

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	Clonmel Poulavanogue
Organisation	Uisce Éireann
Scheme Code	2900PUB0109
County	Tipperary
Site Visit Reference No.	SV27960

Report Detail	
Issue Date	25/07/2023
Prepared By	Criona Doyle

Site Visit Detail			
Date Of Inspection	05/07/2023	Announced	Yes
Time In	10:30	Time Out	13:00
EPA Inspector(s)	Criona Doyle Paul Buckley		
Additional Visitors	David O'Malley Maria O'Connell Health Service Executive: Matthew Morris; Naz Ajaegbo		
Company Personnel	Uisce Éireann: Pat Duggan; Denis McGrath; Samantha Keane. Tipperary County Council (working in partnership with Uisce Éireann): Brid O'Hehir; Owen Lawlor; James Whelan; Fintan Collins.		

> Summary of Key Findings

1. The audit confirmed that the chlorine disinfection failure incident had been appropriately escalated and responded to in order to protect consumers.
2. The Clonmel Poulavanogue Public Water Supply is on the EPA's Remedial Action List. The drilling and yield testing works at the Monroe wellfield are progressing along with detailed design to facilitate rationalisation of the Clonmel Poulavanogue Water Treatment Plant (WTP) with an expected completion date of December 2026.
3. Works are underway to address the inadequate chlorine contact time affecting a portion of the supply and are due to be completed by the end of 2023.

> Introduction

The Clonmel Poulavanogue Public Water Supply (PWS) serves a population of 2,435 with an average daily volume of 1,889m³/d (EDEN figures). Raw water is obtained from three sources (Princes, Boulla and Nugents streams). On the day of the audit the Princes Stream was in use. Treatment includes slow sand filtration and chlorination. The fluoridation treatment stage is not currently in use pending the completion of remedial works.

The audit was carried out in response to (i) a chlorination disinfection failure on the 21/06/2023 which led to the placing of a Boil Water Notice on the supply from 21/06/2023 to the 03/07/2023 and (ii) the detection of *Cryptosporidium* in the treated water on 14/06/2023.

The supply has been on the EPA's Remedial Action List (RAL) for inadequate treatment for *Cryptosporidium* since 2008. Works to address the inadequate treatment for *Cryptosporidium* are due to be completed by December 2026.

> Supply Zones Areas Inspected

The audit consisted of a review of the incident response to the chlorination disinfection failure on 21/06/2023 and an inspection of the filtration and disinfection treatment stages at the water treatment plant.



1. Incident Management

1.1

	Answer
Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	Yes
<p>Comment</p> <p>On 21/06/2023 the trip switch for the flow meter on the electric panel tripped out. This caused the flow proportional chlorine dosing pumps to stop at 11:15 hours and resulted in untreated water going into the network for approximately 45 minutes.</p> <p>There is a low chlorine warning alarm setpoint at 0.78mg/l (15 minute time delay) and high chlorine alarm setpoint at 2.62 mg/l (15 minutes time delay). The chlorine alarms generate a text alert, however there is no automatic plant shutdown linked to the low or high chlorine alarm setpoints.</p> <p>A low chlorine alarm was sent out at 11:28 hours on 21/06/2023. The Caretaker was on site and responded to the low chlorine alarm. The Caretaker escalated the incident to Uisce Éireann and contacted an electrical contractor to investigate the electrical issue. The power was restored to the flow meter and chlorine dosing was restarted at approximately 12:00 hours.</p> <p>Uisce Éireann consulted with the HSE and a Boil Water Notice (BWN) was placed on the supply on 21/06/2023 within 30 minutes of the disinfection issue being identified. In response to the incident Tipperary County Council undertook monitoring of the chlorine residuals in the network at 3 no. locations on 21/06/2023. The residual chlorine levels were Townhall 1.14mg/l, Coleville Avenue 0.45 mg/l and Show Grounds Shopping Centre 1.38 mg/l.</p> <p>Uisce Éireann notified the EPA of the chlorine disinfection failure on 21/06/2023 and the placing of the BWN. The Boil Water Notice was lifted on 03/07/2023 following the receipt of satisfactory monitoring results on the 26/06/23, 27/06/23 and 28/06/23 in consultation with the HSE.</p> <p>The audit found that the chlorination disinfection failure was suitably alerted to the plant operators and was promptly escalated and managed in order to maintain water quality and protect public health. In response to the incident Uisce Éireann plan to install an automatic plant shutdown linked to low and high chlorine alarms and final water turbidity.</p>	



