

# 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>	Portlaw
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	3100PUB1081
<b>County</b>	Waterford
<b>Site Visit Reference No.</b>	SV27500

Report Detail	
<b>Issue Date</b>	07/03/2023
<b>Prepared By</b>	Regina Campbell

Site Visit Detail			
<b>Date Of Inspection</b>	23/02/2023	<b>Announced</b>	Yes
<b>Time In</b>	11:00	<b>Time Out</b>	12:30
<b>EPA Inspector(s)</b>	Regina Campbell		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Eireann: Patrick Duggan, Ronan Walsh Waterford City and County Council working in partnership with Uisce Eireann: David Hourigan, Dave Phelan		

## > Summary of Key Findings

1. There are a number of deficiencies at this plant including a lack of a chlorine monitor with alarm to verify contact time has been achieved, a lack of an online turbidity monitor at the plant and a lack of automatic shutdowns to prevent inadequately disinfected water entering the supply.
2. Uisce Éireann advised that this supply is to be prioritised for an upgrade but no timeframe is available yet.

## > Introduction

The Portlaw Public Water Supply (PWS) serves a population of 1,580 and produces 350 m<sup>3</sup>/day. Raw water is sourced from a spring which is located 1.5 km from the plant. The spring is the main source for the supply. There is also a borehole located adjacent to the planthouse but this is only used if there is a water shortage caused by a major leak or low levels in the spring.

Treatment consists of chlorination and UV disinfection. Treated water is fed to an onsite reservoir which in turn supplies Portlaw town.

The focus of the audit was on alarms and inhibits and oversight.

## > Supply Zones Areas Inspected

The audit consisted of an inspection of the UV and chlorination treatment systems.



## 1. Disinfection

	Answer
1.1 Are duty and standby chlorine pumps/ UV units in operation?	No
<b>Comment</b>	
There is a duty only Sita UV-C unit in operation at the plant.	



## 2. Management and Control

	Answer
2.1 Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No
<b>Comment</b>	
At the audit Uisce Éireann confirmed that the sanitary survey was recently completed and that the protozoal compliance log treatment requirement would be confirmed to the EPA shortly.	



### 3. Alarms, Inhibits & Oversight Audits 2023

	Answer
3.1 Is there a documented site specific incident response and incident escalation process?	Yes
<b>Comment</b>	
There is a site specific incident escalation flowchart displayed at the plant. This document should be updated to reflect recent personnel changes in the local authority and should also clearly state the name of the Supervisor.	

	Answer
3.2 Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No
<b>Comment</b>	
There is no residual chlorine monitor located after contact time for verification purposes. Uisce Eireann confirmed that primary disinfection is provided by chlorination.	
There is an online chlorine monitor which samples from the on-site reservoir but the sampling point is not located after contact time has been achieved.	

	Answer
3.3 Is suitable continuous monitoring in place to verify treatment performance?	No
<b>Comment</b>	
There is no monitor to verify chlorine contact time and there is no continuous turbidity monitor with alarm to verify that turbidity remains < 1 NTU at all time.	

	Answer
3.4 Is continuous monitoring located appropriately to verify treatment performance?	No
<b>Comment</b>	
The chlorine monitor is not located at a suitable location to verify contact time.	

	Answer
3.6 Were online monitors within their calibration dates?	No

**Comment**

There was no record of the UV unit to show that it was within its calibration date.

Stickers showed that bulbs on the UV unit had been replaced but not that the unit had been calibrated.

**Answer**

3.7 Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?

No

**Comment**

At the audit the UV unit was displaying an Irradiance Factor reading of 99 % and operational staff confirmed that the alarm on the UV unit was 82%. However it is unclear how the Irradiance factor and alarm setting equates to the minimum UVI required to deliver a UV dose of 40 mJ/cm<sup>2</sup>.

There is no turbidity monitor with alarm in place.

**Answer**

3.8 Has UÉ carried out an alarm and inhibit review at the water treatment plant?

No

**Comment**

Uisce Eireann advised that an alarm and inhibit review will be scheduled shortly at the plant.

**Answer**

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

No

**Comment**

There is no shutdown of the plant based on a) high and low chlorine, b) high turbidity and c) failure of UV unit to operate within its validated range.

**Answer**

3.10 Are plant performance trends accessible by operational staff at the water treatment plant?

No

**Answer**

3.11 Is there appropriate oversight of alarm responses?

No

**Comment**

The Supervisor is not on the current alarm cascade system.

**Answer**

**3.12** Is there a documented alarm response procedure?

No

**Comment**

There are no formal site specific alarm response procedures setting out the steps taken in response to various types of incidents. This procedure should be more detailed than the incident escalation procedure.

**Answer**

**3.13** Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?

No

**Comment**

There is no documented procedure in place that documents how alarms and inhibits are verified as operational following any works which can affect the systems on-site.



## 4. Site Specific Issues

	Answer
4.1 Are details on the EPA EDEN system correct?	No
<b>Comment</b>	
The EPA EDEN system reported that the daily volume was 170 m <sup>3</sup> /day (rather than 350 m <sup>3</sup> /day) and that pH correction and fluoridation were in operation at the plant which are incorrect.	



## Recommendations

Subject	Portlaw Audit Recommendations	Due Date	07/04/2023
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. Ensure that there are duty and standby UV disinfection units with automatic changeover or plant shutdown in the event of failure of one of the UV disinfection units.</li> <li>2. Confirm the log treatment requirement for the source and provide details of how any log deficit will be addressed.</li> <li>3. Ensure that the incident escalation flowchart displayed at the Water Treatment Plant is updated to take account of recent personnel changes and that it is clear who is the Supervisor to contact.</li> <li>4. Install a continuous chlorine residual monitor with alarm after contact time to verify contact time is achieved.</li> <li>5. Install a continuous turbidity monitor with alarm and shutdown to prevent inadequately treated water entering the supply.</li> <li>6. Ensure that all monitors are regularly maintained and calibrated in accordance with the manufacturer's instructions.</li> <li>7. Review a) the alarm and inhibit settings to ensure that critical treatment processes and statutory limits are protected, b) Install shutdown of the plant based on high and low chlorine levels in the final water and c) install shutdown in the event that the UV unit fails to operate within its validated range.</li> <li>8. Ensure that operational staff have access to plant performance trends at the water treatment plant.</li> <li>9. Ensure that a) the supervisor is added to the alarms cascade system so that there is appropriate oversight of alarm responses, b) there are documented site specific alarm response procedures c) there are appropriate procedures covering verification of alarms and inhibits status following maintenance of other work at the water treatment plant and d) training is provided to all relevant staff on the procedures.</li> <li>10. Update EDEN with the correct daily volume and treatment types currently in place 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 07/04/23 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>		