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	Limerick City Environs PWS
Organisation	Uisce Éireann
Scheme Code	1900PUB1032
County	Limerick
Site Visit Reference No.	SV34875

Report Detail

Issue Date	08/10/2026
Prepared By	Orla Harrington

Site Visit Detail

Date Of Inspection	17/09/2026	**Announced**	Yes
Time In	11:00	**Time Out**	13:00
EPA Inspector(s) **Additional Visitors**	Orla Harrington Pauline Gillard		
Company Personnel	Uisce Éireann: Tommy Roche, Flan Real, Michael Byrne, Sharon O'Dwyer, Ted Ahern, Cathal Furey. Veolia: David Murray, Thomas Murphy.		

Summary of Key Findings

1. Limerick City Environs public water supply was placed on the EPA's remedial action list in Quarter 2 2022 due to persistent exceedances of the trihalomethanes parametric value of 100 ug/l. Uisce Éireann has indicated that upgrade works are progressing and the current completion date of Quarter 4 2028 will be met.

2. Previous EPA audits on 24/09/2020 and 22/02/2023 identified that there is a 0.5 log treatment deficit for the supply. Uisce Éireann are considering installation of UV disinfection to address the log deficit, however no completion date was provided on the day of the audit. Fortnightly monitoring for *Cryptosporidium* will continue until the log deficit is addressed. All monitoring has been clear to date.

3. The Clareville water treatment plant was operating satisfactorily on the day of the audit.

4. The Leakage audit examined aspects of bulk-flow metering that measures drinking water volumes entering the distribution network (Distribution input), which is a key component of the accuracy of reliability of reported Leakage as per regulatory requirements.

Uisce Éireann should submit a report to the EPA on or before the 09/11/2026 detailing the actions taken and planned, with timescales, to close out the six recommendations in this audit report.

Introduction

The Limerick City Environs public water supply (PWS) serves a population of 126,303 and produces 44,307 m3/day. The treatment plant has a design capacity to produce 87,000 m3/day of water and is therefore operating below design capacity. Uisce Éireann is progressing works to increase its capacity to approximately 100 ML/day to allow for the supply to both replace and augment a number of satellite water supply zones.

The Clareville water treatment plant (WTP) is operated by Veolia on behalf of Uisce Éireann under a Design Build Operate contract. There are two sources of raw water, namely a canal feed adjacent to the plant linked to the River Shannon and a gravity feed from the Clonlara headrace, which supplies water to Ardnacrusha hydroelectric power station. Treatment comprises of screening, pH correction using sulphuric acid, coagulation, flocculation, clarification (Degremont and Actiflo clarifiers), pH correction using lime, rapid gravity filtration, further pH adjustment using lime, chlorination (using chlorine gas and chlorine dioxide depending on trihalomethane formation), ortho-P dosing and fluoridation. There is sludge treatment on-site, consisting of washwater tanks, a picket fence thickener and centrifuges.

The audit for Limerick City Environs PWS was scheduled as part of the ongoing EPA audits of the 26 largest public water supplies and also focused on plant upgrades and network management in relation to exceedances within the supply.

The leakage audit examined aspects of bulk-flow metering that measure drinking water volumes entering the distribution network (Distribution Input), which is a key component of the accuracy of reliability of reported leakage as per regulatory requirements.

Supply Zones Areas Inspected

The audit comprised of a site visit to Clareville water treatment plant. The auditor inspected water quality trends and alarm records.

The Leakage audit consisted of interviews with Uisce Éireann staff, the inspection of bulk-meter asset locations where accessible, the associated consoles telemetry systems, and central control areas.

1. Filtration

		Answer
1.1	Does monitoring indicate that the filters are operating effectively?	No

Comment

1. The individual turbidity trends between 15/09/2026 and 17/09/2026 were examined during the audit. It was noted that apparent spikes in turbidity were causing frequent filter shutdowns, indicating a potential issue with the turbidity monitor. Veolia could not explain the cause nor any remedial measures undertaken to address the spikes in turbidity.

2. On the day of the audit the filter turbidity readings were: Filter 1 0.07 NTU, Filter 2 0.12 NTU, Filter 3 0.15 NTU, Filter 4 0.08 NTU, Filter 5 0.12 NTU, Filter 6 0.09 NTU and Filter 7 0.08 NTU, showing acceptable turbidity less than 0.3 NTU on each filter outlet.

