



# Drinking Water Audit Report

<b>County:</b>	Tipperary	<b>Date of Audit:</b>	29/05/18
<b>Plant(s) visited:</b>	Tullohea Drinking Water Treatment Plant  (Scheme Code 2900PUB0124)	<b>Date of issue of Audit Report:</b>	05/06/18
		<b>File Reference:</b>	DW2009/217
		<b>Auditors:</b>	Ms. Criona Doyle
<b>Audit Criteria:</b>	<ul style="list-style-type: none"> <li>• The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</i>.</li> <li>• The <i>EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)</i></li> <li>• The recommendations specified in the <i>EPA Drinking Water Report</i>.</li> <li>• EPA Drinking Water Advice Notes No's 1 to 15.</li> <li>• The recommendations in any previous audit reports.</li> </ul>		

## MAIN FINDINGS

- i. **Irish Water should provide an update to the Agency on the proposed action plan to ensure adequate disinfection and the safety and security of the Tullohea public water supply.**
- ii. **Irish Water should undertake a review of the current turbidity alarm setting to ensure appropriate alarms levels and response procedures are in place in the event that the raw water quality is compromised.**

## 1. INTRODUCTION

Under the *European Union (Drinking Water) Regulations 2014* the Environmental Protection Agency is the supervisory authority in relation to Irish Water and its role in the provision of public water supplies. This audit was carried out to assess the performance of Irish Water in providing clean and wholesome drinking water.

The Tullohea Public Water Supply serves 406 people and produces 278m<sup>3</sup>/d of water. The raw water for the supply is obtained from a spring source. Treatment includes disinfection by chlorination. The supply serves the area surrounding Kilcash, Ninemilehouse and Grangemockler.

The opening meeting commenced at 10am at the Tullohea Water Treatment Plant. The scope and purpose of the audit were outlined at the opening meeting. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment plant. The audit observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

**Representing Irish Water:**

Patrick Duggan, Compliance Specialist, Irish Water.  
Tommy Roche, Compliance Analyst, Irish Water.  
Colin Cunningham, Regional Water Engineer, Irish Water.

**Representing Tipperary County Council:**

Joe Burke, Executive Engineer, Tipperary County Council.  
Flan Real, Assistant Scientist, Tipperary County Council.  
Pat McCarthy, Caretaker, Tipperary County Council.

**Representing the Environmental Protection Agency:**

Criona Doyle, Inspector.

**2. AUDIT OBSERVATIONS**

*The audit process is a random sample on a particular day of a facility's operation. Where an observation or recommendation against a particular issue has not been reported, this should not be construed to mean that this issue is fully addressed.*

<p><b>1.</b></p>	<p><b>Source Protection</b></p> <ul style="list-style-type: none"><li>a. Raw water is obtained from a spring located approximately 60m south west of the treatment plant building.</li><li>b. The raw water is collected in two locked and covered concrete chambers within a secure fenced compound. The immediate vicinity of the spring collection site is fenced and secure with signage indicating the presence of a drinking water supply.</li><li>c. The spring source is in an upland catchment east of Slievenamon Mountain. The landuse in the catchment includes low intensity farming and forestry. Sheep were visible on the uplands on the day of the audit. The land outside of the fenced compound, surrounding the spring, is scrubby in nature and not normally grazed by livestock. Livestock are reported to have broken in and gained access to the scrubby area earlier this year.</li><li>d. Tipperary County Council confirmed that the Zone of Contribution for the spring has been delineated and a map was presented at the audit showing the boundary of the area.</li><li>e. No details were available on when landowners within the setback distances were last informed of their obligations under the GAP Regulations.</li><li>f. A copy of the Cryptosporidium Risk Score was provided which indicated a score of 47 (low risk).</li><li>g. There have been no detections of <i>Cryptosporidium</i> in the supply. Monitoring of <i>Cryptosporidium</i> took place in 2014 (30/09/14, 21/10/14 and 26/11/14) and 2016 (02/08/16 and 12/08/16). No <i>Cryptosporidium</i> monitoring is currently scheduled for 2018.</li><li>h. A raw water monitoring programme has not taken place since 2015. The data for 2010 to 2015 was presented at the audit and indicated a variation in the levels of coliform bacteria levels and E. coli in the raw water. An elevated turbidity level of 3.28 NTU in October 2013 was reported to be linked to an overflow of the spring collection chamber with the turbidity levels being low on the other sampling dates.</li><li>i. There is continuous online monitoring of the raw water turbidity. A full set of SCADA print outs for 2017 were presented at the audit. The data illustrates a very consistent turbidity level which is typically &lt; 0.2 NTU. Explanations were provided for any peak events during 2017. A turbidity alarm level of 1 NTU is in place with a text alert being sent to the caretaker in the event of a turbidity exceedance. There is no auto shut of the source linked to the high turbidity alarm and a manual shutdown is required. The turbidity on the day of the audit was 0.17 NTU.</li></ul>
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	<p>j. As part of the investigation to determine the suitability of the site for the installation of a UV disinfection system 12 months of UVT data has been collected.</p>
<b>2.</b>	<p><b>Disinfection</b></p> <p>a. Disinfection consists of chlorination using 14% sodium hypochlorite (with softener). A use by date of 13/07/18 was displayed on the drum.</p> <p>b. Duty, standby and trim chlorine dosing pumps are installed on site. Dosing is flow proportional and linked to the residual chlorine monitor at the outlet from the reservoir. The duty and standby chlorine dosing pumps require manual switchover which is undertaken by the caretaker on a weekly basis.</p> <p>c. The target residual chlorine level is 0.6 mg/l leaving the reservoir.</p> <p>d. Tipperary County Council advised that the low-level chlorine alarm is set at 0.3mg/l and the high-level alarm is set at 1mg/l. The chlorine dosing requirements information sheet displayed on site indicated that the low-level alarm is 0.25mg/l and the high-level alarm is 1.5mg/l. The caretaker, relief caretaker and general services supervisor receive a text alert in the event of the alarm being triggered.</p> <p>e. There is no auto shut down of the supply linked to the chlorine alarm.</p> <p>f. The contact time is calculated as 42 mg/1/min.</p> <p>g. The caretaker fills the day tank twice weekly.</p> <p>h. The site assessment for the Tullohea supply has recently been completed under the Tipperary Disinfection Programme. The value engineering workshop is expected to take place at the end of May or start of June 2018.</p>
<b>3.</b>	<p><b>Treated Water Storage and Distribution Network</b></p> <p>a. An above ground treated water storage reservoir is located adjacent to the treatment plant (227m<sup>3</sup>).</p> <p>b. The reservoir is on the Irish Water reservoir cleaning programme list.</p> <p>c. Residual chlorine levels are monitored at end of the network daily and recorded in the plant log book. The residuals recorded in the log book on the day of the audit were 0.44mg/l and 0.33 mg/l. The distance to the end of the network is approximately 7km.</p> <p>d. No complaints or network issues were reported.</p>
<b>4.</b>	<p><b>Chemical Storage and Bunds</b></p> <p>a. The chlorine day tank was adequately banded.</p> <p>b. A secure locked and banded chemical store is used for the storage of the sodium hypochlorite drums.</p>
<b>5.</b>	<p><b>Management and Control</b></p> <p>a. Procedures were displayed on site for (1) chlorine outage (2) chlorine dosing arrangement (3) turbidity monitoring requirements and (4) instructions for making up the day tank.</p>

