

# 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	
<b>Name of Installation</b>	Gowna
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	2000PUB1011
<b>County</b>	Longford
<b>Site Visit Reference No.</b>	SV30777

Report Detail	
<b>Issue Date</b>	19/12/2024
<b>Prepared By</b>	Derval Devaney

Site Visit Detail			
<b>Date Of Inspection</b>	14/11/2024	<b>Announced</b>	Yes
<b>Time In</b>	11:15	<b>Time Out</b>	14:10
<b>EPA Inspector(s)</b>	Derval Devaney		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann (UÉ): John Gavin, Joseph Moran, Karina O'Grady, Niamh Conroy Longford County Council (working in partnership with Uisce Éireann): Angela Brady, Damien Gilna.		

## > Summary of Key Findings

1. Two manganese failures occurred in 2023 and were not promptly notified to the EPA nor was the Health Service Executive (HSE) consulted. The EPA was notified of the failures almost a year later.
2. The manganese operational monitoring programme was insufficient, as it did not include sampling in the final water and network.
3. The outdoor coagulant bulk tanks and its bund present a potential risk to the environment due to age and poor condition of the structures.
4. The outdoor washwater tank on-site appears to be undersized and at times its contents can overflow, spilling to the surrounding area.

## > Introduction

The Gowna public water supply produces approximately 2000 m<sup>3</sup>/d serving approximately 4,495 people in County Longford. The raw water is abstracted from Lough Gowna and receives the following treatment at Smear water treatment plant;

- raw water alkalinity boosting using sodium carbonate (soda ash),
- coagulation with ferric aluminium sulphate,
- flocculation including poly dosing,
- clarification in a hopper bottomed clarifier,
- filtration across two rapid gravity filters,
- disinfection with sodium hypochlorite, and
- final water pH correction with sodium carbonate.

Treated water flows to the on-site Smear Lower reservoir and is also pumped to Smear Upper reservoir.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the alarms and inhibits in place at the water treatment plant (WTP), procedures in place to ensure appropriate oversight of treatment processes and chemical and wash water storage on-site.

## > Supply Zones Areas Inspected

The audit included an inspection of the operation and management of the Smear water treatment plant. Particular focus was on procedures, alarms and plant inhibit settings, the disinfection process and chemical and wash water storage. The on-site Smear Lower reservoir and the land drain which receives discharge from the on-site wash water tank was also inspected.



## 1. Disinfection

		Answer
1.1	Is there a chlorine residual $\geq 0.1$ mg/l throughout the network?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. Chlorine residual concentration records for the network were reviewed during the audit and all were above the 0.1 mg/l.</li><li>2. The Water Supplier should continue to take chlorine residual readings frequently (at a minimum twice per week) and ensure end of lines and potentially problematic areas are included.</li></ol>		



## 2. Reservoirs and Distribution Networks

		Answer
2.1	Is treated water in tanks and reservoirs suitably protected against contamination?	No
<b>Comment</b>		
1. The protective mesh was absent on a vent at the final water reservoir at the WTP.		

		Answer
2.2	Are reservoirs adequately inspected and maintained?	Yes
<b>Comment</b>		
1. Many of the supply's reservoirs were inspected and cleaned within the recommended 5 year timeframe (i.e during 2021, 2022 and 2024). 2. However, Edenmore Lower Reservoir (Cell 1 and Cell 2) within the supply, is due an inspection as they were last cleaned in 2020.		



3.1

	Answer
Are treatment process chemicals appropriately managed and stored?	No
<b>Comment</b>	
<ol style="list-style-type: none"><li>1. There are two coagulant (ferric aluminium sulphate) bulk tanks situated outdoors in a concrete bund. Their internal bund wall is not lined by a protective acid-resistant material. The pipe transferring coagulant from the bulk tanks travels through the bund wall to the dosing pumps located indoors and across the yard from the bund.</li><li>2. During the EPA's audit of 12/05/2021, it inspected this bund in response to a chemical spill at the plant and requested a suitably qualified person undertake an integrity assessment of the bund.</li><li>3. UÉ responded to state an inspection of the bund was carried out and deemed it appropriate and additional fail-safes at the plant were completed (such as the alarm and shutdown of the plant due to a sudden drop of coagulant in the bulk tanks).</li><li>4. The EPA noted during this audit that while plant inhibit fail-safes were put in place there appeared to be no upgrade works carried out to the bund and the 20 year old tanks remained in place and in use. Also, the chemical transfer pipe continues to travel through bund's wall, potentially jeopardising the bund's capacity.</li><li>5. UÉ stated that it recognised that the bunds and their tanks presented a risk to the environment and is seeking funding to address the matter.</li></ol>	



