

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	Midleton
Organisation	Uisce Éireann
Scheme Code	0500PUB2406
County	Cork
Site Visit Reference No.	SV29540

Report Detail	
Issue Date	19/03/2024
Prepared By	Paul Buckley

Site Visit Detail			
Date Of Inspection	06/03/2024	Announced	No
Time In	13:00	Time Out	14:45
EPA Inspector(s)	Paul Buckley Regina Campbell		
Additional Visitors			
Company Personnel	Uisce Éireann: Claire Hurley, Cormac Bergin Cork County Council (working in partnership with Uisce Éireann): Pdraig Griffin, Eimer O'Riordan, Billy Horgan, Pauline McAree.		

> Summary of Key Findings

1. There are no high turbidity alarms or shutdowns associated with the individual filters or the final water at the Midleton water treatment plant and these are required to verify the protozoal barrier and to prevent the entry of inadequately treated water into the supply. *Cryptosporidium* monitoring is ongoing within the supply and there have been no detections to date.
2. There is no residual chlorine monitor located after contact time to verify that contact time has been achieved.
3. The filters at the water treatment plant are not designed or operated in accordance with the guidance provided in the *EPA Water Treatment Manual: Filtration*.

> Introduction

The Midleton Public Water Supply (PWS) supplies an average of 2,760 m³/day of water, serving a population of 8,173 people.

The source of the supply is the Owenacurra River. Treatment consists of coagulation, flocculation, rapid gravity filtration and chlorination.

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

> Supply Zones Areas Inspected

The raw water intake, coagulant injection point, clarifier tanks, rapid gravity filters and the chlorine dosing system at the water treatment plant were inspected.



1. Protozoal Barriers Audits 2024

	Answer	
1.1	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No
Comment		
1. There is no chlorine residual monitor located after contact time for verification of primary disinfection. There is a chlorine monitor located after the dosing point.		

	Answer	
1.2	Are the filters designed and managed in accordance with EPA guidance?	No
Comment		
1. The filter media depth for the 3 no. individual filters at the plant was confirmed to be 700 mm which is below the recommended minimum depth of 1000 mm as per the <i>EPA Water Treatment Manual; Filtration</i> .		
2. There are no filter media depth gauges in place for the individual filters.		
3. There are no automatic backwash facilities based on turbidity, headloss, or time, in place. Filter backwashing is triggered manually at the plant and each filter is routinely backwashed every third day, or more frequently as required.		

	Answer	
1.3	Are there suitable plant controls to prevent inadequately treated water entering the distribution network?	No
Comment		
1. There are no automatic backwash triggers for the individual filters. Filter backwashing is triggered manually at the plant and each filter is routinely backwashed every third day, or more frequently as required.		
2. There are no alarms and shutdowns associated with the turbidity monitors for the individual filters or the final water.		
3. The following alarm and shutdown setpoints are in place at the water treatment plant for residual chlorine:		
<ul style="list-style-type: none">• low chlorine alarm: 0.3 mg/L;• low chlorine shutdown: 0.3 mg/L;• high chlorine alarm: 2.5 mg/L, and• high chlorine shutdown: 2.5 mg/L		
Whilst a chlorine residual in excess of 0.1mg/l is being maintained in the network, the low chlorine alarm setpoints are well below the target final water chlorine residual concentration leaving the WTP. In addition, the time delays associated with the alarms and shutdowns are not in line with the timeframe of 5 minutes recommended in the <i>EPA Water Treatment Manual: Disinfection</i> .		

		Answer
1.4	Were treatment processes designed to protect the protozoal barriers operational during the audit?	No
	Comment	
	<p>1. There are no alarms and shutdowns associated with turbidity in place for the individual filters or final water at the water treatment plant.</p> <p>2. There are no automatic backwashing facilities in place at the water treatment plant. Filter backwashing is triggered manually at the plant and each filter is routinely backwashed every third day, or more frequently as required.</p>	

		Answer
1.5	Are alarms and shutdowns on each filter, on the combined filtered water and final water in accordance with the EPA Filtration Manual?	No
	Comment	
	<p>1. There are no alarms and shutdowns associated with turbidity in place for the individual filters or final water at the water treatment plant.</p> <p>2. Cryptosporidium sampling is currently undertaken once per month in the supply.</p>	

		Answer
1.6	Are relevant alarms dialled out to allow a timely response by operational staff?	No
	Comment	
	<p>1. There are no alarms and shutdowns associated with turbidity in place for the individual filters or final water at the water treatment plant.</p>	

Recommendations

Subject	Midleton Audit Recommendations 06/03/2024	Due Date	19/04/2024
Action Text	<p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendation(s) without delay.</p> <ol style="list-style-type: none">1. i) Implement turbidity alarms and shutdowns to ensure that the plant operates in accordance with the turbidity log performance criteria as outlined in the <i>EPA Water Treatment Manual: Filtration</i> to demonstrate that there is an effective protozoal barrier at the plant, and ii) Inform the HSE that the protozoal barrier cannot be verified due to the absence of the required turbidity alarms and shutdowns on the rapid gravity filters and the final water.2. Install a continuous chlorine residual monitor after contact time to verify contact time is achieved.3. i) Assess the feasibility of increasing the filter media depth in the filters to meet the recommended minimum of 1m operating depth; ii) install filter media depth gauges on the 3 no. individual filters at the water treatment plant; iii) install automatic backwashing of the 3 no. individual filters based on turbidity, headloss, and time; and iv) ensure that a filter logbook is maintained containing the following information: a) records of completed backwashes, b) records of alarms triggered and shutdown events, c) records of all maintenance and inspections carried out on the filters, and d) details of the media replacement.4. Continue to monitor for <i>Cryptosporidium</i> as per the Uisce Éireann Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water Supplies until the required alarms and inhibits have been put in place at the water treatment plant.5. Ensure the low chlorine alarm and shutdown setpoints are set at an appropriate level to ensure that the target residual chlorine concentration in the final water leaving the plant is met. <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 19/04/2024 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>		