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	Navan-Mid Meath Kilcarn PWS
Organisation	Uisce Éireann
Scheme Code	2300PUB1051
County	Meath
Site Visit Reference No.	SV33141

Report Detail

Issue Date	05/11/2025
Prepared By	Lisa Noone

Site Visit Detail

Date Of Inspection	10/10/2025	**Announced**	Yes
Time In	10:30	**Time Out**	13:10
EPA Inspector(s) **Additional Visitors**	Lisa Noone		
Company Personnel	Uisce Éireann: Joseph Moran, Conor Flanagan, Bryan Smyth, Daniel Puz Meath County Council (working in partnership with Uisce Éireann): Barry Gaynor		

Summary of Key Findings

1. The protozoal barrier at Kilcarn Water Treatment Plant is not fully protected by suitable alarms and inhibits as set out in the *EPA Water Treatment Manual: Filtration* in order to verify the protozoal barrier and to prevent the entry of inadequately treated water to the supply.

2. Decommissioning of Kilcarn Water Treatment Plant is proposed under the Remedial Action List Action Programme with an expected completion date of Q4 2028. The findings of the audit support progress made with rationalisation and the interim plant upgrades.

Introduction

Navan Mid-Meath Kilcarn Public Water Supply (PWS) is served by Kilcarn Water Treatment Plant (WTP). Uisce Éireann delineated the Navan Mid-Meath PWS into two distinct water supply zones during Q1 2021; namely Navan Mid-Meath Kilcarn PWS and Navan Mid-Meath Liscarton PWS. This was to enable the Navan Mid-Meath Liscarton PWS to be removed from the EPA's Remedial Action List (RAL) following the upgrade of Liscarton WTP. Navan Mid-Meath Kilcarn PWS remains on the RAL due to elevated levels of trihalomethanes (THMs). Decommissioning of Kilcarn WTP is proposed under the RAL Action Programme, and the supply will be rationalised with Staleen WTP, with an expected completion date of Q4 2028.

The Kilcarn WTP supplies between 1,300m3 to 2,500m3 of water per day, serving a population of between 4,000 to 12,000 people depending on the network configuration and production volume of Liscarton WTP. Kilcarn WTP abstracts raw water from the River Boyne. Treatment consists of pH adjustment, coagulation, Dissolved Air Flotation and Filtration (DAFF), disinfection via chlorination and final water pH correction. Treated water is pumped to two offsite reservoirs at Carnhill and Oldtown (Johnstown).

The audit was undertaken to assess Uisce Éireann’s progress with the RAL programme of works and decommissioning of the plant, and to assess performance in producing clean and wholesome water in the interim.

Supply Zones Areas Inspected

The raw water source at the River Boyne, along with all treatment processes on site were inspected as part of the audit.

1. Source Protection

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

Comment

1. A hydrocarbon monitor was installed at the raw water intake following a previous oil spill upstream, however this has not yet been commissioned.

2. Filtration

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

Comment

1. Automatic backwash of the DAFF system takes place every 10 hours or in the event of head loss only.

2. There are no turbidity inhibits/backwash triggers in place on the DAFF system in the event of filtered water turbidity exceeding the operational target of 0.3 NTU in accordance with the requirements of the *EPA Water Treatment Manual: Filtration*, to ensure the *Cryptosporidium* barrier is maintained.

3. Operational staff stated that it is difficult to maintain filtered water turbidity below 0.3 NTU due to the flashy nature of the raw water source at the River Boyne, and in addition, automatic backwashes linked to turbidity may be difficult to achieve due to the capacity of the clearwater tank.

4. On the 16/10/2025 following the EPA audit, Uisce Éireann confirmed that individual filter alarm limits are now set at 0.3 NTU, however it was not confirmed if an inhibit is linked to this alarm to protect the *Cryptosporidium* barrier.

3. Management and Control

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

Comment

1. Operational staff stated that the alarm dial-out system for Oldtown Reservoir regularly malfunctions, with alarms being triggered and dialling-out without clear cause.

