

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	Ardee
Organisation	Uisce Éireann
Scheme Code	2100PUB1001
County	Louth
Site Visit Reference No.	SV32469

Report Detail	
Issue Date	01/05/2025
Prepared By	Ruth Barrington

Site Visit Detail			
Date Of Inspection	03/04/2025	Announced	Yes
Time In	10:30	Time Out	13:00
EPA Inspector(s)	Ruth Barrington Derval Devaney		
Additional Visitors			
Company Personnel	Uisce Éireann: Joseph Moran, Francis McGley Louth County Council (working in partnership with Uisce Éireann): Andrew White, Patrick Callan, James O'Hagan, Alan McAleer		

> Summary of Key Findings

1. Uisce Éireann has addressed a number of the recommendations from the previous EPA audit report, covering definition of the protozoal log requirement, provision of critical alarms and inhibits, verification of disinfection, establishing incident response procedures and chemical storage.
2. The chlorine dosing capacity at Ardee WTP remains at risk, with the two pumps frequently required to run in duty/assist configuration with no automatically available standby on pump failure. Uisce Éireann has implemented a WTP shutdown based on low chlorine residual to operate in the event of pump failure.
3. The log treatment performance of the filtration barrier at Ardee WTP has not yet been defined by Uisce Éireann. Uisce Éireann is carrying out *Cryptosporidium* monitoring at the WTP in the interim and there have been no detections of *Cryptosporidium*.

> Introduction

Ardee Public Water Supply serves a population of approximately 8,000 people. Water is abstracted from the River Dee and from a nearby borehole. Treatment processes at the water treatment plant (WTP) include coagulation, flocculation and clarification, filtration and disinfection using chlorination. This audit was carried out to follow up on progress of the recommendations from the previous EPA audit in December 2022.

> Supply Zones Areas Inspected

Areas of the WTP site were inspected to assess works carried out by Uisce Éireann based on the findings of the previous EPA audit.



1. Source Protection

1.1

Is the abstraction source(s) adequately protected against contamination?

Answer

No

Comment

1. The River Dee is the main abstraction source and is prone to high ammonia levels in the raw water due to activities in the catchment. When ammonia levels rise, the chlorine demand also rises.

2. Uisce Éireann has mitigated against the direct risk of high ammonia by installing an ammonia monitor with raw water shutdown where ammonia levels rise above 0.5 mg/l.



2. Coagulation Flocculation and Clarification (CFC) Stage

2.1

Were the CFC tanks, channels and weirs observed to be clean, level and well maintained during the audit?

Answer

No

Comment

1. Uisce Éireann had carried out work since the previous audit to level the clarifier channels, however some of the clarifier channels in both tanks were observed again to be not level, leading to uneven flow across the channels.



3. Disinfection

3.1

Are duty and standby chlorine pumps/ UV units in operation?

Answer

No

Comment

1. Chlorination is used for disinfection at Ardee WTP, with on-site generation of sodium hypochlorite in the OSEC unit. Drummed sodium hypochlorite is also used as a manually activated back up.

2. There are two chlorine pumps in use at the OSEC bulk tank. These frequently operate as duty/assist pumps rather than in duty/ standby configuration, and in some circumstances the back up sodium hypochlorite facility also must be brought into use in addition. This is linked to high ammonia in the River Dee source, which elevates chlorine demand.

3. During times when two or three pumps are required to maintain an appropriate dose rate, there is no automatically switched standby available in the event of a failure of one pump.

4. The recurring lack of a standby chlorine dosing pump was raised at the previous EPA audit, with the recommendation to provide a standby with automatic switchover or to provide plant shutdown in the event of failure of a dosing pump.

5. Uisce Éireann has taken measures to control ammonia and low chlorine by installing an ammonia monitor with automatic raw water shutdown if the trigger of 0.5 mg/l is breached, and by providing a plant shutdown linked to low chlorine residual at 0.8 mg/l. There has been no additional chlorine pump provided since the previous audit.



4. Management and Control

4.1

Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?

Answer

No

Comment

1. Time delays for residual chlorine and pH alarms and shutdowns were set at 15 minutes, which is not in line with the respective 5 and 3 minute recommendations of the EPA *Water Treatment Manual: Disinfection* and the Uisce Éireann chlorination specification.
2. The alarmed LoLo pH setting was at pH 6, which is outside the parametric range of pH 6.5 to 9.5 specified in the *European Union (Drinking Water) Regulations 2023*.

