



# Drinking Water Audit Report

<b>Local Authority:</b>	Clare County Council	<b>Date of Audit:</b>	10/12/2013
<b>Plant(s) visited:</b>	Kilkeedy Public Water Supply (0300PUB1039)	<b>Date of issue of Audit Report:</b>	10/01/2014
		<b>File Reference:</b>	DW2013/47
		<b>Auditors:</b>	Mr Niall Dunne
<b>Audit Criteria:</b>	<ul style="list-style-type: none"> <li>• The <i>European Communities (Drinking Water) (No. 2) Regulations, 2007</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 EPA Report on <i>The Provision and Quality of Drinking Water in Ireland</i>.</li> <li>• The recommendations in any previous audit reports.</li> </ul>		

## MAIN FINDINGS

- i. *The Direction issued on the 19<sup>th</sup> July 2013, to Clare County Council for this supply, has not been fully complied with. The following work required under the Direction has been completed;*
  - a. *There is a continuous chlorine monitor on the final water, this is alarmed and linked to a recording device;*
  - b. *Automatic switch over between the duty and standby chlorine dosing points have been installed;*
  - c. *The chlorine contact time has been calculated at 19.32 mg.min/l, however, this revised calculation has to be submitted to the EPA.*
- ii. *The UV unit installed at this plant does not meet the requirements of the EPA Advice Note No 3. The Water Services Authority must ensure that the UV system installed meets the requirements set out in Advice Note No 3.*

## 1. INTRODUCTION

Under the *European Communities (Drinking Water) (No. 2) Regulations 2007* the Environmental Protection Agency is the supervisory authority in relation to the local authorities and their role in the provision of public water supplies. This audit was carried out to assess the performance of the local authority in providing clean and wholesome drinking water and to assess compliance with the Direction issued on the 19<sup>th</sup> July 2013 for the upgrade of the chlorination system. Where the text refers to the Water Service Authority this refers to Irish Water in accordance with Section 7 of the *Water Services (No. 2) Bill 2003*.

The Kilkeedy Public Water Supply (PWS), a former group water scheme, is located approximately 11 km north east of Corofin, Co. Clare. Raw water for the supply is sourced from a single borehole and pumped a distance of 50 m to a treatment building where it is chlorinated with sodium hypochlorite prior to distribution. CCC have also installed a single UV unit. The Kilkeedy supply distributes an average volume of 30 m<sup>3</sup>/day to a population of approximately 78 (26 houses) dispersed in this rural, mainly agricultural townland of Co. Clare.

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 13:30 at the Kilkeedy drinking 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 and closing meeting:

Representing the Local Authority:
Caimin Dillon - Executive Engineer*; Maura McNulty - Executive Scientist*; Roisin Breheny-Executive Technician*; Maeve Lait - Senior Executive Technician*; Martin Carkill - Caretaker*.
Representing the Environmental Protection Agency:
Mr 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.*

<b>1.</b>	<p><b>Source Protection</b></p> <ul style="list-style-type: none"> <li>a. The source for the Kilkeedy PWS is a borehole located in a karst limestone area. The surrounding land is used for low intensity dry stock grazing. Clare County Council (CCC) has erected a temporary fence around the borehole (see photograph 1). The borehole chamber is to be upgraded by the end of March 2014.</li> <li>b. CCC stated that farm surveys are to be carried out in the 2014/2015 programme.</li> <li>c. Farmers are to be written to by February 2014 with regard to their obligations under the <i>European Communities (Good Agricultural Practice for the Protection of Waters) Regulations 2010 (SI No.610 of 2010)</i>.</li> <li>d. CCC confirmed that they have some borehole data but that this information is limited.</li> <li>e. CCC stated, based on monitoring results, that the source water is not influenced by surface water, but that their resident geologist is to carry out a visual survey of the surrounding area for features associated with the karst landscape, such as swallow holes.</li> <li>f. The <i>Cryptosporidium</i> risk score for this supply is 36.8 indicative of low risk.</li> </ul>
<b>2.</b>	<p><b>Chlorination and Disinfection</b></p> <ul style="list-style-type: none"> <li>a. In a Direction issued to CCC on the 19/07/2013, CCC was directed to; <ul style="list-style-type: none"> <li>i. Install an operational continuous chlorine residual monitor on the final water. This was to be alarmed and linked to a recording device;</li> <li>ii. Install automatic switch over between the duty and standby chlorination pumps; and</li> <li>iii. To submit the chlorine contact time calculations.</li> </ul> </li> <li>b. The chlorine monitor is in place and is alarmed and linked to a recording device. However, CCC could not confirm whether the data could be downloaded.</li> <li>c. CCC confirmed that there is automatic switch over in place, and that there is also an automatic 24hr switch over in place between the two pumps.</li> <li>d. CCC submitted chlorine calculation of 21.93 mg.min/l on the 20/08/2013, however, the contact time was revised to 19.32 mg.min/l on the 16/12/ 2013. These revised calculations have yet to be submitted.</li> <li>e. The low and high alarm levels are set at 0.25 and 1.0 mg/l respectively. Currently only the caretaker receives the alarms for this supply.</li> <li>f. The caretaker monitors chlorine residual levels within the network on a daily basis.</li> <li>g. Chlorine dosing is flow proportional and is linked to the chlorine monitor.</li> <li>h. CCC have installed a single UV unit, there is no standby unit. The UV unit is not connected to UVI/UVT monitor or alarm, and it is not validated. (See photograph 2). CCC stated that,</li> </ul>

