

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	
Name of Installation	Cork City Water Supply
Organisation	Uisce Éireann
Scheme Code	0400PUB1001
County	Cork
Site Visit Reference No.	SV27235

Report Detail	
Issue Date	26/01/2023
Prepared By	Criona Doyle

Site Visit Detail			
Date Of Inspection	16/01/2023	Announced	Yes
Time In	09:30	Time Out	14:30
EPA Inspector(s)	Criona Doyle Regina Campbell		
Additional Visitors			
Company Personnel	Uisce Eireann: Tommy Roche, Pat Britton, Sean Twohig, Phil Elvins. Cork City Council (acting under service level agreement to Uisce Eireann): James Goulding, John Walsh, Sean Lynch. Murphy Group: Sean Devoy, Roisin Watters, John Ahern, Andrew McCourt.		

> Summary of Key Findings

1. The purpose of the audit was to assess the suitability of the Cork City Public Water Supply (PWS) for removal from the EPA's Remedial Action List (RAL). Based on the audit findings, the supply was removed from the RAL published in January 2023.
2. The new water treatment plant (WTP) went into supply on the 29/07/22. The WTP is currently being operated by the Murphy Group as part of the 12 month operation and maintenance period. The provision of adequate training of all Uisce Éireann and Cork City Council operational staff is required prior to handover of the operation of the WTP by the Contractor.
3. Remedial works on the roof of the high level reservoir have commenced. Supplementary UV disinfection at the high level reservoir is required until the remedial works have been completed.

> Introduction

Cork City PWS supplies a population of 87,291 with a volume of approximately 31,598m³/d (EDEN figures). The Cork City PWS has been on the EPA's RAL since 13/10/08 under the category EPA Audit Observation - Treatment and Management Issues.

The construction of the new Lee Road Water Treatment Plant has greatly improved the level of water treatment being provided to provide a safer and more secure water supply. The new water treatment plant went into supply on 29/07/22. Raw water is abstracted from the River Lee. Treatment includes coagulation, flocculation, rapid gravity filtration, UV disinfection, chlorination, fluoridation, final water pH correction and sludge treatment. The purpose of the audit was to verify if the Cork City PWS can be removed from the EPA's Remedial Action List.

> Supply Zones Areas Inspected

All the main water treatment plant areas of the new Lee Road WTP were inspected along with the temporary UV treatment stage at the high level reservoir at Churchfield.



1. Reservoirs and Distribution Networks

	Answer
1.1	Is treated water in tanks and reservoirs suitably protected against contamination? No
Comment	
<p>A section of the roof of the High Level Churchfield reservoir is damaged. The roof has been stabilised but a complete roof replacement is required. The roof repair works commenced on site in January 2023 and are due to be completed in Q3 2023.</p> <p>A temporary UV unit has been operational at the high level reservoir since 30/08/22 to provide an additional <i>Cryptosporidium</i> barrier for the treated water at the reservoir. Details of the validation criteria and alarms for UV unit were provided at the audit and the verification data for the UV unit was provided in advance of the audit.</p> <p>Uisce Éireann outlined that a continuous hydrocarbon monitor has also been installed at the high level reservoir for the duration of the roof repair works. The monitor had been installed and was awaiting connection to the SCADA on the day of the audit.</p> <p>The other reservoirs on the Cork City PWS were not visited as part of the audit.</p>	



2. Treatment Process Chemicals

2.1

Are treatment process chemicals appropriately managed and stored?

Answer

No

Comment

On the day of the audit the labels on the sodium hydroxide and sodium hypochlorite bulk storage tanks were faded making them difficult to read. Subsequent to the audit Uisce Éireann confirmed on 20/01/23 that the labels had been replaced.



3. Management and Control

		Answer
3.1	Are instrument calibrations within date?	No
Comment		
On the day of the audit the weighing scales for the hydroflurosilic acid day tank was past the due date for calibration. Subsequent to the audit Uisce Eireann confirmed on 20/01/23 that the weighing scales was to be calibrated on 23/01/23.		



4. Supply on the Remedial Action List

4.1

	Answer
Do the audit findings support progress made with the Remedial Action List upgrades?	Yes
Comment	
<p>Uisce Éireann have completed a major upgrade of the Cork City PWS including the construction of a new water treatment plant with a design capacity of 40,000m³/18hr day. The main work items completed at the new water treatment plant can be summarised as follows:</p> <ul style="list-style-type: none"> • Installation of fish screen and boom; • Connection to the existing intake; • Raw water fine screening; • Raw water pumping; • Pre-CFC pH adjustment using Sodium Hydroxide; • Coagulation and Flocculation; • Settlement tanks (6 No. units); • Rapid Gravity Filters (6 No. units); • UV disinfection (2 No. units); • Chlorination using Sodium Hypochlorite; • Treated water reservoir; • Post filtration pH adjustment using Sodium Hydroxide; • Treated water pumping; • Wash Water Settlement tank; • Picket Fence Thickener and Sludge Balancing tank; • Sludge Dewatering infrastructure. <p>The evaluated protozoal log treatment requirement for the river source is a 3 log requirement. The 2 months verification data provided by Uisce Éireann, to support RAL removal, has demonstrated the new water treatment plant has consistently provided a minimum of a 5 log removal (4 log reduction from filtration stage and a minimum 1 log reduction from the UV treatment stage). The WTP can provide up to a 6 log reduction when the UV treatment stage is operated to provide a 2 log reduction.</p> <p>The water treatment plant has been commissioned and has been supplying the public water supply since the 29/07/22. Uisce Éireann has provided verification data to demonstrate that the plant is being appropriately operated to maintain the required protozoal log treatment and adequate disinfection. The supply was removed from the RAL published in January 2023.</p>	



5. Site Specific Issues

	Answer
5.1 Has training been provided to Uisce Eireann and Cork City Council operational staff to facilitate handover of the operation of the new water treatment plant ?	No
Comment	
<p>The WTP is currently being operated by the Murphy Group as part of the 12 month operation and maintenance period that commenced on 29/07/22. Prior to the handover of the operation of the WTP to Uisce Eireann and Cork City Council operational staff it is planned that the Murphy Group will provide training. The provision of adequate training for all operational staff involved in the day to day operation of the WTP is critical prior to the handover of the operation of the water treatment plant from the Contractor to Uisce Eireann and Cork City Council.</p>	

	Answer
5.2 Had the data on the EPA EDEN portal been updated to reflect the plant upgrades ?	No
Comment	
<p>On the day of the audit the data on the EPA EDEN portal had not been updated to reflect the treatment stages in place on the Cork City PWS following the construction and commissioning of the new water treatment plant. Subsequent to the audit Uisce Eireann confirmed on 20/01/23 that the information on the EPA EDEN portal had been updated.</p>	

Recommendations

Subject	Cork City PWS - Audit 16 01 23	Due Date	26/02/2023
Action Text	<p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendation(s) without delay.</p> <ol style="list-style-type: none">1. Uisce Eireann should ensure all staff involved in the operation of the Lee Road WTP are adequately trained prior to the handover of the operation of the water treatment plant from the Contractor to Uisce Eireann and Cork City Council operational staff.2. Uisce Eireann should ensure (i) the works on the roof of the high level reservoir are completed and (ii) the UV unit at the high level reservoir continues to be operated within its validated range until the roof repair works are completed. <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 26/02/23 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>		