

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	Graigcullen PWS
Organisation	Uisce Éireann
Scheme Code	1600PUB1066
County	Laois
Site Visit Reference No.	SV28301

Report Detail	
Issue Date	14/12/2023
Prepared By	David O'Malley

Site Visit Detail			
Date Of Inspection	06/11/2023	Announced	Yes
Time In	10:30	Time Out	13:15
EPA Inspector(s)	Derval Devaney David O'Malley		
Additional Visitors			
Company Personnel	UÉ: Joe Moran, Bláthnaid Cox. Laois (working in partnership with UÉ): Conor Ryle, Brendan Garry, John McCourt, Mick Fitzgerald and Tom O'Carroll.		

> Summary of Key Findings

1. Raw water monitoring is not being carried out at the source to determine if current treatment is adequate and a sanitary survey has not been carried out for the groundwater source to determine the protozoal log treatment requirement.
2. The audit found there was no turbidity monitors with appropriate alarm settings and inhibits on each pressure filter and the final treated water.
3. The alarm settings on critical equipment varied and were not uniform across the site.

> Introduction

The Graigcullen Public Water Supply (PWS) supplies an average of 1202 m³/day of water, serving a population of 4,628. The source for the supply is a borehole and treatment consists of manganese and iron removal, 2 pressure filters and chlorination dosing.

The audit was undertaken to assess Uisce Éireann's (UÉ) performance in producing clean and wholesome water with a focus on the alarms and inhibits in place at the water treatment plant (WTP) and the procedures in place to ensure appropriate oversight of treatment processes.

> Supply Zones Areas Inspected

Borehole No.1, 2 pressure filters, chlorination dosing system and pumps at WTP were inspected.



1. Treatment Process Chemicals

	Answer
1.1 Are treatment process chemicals appropriately managed and stored?	No
Comment	
1. There were 3 drums of sodium hypochlorite stored unbanded in the chemical store room.	



2. Management and Control

	Answer
2.1 Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No
Comment	
<p>1. UÉ confirmed that the sanitary survey has not been completed and that the protozoal compliance log treatment requirement has not yet been determined for this WTP.</p> <p>2. UÉ also stated that there is currently no operational raw water monitoring being carried out on the source.</p>	



3. Alarms, Inhibits & Oversight Audits 2023

	Answer
3.1	Is suitable continuous monitoring in place to verify treatment performance? No
Comment	
<p>1. There is no turbidity monitor after each pressure filter to verify the effectiveness of each pressure filter and to determine when to backwash.</p> <p>2. There is no turbidity monitor on the final treated water.</p> <p>3. The level of media in the pressure filters was unknown and its effectiveness in removing iron and manganese.</p>	

	Answer
3.2	Were online monitors within their calibration dates? No
Comment	
<p>1. Not all online monitors and pumps displayed the calibration date. For example BH2 turbidity monitor was illustrating a flat line on SCADA since 08/11/2023 which suggests it may need to be re-calibrated and the chlorine monitor CL001 and associated pumps had no calibration stickers to indicated when they were last calibrated and when the next calibration was due.</p>	

	Answer
3.3	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process? No
Comment	
<p>1. Upgrades to works are taking place at the WTP. A review of the alarm and inhibit settings is required to ensure uniformity across the WTP and relevant to the treatment processes. For example the the chlorine alarm time delay should be reduced to 5 minutes in line with the <i>EPA's Water Treatment Manual: Disinfection</i>. The procedure should document the corrective actions required and set out delegation of responsibilities for operational, relief staff and management in the acknowledgement and oversight of alarm response.</p>	

	Answer
3.4	Were all findings of the UÉ alarm and inhibit review implemented? No
Comment	
<p>1. Uisce Éireann stated they carried out an Alarm and Inhibit Review, but the recommendations have not yet been implemented.</p>	

3.5

Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?

Answer

No

Comment

1. There are currently no turbidity inhibits in place at the WTP.

Recommendations

Subject	Audit Recommendations	Due Date	23/01/2024
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. Put in place a raw water monitoring programme for the Graigecullen PWS source (to include but not be limited to turbidity, iron, manganese and microbiological parameters); 2. Provide (i) the protozoal log treatment requirement for the groundwater source following completion of a sanitary survey; (ii) details on how a protozoal log deficit, if identified, will be addressed and (iii) ensure <i>Cryptosporidium</i> monitoring is undertaken as per "<i>Uisce Éireann's Rationale for Determining the Frequency Cryptosporidium Monitoring in Public Supplies</i>" where a protozoal log deficit is identified, until such time as it is addressed. 3. Install turbidity monitors with appropriate alarm settings and inhibits on each pressure filter and the final treated water. 4. Review the alarm and inhibit settings at the water treatment plant to ensure they are (i) uniform across the site and (ii) relevant to the treatment processes (for example reduce the chlorine alarm time delay to 5 minutes in line with the "<i>EPA's Water Treatment Manual: Disinfection</i>" and ensure the contact alarm is site specific i.e 25.74 mg.min/l. Ensure operational staff are briefed on amendments to the alarm and inhibit settings. 5. Ensure all plant monitors and pumps are calibrated in accordance with manufacturers instructions, and clearly labelled to show the date of calibration and the next 'calibration due by' date. This includes calibration of BH2 turbidity monitor and critical equipment used to control the disinfection process. 6. Carry out a survey of the filter and filter media to ensure it fit for purpose and effectively reducing iron and manganese concentrations in the final water. 7. Provide a suitable bund, capable of containing at least 110% of the volume of chemicals stored therein, for chemicals such as the drums of sodium hypochlorite chemicals stored onsite. <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 23/01/2024 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>		