Drinking Water Audit Report

County:	Clare County	**Date of Audit:**	20/05/2014
Plant(s) visited:	Killaloe (03000PUB 1002)	**Date of issue of Audit Report:**	18/06/2014
		File Reference:	DW2014/215
		Auditors:	Mr Niall Dunne
Audit Criteria:	• The *European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014).* • *The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)* • The recommendations specified in the EPA Report on *The Provision and Quality of Drinking Water in Ireland.* • The recommendations in any previous audit reports.		

MAIN FINDINGS

i. **The disinfection system on site is not in accordance with *EPA Advice Note Number 3. E.coli in drinking water*;**
   a. **Chlorine dosing is fixed and is not connected to the chlorine monitor.**
   b. **The chlorine monitor at the time of the audit was not operating correctly.**
   c. **The location of the chlorine monitor is not adequate so as to ensure that issues with the chlorine dosing system are detected within an appropriate timeframe.**
   d. **The chlorine monitor is not connected to a recording device.**
   e. **There is no automatic switch over between the duty and standby chlorine dosing pumps.**
   f. **There is no alarm dial out facility in place.**

   Irish Water must as a priority ensure that the disinfection system, at this and at all treatment plants under its control, is in accordance with EPA guidelines.

ii. **The source was not inspected during the audit, due to it being overgrown with vegetation, and according to representatives on site it is not regularly inspected or maintained. IW should ensure that the source is regularly inspected and maintained and that this is documented.**

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 the Killaloe Water Treatment Plant.

The Killaloe Water Treatment Plant serves a population of approximately 2,000 and supplies approximately 1,300 m^3/day. The supply consists of an infiltration gallery with water pumped to a reservoir, where it is chlorinated. Photographs taken by Niall Dunne during the audit are attached to this report and are referred to in the text where relevant.

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

Anna Brosnan – IW SLA Lead*; Kevin Murphy – IW Water Engineer*; Tom Mellett – CCC Executive Engineer*; Patrica Ryan – CCC Area Technician*; Sean Brogan– CCC Caretaker*.

Representing the Environmental Protection Agency:

Niall Dunne - 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.	**Source Protection** a. According to Clare County Council (CCC) staff the source is via an infiltration gallery. The source was not visited at the time of the audit because it was overgrown with vegetation. CCC staff stated that they do not inspect the borehole. b. CCC stated that farm surveys had been carried out in 2000, but currently there are no plans to carry out any further farm surveys. c. CCC state that a Cryptosporidium risk assessment was done approximately six years ago and that the Cryptosporidium risk was determined as low.
2.	**Chlorination and Disinfection** a. Chlorine is dosed prior to the reservoir. b. The chlorine monitor is not on site but is located approximately 0.5 miles away. On inspection the monitor was not working properly and was displaying a reading of 1.99mg/l. A sample taken by CCC staff on the day of the audit returned a result of 0.88 mg/l total and 0.8 mg/l free chlorine. The chlorine monitor was last calibrated on the 16/04/2014 and was due to be calibrated on the 16/06/2014. There are no dial out alarms in place and the monitor is not connected to a recording device, (see photograph 1). c. The hut where the chlorine monitor was located was also of poor construction and was not sealed against vermin (see photograph 1). The sampling point located at the chlorine monitoring hut was also not secure against vermin access and contamination. d. Chlorine dosing is fixed. There are duty and standby dosing pumps in place but there is no automatic switch over between the pumps (see photograph 2). e. CCC stated that chlorine readings are not taken at the plant, as there is no available sampling point there. Chlorine samples are taken daily within the network, but not at the end of the network.

3.	**Treated Water Storage** a. CCC staff stated that there is approximately 24 hours storage within the reservoir. The reservoir has not been integrity tested or cleaned out recently. b. The vents on the reservoir were not adequate against the ingress of vermin or insects and the covers were not adequately against the ingress of surface water (see picture 3).
4.	**Distribution Network** a. CCC stated that there were substantial leaks within the distribution system.
5.	**Management and Control** a. There is no treated water monitoring point on site. There is a tap on site, but this is fed with raw untreated water. There was no sign at the tap stating that the water was not fit for human consumption. b. There were no documented raw or treated water monitoring results on site.