Recommendation

1. Undertake a review of the turbidity trends for the rapid gravity filters to determine the cause of spikes and implement measures to ensure the turbidity monitors are giving representative results.

2. Management and Control

		Answer
2.1	Is the plant suitably managed and controlled to maintain the designed log credit on each treatment stage?	No

Comment

1. Uisce Éireann has described Clareville WTP as having a log score requirement of 3.5, with the existing CFC and filtration processes providing a 3-log barrier. The 0.5 log deficit is addressed by a fortnightly *Cryptosporidium* monitoring programme. Results of the monitoring, reviewed as part of the audit, found no *Cryptosporidium* present in the samples.

2. Regarding the log deficit, Uisce Éireann had previously advised that the intention was to determine whether an additional 0.5 log credit could be achieved by adjusting the filter shut down to 0.15 NTU. While improvements have been made to the filtration processes at Clareville WTP, they are not enough to ensure consistently good performance. Uisce Éireann are now considering installation of UV disinfection to address inadequate treatment for *Cryptosporidium*, however a timeframe for completion could not be provided at the audit.

3. The EPA had recommended in previous audits (24/09/2020 & 20/03/2023) that media depth gauges be installed in all seven of the rapid gravity filters at the plant. On the day of the audit Uisce Éireann were unsure as to the depth of the filter media. Veolia stated that filters were refurbished sometime back in 2014 and that there is no evidence of filters losing media.

Recommendations:

2. Filtration: (i) install a media bed depth gauge on each filter and (ii) ensure filter media depths in all rapid gravity filters are maintained in accordance with the EPA Water Treatment Manual: Filtration.

3. (i) Install UV disinfection to address inadequate treatment for *Cryptosporidium*, and (ii) continue to monitor the supply as per the Uisce Éireann Rationale for Determining the Frequency of *Cryptosporidium* Monitoring in Public Water Supplies.

3. Drinking Water Quality

		Answer
3.1	Have failures of the parametric values or the detection of pathogenic micro-organisms or parasites in the water supply been adequately investigated?	No

Comment

1. Uisce Éireann notified the EPA on 28/08/2026 of the detection of clostridium perfringens, coliform bacteria and E.coli found in a sample taken of the final water at Clareville WTP on 25/08/2026. Investigations by Uisce Éireann identified the root cause of the incident as a sampling error, resulting from the sampler accidentally dropping the bottle and spilling the thiosulfate preservative. This error was not reported until after the sample was sent to a contract laboratory for analysis.

2. Uisce Éireann confirmed that disinfection levels remained satisfactory between 25/08/2026 and 28/08/2026. Residual chlorine trends viewed showed that the treated water chlorine average was being maintained at approximately 1.34 mg/l, there was no unusual dips or spikes observed in the trend. At the audit, records viewed demonstrated that a chlorine residual of > 0.1 mg/l was being maintained throughout the network at the time the sample was taken. Follow up sampling of the final water was undertaken on 27/08/2026 and 28/08/2026 and were compliant.

3. The EPA were notified on 26/08/2026 of three aluminium failures of the drinking water parametric value of 200 ug/l (sample results were 1510 ug/l, 1530 ug/l and 206 ug/l) in samples taken on the 13/08/2026 and 20/08/2026 localised to two locations in the network. Uisce Éireann investigations have ruled out any issues at the plant. Continuous aluminium monitoring data was submitted to the EPA prior to the audit, between 31/05/2026 and 03/09/2026. Treated water aluminium averaged 30 ug/l with a maximum value of 44 ug/l. The online monitor was offline from 04/08/2026 to 21/08/2026. During this time, daily laboratory testing was maintained. A reading of 40 ug/l aluminium was observed on the day of the audit.

4. The following remedial measures are being considered: (i) installation of non return valves/meters at affected houses; (ii) further investigation into internal plumbing at affected houses and (iii) wider investigation into potential large draw downs from local businesses. Flushing of mains and resampling is ongoing at the affected properties and in the wider estate. Investigations are also focusing on hydrant interference and potential back-siphonage into the network, but Uisce Éireann could not confirm the root cause during the audit. HSE advice is to continue investigations.

