



Drinking Water Audit Report

County:	Wicklow	Date of Audit:	17 th April 2015
Plant(s) visited:	Blessington PWS	Date of issue of Audit Report:	1 st May 2015
		File Reference:	DW2015/41
		Auditors:	Mr. Darragh Page Ms. Michelle Roche Mr. Kevin Kelleher
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</i>. • 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> • The recommendations specified in the <i>EPA Drinking Water Report</i>. • The recommendations in any previous audit reports. 		

MAIN FINDINGS

- i. While the definitive cause of the *E. coli* failure could not be identified, the audit found that there were issues with the telemetry system at the time of the incident that hampered an appropriate investigation into the cause. All subsequent sampling in the supply zone has been compliant.
- ii. The disinfection system should be reviewed to ensure it is in compliance with *EPA Advice Note No.3. – E. coli in Drinking Water*.
- iii. Further investigations into the cause of the anomalous results for free chlorine in the distribution network compared to the water leaving the reservoirs should be carried out.

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 in response to the notification by Irish Water dated 7th April 2015 of the failure to meet the *E. coli* parametric value (as specified in Table A of Part 1 of the Schedule of the Regulations) in the Blessington Public Water Supply.

The Blessington Public Water Supply originates from the Ballymore Eustace Water Treatment Plant. Water is stored in two reservoirs where it is rechlorinated on entry into the reservoir. The supply serves 5,711 persons and replaced the former Blessington PWS source as well as incorporating the nearby group water schemes, Manorkilbride and Oldcourt. The parent plant (Ballymore Eustace WTP was not inspected as part of this audit).

The opening meeting commenced at 11:20 am at the reservoirs. 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: (* indicates that person was also present for the closing meeting)

Mr. Andrew Boylan, Regional Water Compliance Monitoring Liaison Specialist, Irish Water*

Mr. Tselophile Tlou, Water Engineer, Irish Water*

Mr. Ger Brady, DBO Engineer, Irish Water*

Mr. Noel Doody, Water Engineer, Wicklow County Council*

Mr. Tom Griffin, Senior Executive Chemist, Wicklow County Council*

Mr. Tommy Cullen, Caretaker, Wicklow County Council*

Representing the Environmental Protection Agency:

Mr. Darragh Page, Inspector*

Ms. Michelle Roche, Inspector*

Mr. Kevin Kelleher, Scientific Officer*

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.

1.	<p>Treated Water Storage and Distribution Network</p> <ul style="list-style-type: none"> a. Treated water from the Ballymore Eustace Water Treatment Plant is rechlorinated prior to entry into two reservoirs in the Blessington PWS. Both reservoirs operate in parallel and have approximately 2 days storage. b. The reservoirs were constructed approximately 7 years ago and have not been cleaned out since coming into service.
2.	<p>Disinfection</p> <ul style="list-style-type: none"> a. There was uncertainty about whether the rechlorination point was on the inlet or outlet of the reservoir during the audit. The auditors requested that a sample of treated water from the reservoir be analysed for chlorine residual to clarify this issue and it was confirmed that dosing is on the inlet. b. Dosing at the inlet of the reservoirs is fixed. Wicklow County Council reported that dosing was previously done on the outlet but this led to variable chlorine levels in the final water. c. The inlet is dosed with 14/15% sodium hypochlorite which is supplied in bulk. 50 L drums of sodium hypochlorite were also on site. Wicklow County Council reported that these are for emergency use in poor weather conditions in the event that a delivery cannot be made. These drums were labelled with a PCS number and date of manufacture. However, the manufacture date was greater than 3 months ago. d. The bund for the bulk storage container for sodium hypochlorite contained residue and was in need of cleaning out. e. There is a chlorine residual monitor on the outlet of the reservoir which was reading 0.38 mg/l at the time of the audit. Wicklow County Council reported that the levels of chlorine measured in the network (i.e. downstream of the reservoir) were generally higher than at the reservoir. No explanation was forthcoming for this anomaly. f. There is a SCADA system but it was reported that this was not reading accurately at the time of the incident. g. There is an alarm on the chlorine monitor which is set at 0.2 mg/l. Wicklow County Council stated that it did not activate at the time of the incident.

	h. Irish Water stated that Glan Agua has been engaged to carry out an examination of the chlorination system and would be on site in the next week.
3.	Exceedances of the Parametric Values <ol style="list-style-type: none"> A failure to meet the <i>E. coli</i> parametric value on 1st April 2015 was notified to the EPA on 2nd April. Follow up sampling was undertaken on 3rd and 9th April and both samples were free of <i>E. coli</i> or coliform bacteria. Further samples were taken on 16th April and the results were awaited at the time of the audit. The results of the investigation could not determine the exact cause of the failure. However, it was noted that the telemetry system was not adequate at the time of the incident and therefore reliable information on the levels of residual chlorine at the time were not available for review during the audit. Irish Water stated that this issue is being actively resolved and the telemetry system is to be repaired.

3. AUDITORS COMMENTS

The disinfection system at the Blessington PWS reservoirs is not in compliance with the EPA recommendations in *EPA Advice Note No.3. – E. coli in Drinking Water* as dosing is fixed. Furthermore, the malfunction of the telemetry system in tandem with the anomalous residual chlorine results (i.e. consistently higher residual chlorine in the network than in the water leaving the reservoirs) raises questions about the disinfection system. Although these issues may not have caused the *E. coli* failure, they nonetheless require the attention of Irish Water.

4. RECOMMENDATIONS

Disinfection

- Irish Water should review disinfection system at the Blessington PWS reservoirs and ensure that it is in compliance with the recommendations of the *EPA Advice Note No.3. – E. coli in Drinking Water*.
- Irish Water should investigate the reasons for the anomalous results in the distribution network compared to those in the final water leaving the reservoirs.
- Irish Water should ensure that the SCADA and telemetry system are repaired and that the information on these is accurate.

Treated Water Storage

- Irish Water should ensure that the service reservoir is inspected and cleaned out on a regular basis and any maintenance and repairs completed as soon as possible after the need has been identified.

Chemical Storage and Bunds

- Irish Water should clean out the sodium hypochlorite bund and ensure that it is kept free of residue.
- Irish Water should remove all expired stock of chemicals from the site and dispose of such chemicals in an appropriate manner.

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 Yvonne Doris, 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:



Date:

1st May 2015

Darragh Page

Inspector