

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	Fethard Regional PWSS
Organisation	Uisce Éireann
Scheme Code	2900PUB0137
County	Tipperary
Site Visit Reference No.	SV29866

Report Detail	
Issue Date	27/02/2024
Prepared By	David O'Malley

Site Visit Detail			
Date Of Inspection	15/02/2024	Announced	Yes
Time In	10:20	Time Out	12:10
EPA Inspector(s)	Criona Doyle David O'Malley		
Additional Visitors			
Company Personnel	Uisce Éireann: Denis McGrath, Micheal Byrne. Glanua (in partnership with Uisce Éireann): Richard Quirke, David Flanagan, Michael Harte. Tipperary County Council (in partnership with Uisce Éireann): Joe Burke.		

> Summary of Key Findings

1. The audit that the inadequate disinfection incident on 24-25/12/23 had not been promptly identified or responded to in order to protect consumers.
2. There is no chlorine monitor in operation with alarm to verify that contact time has been achieved at the reservoir outlet.
3. The residual chlorine trends from the network are not being reviewed regularly and monitoring of network chlorine levels is not being undertaken at the required frequency due to staff resource issues.

> Introduction

The Fethard Public Water Supply (PWS) supplies an average of 5,400 m³/day of water, serving a population of approximately 8,000 people. This is not reflective of the volume and population supplied on the EPA EDEN system.

The source for the supply is from four sources: the Anner River, Gurtnapisha stream, Walshbog stream, Cloran springs and are all mixed together in two mixing chamber tanks located at the water treatment plant (WTP). Treatment at the plant consists of coagulation, flocculation, clarification (DAF), rapid gravity filtration, UV disinfection, pH correction, chlorination and fluoridation.

The audit was undertaken to assess Uisce Éireann's response to an inadequate disinfection incident on 25/12/23 and 26/12/23 and the follow up actions taken to prevent a reoccurrence.

> Supply Zones Areas Inspected

The audit consisted of a review of the incident response to the chlorination disinfection incident.



1. Incident Management

1.1

	Answer
Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	No
Comment	
<p>Incident:</p> <p>The water level in the reservoir at the Fethard WTP dropped overnight on 24-25/12/23 due to process issues. As a result no water was provided, via the sample line, to the chlorine analyser between 11:00 and 17:00 hours on 25/12/23. Automatic chlorine dosing is linked to the residual chlorine monitor. The chlorine dose rate was manually set by the DBO contractor to ensure chlorine dosing continued and cross checked using grab samples. There is UV treatment in place at the WTP, however this is verified to provide a <i>Cryptosporidium</i> barrier only. The UV unit operated within its validation range for the duration of the inadequate chlorine incident.</p> <p>Uisce Éireann (UÉ) suspect ammonia in the raw water may have increased the chlorine demand on 25/12/23 resulting in a decrease in the residual chlorine level in the final water leaving the reservoir. There is no residual chlorine monitor on the reservoir outlet to warn of low chlorine levels and therefore the issue was not identified by the DBO plant operators.</p> <p>Continuous monitoring of the residual chlorine level in the network is undertaken by Tipperary County Council (TCC) at Ballinard and Killenaule. The network caretaker (TCC) received low chlorine alarms on the morning of 26/12/23 from the Ballinard network chlorine monitor and a high alarm in the afternoon. The network caretaker checked the Ballinard pumpstation but observed no issue. The network caretaker had not been notified of the issue with the chlorine monitor at the WTP on the previous day. TCC could not confirm at the audit if monitoring of residual chlorine levels was undertaken in the network on 26/12/23 in response to the chlorine alarms. The DBO plant operator had no visibility of the trends or alarms at these locations as the network is managed by TCC. Residual chlorine trends provided for Ballinard and Killenaule in advance of the audit confirmed inadequate disinfection in the network with levels < 0.1 mg/l for a period of 8 to 10 hours on night of the 25 - 26/12/23. The levels recovered on 26/12/23.</p> <p>Three complaints were received on 26/12/23 from the public in relation to taste issues which UÉ investigated. No issues were identified at the time with the disinfection system. On 26/12/23 the DBO operator reported the issue with the chlorine monitor to UÉ and confirmed the plant had been operating satisfactorily on the basis of the grab samples and that the WTP had since returned to normal operation. The low chlorine levels in the network were not identified until the network chlorine trends were reviewed by TCC on 02/01/24. Due to staff shortages the network chlorine trends are not being regularly reviewed by TCC. UÉ stated at the audit that the HSE were consulted on 02/01/24 in relation to the incident. UÉ notified the EPA of the incident on the 04/01/24, 10 days after the incident took place.</p> <p>Conclusion:</p> <p>The audit found that the absence of a residual chlorine monitor on the outlet of the reservoir allowed inadequately disinfected water to be discharged to the network. The chlorination disinfection incident was not suitably escalated by plant operators in order to maintain water quality and protect public health. Improved communication between the DBO plant operator and the network operator should be implemented.</p> <p>Planned Works:</p> <p>In response to the incident UÉ plan to provide remote viewing of live trends of the residual chlorine levels in the network at Ballinard and Killenaule to operational staff responsible for both the network (TCC caretakers and supervisors) and WTP (DBO operational staff). UÉ have also instructed the DBO plant operator to immediately notify UÉ in the event a similar issue is encountered with the chlorine analyser at the WTP in the future. Disinfection upgrades are planned at the WTP but no date could be confirmed at the audit.</p>	



