

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	Ardfinnan Regional
Organisation	Uisce Éireann
Scheme Code	2900PUB0102
County	Tipperary
Site Visit Reference No.	SV28199

Report Detail	
Issue Date	14/11/2023
Prepared By	Criona Doyle

Site Visit Detail			
Date Of Inspection	01/11/2023	Announced	Yes
Time In	10:30	Time Out	12:05
EPA Inspector(s)	Criona Doyle Paul Buckley		
Additional Visitors			
Company Personnel	Uisce Éireann: Denis McGrath Tipperary County Council (working in partnership with Uisce Éireann): Brid O'Hehir; Joe Burke; Eamonn O'Gorman; Cyril Ryan.		

> Summary of Key Findings

1. The audit found that the turbidity incident on 06/07/2023 had been appropriately responded to and escalated to protect public health.
2. Upgrade works are in progress at Ardfinnan Water Treatment Plant to improve the coagulation, filtration, disinfection and sludge treatment stages with an expected completion date of Q2 2025.

> Introduction

The Ardfinnan Regional Public Water Supply (PWS) serves a population of 11,364 and produces 5,037m³/d. Raw water is abstracted from 2 no. mountain streams. Treatment includes coagulation, dissolved air flotation, rapid gravity filtration, final pH correction, chlorination, fluoridation and sludge treatment.

The audit was undertaken to assess the performance of Uisce Éireann in providing clean and wholesome drinking following the turbidity incident on 06/07/2023 which resulted in the placing of a Boil Water Notice (BWN) on the supply from 07/07/2023 to 25/08/2023.

> Supply Zones Areas Inspected

The audit consisted of interviews with Uisce Éireann and Tipperary County Council staff and a review of the continuous online turbidity and chlorine residual trends. The treatment processes at the water treatment plant (WTP) were inspected.



1. Incident Management

	Answer
1.1 Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	Yes
Comment	
<p>The raw water quality deteriorated overnight on 06/07/2023 into the 07/07/2023 due to heavy rainfall. The automatic coagulant dosing system, based on the raw water colour bands, was not able to adequately treat the water. The combined filtered water turbidity at the clear water tank rose above the turbidity inhibit level of 0.3 NTU at 06:30 hours on 07/07/2023 and the plant automatically shutdown and ran to waste.</p> <p>There are warning alarm setpoints on the individual filters at 0.3 NTU. There are no turbidity inhibit setpoints to take an individual filter out of service or to automatically backwash a filter based on elevated turbidity. The plant was restarted at 08:45 hours on 07/07/2023 following a reduction in the turbidity < 0.3 NTU. The incident was escalated by Tipperary County Council to Uisce Éireann on 07/07/2023. A Boil Water Notice (BWN) was put in place at 4pm on 07/07/2023 following consultation with the HSE. The BWN remained in place until 25/08/2023. The criteria agreed for lifting of the BWN were the return of the plant to normal operation and monitoring results to include three clear <i>Cryptosporidium</i> results and compliant network monitoring results.</p>	



2. Filtration

2.1

Are the filters designed and managed in accordance with EPA guidance?

Answer

No

Comment

The filtration stage does not meet the requirements of the EPA Water Treatment Manual: Filtration.

- The filter media depth is reported to be approximately 600mm which is less than the 1m minimum depth.
- There is no run to waste or slow start after filter backwashing.
- Automatic backwashing of the filters takes place on a 24 hour timed basis or headloss whichever occurs first. Backwashing is not linked to the turbidity alarm setpoint.



3. Management and Control

	Answer	
3.1	Is the water treatment plant resilient enough to cope with significant variations in raw water quality or demand?	No
Comment		
<p>On the day of the audit the WTP was producing compliant water. The automatic coagulation process is controlled by the PLC based on the raw water colour bands. There is no shutdown linked to the raw water turbidity or colour monitor. There is a raw water turbidity alarm setpoint but the alarm setpoint could not be confirmed at the audit. The water treatment plant could not adequately treat the raw water experienced on a number of days in July 2023 in response to heavy rainfall events while the BWN remained in place. The existing PLC has no room for the addition of extra functions for the coagulation stage.</p> <p>The power supply to Ardfinnan WTP was described by Tipperary County Council as being subject to frequent power cuts which pose a risk to treatment processes and controls. There is no permanent standby generator on-site to support the treatment processes in the event of power cuts.</p>		

	Answer	
3.2	Is the plant suitably managed and controlled to maintain the designed log credit on each treatment stage?	No
Comment		
<p>There is no automatic shutdown of an individual filter or automatic backwashing of an individual filter in response to the turbidity alarm set point of 0.3 NTU (600 seconds delay).</p>		

	Answer	
3.3	Is there a documented alarm response procedure?	No
Comment		
<p>There is no documented alarm response procedure displayed on site for the response to turbidity alarms. The Uisce Éireann Incident Communications Response Guidance Form is not displayed on site.</p> <p>The documented chlorine alarm response procedure is displayed on site.</p>		

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

One of the audit recommendations from the previous audit undertaken on the 20/08/2021 relating to the filtration stage is ongoing and has been included in this audit report to track progress:

- Ensure that the filters are run to waste for an appropriate period of time or install a slow start when the filter is brought back into use after backwashing.

Uisce Éireann have indicated these works form part of the scope of works of the contract which is currently underway on site with a completion date of Q2 2025.

Recommendations

Subject	Ardfinnan Regional Audit	Due Date	14/12/2023
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. Provide details of the scope of works for the planned upgrade works currently taking place on site.2. (i) Examine the feasibility of installing automatic shutdown of the raw water intake linked to the turbidity or colour alarm to improve the resilience of the supply and (ii) confirm the current raw water turbidity alarm setpoint and time delay.3. Ensure (i) the Uisce Éireann Incident Communications Response Guidance Form is displayed on site (ii) all staff involved in the communications response are trained on the procedure and (iii) there is a documented procedure for responding to turbidity alarms.4. Ensure the filtration stage operates in accordance with the log credit approach as outlined in the <i>EPA Water Treatment Manual: Filtration</i> to include (i) installation of turbidity monitors with appropriate alarms and inhibits on each individual filter (ii) ensure the filter media depth meets the minimum depth requirements (iii) automatic backwashing is linked to turbidity alarm setpoint and (iv) ensure the filters run to waste for an appropriate period of time after backwashing or install a slow start following backwashing.5. Assess the feasibility of installing a permanent back up power supply at Ardfinnan Regional WTP. <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 14/12/2023 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>		