

Site Visit Report

Under the *European Union (Drinking Water) Regulations 2014* as amended, 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	Tallow
Organisation	Uisce Éireann
Scheme Code	3100PUB1095
County	Waterford
Site Visit Reference No.	SV27570

Report Detail	
Issue Date	23/03/2023
Prepared By	Regina Campbell

Site Visit Detail			
Date Of Inspection	09/03/2023	Announced	Yes
Time In	11:10	Time Out	12:50
EPA Inspector(s)	Regina Campbell Noel Byrne, Patrick Chan		
Additional Visitors			
Company Personnel	Uisce Éireann: Ronan Walsh, Siobhan Clifford Waterford City and County Council (working in partnership with Uisce Éireann): Dave Whelan, Ciaran Burke, Liam Buckley		

> Summary of Key Findings

1. The protozoal barrier on the slow sand filters at Tallow Water Treatment Plant is not fully protected by suitable alarms and inhibits as set out in the EPA Water Treatment Manual: Filtration in order to verify the protozoal barrier and to prevent the entry of inadequately treated water into the supply.
2. Uisce Éireann were unable to confirm the protozoal log treatment requirement for the Tallow Water Treatment Plant. There is no monitoring for *Cryptosporidium*, in line with Uisce Éireann's Rationale for Determining the Frequency of *Cryptosporidium* Monitoring in Public Water Supplies, currently taking place in the supply.
3. There are no automatic shutdowns linked to low chlorine levels or high turbidity levels in the final water in order to prevent inadequately treated water entering the supply.

> Introduction

The Tallow Public Water Supply (PWS) serves a population of 1,100 and produces between 250 to 350 m³/day depending on demand. Raw water is sourced from 2 no. boreholes and the Kilbeg River (the latter is treated by slow sand filtration).

One borehole is located at the reservoir site with the 2nd borehole located at the slow sand filtration site which is located about 3.5km from the reservoir site. Each borehole produces approximately 150 m³/day with the remainder of demand sourced from the slow sand filters. According to Waterford City and County Council (WCCC) the slow sand filters are only used if extra water is needed such as when yields drop in the boreholes or if there is high demand on the network due to leaks. The filters are run to waste if not required for the supply.

The filtered water and borehole water are combined and then pumped by gravity to the reservoir site and further combined with water from the reservoir borehole prior to chlorination. The treated water is then fed to the on-site reservoir.

The focus of the audit was on protozoal barriers at the plant.

> Supply Zones Areas Inspected

The audit consisted of an inspection of the slow sand filters, boreholes and chlorination.



1. Management and Control

	Answer
1.1	Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process? Comment 1. The low-low chlorine alarm on chlorine monitors CL001 and CL002 is set at 0.3 mg/l and at its current level is too low to alert the operator to any chlorination issues in a timely manner and to ensure that the target chlorine contact time is maintained at all times. 2. There is no continuous turbidity monitor with alarm on the borehole at the slow sand filter plant to alert the operator to deteriorating water quality from the borehole prior to blending with filtered water. There is automatic shutdown based on turbidity on the reservoir borehole.



2. Protozoal Barriers Audits 2023

	Answer	
2.1	Has UÉ identified the protozoal compliance log treatment requirement for the water treatment plant?	No
Comment		
Uisce Éireann has not identified the protozoal compliance log treatment requirement for the water treatment plant.		

	Answer	
2.2	Did UÉ confirm whether <i>Cryptosporidium</i> monitoring under the Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water Supplies is being carried out?	No
Comment		
<i>Cryptosporidium</i> monitoring has not been carried out at the plant. Uisce Éireann said it would commence monitoring following the audit.		