## 4. Management and Control

		Answer
4.1	Is the water treatment plant resilient enough to cope with significant variations in raw water quality or demand?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. On the day of the audit the plant appeared to be coping with the water presented, however it is unclear if the WTP is resilient enough to cope with the raw water quality as the raw water monitoring programme results were not available for review during the audit.</li> <li>2. There were manganese failures in the treated water during 2023 and 2024.</li> <li>3. It is unclear if the treatment plant requires to be optimised for the removal of manganese, as the results of the manganese operational monitoring plan was not available for assessment during the audit.</li> <li>4. Information submitted after the audit stated manganese was only monitored in the final water and the raw water will be reviewed for sample inclusion. Raw water monitoring for manganese is crucial to determine if the WTP is capable of removing manganese present in the source. The EPA recommends a point in the network is also monitored to determine compliance as the water travels through the distribution network.</li> </ol>		

		Answer
4.2	Have the recommendations from the previous EPA audit been satisfactorily addressed?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. The EPA on 14/05/2021 carried out an audit in response to a chemical spill which occurred at the Smear water treatment plant (WTP).</li> <li>2. The spill occurred on 10/05/2021 due to the corrosion of a temporary pipe fitting, located just outside the bulk tank bund, which was incompatible with the coagulant material being transferred in the pipe. Approximately 2.4m<sup>3</sup> of Chemifloc 101 (Ferric/Alum Sulphate blend) was released from the bulk tank, some entered the on-site wash water tank and some flowed down the yard and into a land drain and water course.</li> <li>3. The Audit report recommended UÉ assesses the feasibility of installing a shutoff mechanism on the wash water tank outlet pipe, in the event that it is required to cease a discharge from the tank to surface water.</li> <li>4. Uisce Éireann during 2024 reported that it re-assessed the risk of potential loss of alum sulphate at Smear WTP and existing mitigation measures. Uisce Éireann has determined that the existing system of alarms and shut-offs is sufficient. The risk is considered to be low, is managed adequately by existing measures and does not warrant installation of additional shutdown valves.</li> <li>5. During the audit the wash water tank was inspected. It appeared to be undersized for the volume of water it was receiving from the filter backwash and sludge bleeds. The washings within the tank did not appear to be given time to settle due to the continuous volume of water entering the tank. It was stated during the audit that at times the wash water tank can overflow with its contents running out over its walls and down the road.</li> </ol>		



## 5. Drinking Water Quality

5.1

	Answer
Have relevant failures to comply with the requirements of the European Union (Drinking Water) Regulations 2023 been notified to the EPA?	No
<b>Comment</b>	
<ol style="list-style-type: none"><li>1. The EPA was notified in November 2024 of manganese failures which occurred in 28 November 2023 (72 ug/l) and 18 December 2023 (64 ug/l) and 22 October 2024 (64 ug/l) vs. the parametric value of 50 ug/l.</li><li>2. Such failures are to be notified to the EPA promptly and these delays are not acceptable to the EPA.</li><li>3. UÉ's additional failure to appropriately consult with the Health Service Executive during 2023 in this regard, is also not acceptable.</li></ol>	



## 6. Alarms, Inhibits & Oversight Audits 2024

		Answer
6.1	Is there a documented site specific incident response and incident escalation process?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. The Uisce Éireann Incident Communication Response Guidance Form is displayed at Smear WTP.</li><li>2. Personnel contacts displayed in the procedure need to be updated to reflect staff currently associated with the WTP's operations, management and oversight.</li></ol>		

		Answer
6.2	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. Chlorine monitor CL002 and CL003 are located on the outlet of the Smear Lower Reservoir onsite but they were not labelled.</li></ol>		

		Answer
6.3	Were online monitors operational?	No
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. The final water UVT monitor was not operational.</li><li>2. The plant operator was undertaking daily UVT readings of the final water using a handheld monitor.</li></ol>		

		Answer
6.4	Was there a plan in place for repair of any monitor not in operation during the audit?	No
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. See answer to Q 6.3 above regarding the final water UVT monitor which was out of operation for close to a year.</li><li>2. The EPA's audit of 2021 had recommended that UÉ ensure that readings from the continuous online UVT monitor remain accurate.</li></ol>		

		Answer
6.5	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No
<b>Comment</b>		