3. AUDITORS COMMENTS

The disinfection system at this plant is not in accordance with the *EPA Advice Note Number 3. E.coli in Drinking Water.* At the time of the audit the chlorine monitor was not working properly and there were no dial out alarms in place to alert staff of this. The chlorine monitor is located approximately 0.5 miles from the dosing point. At this location the monitor will not detect any significant changes to chlorine levels within an appropriate timeframe so as to allow an effective response from staff. The monitor was also not connected to a recording device. There is no auto switch over between the dosing pumps. Chlorine dosing is by fixed dosing.

The disinfection system does not offer a sufficient safeguard for the protection of consumer's health and leaves consumers at the risk from potential contamination.

Irish Water must ensure that the disinfection system at this plant, and at all other drinking water plants, under the control of Irish Water are installed as per EPA Advice Note Number 3.

4. RECOMMENDATIONS

1. The Water Services Authority should ensure that the chlorine monitor is working appropriately. This monitor should be alarmed and linked to a recording device to ensure that either a sudden increase in chlorine demand or a failure of the chlorine dosing system is immediately detected.

2. The Water Services Authority should ensure that there is automatic switch over between dosing pumps in the event of the failure of one of the pumps.

3. The Water Services Authority should ensure that dosing of chlorine is flow proportional or is linked to the residual chlorine monitor. Where the dosing pump is fixed the Water Services Authority should replace the pump(s) with flow proportional pumps or pumps capable of dosing based on the residual chlorine monitor.

4. The Water Services Authority should ensure that chlorine samples are regularly taken from the treatment plant and from the end of the network and that these are regularly documented.

5. The Water Services Authority should ensure that the source is regularly inspected and that any vegetation removed so that the infiltration gallery can be easily accessed and inspected. The

Water Services Authority should submit pictures of the source when the surrounding vegetation is removed.

6. The Water Services Authority should ensure that documented monitoring results for the raw and treated water are kept on site.

7. The Water Services Authority should revise the *Cryptosporidium* risk assessment for this supply and submit the results to the EPA.

8. The Water Services Authority should ensure that requirements of the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* are being complied with in the vicinity of the source.

9. The Water Services Authority should develop leak detection and repair program for this supply.

10. The Water Services Authority should carry out an integrity assessment of the clear water tank/service reservoir and carry out any repair work required to ensure that there is no ingress into the reservoir. The reservoir should also be cleaned out on a regular basis. All the vents on the reservoirs should be secured against ingress of animals or deliberate introduction of any contaminant or acts of vandalism. All covers on the reservoir should be of the type that are fully secure against surface water ingress and lockable.

11. The Water Services Authority should ensure that a sign indicating that the water is not fit for human consumption is placed in the vicinity of the sink located at the reservoir buildings.

FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER

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

The Water Services Authority 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 DW2014/215 in any future correspondence in relation to this Report.

