



Drinking Water Audit Report

County:	Wexford	Date of Audit:	7 th July 2017
Plant(s) visited:	Glynn (3300PUB1507)	Date of issue of Audit Report:	11 th July 2017
		File Reference:	DW2017/90
		Auditors:	Mr Darragh Page
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>. • EPA Drinking Water Advice Notes No.s 1 to 15. • The recommendations of the previous audit reports. 		

MAIN FINDINGS

- i. The Glynn public water supply became contaminated with *E.coli* on 4th July 2017 due to the failure of the disinfection system and the failure of the chlorine alarm to notify the appropriate personnel in Wexford County Council. Irish Water should ensure that the chlorine monitor and alarm are notifying the relevant personnel so that action can be taken to prevent a reoccurrence.
- ii. The previous EPA audit on 10th August 2016 identified the need to upgrade the disinfection system at Glynn water treatment plant. The upgrade works have been delayed twice and the EPA were informed during the audit that it has been further delayed.
- iii. The UVT monitor installed to determine the suitability of the water for UV treatment was at the wrong location and therefore the data gathered since May 2017 cannot be used to assist the design of the system. Irish Water should reassess the raw water quality and determine whether UV is suitable for installation in this supply.

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 6th July 2017 of the failure to meet the *E. coli* parametric value (as specified in Table A of Part 1 of the Schedule of the Regulations) and the subsequent imposition of a boil water notice in the Glynn public water supply.

The Glynn public water supply is abstracted from a borehole in the village of Glynn. Treatment consists of chlorination using sodium hypochlorite and pH correction using sodium carbonate. The borehole produces 31 m³/d and supplies 182 people.

The opening meeting commenced at 10.00 am at the Glynn 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:

Mr. Patrick Duggan, Compliance Specialist, Irish Water
 Ms. Deirdre O'Loughlin, Compliance Monitoring Liaison Specialist, Irish Water
 Mr. Brian O'Leary, SLA Operations Lead, Irish Water
 Mr. Jason Hynes, Caretaker (stand in), Wexford County Council
 Mr. Leonard Poole, Executive Engineer, Wexford County Council
 Mr. Noel Hayes, Senior GSS, Wexford County Council

Representing the Environmental Protection Agency:

Mr. Darragh Page, 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.

1.	<p>Source Protection</p> <ol style="list-style-type: none"> The borehole is located in the village of Glynn at the roadside. At the time of the audit, there was no information available on the borehole construction. Since the previous audit, the disused borehole has been capped but Irish Water indicated that it may be brought back into use and was therefore not sealed. Improvement works had been done to the production borehole to cap it and install a lock since the previous audit. Irish Water was not aware of whether any raw water monitoring of the borehole had taken place in the past.
2.	<p>Disinfection</p> <ol style="list-style-type: none"> The raw water is treated with 10-11% sodium hypochlorite with a flow proportional dose which has been installed since the previous audit. Duty and standby chlorine dosing pumps are installed and there is autoswitchover on the pumps. There is a chlorine monitor and alarm which is supposed to activate when the chlorine dose is low. The caretaker who normally manages the plant was on leave when the incident occurred on 3rd/4th July and was still on leave at the time of the audit. On 4th July, the stand-in caretaker noticed that the levels of chlorine in supply were low and increased the dose. Upon review of the results of the chlorine monitor it was found that inadequate levels of chlorine were entering the supply since the 3rd July. This should have triggered a low level alarm however, since the caretaker was on leave, Wexford County Council were unable to check if he received an alarm dial out to his phone. However, they did confirm that the alarm did not cascade down to the next contacts, as it should have. At the same time, a compliance monitoring sample taken in the network was found to contain <i>E. coli</i> and the supply was placed on a boil water notice. Adequate effective contact time of 15mg.min/l is not achieved before the first consumer and this issue was raised at the previous audit. Irish Water has not consulted with the HSE