### 3. AUDITORS COMMENTS

Correspondence on this file dating back to 19/07/16 indicated that Irish Water had proposed to install a UV disinfection system. The works were originally expected to be completed in Quarter 1 2017. Due to an issue with the data from the UVT monitor the projected commissioning date was subsequently amended to Quarter 4 2017. On 17/05/17 Irish Water indicated that they had decided to review the action plan for Tullohea. A number of options were being examined to identify the most appropriate solution for the supply. It was outlined that the action plan should be finalised by the end of May 2018.

It was outlined at the audit that the site assessment for the Tullohea supply has recently been completed under the Tipperary Disinfection Programme. The value engineering workshop is expected to take place at the end of May or start of June 2018. A decision will then be taken on whether to rationalise the scheme or undertake upgrade works as part of the disinfection programme.

Irish Water should provide an update to the Agency on the proposed action plan regarding the proposals to ensure adequate disinfection to ensure the safety and security of the Tulllohea public water supply.

Irish Water should ensure that an appropriate alarm level is set on the raw water turbidity monitor to warn of potential water quality issues.

#### 4. RECOMMENDATIONS

##### Disinfection

1. Irish Water should provide an update on the proposed action plan to provide adequate disinfection. The plan should detail the proposed timeframe for the completion of the works.
2. Irish Water should ensure there is automatic switch over in the event of the failure of one of the chlorine dosing pumps.
3. Irish Water should clarify the high and low level chlorine alarms and ensure that the procedures at the plant state the correct alarm levels.

##### Source Protection

4. Irish Water should liaise with Tipperary County Council to ensure that all landowners are made aware of the setback distances in the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No. 31 of 2014) for the source of the supply. Irish Water should confirm that the landowners have been written to inform them of their obligations.
5. Irish Water should ensure that the source protection and catchment risk assessment score for the *Cryptosporidium* risk assessment is reviewed and submit a copy to the Agency. In particular Section 7 Water Source Type and Section 8 Sanitary Protection of Groundwater Supply should reflect the fact that the supply is a spring rather than a borehole supply.
6. Irish Water should undertake a review of the current turbidity alarm settings and time delays to ensure appropriate alarms levels and response procedures are in place in the event the raw water quality is compromised.

#### FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER

During the audit Irish Water representatives were advised of the audit findings and that action must be taken as a priority by Irish Water to address the issues raised. This report has been reviewed and approved by Ms Regina Campbell, Drinking Water Team Leader.

Irish Water should submit a report to the Agency within one month of the date of this audit report detailing how it has dealt with the issues of concern identified during this audit. The report should include details on the action taken and planned to address the various recommendations, including timeframe for commencement and completion of any planned work.

The EPA also advises that the findings and recommendations from this audit report should, where relevant, be addressed at all other treatment plants operated and managed by Irish Water.

Please quote the File Reference Number in any future correspondence in relation to this Report.

Report prepared by:

*Críona Doyle*

Date:

05/06/18

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Inspector