veronica Boland

Site Visit Detail

Date Of Inspection	12/05/2025	**Announced**	Yes
Time In	14:00	**Time Out**	16:40
EPA Inspector(s) **Additional Visitors**	Veronica Boland		
Company Personnel	Uisce Éireann: Aidan Harrole, Eunan McCafferty, Geraldine Friel, Stephen McGlynn. Donegal County Council (working in partnership with Uisce Éireann): Hugh Alexander.		

Summary of Key Findings

1. The time delays in place for turbidity and high and low chlorine residual alarms do not meet the time delays recommended in the *EPA Water Treatment Manuals: Filtration and Disinfection*.
2. The Meencrumlin WTP is subject to power outages on a regular basis especially during winter months which impacts operational control over treatment processes. All historical SCADA trend data at the WTP was lost due to an electricity outage that occurred on 25/04/2025.

Introduction

The Lough Mourne public water supply (PWS) serves a population of approximately 22,000 people and is supplied by the Meencrumlin Water Plant (WTP) which produces approximately 9,055 m3/day. Raw water is abstracted from Lough Mourne. Treatment processes include pre-treatment pH correction, coagulation, flocculation, clarification, rapid gravity filtration, post-treatment pH correction and chlorination. The treated water goes to an on-site reservoir (capacity equivalent to 4 hours treated water storage) prior to distribution to the network.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on alarms, inhibits and management oversight.

Supply Zones Areas Inspected

The site areas inspected during the audit:

- WTP treatment processes.

1. Coagulation Flocculation and Clarification (CFC) Stage

		Answer
1.1	Is the CFC process optimised to respond to changes in raw water quality?	No

Comment

1. Alarm activation history reviewed during the audit indicated reoccurring pH dose alarms. The site operator outlined that there are issues with the pH dosing system that regularly trigger alarms and require manual intervention. The issues outlined include (i) recurring blockages in the bulk soda ash storage silo and the soda ash cruncher valve as the silo is located outside and impacted by weather (freezing temperatures and condensation during hot weather), and (ii) that the pH solutions in the two day tanks (used on an alternate basis) do not match even though the same batch makeup is applied in both tanks.
2. These issues impact on the operational control/requirements over the coagulation/flocculation processes and require further investigation to ensure optimization of the pH dosing system.

		Answer
1.2	Were the CFC tanks, channels and weirs observed to be clean, level and well maintained during the audit?	No

Comment

1. Algal growth was observed in the clarifiers, especially clarifier no. 2. Operational staff advised that it is difficult to clean the clarifiers due to access issues, and noted that they carry out daily visual checks of the clarifier bleed.

2. Management and Control

		Answer
2.1	Have the recommendations from the previous EPA audit been satisfactorily addressed?	No

Comment

1. The recommendation in the previous EPA audit of 2023 relating to increasing media depth and feasibility of providing a run to waste facility following filter backwash has yet to be commenced. At the audit, operational staff advised that filter media and substrate replacement was awaiting approval for funding.

3. Alarms, Inhibits & Oversight Audits 2025

		Answer
3.1	Is there a documented site specific incident response and incident escalation process?	Yes

Comment

1. The information displayed on the Meencrumlin WTP site specific Incident Response Form for turbidity and chlorine residual setpoints did not correspond to the alarm setpoints on the HMI at the WTP.
2. The final water turbidity alarm shutdown setpoint displayed on the HMI was 0.85 NTU with a 30 minute time delay, and the Incident Response Form displayed a final water turbidity alarm shutdown setpoint of 0.3 NTU with a 3 minute time delay.
3. The chlorine residual alarm shutdown setpoints displayed on the HMI were 0.7mg/l (Lo) and 1.5mg/l (Hi) both with a 15 minute time delay, whilst on the Incident Response Form the setpoints were 0.5 mg/l (Lo) and 2mg/l (Hi) with 3 minute time delay.

		Answer
3.2	Is continuous monitoring located appropriately to verify treatment performance?	No

Comment

1. There are individual turbidity monitors on the outlet of each rapid gravity filter (RGF), the final water turbidity monitor is located on the outlet of the treated water reservoir, however there is no combined filtered water turbidity monitor at Meencrumlin WTP. Staff advised that there is no facility to put a combined filtered water turbidity monitor at the WTP due to the site configuration of the older rapid gravity filters (RGFs) no.1 to no.4, and the new filters (no. 5 and no. 6, circular).
2. There were visible cracks in the surface of the media of the RGFs no. 1. to no. 4, these are the RGFs that were flagged for upgrade at the previous EPA audit in 2023.

		Answer
3.3	Were online monitors operational?	No

Comment

1. The raw water ammonia monitor was not operational and there was no plan in place to repair the monitor.

		Answer
3.4	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No

Comment

1. The warning alarm time delays for chlorine residual are 5 seconds (Lo) and 10 seconds (Hi), these time delays do not give the operators time to respond to a warning alarm, and are not as per the recommended 5 minute outlined in the *EPA Water Treatment Manual: Disinfection.*

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

Comment

1. The final water turbidity shutdown alarm has a time delay of 30 minutes, this is not in accordance with the recommended time delay of 3 minutes outlined the *EPA Water treatment Manual: Filtration*.
2. The chlorine residual alarm time delay of 15 minutes displayed on the HMI is not in accordance with the recommended 5 minute time delay outlined in the *EPA Water Treatment Manual: Disinfection*.

		Answer
3.6	Did plant performance trends demonstrate that data was being captured and recorded at all times?	No

Comment

1. Staff advised that a power outage occurred on 25/04/2025, the WTP SCADA computer had to be rebooted, as a result all historical plant performance trend data prior to this date was lost. The issue of SCADA availability at Meencrumlin WTP was raised in a previous EPA audit in 2023.
2. As there was insufficient historical SCADA trend data available to review at the audit and and there was no backup of the SCADA data, it could not be demonstrated that data is captured and recorded at all times to assist in the protection of treatment barriers.

4. Site Specific Issues

		Answer
4.1	Is the water treatment plant resilient enough to cope with significant variations in raw water quality or demand?	No

Comment

1. While it is noted that the network has 12 reservoirs, the on-site reservoir has a capacity of 4 hours storage which may lead to a risk of supply outage in the event of a shutdown on critical WTP processes.

Recommendations

Subject	Lough Mourne PWS - Audit 2025 (AIO) - Recommendations	**Due Date**	06/08/2025
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. Prioritize completion of the filter refurbishment programme and ensure that the filters are maintained in accordance with the *EPA Water Treatment Manual: Filtration*. 2. Upgrade the soda ash storage and dosing facilities to optimize the pH treatment system. 3. Examine the feasibility of upgrading the current SCADA system at Meencrumlin WTP to ensure that interruptions to data availability is addressed. In the interim create regular backups of SCADA data for trend analysis and oversight. 4. Ensure that all alarm and shutdown time delay set points for turbidity and chlorine are in accordance with site specific requirements and the *EPA Water Treatment Manuals: Filtration and Disinfection*. Ensure operational staff are briefed on amendments to the alarm and inhibit settings. 5. Ensure the clarifiers are maintained in a manner to prevent the buildup of algae. 6. Repair or replace the raw water ammonia monitor at the treatment plant. This should include the provision of appropriate alarms/inhibits with the output of the monitor trended on both the local and county SCADA. 7. Examine the feasibility of increasing the capacity of the treated water storage reservoir to increase the resilience of the Lough Mourne PWS. **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 06/08/2025 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.		