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	Kilgarvan PWS 046A
Organisation	Uisce Éireann
Scheme Code	1300PUB1059
County	Kerry
Site Visit Reference No.	SV32823

Report Detail

Issue Date	02/09/2025
Prepared By	Regina Campbell

Site Visit Detail

Date Of Inspection	23/07/2025	**Announced**	Yes
Time In	11:00	**Time Out**	12:40
EPA Inspector(s) **Additional Visitors**	Regina Campbell		
Company Personnel	Uisce Éireann: Shabila Perveen, Criona Doyle, Claire Kelly, Tom Ryan, Maurice Fitzgerald. Kerry County Council (working in partnership with Uisce Éireann): Kathleen Casey, Gerry Tangney, Mike Downey.		

Summary of Key Findings

1. Uisce Éireann have installed and commissioned a Granular Activated Carbon Treatment System with UVT monitors after the slow sand filters in order to minimise the risk of Trihalomethanes formation in the Kilgarvan drinking water supply.

2. A supplementary borehole was also drilled and groundwater is mixed with the lake water in the slow sand filters.

3. Satisfactory Trihalomethanes monitoring results were submitted along with UVT trends in order to verify the effectiveness of the works. The supply will be removed from the Quarter 2 2025 Remedial Action List published by the EPA in September 2025.

Introduction

The Kilgarvan Public Water Supply (PWS) serves a population of 749 with a supply production of 305 m3/day. The supply is a blend of Coomclogherane Lake (90% of supply), which is about 1km from the plant, and one onsite borehole (10% of supply). Treatment at the water treatment plant (WTP) consists of slow sand filtration, Granular Activated Carbon (GAC) and chlorination.

The supply was on the EPA Remedial Action List (RAL) due to elevated levels of Trihalomethanes (THMs) above the standard in the Drinking Water Regulations. The purpose of the audit was to assess the upgrade works that have been implemented under the RAL action programme and to verify if the Kilgarvan supply could be removed from the RAL.

Other aspects of the WTP outside of those related to THM treatment were also assessed as part of the audit.

Supply Zones Areas Inspected

The borehole, slow sand filters, GAC units, monitors, alarms and inhibits were inspected.

1. Source Protection

		Answer
1.1	Is the abstraction source(s) adequately protected against contamination?	No

Comment

1. A new borehole was drilled at the plant and is in production since late 2024. The borehole supplies 10% of the production volume. The groundwater is blended with the lake water in the slow sand filters and helps to reduce the level of organics in the water.

2. The borehole wellhead is not complete and is vulnerable to damage. There is no turbidity monitor on the borehole.

2. Filtration

		Answer
2.1	Are the filters designed and managed in accordance with EPA guidance?	No

Comment

1. There are three slow sand filters in operation at the plant. Trends viewed showed satisfactory turbidity levels from the filters.

2. The sand depth in filter 1 is 590mm which is less than the 600mm which is recommended. Uisce Éireann said that topping up of the sand is due to be undertaken shortly.

3. There is no media depth gauge in each filter. Uisce Éireann said that gauges have been procured and are due to be installed shortly.

4. There is a turbidity monitor that rotates between each filter at 10 minute intervals and this is the monitor that is alarmed and connected to SCADA. New turbidity monitors have been installed on each filter and Uisce Eireann said that these monitors will be alarmed and connected to the PLC shortly.

3. Management and Control

		Answer
3.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	Yes

Comment

1. There is a 3 log protozoal compliance requirement for the WTP. The slow sand filters provide 2.5 log when operated in accordance with the EPA Water Treatment Manual: Filtration. Therefore there is a 0.5 log treatment deficit.

2. Monthly *Cryptosporidium* monitoring is undertaken and there have been no detections to date.

		Answer
3.2	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 inhibits based on high or low chlorine in the treated water entering the supply.

2. There are no inhibits based on high turbidity in the treated water entering the supply.

3. Adequate chlorine and turbidity alarms are in place.

4. Supply on the Remedial Action List

		Answer
4.1	Is the Action Programme on track to meet the Remedial Action List completion date?	Yes

Comment

Uisce Éireann have completed the following upgrade works at Kilgarvan WTP in order to minimise the risk of THM formation in the network:

1. Installation and commissioning of 3 no. GAC streams (each stream comprises of a pair of vessels). The GAC filter media is filled and prewashed off site.

There is an individual UVT monitor after each GAC stream and a combined UVT monitor for all 3 no. GAC streams. The installation of alarms and connection of individual UVT monitors (post GAC) to the PLC has been completed. If the UVT falls below 85%, then this will trigger replacement of the GAC vessels. The combined UVT monitor was reading incorrectly at the audit. Uisce Éireann have undertaken investigations and have identified that there is a sampling line issue and advised that the date to rectify the issue is the end of September 2025.

Each individual UVT monitor was displaying a reading between 94% and 98% which is satisfactory. Trends viewed were satisfactory also.

There is a UVT monitor after the on site reservoir which is alarmed at 70% and connected to PLC.

2. Development of a new on-site new groundwater production well which supplies 10% of the supply volume. The groundwater helps to lower the organic proportion in the water.

3. Results of THM verification monitoring undertaken in the network from September 2024 to July 2025 was submitted which demonstrates compliance with the THM drinking water standard. Regulatory THM monitoring will continue to be undertaken.

4. The supply will be removed from the Quarter 2 2025 Remedial Action List published by the EPA in September 2025.

5. Site Specific Issues

		Answer
5.1	Is the final water compliant with the pH parametric values?	No

Comment

On the day of the audit the final water pH monitor was reading 6.25 which is less than the lower pH parametric value of 6.5. Kerry County County said that the introduction of the borehole supply has resulted in a drop in the pH of the final water and that the plant may need final water pH correction to be installed.

Recommendations

Subject	Kilgarvan Audit Recommendations	**Due Date**	02/10/2025
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.** 1a) Undertake any works necessary to ensure that the borehole is sealed and housed in accordance with EPA Drinking Water Advice No. 14: Borehole Construction and Wellhead Inspection and b) Install an online turbidity monitor on the borehole. 2. Install appropriate alarms on each of the new filter turbidity monitors and connect the monitors to the PLC and SCADA. 3. a) Top up the sand depth in each filter to ensure that it is at least 600mm in depth and b) install a media depth gauge in each filter. 4. a) Submit details of actions to address the log treatment deficit and c) continue to monitor the supply in accordance with Uisce Eireann's Rationale for Determining Frequency of Monitoring of *Cryptosporidium* in Public Water Supplies. 5. a) Install inhibits based on high and low chlorine levels in the final water and b) install an inhibit based on high turbidity in the final water. 6. a) Confirm that the combined GAC UVT monitor is reading correctly, is alarmed and connected to the PLC. 7. a) Review the final water pH results at the plant and in the network, b) assess if the supply should be added to the Uisce Éireann National pH file and c) put remedial measures in place to restore compliance with the pH parametric value in the supply where necessary. **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 02/10/25 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.		