

# 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	
<b>Name of Installation</b>	Mooncoin Regional PWS
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	1500PUB1012
<b>County</b>	Kilkenny
<b>Site Visit Reference No.</b>	SV27428

Report Detail	
<b>Issue Date</b>	01/03/2023
<b>Prepared By</b>	Orla Harrington

Site Visit Detail			
<b>Date Of Inspection</b>	02/02/2023	<b>Announced</b>	Yes
<b>Time In</b>	10:30	<b>Time Out</b>	11:55
<b>EPA Inspector(s)</b>	Orla Harrington		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Samantha Keane, Pat Duggan, Ornaith Hanna Kilkenny County Council (working in partnership with Uisce Éireann): David O'Brien, Kevin Hogan, Eddie Doyle, PJ Alyward, David McCardle.		

## > Summary of Key Findings

1. The audit found that Mooncoin Water Treatment Plant was operating satisfactorily on the day of the audit.
2. Alarms and inhibits on each filter and combined filtered water are required in accordance with the turbidity performance criteria as set out in the EPA Water Treatment Manual: Filtration to verify the *Cryptosporidium* barrier.

## > Introduction

The Mooncoin Public Water Supply (PWS) serves a population of 5,866 and produces 2,700 m<sup>3</sup>/day. Raw water is gravity fed from the Pollanasa River, located approximately 4km from the water treatment plant (WTP). Treatment consists of coagulation, flocculation and clarification, rapid gravity filtration, chlorination and fluoridation.

This audit focussed on the operation and management of the rapid gravity filters that provide a barrier for *Cryptosporidium* to verify that the installed treatment barrier is satisfactory.

## > Supply Zones Areas Inspected

The audit assessed the rapid gravity filtration system at the Mooncoin WTP.



## 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? <b>Comment</b> 1. Chlorination alarms are as follows: a) low: 0.60 mg/l; b) low low 0.45 mg/l; c) high 1.80 mg/l; and d) high high: 2.00 mg/l. According to the 2023 chlorine contact time calculation, a minimum chlorine residual of 1.6 mg/l is required for adequate disinfection. The alarm settings should be revised having regard to the requirements of the contact time calculations, to ensure that the disinfection process is protected. 2. Uisce Éireann and Kilkenny County Council did not confirm if there is a shutdown at the plant based on low low and high high residual chlorine but advised that when the alarm triggers there is a shutdown on production at the plant. However flow does continue to enter the distribution network. This set-up presents a risk of undisinfecting water being supplied to consumers.



## 2. Protozoal Barriers Audits 2023

	Answer	
2.1	Is there a documented site specific incident response and incident escalation process?	No
<b>Comment</b>		
A copy of the Uisce Éireann Water Incident Communication Guidance Response Form was not on display in the operations room at the Mooncoin WTP.		

	Answer	
2.2	Are the filters designed and managed in accordance with EPA guidance?	No
<b>Comment</b>		
<p>1. There are four rapid gravity filters in place at Mooncoin water treatment plant. Two filters were refurbished in 2017 and a further two in 2020. Kilkenny County Council advised that the filter media (sand) depth is approximately 700mm which is less than the minimum depth of 1000 mm recommended in the EPA Water Treatment Manual: Filtration. There are no marker posts installed in the filters to assist with monitoring of the depth of filter media present.</p> <p>2. A turbidity monitor is in place on each individual filter with an alarm setpoint of 0.15 NTU (10 minutes delay) on each filter. When it reaches 0.15 NTU a text alert is sent to three people on a cascade system to investigate. A turbidity setpoint of 0.35 NTU (delay 30 minutes) on the filters triggers a backwash. This level is above the EPA recommended filter turbidity performance criteria of 0.3 NTU to demonstrate and verify an effective <i>Cryptosporidium</i> barrier. Kilkenny County Council advised that backwash is normally automatically triggered on a timed basis every third day as turbidity never reaches 0.35 NTU. There is a six minute run to waste after the backwash, before the filter is brought back into service. A backwash on Filter no 2 was observed during the audit and some dead spots were noted. This may indicate a blockage in the air distribution system. During the audit, the individual filters were displaying turbidity between 0.02 NTU and 0.06 NTU.</p> <p>3. There is no turbidity monitor with alarm on the combined filtered water to verify the protozoal barrier.</p> <p>4. A plant shutdown for final water turbidity of 1 NTU for 3 minutes is in place. Final filtered water was 0.04 NTU on the day of the audit.</p>		

## Recommendations

<b>Subject</b>	Mooncoin PWS - Audit Recommendations	<b>Due Date</b>	03/04/2023
<b>Action Text</b>	<p><b>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendation(s) without delay.</b></p> <ol style="list-style-type: none"><li>1. Review and implement turbidity alarms and shutdowns to ensure that the plant operates in accordance with the turbidity log performance criteria as outlined in the EPA Water Treatment Manual: Filtration to demonstrate that there is an effective protozoal barrier at the plant.</li><li>2. Filtration: (i) ensure that the air/water backwash is even across each filter and that air nozzles are fully functional and not blocked or damaged; (ii) install a continuous turbidity monitor with alarm on the combined filtered water; (iii) assess the feasibility of increasing the filter media depth in the filters to meet the recommended minimum of 1m operating depth; (iv) install a filter media depth gauge.</li><li>3. Install an appropriate low alarm setpoint at the outlet from the reservoir to verify that chlorine contact time is being maintained at all times.</li><li>4. Ensure that a copy of the incident response procedure and contact list are displayed at the treatment plant.</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 03/04/2023 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>		