Recommendations:

4. Ensure that (i) the cause of the aluminium exceedances in the network are investigated and (ii) remedial measures are put in place to ensure compliance.

5. Submit three consecutive aluminium resampling results from the failed locations to verify compliance, once remedial measures complete.

4. Supply on the Remedial Action List

		Answer
4.1	Do the audit findings support progress made with the Remedial Action List upgrades?	No

Comment

1. Limerick City Environs PWS has been on the EPA remedial action list since 30/09/2022 due to elevated levels of THMs above the parametric value of 100 ug/l.

2. Uisce Éireann indicated that upgrade works to enable the removal of the supply from the remedial action list are progressing and that the current completion date of December 2028 will be met.

3. Uisce Éireann stated that works are continuing to remove the organic precursors of THMs. Uisce Éireann provided monthly THM monitoring results from 19 locations between 20/11/2024 and 28/07/2026. Sampling has shown general compliance in the final water however, the latest exceedance was from a network sample taken on 28/07/2026 (118ug/l). Uisce Éireann advised that they will continue to progress enhancement of the coagulation chemical dosing system, upgrade to pH correction and the removal of lime dosing pre filtration.

Recommendation

6. THMs: (i) progress works to address the THM issue in the supply; (ii) once the upgrade works are complete carry out a six month verification monitoring programme to demonstrate that the works completed are effective in ensuring ongoing compliance with the THMs parametric value.

5. DI Bulk Flow Metering (Leakage)

		Answer
5.1	Confirm that the treatment plant supplies above 1000MCD	Yes

Comment

1. Treatment Plant supplies approximately 48 million litres per day.

		Answer
5.2	Is there site-bulk metering for measuring drinking water volumes entering the supply network?	Yes

Comment

1. Treatment Plant has 4 bulk-meters which were excluded from visual inspection as they are underground:

i. M17 900mm (Combined)

ii. M53 900mm to Newcastle Reservoir

iii. M52 700 mm to Newcastle Reservoir

iv. M51 400mm (Not in use) to Newcastle Reservoir

		Answer
5.3	Is ALL treated water entering the supply system from the treatment plant currently metered?	Yes

Comment

1. Confirmed, all water entering the supply system is metered.

		Answer
5.4	Is there a scheduled verification of bulk meter(s) to ensure the accuracy of the meter reading?	No

Comment

1. The verification audit was not done.

		Answer
5.5	Is there a scheduled verification of bulk meter(s) readings to ensure the correct readings are transmitted to data/network management systems (e.g. SCADA)?	Yes
	Comment	
	1. Calibration inspection done each year. Further information requested.	

		Answer
5.6	What is the frequency of the bulk meter(s) readings taken (hourly, daily)?	Yes
	Comment	
	1. Readings taken continuously, confirmed by inspection of trends in control room.	

		Answer
5.7	Is the bulk meter compliant/calibrated to OIML R49 / ISO DIN 4064 Standards?	Not Applicable
	Comment	
	1. Further verification required. Unable to confirm at time of visit.	

		Answer
5.8	For each on-site bulk meter, is the current bulk-meter flow above the recommended operational minimum and maximum flows for the meter?	Yes
	Comment	
	1. Unable to confirm at time of audit.	

		Answer
5.9	Is there a process in place to alert Operators/Maintenance/Systems when the bulk-meter malfunctions or stops working?	Yes
	Comment	

1. Operators will be alerted through alarms in the treatment process. Alarms are monitored 24/7.

		Answer
5.10	Are bulk-meter flow trends available on-site?	Yes

Comment
1. Confirmed by inspection of telemetry control room.

		Answer
5.11	Are there any plans to add or upgrade existing meters within the next 12 months?	No

Recommendations

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 is responsible for ensuring a clean and wholesome supply of drinking water and should implement the recommendations raised in this report without delay.

Response to Audit Report

Uisce Éireann should submit a report to the EPA on or before the date specified in the Summary of Key Findings detailing the actions taken and planned, with timescales, to close out the recommendations in this audit report.

The EPA advises that the findings and recommendations from this report should, where relevant, be addressed at other public water supplies.

Publication of Reports

Audit reports are published to the EPA's website, www.epa.ie, typically 1 month after the audit report is issued to Uisce Éireann.