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

Name of Installation	Dunlavin Public Supply
Organisation	Uisce Éireann
Scheme Code	3400PUB1020
County	Wicklow
Site Visit Reference No.	SV29620

Report Detail

Issue Date	23/10/2024
Prepared By	Derval Devaney

Site Visit Detail

Date Of Inspection	11/09/2024	**Announced**	Yes
Time In	14:15	**Time Out**	15:40
EPA Inspector(s) **Additional Visitors**	Derval Devaney		
Company Personnel	Uisce Éireann (UÉ): Linda Doran, Cristina Prado. Wicklow County Council (working in partnership with UÉ): Noel Doody, Eoghan Forristal, Tommy Cullen.		

Summary of Key Findings

1. The Dunlavin Water Treatment Plant (WTP) and its spring sources are to be made redundant. Work is to commence in Q1, 2025 to connect the Dunlavin supply network to the Ballymore Eustace WTP. It is estimated that works to lay a 7 km interconnector pipe will take 12 months to complete.
2. There are no automatic plant shutdowns/inhibits in place to prevent the entry of inadequately treated water into the distribution network.
3. An alarm and inhibit review is required to ensure only water meeting drinking water quality standards enters supply.
4. There is no site specific alarm response procedure setting out how site specific alarms are responded to in order to protect water quality and public health.
5. There was a treated water high chlorine incident on 30/31 August 2024. UÉ is to report further on this incident and clarify the contact time calculation for adequate disinfection.

Introduction

Dunlavin Public Water Supply (PWS) produces approximately 17 m3/hour serving a population of 1,040. Raw water is abstracted from one of two springs. Treatment consists of disinfection by 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 water treatment plant (WTP) and the procedures in place to ensure appropriate oversight of treatment processes.

Supply Zones Areas Inspected

The two spring sources and treatment processes at the water treatment plant were inspected. The treated water storage reservoir located approximately 250 m away from the water treatment plant was not inspected.

1. Incident Management

		Answer
1.1	Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	No

Comment

1. UÉ, in advance of the audit and upon request from the EPA, submitted final water chlorine trends from the chlorine monitor CL002 located on the outlet of the Reservoir post contact time.
2. Such chlorine residual trends illustrated a spike > 2 mg/l in the final water exiting the reservoir on 30/31 August 2024.
3. It was explained that the chlorine dose pump blocked and an alarm of low chlorine signalled on CL002. The incident was attended to, but resulted in an overdose of chlorine when the chlorine dose continued when the raw water pumps had stopped.
4. It was unclear during the audit the how long the incident lasted, what the maximum chlorine concentration entering the network was and if the incident presented a risk to public health.

2. Management and Control

		Answer
2.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No

Comment

1. A log credit of 3, based on a default assessment, has been assigned to the Dunlavin water treatment plant.
2. A source and sanitary survey has not been completed for the supply.
3. There is no raw water monitoring programme in place for the two spring sources located at the water treatment plant.
4. UÉ explained that due to the isolated location of the water treatment plant, the possible need for additional treatment such as UV and a new treated water storage reservoir, it is planned to make the source and treatment redundant and instead supply customers on the Dunlavin PWS with treated water from Ballymore Eustace PWS.
5. It is estimated that the redundancy will occur within the next 12 months. It is planned to install 7km of a new main, commencing Q1, 2025, to connect the Dunlavin network to Ballymore Eustace PWS negating the need for a new reservoir at Dunlavin.

3. Alarms, Inhibits & Oversight Audits 2024

		Answer
3.1	Is there a documented site specific incident response and incident escalation process?	No

Comment

1. The Uisce Éireann Incident Communication Response Guidance Form was not displayed at Dunlavin Water Treatment Plant (WTP) with site specific trigger levels protecting critical processes at the WTP.

		Answer
3.2	Were online monitors operational?	No

Comment

1. The online UVT monitor located pre-reservoir was not operational and there is no plan to repair it given that it is planned to make the plant redundant in 2025.

		Answer
3.3	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No

Comment

1. The pH final water alarm setting does not protect the pH statutory limit of between 6.5 and 9.5. And the pH alarm time delay of 1800 (30 minutes) is too long and does not allow for a timely response should pH drop below 6.5.
2. The temperature alarm settings on the final water appeared to be incorrect; set at 1 Degree Celsius for a HiHi limit, 0.5 Degree Celsius for a Hi limit and 0 Degree Celsius for both Lo and LoLo limits.

		Answer
3.4	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No

Comment

1. There are no automatic plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network.
2. UÉ explained that there is a valve on the reservoir outlet which can be manually adjusted to prevent water entering the distribution network from the reservoir.

		Answer
3.5	Is there a documented alarm response procedure?	No

Comment
1. There are no documented alarm response procedures in place setting out how site specific alarms are responded to in order to protect water quality and public health.

		Answer
3.6	Is the chlorine contact time calculation correct?	No

Comment
1. It was unclear if UÉ's Contact Time calculation for primary chlorination disinfection, provided in advance of the audit, was correct. 2. A distribution flow (Df) factor of 0.3 was used in calculating the reservoir's contact time for chlorine disinfection. This indicates the reservoir has single or multiple unbaffled inlets and outlets which could not be confirmed during the audit.

Recommendations

Subject	Dunlavin Audit Recommendations 11092024	**Due Date**	25/11/2024
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.** 1. Ensure *Cryptosporidium* monitoring is undertaken as per Irish Water Rationale for Determining the Frequency of *Cryptosporidium* Monitoring in Public Supplies where a protozoal log deficit is identified, until such time as the WTP is made redundant. 2. Ensure (ii) the Uisce Éireann Incident Communication Response Guidance Form is displayed at the Dunlavin WTP with site specific trigger levels protecting critical processes at the WTP and (ii) provide training to all operational and relief staff on the incident response and escalation procedure. 3. Review the alarm and inhibit settings for pH and temperature to ensure critical treatment processes and water quality are protected and settings align with UÉ's Disinfection Specification and statutory limits. 4. Ensure that (a) there are documented site specific alarm response procedures, and they incorporate when to manually prevent water entering the distribution network from the final water reservoir, and (b) training is provided to all relevant staff on alarm response procedures. 5. Ensure old calibration stickers are removed from online monitors once newly calibrated. 6. Clarify if a DF factor of 0.3 represents the final water reservoir configuration and if the contact time calculation provided in advance of the audit is accurate. Provide photographs of the reservoir to support the response. 7. Submit details of the high chlorine residual incident on 30/31st August 2024 exiting the reservoir (CL002). Provide details, such as the time period where chlorine was > 2mg/l entering the network, if the chlorine concentration entering the network exceeded 5mg/l at any time, the network chlorine residuals during the period of the incident, if the valve on the outlet of the reservoir closed for any length of time during the incident? **Actions required by Uisce Éireann** 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. Uisce Éireann should submit a report to the EPA on or before the above due date detailing the actions taken and planned, with timescales, to close out the above recommendations. The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.		