1. The EPA's 2021 audit reported there was combined filtered water monitor set to alarm and shutdown the WTP at a turbidity of 0.5 NTU. This audit found there was no turbidity monitor in place on the combined filtered water.
2. The final water UVT monitor was not operational and was not alarmed. In the EPA's 2021 audit, UÉ stated the Smear WTP was upgraded to achieve THM compliance for RAL removal. UÉ reported as part of the 2021 audit that these upgrade works included the installation of an online final water UVT monitor which was alarmed at a set-point below 85% UVT.
3. There is a chlorine residual monitor, CL001, monitoring post dose and after a 15 minute contact time sample loop. UÉ's contact time (Ct) calculation illustrates 0.45 mg/l chlorine residual post Ct provides adequate disinfection.
4. The hi hi alarm and plant inhibit linked to CL001 is set at 3.5 mg/l after a 15 minute time delay. The alarm setting and time delay on the chlorine monitor is not in line with the EPA guidance and UÉ's Disinfection Specification. The EPA's Water Treatment Manual: Disinfection states: "A high level alarm is needed to prevent excess DBP formation and avoid customer complaints. A maximum of 0.2 mg/l above the target concentration is recommended." The hi hi alarm setting on CL001 should be revised downwards, closer to the 0.45 mg/l concentration required, in line with EPA Guidance.
5. The on-site Smear Lower reservoir provides storage for contact time disinfection. The chlorine residual monitor, CL002, on the outlet of this reservoir acts to validate that 0.45mg/l, required for adequate disinfection, is being achieved. CL002 has a lo lo alarm and plant inhibit setting of 0.45 mg/l with a 3 minute time delay. The EPA recommends, due to the 10 hour storage in this reservoir, that this alarm setting be adjusted upwards to afford time to react if there is a drop of chlorine and to avoid compromising the the supply of adequately disinfected water to consumers. CL003 acts as a duplicate chlorine monitor on the outlet of the Smear Lower reservoir.
6. The Effective Ct has a time delay of 15 minutes, which is not in line with UÉ's 3 minute time delay set out in UÉ's Disinfection: Primary Chlorination Document No. UÉ-TEC-900-05-01.
7. The alarm settings on the chlorine monitors at reservoirs Clonnelly and Edenmore were not available during the audit. These reservoirs provide booster chlorination.

		Answer
6.6	Is there a documented alarm response procedure?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. There is no formal site specific procedure setting out how alarms are responded to in order to protect water quality and public health.</li> </ol>		

		Answer
6.7	Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. There is no procedure setting out how alarms and plant inhibit settings are verified as accurate and operational following works which can affect the systems on-site.</li> </ol>		

## Recommendations

Subject	Gowna PWS Recommendations	Due Date	31/01/2025
Action Text	<p><b>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</b></p> <ol style="list-style-type: none"> <li>1. Ensure that any water quality failures are:               <ol style="list-style-type: none"> <li>i. suitably escalated, managed, and resolved in a timely manner and in line with the Uisce Éireann Incident Communications Response Guidance Form,</li> <li>ii. there is prompt and timely consultation with the HSE to facilitate assessment of potential risk to human health, and</li> <li>iii. that incidents are notified to the EPA without delay.</li> </ol> </li> <li>2. Submit the 2024 raw water monitoring programme results for the Lough Kinale source.</li> <li>3. Submit the routine operational monitoring programme for manganese outlining the location (raw, final water and network) and frequency of sampling.</li> <li>4. Ensure the Uisce Éireann Incident Communication Response Guidance Form displayed at the Smear WTP is updated and maintained to reflect staff currently associated with the WTP's operations and oversight.</li> <li>5. Put in place a procedure for:               <ol style="list-style-type: none"> <li>i. site-specific alarm response,</li> <li>ii. verification of alarms and plant inhibits following maintenance or other work on-site, and</li> <li>iii. ensure training is provided to all relevant staff on the procedures.</li> </ol> </li> <li>6. Put in place:               <ol style="list-style-type: none"> <li>i. a raw water monitoring programme for the Lough Kinale source,</li> <li>ii. a call out plan for repair of any monitoring equipment breakdown and set out action to be taken to protect water quality and public health in the interim, and</li> <li>iii. ensure monitors are labelled (e.g. CL002 and CL003 chlorine monitors).</li> </ol> </li> <li>7.               <ol style="list-style-type: none"> <li>i. Restore the combined filtered water turbidity monitor and the final water UVT monitor to operational status and ensure they are linked to a recording device and appropriately alarmed;</li> <li>ii. Review the alarm and inhibit settings (for example on the chlorine monitors and Effective Ct) to ensure critical treatment processes and water quality targets are protected and settings align with EPA Guidance (e.g. the <i>EPA Water Treatment Manual: Disinfection</i>), UÉ's Disinfection Specification, and statutory limits;</li> <li>iii. Provide the alarm settings and time delay for the chlorine monitors at the Clonnelly and Edenmore reservoirs.</li> </ol> </li> <li>8. Provide the timeframe for the upgrade or replacement of the bulk ferric aluminium sulphate tanks and its bund. Refer to EPA guidance document –“IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities” which sets out minimum requirements for these structures to protect the environment.</li> <li>9. Review the potential risk the wash water tank poses from the release of its contents to the environment and report the actions to be taken to prevent any risks identified.</li> <li>10. Reservoirs:               <ol style="list-style-type: none"> <li>i. Ensure that vents on all reservoirs at the WTP and in the network are appropriate and secured against ingress of animals or deliberate introduction of any contaminant or acts of vandalism,</li> <li>ii. Provide a timeframe by which the Edenmore Lower Cell 1 and Cell 2 reservoir within the supply will be cleaned and inspected.</li> </ol> </li> </ol> <p><b>Actions required by Uisce Éireann</b></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>		

