

# 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	
<b>Name of Installation</b>	Camp PWS 020D
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	1300PUB1024
<b>County</b>	Kerry
<b>Site Visit Reference No.</b>	SV28210

Report Detail	
<b>Issue Date</b>	23/10/2023
<b>Prepared By</b>	Regina Campbell

Site Visit Detail			
<b>Date Of Inspection</b>	04/10/2023	<b>Announced</b>	Yes
<b>Time In</b>	14:00	<b>Time Out</b>	15:45
<b>EPA Inspector(s)</b>	Regina Campbell David O'Malley		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Tommy Roche Kerry County Council (working in partnership with Uisce Éireann): Brendan Hannafin, Seamus King, Seamus O'Mahony, Brian Lennon, John O' Donnell		

## > Summary of Key Findings

1. Appropriate shutdowns should be installed at both the Camp Upper and Camp Lower water treatment plants in order to prevent inadequately treated water entering the distribution network.
2. There is no continuous turbidity monitoring of the Camp Lower borehole.

## > Introduction

The Camp Public Water Supply serves a population of 870 and produces 495 m<sup>3</sup>/day. There are two water treatment plants that serve the supply as follows:

i) Camp Upper (main water treatment plant): the main source is the Curracullenagh River which is supplemented in dry weather by the nearby Curracullenagh stream. There is also a small borehole source at the plant that is used very occasionally in dry weather or if there is a burst on the water main. The river was the main source on the day of the audit. Camp Upper operates at 25 m<sup>3</sup>/hr for 16-24 hours a day depending on demand. Treatment at this plant is pH adjustment, coagulation, Dissolved Air Flotation and Filtration (DAFF), primary disinfection by UV, chlorination and final pH correction.

ii) Camp Lower: the source is a borehole which produce 29 m<sup>3</sup>/hr for approximately 12 hours a day. Treatment at this plant is chlorination only.

Camp Upper supplies some customers prior to storage in the reservoir at Camp Lower which is where the lower borehole mixes with the supply.

The focus of the audit was on the operation and management of protozoal barriers for the supply.

## > Supply Zones Areas Inspected

The main water treatment processes were inspected at each plant.



## 1. Source Protection

	Answer
1.1 Is the abstraction source(s) adequately protected against contamination?	No
<b>Comment</b>	
<p>The Camp Lower borehole is located on a grassy verge at the side of a road. The borehole is located in a padlocked covered below ground chamber but is not fenced off.</p> <p>The borehole is not capped.</p>	



## 2. Protozoal Barriers Audits 2023

	Answer
2.1	Is there a documented site specific incident response and incident escalation process? No
<b>Comment</b>	
There was no documented site specific incident response and incident escalation process displayed at the water treatment plants.	

	Answer
2.2	Has UÉ identified the protozoal compliance log treatment requirement for the water treatment plant? No
<b>Comment</b>	
Uisce Éireann said that the preliminary protozoal compliance log treatment requirement for Camp PWS has been calculated as 3 log. A sanitary survey and peer review remains to be carried out. It was unclear at the audit if the Camp Lower Borehole had been included in the assessment.	

	Answer
2.3	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
<b>Comment</b>	
<i>Cryptosporidium</i> monitoring is not undertaken at Camp Upper WTP as UV provides primary disinfection. Occasional <i>Cryptosporidium</i> monitoring has been undertaken at Camp Lower reservoir over the years but there have been no exceedances to date.	

	Answer
2.4	Are the filters designed and managed in accordance with EPA guidance? No
<b>Comment</b>	
The purpose of the DAFF unit is to reduce organics and turbidity prior to primary disinfection by UV. Kerry County Council said that the DAFF was installed in 2013 and there was no record of the media depth and condition having been assessed or replaced since it was installed. Backwashing takes place every 24 hours or based on headloss. Backwash is not triggered by high turbidity. There is a slow start after backwash and no run to waste facilities.	

	<b>Answer</b>
<b>2.5</b>	Does continuous turbidity monitoring indicate that the filters are operating effectively?
	No
<b>Comment</b>	
<p>The turbidity monitor is located at the inlet to the reservoir which is after DAFF and UV treatment. An additional turbidity monitor should be located after the DAFF and prior to the UV unit in order to verify the performance of the DAFF and UV unit.</p> <p>Some spikes were also evident in the turbidity trends viewed and these were attributed by Kerry County Council to sample line issues when reservoir levels are low.</p>	

	<b>Answer</b>
<b>2.6</b>	Are service due/ instrument calibration for the UV units within date?
	No
<b>Comment</b>	
<p>The service calibration stickers for the UV units were out of date.</p>	

	<b>Answer</b>
<b>2.7</b>	Are there suitable plant controls to prevent inadequately treated water entering the distribution network?
	No
<b>Comment</b>	
<p><u>Camp Upper WTP:</u></p> <p>There are no shutdowns based on the UV unit validated operating criteria, on high or low chlorine or on high turbidity in order to prevent inadequately treated water entering the network.</p> <p><u>Camp Lower borehole and reservoir:</u></p> <p>There are no shutdowns based on high or low chlorine or based on high turbidity in order to prevent inadequately treated water entering the network.</p>	

	<b>Answer</b>
<b>2.8</b>	Are alarms and shutdowns appropriately set on the UV disinfection system?
	No
<b>Comment</b>	
<p>There are no shutdowns on the UV disinfection system in order to prevent the the UV unit operating outside of its validated range.</p>	



### 3. Site Specific Issues

	Answer
3.1 Is monitoring undertaken of the supernatant discharged to surface water?	No
<b>Comment</b>	
Kerry County Council said that backwash water is settled with sludge tankered off site and clear supernatant discharged to surface water. There is no monitoring programme in place of the discharge or of the receiving waters.	

## Recommendations

Subject	Camp Audit Recommendations 2023	Due Date	23/11/2023
Action Text	<p><b>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</b></p> <ol style="list-style-type: none"> <li>1. a) Confirm the protozoal log treatment requirement for Camp Upper and Camp Lower water treatment plants and submit details of how any log treatment deficit will be addressed and b) Commence monitoring of the Camp Lower reservoir borehole in accordance with Uisce Éireann's Rationale for Determining the Frequency of <i>Cryptosporidium</i> Monitoring in Public Water Supplies.</li> <li>2. Undertake a) an assessment of the condition and depth of the DAFF filter media and undertake any works required and b) investigate the feasibility of installing backwash of the DAFF based on high turbidity.</li> <li>3. a) Install a turbidity monitor with appropriate alarms and shutdowns prior to the UV unit and b) Move the location of the turbidity monitor at Camp Upper reservoir so the sample line is not affected by low reservoir readings.</li> <li>4. Install appropriate shutdowns for a) the UV system, b) based on high turbidity and c) based on high and low chlorine levels to ensure that inadequately treated water does not enter the distribution network from the Camp Upper water treatment plant.</li> <li>5. Install a) a turbidity monitor with suitable alarms and shutdowns and b) shutdown based on high and low chlorine levels at Camp Lower water treatment plant.</li> <li>6. Ensure that the UV units are regularly serviced and calibrated in accordance with the manufacturer's instructions.</li> <li>7. Ensure that the Camp Lower borehole is a) lined and sealed in accordance with EPA Advice Note No. 14 Borehole Construction and Wellhead Protection and b) fenced off.</li> <li>8. Display a site specific incident response and incident escalation procedure at both water treatment plants with site specific contact details and trigger levels.</li> <li>9. Commence a monitoring programme of the supernatant discharge from the plant and of the receiving waters.</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 23/11/23 check 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>		