2. Source Protection

	Answer
2.1 Is the abstraction source(s) adequately protected against contamination?	No
Comment	
Uisce Éireann and Tipperary County Council could not confirm when local landowners were last written to in relation to their obligations under the <i>European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 as amended</i> .	

> 3. Filtration

		Answer
3.1	Are the filters designed and managed in accordance with EPA guidance?	No
Comment		
<p>There are 5 no. slow sand filters. On the day of the audit Filter No. 4 was out of service for skimming. No records were available to confirm when the sand depth was last checked. Uisce Éireann and Tipperary County Council stated the depth of sand in the filters was 0.5m. This is less than the minimum recommended sand depth of 0.6m in the <i>EPA Water Treatment Manual: Filtration</i>.</p> <p>There is no continuous head loss monitor on each filter. Head loss is not used to instigate filter cleaning. One filter is cleaned each week or as required in response to an increase in turbidity.</p> <p>There is no daily temperature monitoring as recommended in the <i>EPA Water Treatment Manual: Filtration</i>.</p>		

		Answer
3.2	Does monitoring indicate that the filters are operating effectively?	No
Comment		
<p>The turbidity trend data for the seven days before and after the <i>Cryptosporidium</i> detection (14/06/2023) was submitted on the 06/07/23 following the audit for the five individual slow sand filters and the combined filtered water turbidity.</p> <p>The trend data for Filter No. 5 indicates elevated turbidity between 16/06/2023 and 19/06/2023. The data indicates the turbidity in Filter No. 5 was above 0.5 NTU and above the individual turbidity alarm setpoint of 0.46 NTU between the 16/06/2023 and 19/06/2023. The combined final turbidity was below 0.5 NTU on these dates.</p> <p>The explanation provided with the trend data is that there was an issue with the turbidity monitor. No information was provided with the trend data in relation to what remedial actions were undertaken in response to this operational event and details of the actions undertaken in response to alarms and incidents were not recorded on the daily log at the audit.</p>		



4. Disinfection

	Answer	
4.1	Does the trend in chlorine residual at the treatment plant indicate adequate and stable levels of disinfection?	No
Comment		
<p>A review of the residual chlorine trend data submitted prior to the audit indicated a further low chlorine event on 20/06/2023 at approximately 16:45 hours in response to a power outage. A low chlorine alarm was generated at 16:59 hours but no record was available in the plant log book to confirm what corrective actions took place in response to the alarm. A battery pump is installed on site to facilitate chlorine dosing when there is a power failure.</p>		

	Answer	
4.2	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	No
Comment		
<p>There is no residual chlorine monitor located after contact time.</p>		

	Answer	
4.3	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	No
Comment		
<p>Tipperary County Council outlined that residual chlorine levels in the network are monitored on a weekly frequency.</p>		

	Answer	
4.4	Is there adequate chlorine contact time before the first connection?	No
Comment		

Inadequate contact time was identified in this supply in October 2018 for a portion of the supply. A dual advisory notice has been in place since 12/10/2018 affecting 23 no. properties (population 96). The affected consumers have not been updated since in relation to the advisory notice which was issued in 2018.

Works are underway to resolve the inadequate contact time issue. It is proposed to supply the 23 no. affected properties from an alternative water supply (Glenary PWS). The installation of approximately 3km of main pipeline has been completed and civil works to complete the connection of the new main to the properties is underway. The new pumping station has yet to be constructed. The works are due to be completed by the end of the 2023.