2. Disinfection

2.1

Is there a suitable monitoring frequency for residual chlorine in the network with records available?

Answer

No

Comment

1. Tipperary County Council indicated that monitoring is conducted once per week due to staff resource issues.



3. Alarms, Inhibits & Oversight Audits 2024

	Answer
3.1 Is there a documented site specific incident response and incident escalation process?	No
Comment	
1. The Uisce Éireann incident response and incident escalation guidance form was not displayed at the facility.	

	Answer
3.2 Did staff confirm they have received training on the site specific incident response and incident escalation process?	No
Comment	
1. The DBO contactor stated staff are due to undergo the Uisce Éireann training on the site specific incident response and incident escalation procedure. The DBO contractor had provided training to staff on incident response.	

	Answer
3.3 Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No
Comment	
1. There is no residual chlorine monitor with alarm located at the outlet of the reservoirs to verify contact time.	

	Answer
3.4 Is suitable continuous monitoring in place to verify treatment performance?	No
Comment	
1. The sampling point of the residual chlorine monitor in the reservoir is not at a sufficient depth to ensure continuous monitoring of residual chlorine when the water level in the reservoir drops.	

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

1. There is no residual chlorine monitor, with suitable alarms and inhibits, after contact time to ensure inadequately disinfected water is not discharged to the network.

		Answer
3.6	Are plant performance trends accessible by operational staff at the water treatment plant?	No
Comment		
1. The residual chlorine trends from the networking monitoring at Ballinard and Killenaule were not accessible to the DBO operational staff at the WTP.		

		Answer
3.7	Is there appropriate oversight of plant performance trends?	No
Comment		
1. Tipperary County Council confirmed that due to staff resource issues the regular review of the network chlorine trends at Ballinard and Killenaule is not being undertaken at present.		

Recommendations

Subject	Audit Recommendations	Due Date	27/03/2024
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. Ensure (i) the Uisce Éireann Incident Communications Response Guidance Form is displayed on site and (ii) all staff involved in the communications response are trained on the procedure.2. Install a continuous online chlorine monitor with alarm to verify contact time.3. Ensure that (i) trended performance data is available to operational and supervisory staff at the plant including the network residual chlorine trends and (ii) there are robust systems of reviews and checks on the water treatment plant performance data and network residual chlorine trends which should include regular review of SCADA trends by operational and supervisory staff.4. Review the location of the sample point for the residual chlorine monitor to prevent a reoccurrence of the sampling issues in the event of a low water level in the reservoir.5. Provide details of the low and high residual chlorine alarm setpoints in the network at Ballinard and Killenaule.6. Ensure that monitoring of residual chlorine is undertaken several times a week at different points of the network to include network extremities, and that records of the monitoring results are maintained, ensuring chlorine is > 0.1 mg/L in the network.7. Update EDEN with the correct volume supplied and population served figures for the supply. <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 27/03/23 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>		