

# 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>	Carlingford
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	2100PUB1010
<b>County</b>	Louth
<b>Site Visit Reference No.</b>	SV29684

Report Detail	
<b>Issue Date</b>	29/01/2024
<b>Prepared By</b>	Lorcan Farrell

Site Visit Detail			
<b>Date Of Inspection</b>	23/01/2024	<b>Announced</b>	Yes
<b>Time In</b>	10:30	<b>Time Out</b>	12:00
<b>EPA Inspector(s)</b>	Lorcan Farrell		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Daniel Behan, Linda Doran, James O'Hagan. Louth County Council (Working in partnership with Uisce Éireann): Patrick Callan, Patrick Deery, Linda Lynch, Andrew White.		

## > Summary of Key Findings

1. There are no shutdown setpoints in place at Carlingford Water Treatment Plant (WTP) to protect disinfection processes.
2. There is no verified protozoal barrier in place at the treatment plant and no monitoring is taking place at the treatment plant for *Cryptosporidium*.
3. There is an inadequate standby pump arrangement at times when chlorine dosing pumps are used in a duty/assist format.

## > Introduction

Carlingford Public Water Supply serves a population of 974 (EDEN figure) and is supplied by Carlingford WTP. The treatment plant produces approximately 600- 800 m<sup>3</sup>/day depending on demand and sources its water from three spring sources located uphill of the treatment plant. Treatment consists of UV disinfection and chlorination.

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

## > Supply Zones Areas Inspected

The audit included a site tour of Carlingford WTP .



## 1. Source Protection

	Answer	
1.1	Is the abstraction source(s) adequately protected against contamination?	No
<b>Comment</b>		
1. Louth County Council confirmed that one of the spring sources for Carlingford WTP (Jenkinswell) is not fenced off and can be accessed by livestock.		



## 2. Alarms, Inhibits & Oversight Audits 2024

	Answer	
2.1	Is there a documented site specific incident response and incident escalation process?	Yes
<b>Comment</b>		
<p>1. A copy of the Uisce Éireann Incident Communications Response Guidance Form containing site specific alarm trigger levels and emergency contact information was available for inspection on the day of the audit. However, a copy of the form was not posted in a prominent position in the treatment plant as a resource for all operational staff.</p> <p>2. The Incident Communications Response Guidance Form categorised turbidity in excess of 1 NTU leaving the plant as an incident. Trend data submitted before the audit indicated that turbidity at the plant rose above 1NTU for a period of time on the 01/01/2024. This incident was not reported to the EPA until 25/01/2024 after the audit of Carlingford WTP.</p>		

	Answer	
2.2	Is continuous monitoring located appropriately to verify treatment performance?	No
<b>Comment</b>		
<p>1. There is no post-dosing chlorine residual monitor in place at the treatment plant. Such a monitor, programmed with suitable warning alarm/plant shutdown setpoints would avoid accumulation of inadequately disinfected water in the contact tank at the treatment plant should a failure of sodium hypochlorite dosing equipment occur.</p>		

	Answer	
2.3	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>		
<p>1. The chlorination contact time calculation for the treatment plant was not received in pre-audit information and was not available at the audit.</p> <p>2. The HMI at the plant indicated a LoLo chlorine alarm setting of 0.2 mg/l. The chlorination contact time calculation received after the audit indicated a different LoLo free chlorine alarm setpoint of 0.3 mg/l which is not sufficient to meet the required target contact time at the treatment plant. This LoLo free chlorine alarm setpoint requires revising to ensure target contact time is achieved at all times.</p> <p>3. It was not possible to assess whether the UVT or UVI alarm setpoints in place at the plant were appropriate as no UV validation documentation was received in pre-audit information and the appropriate documentation was not available at the audit.</p>		

