



# Drinking Water Audit Report

<b>County:</b>	Wicklow	<b>Date of Audit:</b>	9 <sup>th</sup> May 2018
<b>Plant visited:</b>	Ballingate (scheme code 3400PUB1057)	<b>Date of issue of Audit Report:</b>	22 <sup>nd</sup> May 2018
		<b>File Reference:</b>	DW2018/90
		<b>Auditors:</b>	Aoife Loughnane Michelle Minihan
<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>, as amended.</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> </ul>		

## MAIN FINDINGS

- i. A Boil Water Notice was issued to the 15 consumers served by Ballingate public water supply on 30/04/18 following the detection of coliform bacteria in the treated water. *Enterococci* was detected in a follow up sample on 03/05/18.
- ii. The water supply is disinfected by UV treatment. It was not possible to verify the performance of the UV disinfection system during the audit because there is no display of operational data (flow and UV intensity) at the treatment plant, nor link to a SCADA system.
- iii. Irish Water must ensure that the UV disinfection system operates within its validated range at all times, and that its performance can be verified by providing access to trended operational data.

## 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 in response to the notification by Irish Water dated 30/04/18 of the failure to meet the coliform bacteria parametric value (as specified in Table C of Part 1 of the Schedule of the Regulations) and the imposition of a Boil Water Notice on Ballingate public water supply on 30/04/18.

Ballingate public water supply is a small supply of 3 m<sup>3</sup>/day serving 5 houses in a rural area close to Carnew. The raw water source is a borehole. Treatment is provided by pressure filtration (iron and arsenic removal), pH correction in a limestone contactor and disinfection by UV treatment.

The opening meeting commenced at 1 pm at Ballingate 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 audits observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

**Representing Irish Water:**

Andrew Boylan – Drinking Water Compliance Specialist

Aoife Lambe – Drinking Water Compliance Analyst

Peter Thornton – SLA Lead

**Representing Wicklow County Council:**

Tom Griffin – Senior Executive Chemist

Tom O’Leary – Senior Executive Engineer

Fergal Sheerin, Technician

**Representing the Environmental Protection Agency:**

Aoife Loughnane – Inspector

Michelle Minihan – Senior 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.*

<b>1.</b>	<p><b>Exceedances of the Parametric Values</b></p> <ul style="list-style-type: none"> <li>a. On 30/04/18 Irish Water notified the EPA of a coliform bacteria exceedance of 78/100ml in a check sample at Ballingate public water supply on 25/04/18. <i>Enterococci</i> was detected in a follow up sample taken on 03/05/18.</li> <li>b. Following consultation with the HSE, Irish Water issued a Boil Water Notice to all 15 consumers on the Ballingate PWS on 30/04/18.</li> <li>a. Irish Water has reported no issues with the operation of the UV disinfection system at Ballingate treatment plant. There is no chlorination of the supply to maintain a residual disinfectant in the distribution network because the area served is so small (5 houses).</li> <li>c. Sampling undertaken on 9<sup>th</sup> &amp; 10<sup>th</sup> May has found no further microbiological exceedances.</li> </ul>
<b>2.</b>	<p><b>Source Protection</b></p> <ul style="list-style-type: none"> <li>a. The borehole is located in an underground chamber at the treatment plant. The borehole construction details are unknown.</li> <li>b. The auditors observed the return water from the turbidity monitor being piped back into the borehole (see photo 1). This is not considered best practice in terms of risk of contamination of the groundwater source.</li> </ul>
<b>3.</b>	<p><b>Filtration</b></p> <ul style="list-style-type: none"> <li>a. The raw water passes through a series of three pressure filters for iron removal, arsenic removal and pH correction. The limestone contactor for pH correction was commissioned in January 2018 as part of the Disinfection Programme upgrades in County Wicklow.</li> <li>b. The iron removal filter backwashes once a day. The backwash water is discharged via a pipe onto the roadside at the rear of the treatment plant.</li> </ul>
<b>4.</b>	<p><b>Disinfection</b></p> <ul style="list-style-type: none"> <li>b. The supply is disinfected in a Trojan Pro20 UV Disinfection system which was installed in 2013.</li> <li>c. The UV validation certificate was not available to review at the plant. Wicklow County Council’s technician confirmed that the UV unit provides the target dose of 40 mJ/cm<sup>2</sup> at a maximum flow of 0.17 m<sup>3</sup>/hr. The unit automatically shuts down if the operating criteria</li> </ul>

	<p>are not met.</p> <p>d. The UV system is equipped with a UVI sensor but there is no display of UVI or flow data.</p> <p>e. The UV system was serviced on 18/04/18 and inspected on 01/05/18 following the coliform bacteria exceedance. No issues were identified.</p> <p>f. There is an alarm dial out in the event of a malfunction of the UV system. The alarms are sent to two responders. Wicklow County Council's technician confirmed that no alarms were activated around the time of the microbiological exceedances.</p>
<b>5.</b>	<p><b>Management and Control</b></p> <p>a. It was not possible to verify the performance of the UV disinfection system during the audit because there is no display of operational data (flow and UV intensity) at the treatment plant, nor link to a SCADA system.</p> <p>b. At the time of the audit, there was no map or information regarding the Boil Water Notice on Irish Water's website. Irish Water subsequently published this information on <a href="http://www.water.ie">www.water.ie</a> on 10/05/18 after it was raised at the audit.</p>

### 3. AUDITORS COMMENTS

This audit was carried out in response to the imposition of a Boil Water Notice on the Ballingate public water supply on 30/04/18. The water supply is disinfected by UV treatment. It was not possible for the auditors to verify the performance of the UV disinfection system during the audit because the operating criteria (flow and UV intensity) are not displayed at the treatment plant or linked to a SCADA system.

### 4. RECOMMENDATIONS

1. Irish Water should ensure that the UV disinfection system operates within its validated range at all times. A copy of the UV validation certificate should be kept at the treatment plant.
2. Irish Water should ensure that the performance of the UV disinfection system can be reviewed and verified, by providing access to the trended operational data (flow and UV intensity) either at Ballingate water treatment plant or remotely on a SCADA system.
3. Irish Water should cease the practice of disposing the return water from the turbidity monitor back into the borehole, to minimise the risk of contamination of the groundwater source.

### 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 Michelle Minihan, Senior Inspector, Drinking Water Team.

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:**

*Aife Laghuane*

Inspector

**Date:**

22<sup>nd</sup> May 2018



**Photo 1: Ballingate Borehole (note the return water from the turbidity monitor being discharged back into the borehole via the white pipe).**