	<p>based on previous monitoring results, the UVT of the water is in the region of 90%.</p> <p>a. CCC has installed two Cintropur filters, 50 µm and a 75µm filter, prior to the UV unit.</p> <p>b. The chlorine dosing points were observed not to be secure (see photograph 2).</p>
<b>3.</b>	<p><b>Chemical storage and bunds</b></p> <p>a. CCC has chemical delivery procedures now in place and all deliveries are logged and signed off.</p> <p>b. The chlorine day tank was observed to be banded.</p>
<b>4.</b>	<p><b>Management and Control</b></p> <p>a. CCC stated that the plant manual for this supply is currently being compiled.</p> <p>b. While the chlorine monitor is connected to a recording device, the display unit on the recording device is small and does not lend itself to reading historical results in graph form easily or accurately.</p> <p>c. The treatment plant is not connected to SCADA.</p>

### 3. AUDITORS COMMENTS

Clare County Council has complied with the majority of the requirements of the Direction issued on the 19/07/2013. The chlorine monitor has been installed, alarmed and linked to a recording device. Automatic switch over between the duty and the stand by pumps has also been installed. However, the calculations for the revised contact time of 19.32 mg.min/l have to be re-submitted.

CCC installed a single UV unit on this supply, there is no stand by unit and it is not connected to a UVT/UVI monitor or alarm. The unit is not validated. This current system is not acceptable as it does not meet the requirements of EPA Advice Note No 3. The Water Services Authority must as a priority ensure that the UV unit is upgraded to meet the requirement of the EPA Advice Note No 3.

### 4. RECOMMENDATIONS

- Source Protection:** The Water Services Authority should take action should to ensure that the area in the immediate vicinity of the borehole is permanently secured and fenced off to prevent unauthorised and livestock access.
- Source Protection:** The Water Services Authority should ensure that the well head is raised above ground level and that it is securely capped to address to reduce the risk of ingress into the borehole shaft and that the chamber is sealed with a lockable manhole cover. The borehole chamber should be constructed as per EPA Advice Note No 14: Borehole Construction and Wellhead Protection.
- Source Protection:** The Water Services Authority should ensure that farms in the area surrounding the borehole are surveyed and that any findings with the potential to impact on the water supply are pursued.
- Source protection:** The Water Services Authority is to confirm that the landowners within the vicinity of the borehole were written to advise them of their requirements under the *European Communities (Good Agricultural Practice for the Protection of Waters) Regulations 2010 (SI No.610 of 2010)*.
- Source Protection:** The Water Services Authority should submit the findings of the geologist with regard to the survey undertaken to determine the features present which may present pathways to the groundwater body.
- Disinfection:** The Water Services Authority should confirm whether the data on the recordable device can be downloaded.
- Disinfection:** The Water Services Authority should submit the revised contact time calculations.

8. **Disinfection:** The Water Services Authority should ensure that a cascade system for the alarms is put in place to ensure that appropriate personnel are promptly informed of alarms, especially when the caretaker is unable to respond within the allocated timeframe. The Water Services Authority should develop a documented response to alarms, setting out the actions to be taken and by whom in the event of an alarm.
9. **Disinfection:** The Water Services Section must ensure that the UV treatment system meets the requirements of the EPA Advice Note No 3. There should be duty standby UV units in place with automatic switch over between the units. The UV units must be validated to an appropriate international validation standard; the Water Service Authority should also submit a copy of the validation certificate. The UV unit should be connected to a UVI/UVT monitor to ensure that it is operating within its validation range at all times and so that the data can be achieved and reviewed on a regular basis.
10. **Disinfection:** The Water Services Authority should ensure chlorine dosing points are secured against accidental damage.
11. **Management and Control:** The Water Services Authority should investigate the possibility of linking the treatment works to a SCADA system, so that the performance of the treatment works can be viewed remotely and that historical data can easily be retrieved and examined.

#### **FOLLOW-UP ACTIONS REQUIRED BY THE LOCAL AUTHORITY**

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 audit report by 10/02/2014 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 the Water Services Authority.

Please quote the File Reference Number DW2013/47 in any future correspondence in relation to this Report.

Report  
prepared by:



Niall Dunne

Inspector

Date:

10/1/14



**Photograph No. 1: Temporary fence around borehole. Head of borehole below ground level and chamber not of adequate construction.**



**Photograph 2: Chlorine dosing points not adequately protected. Single UV unit in place.**