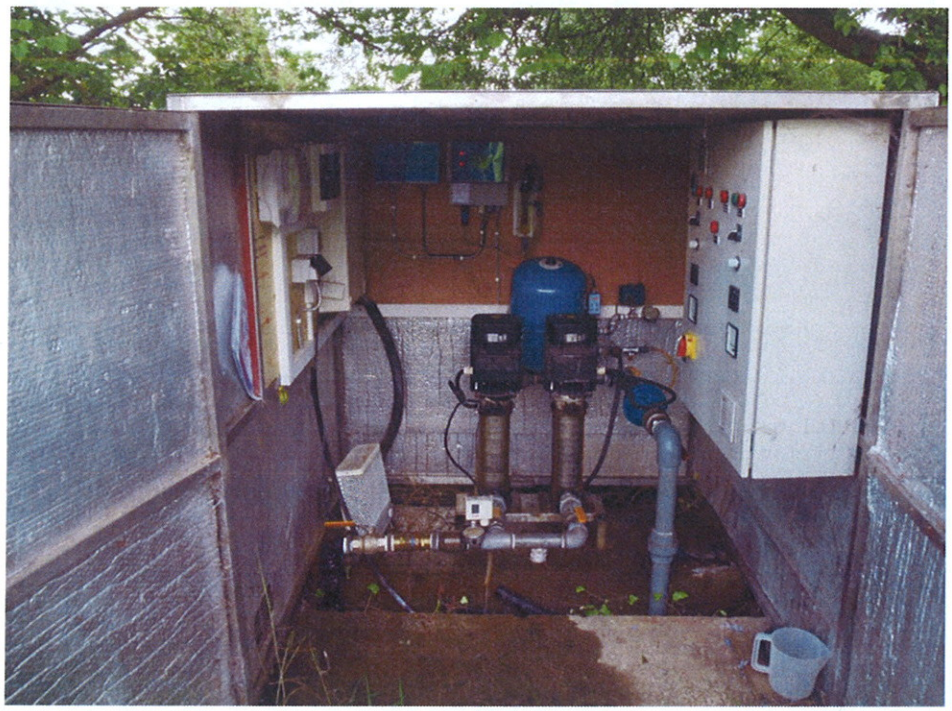
Report prepared by: 

Niall Dunne

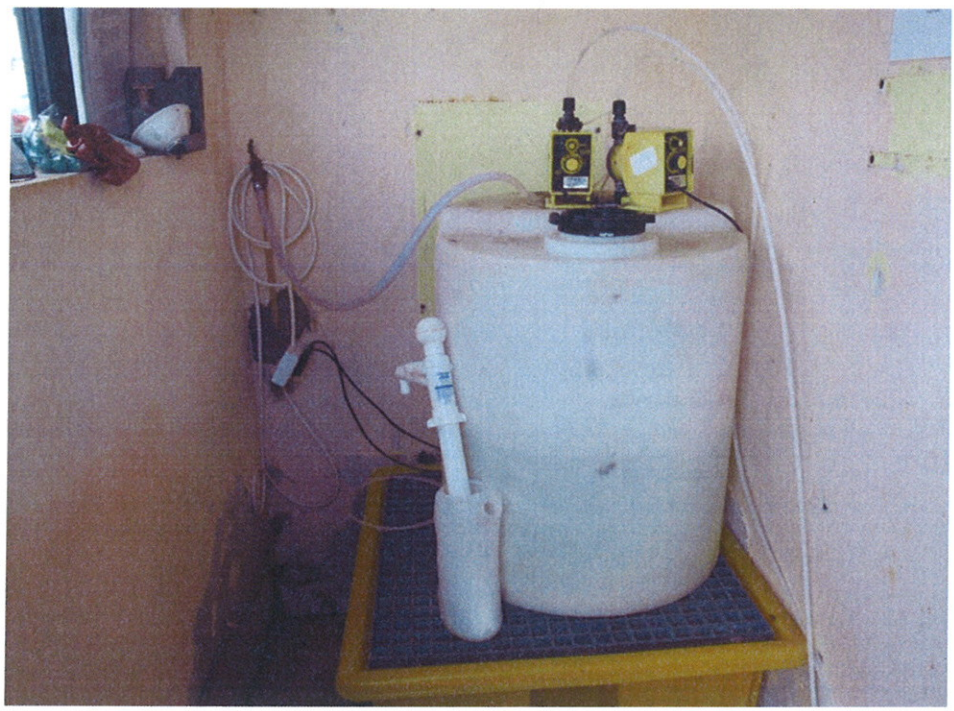
Inspector

Date: 18/06/2014

Photograph 1: Hut where the chlorine monitor was located. The chlorine monitor was reading 1.99mg/l. The hut was of poor construction and was not secure against vermin access. The chlorine sampling point was also not secure against vermin access or contamination.



Photograph 2: Duty standby chlorine dosing pumps. There is no auto switch over between the pumps. Dosing is also fixed. There is no alarm on the dosing pumps.



See Photograph 3: Covers to reservoir not of the type to fully stop the ingress of surface water.