	<p>to determine if there is a risk to public health or on whether advice should be given to consumers.</p> <p>f. During the audit in 2016, Irish Water stated that there has been a delay in awarding the contract for the National Disinfection Programme in Co. Wexford. Initial assessments were carried out under this programme in late 2016, however the reports were deemed inadequate by Irish Water. They were re-done and submitted to Irish Water in February 2017. At the time of the audit Irish Water had not decided what was to be done to improve the Glynn supply under this programme and that the timeframe for completion had slipped further from Q3 to Q4 2017.</p> <p>g. As part of the assessment under the National Disinfection Programme, Irish Water installed a UVT monitor in the Glynn supply in May 2017. At the time of the audit this was reading 65.1% UVT. Following discussions it was discovered that the UVT monitor is reading the final treated water after chlorination and pH correction and is therefore not representative of the water that would be treated if UV was installed. The UVT monitor has been installed at the wrong location and therefore the data generated to date cannot be used to determine the suitability or otherwise of UV treatment on the supply.</p>
3.	<p>Treated Water Storage and Distribution Network</p> <p>a. Following disinfection, treated water is pumped into the network. From here it either feeds directly to consumers (if the demand is high) or is pumped to the reservoir.</p> <p>b. The reservoir, which was constructed in the 1960's, was inspected and there was evidence of a leak at the base of the reservoir (see Photo 1).</p> <p>c. Irish Water and Wexford County Council were unable to say when the reservoir had last been inspected or cleaned out.</p> <p>d. Since the <i>E.coli</i> contamination incident occurred, the mains have been flushed out and adequate levels of chlorine detected in the network</p>
4.	<p>Monitoring and Sampling Programme for treated water</p> <p>a. A single microbiological sample was taken in the network on 5th July and was found to be free of <i>E. coli</i> and coliforms. Wexford County Council advised that a further sample cannot be taken until Monday 10th July 2017 as the labs don't take samples on Friday and don't operate at the weekend.</p> <p>b. Irish Water had yet to agree with the HSE the conditions that must be in place to enable the boil water notice to be lifted.</p>

3. AUDITORS COMMENTS

While it was unclear at the time of the audit whether the chlorine alarm notified the caretaker of the low chlorine level caused by a failure of the disinfection system, it is clear that not everyone on the cascade system was notified as required. This resulted in inadequately disinfected water entering the supply on 3rd and 4th July leading to the imposition of a boil water notice. Irish Water need to check the robustness of the alarm systems at this and other plants to ensure that when stand-in cover is being provided that normal alarm response procedures are still effective.

There have been repeated delays in the roll out of the National Disinfection Programme in Wexford and specifically in the Glynn public water supply and further delays were communicated to the EPA on the day of the audit. It is possible that this will be delayed further owing to the fact that, since it was installed in May, the UVT monitor has not been taking a sample at the correct location. Therefore all data generated since May cannot be used in the design of the UV disinfection system. This is a basic error that should have been avoided or detected upon review of the results from the monitor.

4. RECOMMENDATIONS

General

1. Irish Water should investigate the reasons the chlorine alarm did not notify all those on the cascade system and put in place measures to prevent a reoccurrence.

Source Protection

2. Irish Water should determine whether any monitoring has been carried out on the raw water source and if so, this information should be considered as part of the required upgrade to the disinfection system. If it has not been done, the source should be monitored for *E.coli* bacteria following heavy rainfall.

Disinfection

3. Irish Water should identify the areas affected by inadequate contact time for chlorine disinfection and consult with the HSE to determine whether there is any risk to public health and whether any advice should be given to consumers.
4. Irish Water should take appropriate action to address the inadequate chlorine contact time in the Glynn supply.
5. Irish Water should relocate the sampling point for the UVT monitor such that it is representative of the water that is to be treated by UV. Specifically, the sample point should be before the pH correction dosing point.

Treated Water Storage

6. Irish Water should repair the leak at the base of the reservoir.
7. 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.

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 Aoife Loughnane, 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:

11th July 2017

Darragh Page

Senior Inspector



Photo 1. Leak at the base of the Glynn Reservoir.