

# 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	Knockeragh
Organisation	Uisce Éireann
Scheme Code	0500PUB1605
County	Cork
Site Visit Reference No.	SV33296

Report Detail	
Issue Date	18/12/2025
Prepared By	Orla Harrington

Site Visit Detail			
Date Of Inspection	07/11/2025	Announced	Yes
Time In	13:45	Time Out	14:35
EPA Inspector(s)	Orla Harrington		
Additional Visitors			
Company Personnel	Uisce Éireann: John Sheahan, Claire Hurley.  Cork County Council (working in partnership with Uisce Éireann): Jerry Sheahan.		

## > Summary of Key Findings

1. Following consultation with the HSE, Uisce Éireann issued a 'Do Not Consume' Notice on the Knockerah Public Water Supply on 10/10/2025 due to elevated levels of iron and manganese in the final water at the water treatment plant, which remains in place to date. Current treatment at the plant does not effectively remove manganese and iron present in the raw water source.
2. There is no turbidity monitor with associated alarms and inhibit set-points at the water treatment plant.
3. The standby UV unit was out of operation on the day of the audit. There is no automatic shutdown in place at the water treatment plant to prevent inadequately treated water entering the supply network should the duty UV unit fail at the plant.

## > Introduction

The Knockerah Public Water Supply (PWS) produces approximately 11 m<sup>3</sup>/day serving approximately 38 people. Raw water is abstracted from a borehole next to the water treatment plant. Treatment consists of pH correction, UV disinfection and chlorination, iron and manganese removal treatment via pressure filtration.

The audit was conducted in response to a number of manganese and iron failures detected at the water treatment plant and in the distribution network from 08/09/2025, and subsequent imposition of a Do Not Consume notice on the supply from 10/10/2025 which remains in place at the time of issue of this audit report.

## > Supply Zones Areas Inspected

The borehole source and treatment processes at the water treatment plant were inspected.



## 1. Source Protection

1.1

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

**Answer**

No

**Comment**

1. Raw water is obtained from one borehole on site.
2. The borehole is not sealed or capped in accordance with EPA Drinking Water Advice Note No. 14:Borehole Construction and Wellhead Protection.



## 2. Disinfection

2.1

Is the disinfection system verified using monitors and alarms?

Answer

No

### Comment

1. A UV disinfection system was installed to provide a barrier against *Cryptosporidium*. It is provided by a VIQUA PRO10 model UV disinfection system. Uisce Éireann were unable to confirm what validated shutdowns are in place for the UV unit to prevent entry of inadequately treated water into the supply.

2. Primary disinfection is achieved by using sodium hypochlorite, which is dosed using duty/standby pumps with automatic switchover in place. The chlorine dose is flow proportional. There is one chlorine monitor at the plant with a low shutdown of 0.5mg/l. There is no alarm setting in place.

2.2

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

Answer

No

### Comment

1. The standby UV unit is currently out of operation and it could not be confirmed when it first went out of service.

2.3

Is the UV system suitably validated?

Answer

Yes

### Comment

1. Uisce Éireann provided a validation certificate subsequent to the audit, confirming that the UV unit is validated to the United States National Sanitation Foundation protocol, which validates for UV dose and maximum flow. At the time of the audit, the inlet flow was 0.3 m<sup>3</sup>/hr, and UV dose 60 mJ/cm<sup>2</sup> which demonstrates that the plant was being operated within its validated range.

2.4

Is there adequate chlorine contact time before the first connection?

Answer

Yes

### Comment

1. Uisce Éireann submitted a chlorine contact time calculation that demonstrated that the plant achieves a total effective contact time of 16.28 mg.min/l at a chlorine level of 0.5 mg/l and this is less than the target residual chlorine of 23.4 mg.min/l that Uisce Éireann have set for the site which is a more considered site-specific approach to setting contact time values. Contact time is achieved onsite within the contact tank and there is one chlorine monitor at the plant to verify chlorine concentrations. It is configured to shutdown at 0.5 mg/l.



3.1

Is the water treatment plant resilient enough to cope with significant variations in raw water quality or demand?

Answer

No

**Comment**

1. Uisce Éireann advised that manganese levels are naturally occurring in the raw water and linked to the lowering of the water level in the borehole. There is one pressure filter (labelled as Kataolx) for the purposes of manganese and iron removal but little information was available at the audit on how the filter operates. The media was last replaced on 25/08/2025 and the next service is due in March 2026. In terms of maintenance, Uisce Éireann stated that the filter is subject to service maintenance every six months. There is no operational monitoring programme of raw and treated water to ensure the manganese removal filter is operating effectively and efficiently.

2. Following the series of manganese and iron exceedances from 08/09/2025, Uisce Éireann notified the failures to the HSE and a Do Not Consume notice was placed on the supply on 10/10/2025 affecting a population of 38.

3. There is a pH correction unit at the site which uses limestone to raise the pH of the naturally acidic water. There is no pH monitor at the plant.

4. There is no turbidity monitor installed and operational at the plant.

5. Uisce Éireann advised that they intend to carry out a number of remedial measures to address the manganese and iron exceedances which include (i) installation of a larger contact tank to facilitate longer backwash of the iron and manganese pressure filters (ii) borehole cleaning and (iii) optimisation of the pressure filters. These actions are taken with the aim of returning the supply to water quality compliance. Uisce Éireann will continue fortnightly monitoring for manganese and iron of the raw and final water along with two locations on the network.

## Recommendations

<b>Subject</b>	Knockeragh PWS - Audit Report	<b>Due Date</b>	26/01/2026
<b>Action Text</b>	<p><b>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendation(s) without delay.</b></p> <ol style="list-style-type: none"> <li>1. Manganese and iron: (i) Submit an action programme (with timescales) for the restoration and maintenance of compliance with the manganese and iron parametric values (ii) continue to undertake a fortnightly monitoring programme of raw water, final water and network until compliance with the parametric values has been achieved and (iii) notify the EPA when the Do Not Consume Notice is lifted.</li> <li>2. Examine the feasibility of repairing and reinstating the standby UV unit.</li> <li>3. (i) Establish appropriate alarm and shutdown set-points for chlorine and UV to ensure adequate disinfection and a <i>Cryptosporidium</i> barrier in accordance with the EPA Water Treatment Manual: Disinfection and (ii) Ensure that the low chlorine alarm and shutdown setpoints are set at an appropriate level to ensure that the target residual chlorine concentration in the final water leaving the plant is met.</li> <li>4. Install a continuous turbidity monitor with alarm and shutdown to prevent inadequately treated water entering the supply.</li> <li>5. Install a pH monitor with appropriate high and low alarms.</li> <li>6. Ensure the borehole is adequately capped. Uisce Éireann should have regard to EPA Advice Note no. 14: Borehole Construction and Wellhead Protection when carrying out these works.</li> </ol> <p><b>Actions required by Uisce Éireann</b></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 26/01/2026 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>		