	Answer	
2.3	Are the filters designed and managed in accordance with EPA guidance?	No
Comment		
<p>Waterford City and County Council (WCCC) staff explained that most of the time the slow sand filters are running to waste and are only used for supply if yields drop from the boreholes or if there is a large demand on the supply. Some years the filters have only been used for days or weeks and other years they have run for several months.</p> <p>Uisce Éireann said that the long - term plan is to decommission the filters but currently they are required as back up supply. A number of deficiencies in the operation and management of the filters were noted including the following:</p> <ol style="list-style-type: none">1. The current depth of the media in the 2 no. slow sand filters could not be confirmed. WCCC said that the media was replaced around 2012. There is no media depth gauge at the filters.2. There is no continuous turbidity monitor on the feed water. WCCC said a monitor had been purchased but had not been put into operation yet.3. There is no continuous turbidity monitor with alarm on each filter or on the combined filtered water.4. There is no continuous headloss or water level monitor on each filter.		

	Answer	
2.4	Does continuous turbidity monitoring indicate that the filters are operating effectively?	No

Comment

There are no turbidity monitors on each filter so it could not be determined if the filters are operating effectively on the day of the audit.

Answer

2.5 Are there suitable plant controls to prevent inadequately treated water entering the distribution network?

No

Comment

There is no automatic shutdown based on high or low levels of chlorine in the final water or on high levels of turbidity in the final water.

Operational staff respond to alarms and will manually shut down the plant if required.

Answer

2.6 Are alarms and shutdowns on each filter, on the combined filtered water and final water in accordance with the EPA Filtration Manual?

No

Comment

There are no alarms or shutdowns on each filter or on the combined filtered water in accordance with with the EPA Filtration Manual.



3. Site Specific Issues

		Answer
3.1	Are site details on EDEN correct?	No
Comment		
EDEN does not list the correct number of sources or the correct treatment types in operation at the plant.		

		Answer
3.2	Are monitors displaying accurate readings?	No
Comment		
<p>1. The nitrate monitor on the combined blended supply was displaying 0.0 mg/l at the audit but the reading on the HMI was about 12 mg/l which indicates that there is an issue with the monitor.</p> <p>2. The pH monitor for the combined filtered water and boreholes prior to chlorination was reading 6.18 at the audit which is below the pH parametric value of 6.5. Uisce Éireann subsequently submitted pH monitoring results for locations in the network for the last number of years which showed compliance with the pH parametric value in the supply. This indicates that the pH monitor at the plant may be inaccurate.</p> <p>3. A number of monitors were not clearly labeled. It was not clear to the EPA inspectors what they were monitoring.</p>		

Recommendations

Subject	Tallow Audit Recommendations	Due Date	23/04/2023
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. a) Confirm the protozoal log treatment requirement for the plant b) Identify how the log treatment deficit will be addressed and c) Monitor the supply in accordance with the <i>Irish Water Rationale for monitoring Cryptosporidium in Public Water Supplies</i>. 2. Inform the HSE that the protozoal barrier cannot be verified due to the absence of the required monitors and alarms on the slow sand filters. 3. a) Install turbidity monitors with appropriate alarms and inhibits on each filter and on the combined filtered water to verify that the plant operates in accordance with the log credit approach as set out in the EPA Filtration Manual and b) Install automatic shutdown for turbidity in the final water to protect the regulatory limit. 4. a) Install a turbidity monitor on the slow sand filter feed water b) Confirm the depth of the media in each slow sand filter c) Install a filter media depth gauge and d) Install a continuous monitor for water levels and headloss for each filter 5. a) Raise the low - low chlorine alarm on chlorine monitors CL001 and CL002 to ensure that the operator is alerted to any chlorine dosing issues in a timely manner and b) Install shutdown of the plant based on high and low chlorine levels in the final water. 6. Install a continuous turbidity monitor with alarm and inhibit on the borehole next to the slow sand filters. 7. a) Confirm that the nitrate and pH monitors are displaying accurate readings and b) Label all monitors to indicate what each monitor is measuring. 8. Update EDEN with the correct sources and treatment in place on this 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 23/04/23 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>		