

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 | Galbally PWS |
| Organisation | Uisce Éireann |
| Scheme Code | 1900PUB1028 |
| County | Limerick |
| Site Visit Reference No. | SV30102 |

| Report Detail | |
|--------------------|-----------------|
| Issue Date | 02/07/2024 |
| Prepared By | Orla Harrington |

| Site Visit Detail | | | |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------|-------|
| Date Of Inspection | 22/05/2024 | Announced | Yes |
| Time In | 14:00 | Time Out | 15:15 |
| EPA Inspector(s) | Orla Harrington | | |
| Additional Visitors | | | |
| Company Personnel | Uisce Éireann: Susan Cook. Limerick City and County Council (working in partnership with Uisce Éireann): Neal Boyle. | | |

> Summary of Key Findings

1. The continuous turbidity monitor has not been in operation since March 2024. Daily turbidity readings are being taken with a handheld monitor until the turbidity monitor is replaced.
2. No chlorine contact time calculation was available for the Galbally water treatment plant.
3. There is no treatment barrier to *Cryptosporidium* entering the water supply from the borehole serving the Galbally public water supply. Uisce Éireann confirmed that the groundwater source has a protozoal log credit requirement of 3 log. No monitoring for *Cryptosporidium* in line with *Uisce Éireann's Rationale for Determining the Frequency of Cryptosporidium in Public Water Supplies* is currently taking place at the water treatment plant.

> Introduction

Galbally public water supply (PWS) serves a population of approximately 671 people and produces 180 m³ of treated water per day. Raw water is abstracted from a single borehole located at the water treatment plant (WTP). Treatment consists of pH correction using soda ash and chlorination. The treated water is then fed to the on-site reservoir and flows by gravity for 200m to a pumphouse before distribution.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome drinking 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 an inspection of the water treatment plant and its critical monitoring equipment and controls.



1. Management and Control

| | Answer |
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| 1.1 | Is the plant suitably managed and controlled to maintain the designed log credit on each treatment stage? Comment 1. The protozoal log treatment requirement for the plant has been assigned as log 3. This gives a - 3 log treatment deficit. 2. At present, there is no monitoring being carried out in accordance with the <i>Uisce Éireann Rationale for Monitoring Cryptosporidium in Public Water Supplies</i> . 3. There is no treatment barrier to <i>Cryptosporidium</i> entering the water supply from the borehole serving the supply. |



2. Alarms, Inhibits & Oversight Audits 2024

| | Answer | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----|
| 2.1 | Is suitable continuous monitoring in place to verify treatment performance? | No |
| Comment | | |
| <p>1. The continuous turbidity monitor has not been in operation since March 2024. The turbidity monitor sample line is located between pH correction (soda ash) and chlorination. Limerick City and County Council advised that malfunction of the monitor is caused by repeat blockages of the sample probe which may be due to the location of the sample line.</p> <p>2. Limerick City and County Council said that daily turbidity readings are taken with a handheld monitor. The data is recorded in a log book at the plant. Handheld readings are averaging 0.9 NTU according to the data viewed.</p> <p>3. There have been delays in getting the monitor replaced. A new probe has been ordered and Uisce Éireann advised that delivery is imminent.</p> | | |

| | Answer | |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------|----|
| 2.2 | Were online monitors operational? | No |
| Comment | | |
| <p>1. As outlined in Section 2.2 above, the turbidity monitor has not been operational since March 2024.</p> | | |

| | Answer | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----|
| 2.3 | Were online monitors within their calibration dates? | No |
| Comment | | |
| <p>1. There was no calibration sticker observed on the handheld turbidity monitor at the plant. Uisce Éireann were unable to confirm when this monitor was last calibrated.</p> | | |

| | Answer | |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------|----|
| 2.4 | Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process? | No |
| Comment | | |

1. No contact time (ct) calculation was available for the Galbally supply. There is a residual chlorine monitor (CL002) located at a pumphouse 200m from the onsite reservoir which Limerick City and County Council identified as the point of chlorine contact time validation before the first customer is reached at Galbally.

