

# 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>	Cork Harbour and City
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	0500PUB3401
<b>County</b>	Cork
<b>Site Visit Reference No.</b>	SV28445

Report Detail	
<b>Issue Date</b>	19/12/2023
<b>Prepared By</b>	Criona Doyle

Site Visit Detail			
<b>Date Of Inspection</b>	14/12/2023	<b>Announced</b>	Yes
<b>Time In</b>	10:00	<b>Time Out</b>	12:15
<b>EPA Inspector(s)</b>	Criona Doyle Paul Buckley		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Donagh Goulding, Ciaran Connolly, Claire Hurley, Niall O Riordan, Killian Twomey.  Cork County Council (working in partnership with Uisce Éireann): Pauine McAree, Jason Forde, Jerry Creedon.		

## > Summary of Key Findings

1. The Inniscarra Water Treatment Plant was operating satisfactorily on the day of the audit.
2. The audit found a number of the recommendations from the previous audit have not been fully completed to date.
3. Planned upgrade works on the disinfection treatment stage are taking place at the Inniscarra Water Treatment Plant with an expected completion date of Quarter 4 2025 for the completion of the installation of the on site electrochlorination (OSEC) disinfection treatment stage. Upgrade works on the filters are also planned to commence in 2026.

## > Introduction

The Cork City and Harbour public water supply serves a population of 133,406 and produces 62,264m<sup>3</sup>/d. Raw water is abstracted from the River Lee at the Inniscarra Lake. Treatment at the Inniscarra Water Treatment Plant (WTP) includes coagulation, flocculation, clarification, filtration, disinfection, final pH correction, fluoridation and sludge treatment.

The audit was carried out as part of the EPA's routine assessment of large scale public water supplies and to assess progress with the recommendations from the previous audit undertaken by the EPA on 30/09/2021.

## > Supply Zones Areas Inspected

The audit included an inspection of the water treatment plant and the assessment of the operation and management of the water treatment plant with a focus on the protozoal barriers.



## 1. Coagulation Flocculation and Clarification (CFC) Stage

	Answer
1.1	Were the CFC tanks, channels and weirs observed to be clean, level and well maintained during the audit?
	No
<b>Comment</b>	
<p>The collection channels in settlement tanks no. 3 and no. 4 were not level and an uneven distribution of flow was observed over the v notch weirs. Remedial works were carried out on tanks no. 1 and no. 2 between September and November 2023. The works involved the installation of new brackets on the settlement tank walls to hold the collection channels in a level position and a deep clean of the settlement tanks and lamellae plates. Similar works are due to take place on settlement tanks no. 3 and no. 4 in early 2024.</p>	



## 2. Management and Control

		Answer
2.1	Have the recommendations from the previous EPA audit been satisfactorily addressed?	No
<b>Comment</b>		
<p>The following recommendations from the previous audit undertaken on 30/09/2021 have not been completed and have been included in this audit report to track progress:</p> <p>(i) install a filter media depth marker in each of the filters;</p> <p>(ii) install automatic switchover between duty and standby dosing pumps (coagulant, coagulant aid, pH correction and chlorine) in the event of failure of one of the dosing pumps.</p>		

### > 3. Protozoal Barriers Audits 2023

		Answer
3.1	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No
<b>Comment</b>		
<p>3 no. residual chlorine monitors have been installed under the disinfection programme upgrade works to provide continuous verification of contact time on the Dripsey, Curraleigh and Maglin lines. The connection of the monitors to the SCADA and the programming of the alarm and inhibit setpoints is expected to be completed in Q1 2024.</p>		

		Answer
3.2	Are the filters designed and managed in accordance with EPA guidance?	No
<b>Comment</b>		
<p>The filter media depth could not be confirmed at the audit. Subsequent to the audit on 18/12/2023 Cork County Council submitted details of the filter media depths confirming it meets the depth requirement.</p> <p>Filter backwashing is undertaken manually on a timed basis (48 hours) or on headloss. There is no automatic backwashing of an individual filter linked to the turbidity alarm setpoint but the filter is automatically shutdown if turbidity &gt; 0.25 NTU (time delay 600 seconds).</p> <p>The filter media depth marker posts for each of the filters, as recommended in the previous audit on 30/09/2021 had not been completed to date. Cork County Council indicated it had not been possible to source suitable posts and that the estimated completion date for the work was now June 2024.</p>		