4.2

Are online monitors operational?

Answer

Yes

Comment

1. Combined filtered water turbidity is measured using the C-SCAN unit at Ardee WTP. Provision for this measurement was implemented by Uisce Éireann following the EPA audit of 14/12/2022. During this audit, the display on the C-SCAN showed a turbidity of 13.9NTU but this was clearly a discrepancy when viewed alongside individual filter turbidity and final water turbidity readings. The unit had recently been serviced in March 2025.
2. Combined filter turbidity is visible on SCADA as a current reading only and is not trended.
3. The ammonia monitor was operational during the audit, however it had been out of service for approximately 6 weeks during 2025. Staff described this as due to difficulty obtaining the correct reagents for the monitor. These reagents are not standard across all ammonia monitors. Daily ammonia samples were taken by staff during the time the monitor was out of service.

4.3

Have the recommendations from the previous EPA audit been satisfactorily addressed?

Answer

No

Comment

1. The EPA has been tracking progress by Uisce Éireann against the recommendations of the audit carried out on 14/12/2022, and this current audit was carried out to verify the reported progress. Work has been undertaken on site to address recommendations covering definition of the protozoal log requirement, provision of critical alarms and inhibits, verification of disinfection, establishing incident response procedures and chemical storage.
2. Other recommendations from the audit of 14/12/2022 have been partially addressed, specifically levelling clarifier channels, defining the log treatment provided, confirmation on how any deficit will be managed and improvements to filter controls and management. Recommendations on these remaining points are included in this report for ease of reporting and tracking.



5. Drinking Water Quality

5.1

Is *Cryptosporidium* monitoring being carried out in accordance with Uisce Éireann's 'Rationale for Determining the Frequency of *Cryptosporidium* Monitoring in Public Water Supplies'?

Answer

Yes

Comment

1. Following the EPA's audit on 14/12/2022, Uisce Éireann commenced *Cryptosporidium* sampling at Ardee WTP. The sampling has not shown any detections of *Cryptosporidium*.
2. The auditors noted that the *Cryptosporidium* lab analysis certs showed a range of sample sizes, with a 1 litre sample being analysed in October 2024 and a 133 litre sample being analysed in December 2024. *Cryptosporidium* sampling under the Uisce Éireann monitoring programme is usually undertaken using a 24-hour sample of approx. 1200 litres. It could not be determined during the audit why the smaller sample size was used or whether that met Uisce Éireann's own criteria for a representative sample.

Recommendations

Subject	Ardee Audit 03/04/2025	Due Date	02/06/2025
Action Text	<p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</p> <ol style="list-style-type: none"> 1. Assess the feasibility of providing standby dosing capacity for the OSEC generated chlorine dose, to operate automatically on failure of duty pump(s) or low chlorine residual. This feasibility assessment should consider the frequency and duration of WTP shutdowns on low chlorine or high ammonia triggers. 2. Protozoal barrier: (i) confirm the log treatment provided by processes at Ardee WTP; (ii) define how and through which Uisce Éireann programme any log deficit will be addressed (for example filter run to waste capacity); (iii) confirm that the <i>Cryptosporidium</i> monitoring programme is representative in relation to recent sample volumes. 3. Review and make appropriate changes to alarm settings (for pH, to be within the parametric range) and time delays (for chlorine and pH), in line with the EPA <i>Water Treatment Manual: Disinfection</i> and Uisce Éireann specification. 4. Monitoring: (i) establish a suitable maintenance programme for the ammonia monitor including including stocking of reagents to keep the monitor operational at all times; (ii) maintain the C-SCAN turbidity monitor/probes to ensure representative results (iii) provide combined turbidity as trended data in SCADA. 5. Level the clarifier channels to allow equal flow across each channel within the clarifiers. 6. Establish a filter log book to record filter maintenance details, media depth measurements and details set out in the EPA <i>Water Treatment Manual: Filtration</i> section 5.5.4 as a minimum. 7. Update the Incident Management chart to include relevant staff contact phone numbers and incident triggers for the ammonia monitor. <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 the above due date 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>		