2. The chlorine alarm setpoints at CL002 are 0.25 mg/l (low) and 0.8 mg/l (high). The low chlorine alarm should be raised to ensure it provides adequate warning of low chlorine levels and takes account of the minimum free chlorine concentration required at the ct validation point once the ct calculation is complete.

3. The pH alarm setpoints on the raw water are 5 pH units (low) and 8 pH units (high) prior to dosing with soda ash. Uisce Éireann were unable to confirm the target pH aimed for at the plant and whether the statutory limit of between 6.5 and 9.5 pH units was being protected. On the day of the audit, the raw water pH monitor was reading 6.31. There is a second pH monitor after dosing with soda ash. Uisce Éireann could not confirm alarm setpoints on this monitor, which was reading 6.04 on the day of the audit. There was no information on the control and operation of soda ash dosing at the plant.

4. There are no alarms based on high turbidity in the final water.

| | | Answer |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------|
| 2.5 | Has UÉ carried out an alarm and inhibit review at the water treatment plant? | No |
| Comment | | |
| 1. Uisce Éireann advised that the findings of the Alarm and Inhibit review had not been finalised. | | |

| | | Answer |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------|
| 2.6 | 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 shutdowns based on high turbidity in the final water. | | |

| | | Answer |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------|
| 2.7 | Is there a documented alarm response procedure? | No |
| Comment | | |
| 1. There is no documented alarm response procedure to advise operational staff on how specific water quality alarms should be responded to and acted upon. | | |

| Answer |
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| 2.8 | Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site? | No |
| Comment | | |
| 1. There is no appropriate procedure covering verification of alarms and inhibits status following maintenance or other work on site. | | |

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|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------|
| | | Answer |
| 2.9 | Is the chlorine contact time calculation correct? | No |
| Comment | | |
| 1. At the time of the audit, no contact time (Ct) calculation was provided by Uisce Éireann for the Galbally PWS. | | |



3. Site Specific Issues

| | Answer |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 3.1 Is the information reported by Uisce Éireann on the EPA EDEN portal correct? | No |
| Comment | |
| 1. The supply volume on EDEN at the time of the audit was reported as 40 m ³ /day. At the audit, Limerick City and County Council stated that a volume of 180 m ³ /day is provided. | |

Recommendations

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| Subject | Galbally PWS -Audit Report | Due Date | 02/08/2024 |
| 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. (i) Install a permanent continuous turbidity monitor at the Galbally water treatment plant, with associated alarms and shutdowns to verify treatment performance (ii) ensure the turbidity monitor is in the correct location and representative of final water quality. 2. (i) Complete and submit the site-specific chlorine contact time calculation for the supply; (ii) confirm that the minimum WHO specified contact time of 15mg.min/l is achieved at the WTP and that the first connections are receiving appropriately disinfected water and (iii) confirm that the chlorine residual alarm level reflects the minimum free chlorine concentration required at the Ct validation point as outlined in the contact time calculation to be submitted. 3. (i) Confirm how the log deficit will be addressed with timeframe for completion of the works (ii) ensure monitoring for <i>Cryptosporidium</i> is carried out as per <i>Uisce Éireann's Rationale for Determining the Frequency of Cryptosporidium in Public Water Supplies</i>. 4. (i) Ensure appropriate alarms and inhibits are installed to monitor pH and secure compliance with the pH parametric value in the final water and (ii) review pH results for the supply from 2021 to 2024 and assess if there is ongoing compliance with the pH parametric value. 5. Update the EDEN figures to reflect the correct average daily volume. 6. Put in place a written alarm response procedure to ensure alarms are investigated correctly and the appropriate actions taken in response. 7. Ensure there is a procedure in place for caretakers and contractors to check and sign off that all alarms have been correctly re-set on completion of any maintenance work. 8. Ensure the handheld turbidity monitor is calibrated or serviced in accordance with manufacturers instructions and clearly labelled to show the next 'calibration due by' or 'service due by' date. 9. Complete the Alarm and Inhibit Review for the plant and implement any findings. <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 02/08/2024 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> | | |