		Answer
3.2	Is a suitable cascade system in place for alarm dial outs?	No

Comment

1. Critical alarms are dialled-out on a group-basis to three plant operators and are responded to depending on whoever is on call, however there is no way of verifying that alarms have been responded to.

		Answer
3.3	Are online monitors operational?	No

Comment

1. There is no currently no operational fluoride monitor in place at the WTP.

		Answer
3.4	Is continuous monitoring data accessible?	No

Comment

1. Carnhill Reservoir is not connected to the SCADA system, meaning live trends or data are not available for review by operational staff

4. Supply on the Remedial Action List

		Answer
4.1	Do the audit findings support progress made with the Remedial Action List upgrades?	Yes

Comment

1. Navan Mid-Meath Kilcarn PWS is on the EPA's Remedial Action List (RAL) since 2009 due to elevated levels of trihalomethanes (THMs) in the supply. Six parametric failures for THMs have been reported to the EPA in 2025 for the Kilcarn supply with results ranging from 102ug/l to 158ug/l versus the parametric value of 100ug/l.

2. Uisce Éireann have provided progress reports on the RAL Action Programme to the EPA for Kilcarn PWS via bi-annual RAL updates. These reports and works completed to date in the network and at the WTP were discussed during the audit and are summarised as follows:

- Éireann is currently progressing preliminary design and planning associated with rationalisation of Kilcarn. Uisce Éireann has stated that the long term solution is currently planned for implementation by Q4 2028 subject to design, consents, procurement and funding.
- As part of the rationalisation process, the current water supply zone will be supplied with water from Staleen WTP which Uisce Éireann state will be upgraded to provide the increased demand and required quality by Q4 2028.
- In preparation for rationalisation to Staleen WTP, water mains have been laid and booster pumps installed between Ballies and Navan, with remaining works and infrastructure delivery on Carnhill Reservoir and the Duleek to Navan trunk mains due to be completed in Q4 2025.
- From an operational perspective, Uisce Éireann continue to make effort to manage and optimise existing infrastructure to address the existing deficiencies of Kilcarn WTP during the interim period ahead of rationalisation.
- Jar testing, associated training and process optimisation has been carried out, with polymer dosing system to be inspected and calibrated to confirm batch strength and dose rates.
- A new saturation vessel has been installed to improve DAFF performance, as well as a run-to-waste system.
- Network management process reviews are being carried out such as water age management, and a review of reservoir necessity is being carried by Uisce Éireann in an effort to reduce parametric exceedances and support THM reduction.
- Six automatic network scours are due to be put in place - one has been installed to date.
- The Uisce Éireann disinfection programme was carried out at Carnhill Reservoir with handover to operational staff since complete

3. The findings of the audit support progress made with rationalisation and the interim plant upgrades.

Recommendations

Subject	Navan Mid-Meath Kilcarn Audit Recommendations	**Due Date**	05/12/2025
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.** 1. Confirm if the individual turbidity alarm set points put in place following the EPA audit triggers an appropriate inhibit in accordance with the requirements of the *EPA Water Treatment Manual: Filtration* to protect the protozoal barrier and prevent the entry of inadequately treated water to the supply. 2. Proceed with rationalisation of Kilcarn WTP and continue plant optimisation works in the interim as per the RAL Action Programme and associated completion date of Q4 2028. Uisce Éireann should include assessment of THM monitoring in bi-annual RAL updates to demonstrate effect of interim works at the WTP and in the network. 3. Examine the feasibility of linking Carnhill Reservoir to the SCADA system to ensure operational staff have access to trended performance data. 4. Investigate and resolve any potential issues affecting the Oldtown Reservoir alarm triggers and ensure alarms are enabled at all times. 5. Monitors: (i) Repair or replace the fluoride monitor, and (ii) Ensure final commissioning of the hydrocarbon monitor is complete. 6. Put in place an appropriate cascade system for responding to alarms generated at the plant which allows for verification that an alarm has been responded to. **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.		