

# 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>	Swan PWS
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	1600PUB1010
<b>County</b>	Laois
<b>Site Visit Reference No.</b>	SV28302

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

Site Visit Detail			
<b>Date Of Inspection</b>	06/11/2023	<b>Announced</b>	Yes
<b>Time In</b>	14:45	<b>Time Out</b>	16:30
<b>EPA Inspector(s)</b>	David O'Malley Derval Devaney		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Joseph Moran, Blathnaid Cox, EPS: David Logue, Tom Hickey & Luisa Andrade		

## > 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. There is no chlorine injection point post filtration, to improve control on the disinfection process and to ensure adequate disinfection is being achieved.
3. The audit found that there was no turbidity monitors on the raw water or the pressure filter. There was no chlorine monitor with appropriate alarm settings on the outlet of the reservoir to ensure the disinfection process can be validated after contact time has elapsed.
4. There are no plant inhibits installed on critical control parameters at the plant.

## > Introduction

The Swan Public Water Supply (PWS) supplies an average of 542 m<sup>3</sup>/day of water, serving a population of 1,471. The source for the supply is a borehole and treatment consists of manganese and iron removal, a pressure filter 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

The borehole, supernatant tank, Culligan filter, chlorination dosing system and pumps at WTP were inspected. The reservoir is off site and is managed by Laois County Council and was not inspected as part of the audit.



## 1. Management and Control

	Answer
1.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant? <b>Comment</b> 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. 2. UÉ also stated that there is currently no operational raw water monitoring being carried out on the source.



## 2. Alarms, Inhibits & Oversight Audits 2023

	Answer	
2.1	Is there a documented site specific incident response and incident escalation process?	No
<b>Comment</b>		
1. The Water Incident Communication Response Chart displayed at the site requires updating, a complete list of staff were not listed. EPS operates the WTP under a DBO contract with UÉ.		

	Answer	
2.2	Did staff confirm they have received training on the site specific incident response and incident escalation process?	Yes
<b>Comment</b>		
1. EPS stated a new Win 911 software system for incident response and escalation process will be installed in 2024. Training will be required to all applicable staff members.		

	Answer	
2.3	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No
<b>Comment</b>		
1. There is no chlorine residual monitor at the outlet of the reservoir to verify that primary disinfection is achieved.		
2. There is only one chlorine dosing point at the inlet to the pressure filter. This one dosing point is used as part of the manganese and iron removal process and to also provide the WTP's chlorine residual.		
3. Chlorine fluctuations are caused due to the pressure filter back washing, once contact time has elapsed.		

	Answer	
2.4	Is suitable continuous monitoring in place to verify treatment performance?	No
<b>Comment</b>		

1. There was no turbidity monitor installed at raw water intake. At the plant there is no turbidity monitor installed post filtration to verify effectiveness of pressure filter. The supernatant from the backwash is pumped back to the head of the works, this is because there is no waterway to discharge to. The pressure filter should be backwashed on both time and a predetermined turbidity concentration basis.
2. There is no chlorine residual monitor on the outlet of the reservoir to confirm adequate disinfection has been achieved once contact time has elapsed.
3. The design capacity is stated as 486 m<sup>3</sup>/day and it was operating at 648 m<sup>3</sup>/day.

		Answer
2.5	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. There is a low alarm setpoint of 0.2mg/l for chlorine residual and a high alarm setpoint of 0.75NTU for turbidity.</li> <li>2. There is no chlorine monitor on the reservoir to alert if water has been adequately disinfected and no turbidity monitor on the pressure filter to alert the operator of a failure of a critical treatment process.</li> <li>3. Recommendations arising from Uisce Éireann's Alarm and Inhibit Review should be implemented in relation to final chlorine and both backwash turbidity settings and final water turbidity settings i.e. treated water is not &gt; 1 NTU for more than 3 minutes.</li> </ol>		

		Answer
2.6	Were all findings of the UÉ alarm and inhibit review implemented?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. Uisce Éireann stated they carried out an Alarm and Inhibit Review, but the recommendations have not yet been implemented.</li> </ol>		

		Answer
2.7	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
<b>Comment</b>		
<ol style="list-style-type: none"> <li>1. There are currently no shutdowns in place at the WTP.</li> </ol>		

		Answer
2.8	Is there a documented alarm response procedure?	No

**Comment**

1. There is no documented alarm response procedure for the plant. A new alarm response system is currently being developed.

## Recommendations

Subject	Swan PWS Audit Recommendations	Due Date	23/01/2024
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. Put in place a raw water monitoring programme for the Swan PWS source (to include but not be limited to iron, manganese and microbiological parameters).</li> <li>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 Cryptosporidium monitoring is undertaken as per "<i>Uisce Éireann's Rationale for Determining the Frequency of Cryptosporidium Monitoring in Public Supplies</i>" where a protozoal log deficit is identified, until such time as it is addressed. This recommendation should be addressed with priority given that filter backwash is returned to the head of the works.</li> <li>3. Install a chlorine injection point post filtration, to improve control on the disinfection process and to ensure adequate disinfection is being achieved.</li> <li>4. Install turbidity monitors with appropriate alarm settings on the raw water and pressure filter. Install a chlorine monitor with appropriate alarm settings on the outlet of the reservoir to ensure the disinfection process can be validated after contact time has elapsed.</li> <li>5. Implement the recommendations arising from Uisce Éireann's Alarm and Inhibit Review. Ensure plant inhibits are installed on critical control parameters (for example on low and high chlorine in the final treated water, post disinfection contact time, on high turbidity on filtered and final treated water).</li> <li>6. Update the Water Incident Communication Response Chart displayed at the site to ensure it site specific and put in place a documented procedure for responding to site specific alarms generated at the water treatment plant. Provide training to staff on the procedures.</li> <li>7. 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.</li> <li>8. Confirm Design Capacity of the WTP.</li> <li>9. Submit daily residual readings from the outlet of the reservoir from 21/12/2023 - 18/01/2024.</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 23/01/2024 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>		