5. Treatment Process Chemicals

	Answer
5.1 Are treatment process chemicals appropriately managed and stored?	No
Comment	
<p>A build up of liquid was observed in the bund of the sodium hypochlorite day tank.</p> <p>25 litre drums of sodium hypochlorite, which were past their expiry day, were being stored adjacent to the chlorine day tank. Tipperary County Council stated that these drums were not in use but were being temporarily stored.</p>	



6. Management and Control

		Answer
6.1	Are instrument calibrations within date?	No
Comment		
The residual chlorine monitor (due 03/07/23) and final turbidity monitor (due 03/07/23) were past their service due dates.		



7. Site Specific Issues

	Answer	
7.1	Have works been completed to address the inadequate treatment for <i>Cryptosporidium</i> at the Clonmel Poulavanogue PWS ?	No
Comment		
<p>The Clonmel Poulavanogue PWS has been on the EPA's Remedial Action List (RAL) for inadequate treatment for <i>Cryptosporidium</i> since 2008. Uisce Éireann propose to rationalise the Clonmel Poulavanogue WTP and replace with a supply from the Monroe PWS.</p> <p>Uisce Éireann are continuing to progress the RAL works and confirmed that the well drilling, yield testing and water sampling are ongoing at the Monroe Wellfield. Uisce Éireann outlined that detailed design and network modelling is also progressing and that land acquisition and planning permission will also be required for the proposed development. Uisce Éireann confirmed that the works are on track to be completed by the RAL completion date of December 2026.</p>		

	Answer	
7.2	Is fluoride dosing taking place ?	No
Comment		
<p>Fluoride dosing was not taking place on the day of the audit. Uisce Éireann confirmed that fluoride dosing had not taken place for approximately two years as remedial works are required to the fluoridation treatment stage. The remedial works are due to commence on site on 14/07/2023.</p>		

Recommendations

Subject	Clonmel Poulavanogue - Audit	Due Date	25/08/2023
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. (i) Confirm the sand depth in each slow sand filter; (ii) undertake remedial works to ensure the sand depth meets the depth requirements specified in the <i>EPA Water Treatment Manual: Filtration</i>; (iii) examine the feasibility of installing a continuous headloss monitor on each slow sand filter in accordance with the <i>EPA Water Treatment Manual: Filtration</i>; (iv) take daily temperature readings of the raw water; (v) provide an explanation for the cause of the elevated turbidity in Filter No. 5 between 16/06/2023 and 19/06/2023 with details of the remedial actions that were undertaken in response to this operational event. 2. (i) Install automatic shutdown linked to the high and low chlorine alarms and final water turbidity alarm and (ii) provide details of the alarm and shutdown setpoints. 3. (i) Confirm when works are completed to address inadequate contact time on a portion of the Clonmel Poulavanogue PWS; (ii) communicate with affected consumers to ensure they are aware of the ongoing dual advisory notice and (iii) install a chlorine monitor with alarm to verify contact time is being maintained on the Clonmel Poulavanogue PWS. 4. (i) Progress the RAL works to address the inadequate treatment for <i>Cryptosporidium</i> and (ii) monitoring of <i>Cryptosporidium</i> should continue as per the Uisce Éireann <i>Rationale for Determining the Frequency of Cryptosporidium in Public Water Supplies</i> until the supply is rationalised. 5. Ensure that the daily plant log includes recording of alarms and incidents with details of the actions undertaken in response to the alarms and incidents. 6. (i) Ensure all monitors are serviced and calibrated by the due date; (ii) clean the bund on the sodium hypochlorite day tank and (iii) remove and appropriately dispose drums of the 25 litre drums of sodium hypochlorite which were past the expiry date. 7. Ensure monitoring of residual chlorine levels is undertaken at the network extremities several times per week. 8. Confirm when the remedial works are completed to restore fluoride dosing. 9. Liaise with Tipperary County Council to ensure that local landowners have been written to in relation to their obligations under the <i>European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022</i> as amended. <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 25/08/2023 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>		