		Answer
2.4	Has UÉ carried out an alarm and inhibit review at the water treatment plant?	Yes
<b>Comment</b>		
<p>1. An alarm and inhibit review was carried out at the treatment plant in 2022. The recommendations from the review have yet to be implemented but are due to be addressed under the Uisce Éireann Disinfection Programme upgrade works due to take place at the treatment plant. Site assessment under the programme began in Q4 2023 however, no timescales were available for when upgrade works under the programme are due for completion.</p>		

		Answer
2.5	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
<b>Comment</b>		
<p>1. Continuous online monitors measuring chlorine residual after contact time and raw water turbidity are present at Carlingford WTP. However, there are no shutdown setpoints in place to provide chlorine contact time verification or to protect the turbidity disinfection limit of 1 NTU.</p> <p>2. A UV disinfection system is present at the treatment plant and according to the manufacturer's plate on the unit, operates under ONORM/DVGW validation criteria. However, Uisce Éireann confirmed that no treatment credits were claimed for the UV system due to the absence of plant shutdown setpoints. Owing to this, there is no verification of the protozoal barrier in place at the treatment plant.</p>		

		Answer
2.6	Is there a documented alarm response procedure?	No
<b>Comment</b>		
<p>1. Alarms generated at the treatment plant are sent to operational staff on the plant dial-out list at the same time. While there is an informal system in place to make sure alarms have been responded to, there is no formal documented procedure for ensuring that alarms have been responded to.</p>		

		Answer
2.7	Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?	No
<b>Comment</b>		
<p>1. There are informal procedures covering verification of alarms and inhibits status following works carried out at the treatment plant however, there is no formal procedure or system in place such as a tag in/tag out system or alarm/shutdown testing following completion of works on-site.</p>		



### 3. Site Specific Issues

	Answer
3.1 Has the protozoal compliance log treatment requirement been identified for the treatment plant?	No
<b>Comment</b>	
1. Uisce Éireann confirmed that the protozoal log treatment requirement for the plant had not been assessed to date and that no monitoring in line with Uisce Éireann's Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water Supplies was taking place at the treatment plant. Uisce Éireann stated that the operational raw monitoring programme would begin at the supply in Q1 2024.	

	Answer
3.2 Are duty and standby chlorine pumps in operation?	No
<b>Comment</b>	
1. There are two chlorine dosing pumps at the treatment plant which Louth County Council confirmed can operate when needed in a duty/assist arrangement. It was confirmed that this happens occasionally when raw water conditions deteriorate. At these times there is no standby pump available in the event of a mechanical failure of either the duty or assist pumps.	

## Recommendations

Subject	Carlingford Audit Recommendations	Due Date	29/02/2024
<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 recommendations without delay.</b></p> <ol style="list-style-type: none"><li>1. Disinfection: (i) Complete the upgrade works at Carlingford Water Treatment Plant under the Uisce Éireann Disinfection Programme and ensure that appropriate treatment plant warning alarms/shutdown setpoints are provided to verify chlorine contact time and protect the 1 NTU disinfection limit, (ii) install a standby chlorine dosing pump, (iii) revise the shutdown setpoint on the chlorination contact time calculation to ensure target contact time is achieved at all times and (iv) consider installing a post-dosing chlorine residual monitor at the treatment plant.</li><li>2. Protozoal Barrier: (i) Confirm the protozoal log treatment requirement for the supply, (ii) confirm how any protozoal log deficit will be addressed, (iii) undertake monitoring as per the Uisce Éireann Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water supplies until a verified treatment barrier is in place and, (iv) secure and fence off treatment plant sources to prevent access by livestock.</li><li>3. Provide incident response refresher training to all staff.</li><li>4. Develop and implement: (i) a documented procedure for confirming treatment plant alarms have been responded to and, (ii) an appropriate procedure covering verification of alarms/inhibits status following maintenance or other work completed at the treatment plant. Provide training to staff on the new procedures.</li><li>5. Display an updated copy of the Uisce Éireann Incident Communications Response Guidance Form in a prominent position 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 29/02/2024 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>		