



# Drinking Water Audit Report

<b>County:</b>	Carlow	<b>Date of Audit:</b>	5 <sup>th</sup> April 2016
<b>Plant(s) visited:</b>	Leighlinbridge Water Treatment Plant	<b>Date of issue of Audit Report:</b>	21 <sup>st</sup> April 2016
		<b>File Reference:</b>	DW2016/56
		<b>Auditors:</b>	Ms. Michelle Roche
<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>.</li> <li>• <i>The 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> <li>• The recommendations in any previous audit reports.</li> </ul>		

## MAIN FINDINGS

- i. **The effective chlorine contact time of 14.82mg.min/l should be reviewed and a minimum of effective contact time of 15mg.min/l should be achieved.**
- ii. **The low level chlorine alarm set point of 0.1 mg/l should be reviewed with a view to providing additional time for the plant caretaker to react to the detection of a low chlorine residual leaving the water treatment plant.**

## 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 Irish Water in providing clean and wholesome drinking water in the Leighlinbridge public water supply.

The Leighlinbridge public water supply serves approximately 1,500 people in the town of Leighlinbridge and a number of properties between Leighlinbridge and the M9 motorway. The supply is served by two groundwater boreholes with only one borehole operating at any one time and producing approximately 500m<sup>3</sup>/day. Treatment consists of disinfection with sodium hypochlorite and treated water is pumped directly into supply from a chlorine contact tank.

The opening meeting commenced at 10.30am at the Leighlinbridge 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:

Ms. Catherine Rice – Compliance Analyst, Irish Water

Mr. Liam Brett – Water Engineer, Irish Water

Mr. Gerard O'Brien – Senior Executive Engineer, Carlow County Council  
 Ms. Catherine Buggy – Environmental Technician, Carlow County Council  
 Mr. Niall Byrne, General Service Supervisor, Carlow County Council  
 Mr. Michael Cullen – Caretaker, Carlow County Council

Representing the Environmental Protection Agency:

Ms. Michelle Roche – 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.*

<p><b>1.</b></p>	<p><b>Source Protection</b></p> <ul style="list-style-type: none"> <li>a. A source protection zone has been developed for the Leighlinbridge boreholes and all landowners within a 200m buffer zone have been written to under the <i>European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)</i>.</li> <li>b. Both boreholes are fully capped and located in sealed chambers.</li> <li>c. Boreholes are cased down to 20m below ground level and are therefore drawing on deep groundwater for supply.</li> <li>d. Only one borehole is pumped at any one time and the caretaker manually switches the operational borehole once a week. There have been no yield issues from either of the boreholes.</li> </ul>
<p><b>2.</b></p>	<p><b>Disinfection</b></p> <ul style="list-style-type: none"> <li>a. Raw water is treated with 11% sodium hypochlorite with a fixed dose. The flow rate of the water delivered to the dosing system is also fixed.</li> <li>b. Duty and standby chlorine dosing pumps are installed and there is automatic switchover in the event of pump failure. The caretaker manually switches over the pumps every 24 hours to ensure they function effectively.</li> <li>c. The day tank is filled once a week using 10L drums which are stored within a bunded area. There is no dilution of the sodium hypochlorite.</li> <li>d. A contact tank is located beneath the pump house and between the contact tank and the distribution pipeline to the first customer a contact time of 14.82mg.min/l is achieved.</li> <li>e. Chlorine residuals are measured using an online chlorine monitor after the contact tank. The meter is alarmed with a low alarm of 0.1mg/l and a high alarm of 0.5mg/l.</li> <li>f. An alarm trigger will call out to the caretaker and to other Carlow County Council staff via a cascade system.</li> </ul>
<p><b>5.</b></p>	<p><b>Treated Water Storage and Distribution Network</b></p> <ul style="list-style-type: none"> <li>a. Chlorine residuals are measured at the end of the distribution network every 2 to 3 days. Chlorine residual measurements from the caretakers logbook were inspected during the audit and all were above 0.1 mg/l.</li> <li>b. Areas of the network identified as having the potential to cause an issue with chlorine residuals in the network are flushed once a week.</li> </ul>

### 3. AUDITORS COMMENTS

The Leighlinbridge Water Treatment Plant was found to be very well managed by a dedicated team of staff. Process documentation was up to date and available at the plant and record keeping was of an excellent standard. Aspects of the disinfection process should be reviewed including the low level chlorine alarm set point of 0.1mg/l and the chlorine contact time of 14.82 mg.min/l which is marginally below the required contact time of 15mg.min/l. These issues should be reviewed under the Irish Water National Disinfection Programme which is at tender stage in County Carlow.

### 4. RECOMMENDATIONS

#### Disinfection

1. Irish Water should review the contact time for chlorine disinfection to ensure that the effective contact time achieved is 15mg.min/l and that the first connections are receiving appropriately disinfected drinking water.
2. Irish Water should review the low level chlorine alarm on the online chlorine residual monitor on the final water. Setting a higher set-point would provide additional time for the plant caretaker to react to the detection of a low chlorine residual leaving the water treatment plant.

### 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 is recommended to put such measures in place as are necessary to implement the recommendations listed in this report. The actions by Irish Water to address the recommendations taken will be verified by the Agency during any future audits.

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:

21<sup>st</sup> April 2016

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Inspector