		Answer
3.3	Are service due/ instrument calibration for turbidity monitors within date?	No
<b>Comment</b>		
<p>A new combined filtered water turbidity monitor was installed and commissioned in September 2023. A sticker has yet to be installed with the date when the service /calibration is next due for this monitor.</p>		

		Answer
3.4	Are relevant alarms dialled out to allow a timely response by operational staff?	No
<b>Comment</b>		
<p>The plant is manned from 8am to 12 midnight. During this time alarms are received by two staff (the duty caretaker and the engineer). Between 12 midnight and 8am alarms are only received by one person (the engineer).</p>		



## 4. Site Specific Issues

	Answer	
4.1	Are there duty and standby dosing pumps with automatic switchover?	No
<b>Comment</b>		
<p>Duty / standby dosing pumps are provided for dosing of the coagulant (aluminium sulphate) and the coagulant aid (polyelectrolyte). There is no automatic switchover of the dosing pumps from duty to standby if the duty pump for the coagulant or coagulant aid fails and a manual switchover is required. Routine rotation of the duty pumps on a weekly basis is taking place.</p> <p>There are duty and standby chlorinators which are manually switched over. Cork County Council indicated at the audit that they are not being regularly routinely changed over.</p>		
		Answer
4.2	Is regular coagulant residual monitoring taking place ?	No
<b>Comment</b>		
<p>The records on site indicated compliant residual aluminium monitoring results, however, monitoring is not taking place on a daily basis as required under Advice Note 15: Optimisation of Chemical Dosing at Water Treatment Works.</p>		
		Answer
4.3	Can alarm setpoints and inhibits be viewed on site ?	No
<b>Comment</b>		
<p>The alarm setpoints could not be viewed on site on the plant HMI and it was reported that this data can only be accessed by the contractor. The low chlorine alarm setpoint on site is reported to be 0.50mg/l as indicated on the alarm and inhibit review review sheet while the documented site specific alarm response procedure indicated a low chlorine alarm setpoint of 0.25 mg/l. It was confirmed the alarm setpoint on the alarm procedure needs to be updated.</p> <p>Subsequent to the audit Cork County Council submitted a screen shot of the alarm settings on 18/12/2023.</p>		

## Recommendations

Subject	Cork Harbour & City Audit 2023	Due Date	19/01/2024
<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. Ensure the following audit recommendations from the previous audit are addressed: (i) install a filter media depth marker in each of the filters; (ii) install automatic switchover between duty and standby dosing pumps (coagulant, coagulant aid, pH correction and chlorine) in the event of failure of one of the dosing pumps.</li><li>2. Confirm that (i) the disinfection programme works have been completed to provide continuous verification of contact time at the 3 no. residual chlorine monitors on the Dripsey, Curraleigh and Maglin lines and (ii) provide details of the alarm setpoints and time delays when fully commissioned.</li><li>3. (i) Ensure alarm setpoints and inhibit levels are updated on the alarm response procedure and (ii) ensure there is a suitable alarm cascade in place to ensure more than one person receives alarms at all times.</li><li>4. Ensure the filtration stage meets the criteria specified in the EPA Water Treatment Manual: Filtration (i) ensure automatic backwashing is linked to the turbidity alarm setpoint.</li><li>5. Undertake daily monitoring of the residual aluminium in the final water at the WTP and maintain a copy of the records on site.</li><li>6. Ensure regular cleaning of the settlement tanks is undertaken and confirm when the planned repair works to the collection channels in Tanks No. 3 and No. 4 have been completed.</li><li>7. Ensure that the service due / calibration dates are displayed on all newly installed monitors.</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 19/01/2024 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>		