



# Drinking Water Audit Report

<b>County:</b>	Co. Sligo	<b>Date of Audit:</b>	15/06/2016
<b>Plant(s) visited:</b>	Lough Easkey Water Treatment Plant (WTP) and abstraction point  Scheme Code: 2700PUB2704	<b>Date of issue of Audit Report:</b>	29/06/2016
		<b>File Reference:</b>	DW2016/108
		<b>Auditor:</b>	Ms Ruth Barrington
<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>• 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 <i>EPA Drinking Water Report</i>.</li> <li>• EPA Drinking Water Advice Notes Nos. 1 to 15.</li> <li>• The recommendations in a previous EPA audit report dated 2<sup>nd</sup> April 2009.</li> </ul>		

## MAIN FINDINGS

- i. **The disinfection system at Lough Easkey public water supply does not currently meet EPA criteria as there is no automatic switchover between duty and standby chlorinators in the event of inadequate chlorine residual being detected. Switchover must be performed on a manual basis.**
- ii. **Chlorine residuals in two of the network extremities were reported as insufficient to maintain secondary disinfection. Irish Water must take action to ensure the water supply is adequately disinfected at all times.**

## 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.

The Lough Easkey supply serves a population of approx. 6,235 with 2,808 m<sup>3</sup>/day of treated water. Raw water is abstracted from Lough Easkey, about 6km from the plant. The treatment process consists of pH adjustment, coagulation, flocculation, rapid gravity filtration, disinfection using chlorine gas, and fluoridation. There are nine reservoirs in the distribution network, with booster chlorination in use when necessary at one of these, Skreen reservoir.

Photographs taken by Ms Barrington during the audit are attached to this report where relevant.

The opening meeting commenced at 12.55 p.m. at Lough Easkey Water Treatment Plant (WTP). 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 audit 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 Yvonne McMonagle – Drinking Water Compliance Analyst

Representing Sligo County Council:

Mr Declan Keaveney - Caretaker

Mr Peter Duignan - Technician

Ms Majella Sweeney - Technician

Mr Noel Haran – O&M

Representing the Environmental Protection Agency:

Ms Ruth Barrington – 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.	<b>Source Protection</b> <ul style="list-style-type: none"><li>a. The abstraction for the supply is taken from Lough Easkey. The lake shore in the immediate vicinity of the abstraction point is in low intensity grazing use (commonage) and areas of forestry were also visible further along the lake.</li><li>b. It was not clear during the audit whether landowners/occupiers have been communicated with in relation to risks to the drinking water abstraction (e.g. pesticides from forestry usage).</li></ul>
2.	<b>Filtration</b> <ul style="list-style-type: none"><li>a. Filtration facilities have been upgraded since the previous EPA audit. Most notably, backwashing has been automated and turbidity monitors on the outflow of each filter are operational. There is also a 10 minute run to waste facility following backwash completion.</li><li>b. Filter media was last replaced in 2007 and expansion testing was undertaken in 2011.</li></ul>
3.	<b>Disinfection</b> <ul style="list-style-type: none"><li>a. There is no automatic switchover between duty and standby chlorinators in the event of an inadequate chlorine residual being detected. Irish Water identified that the disinfection system is being assessed for an upgrade under their National Disinfection Programme, including a change to sodium hypochlorite dosing system rather than the chlorine gas which is in use currently. The disinfection programme workshop for the supply is scheduled for July 2016, but a timeline for providing the disinfection upgrade is not yet available.</li><li>b. The chlorine contact time calculation done in 2014 gave a Ct of 55.47 mg.min/l. This has since been revised following Irish Water's protocol for the calculation which restricts the allowable pipe length to that within the site boundary fence. The revised figure, while expected to still be adequate, was not available during the audit.</li></ul>

4.	<p><b>Treated Water Storage and Distribution Network</b></p> <ol style="list-style-type: none"> <li>a. There are nine reservoirs within the distribution network. These were not visited during the audit but the facilities provided and the operation of three of the reservoirs was discussed with reference to secondary disinfection. Booster chlorination is provided at Skreen Reservoir, which supplies Chapel Street and Ardnabrone Reservoirs.</li> <li>b. Inadequate chlorine residuals (&lt;0.1 mg/l) were reported to be occurring at the end of the lines served by Chapel Street and Ardnabrone, with the most likely reason assigned as low water use in these areas. Bypass of Chapel Reservoir is possible to reduce water age but Ardnabrone cannot be fully bypassed if adequate water pressure/supply is to be maintained. The water level has however been lowered as much as possible at Ardnabrone.</li> <li>c. An automated scour is being considered at the end of the Chapel Street line.</li> <li>d. Online chlorine residual monitors are in place at the reservoirs and the data was available through the county wide SCADA. However the daily manual tests, which are carried out in the network at the end of lines, are not recorded. This leaves a gap in available data to support the call for better management of secondary disinfection.</li> </ol>
5.	<p><b>Hygiene and Housekeeping</b></p> <ol style="list-style-type: none"> <li>a. The concrete edge of one of the hatches on the clearwater tank was broken (refer to photograph No. 1 attached). It appeared that surface water ingress may be possible at this point. The hatches at the clearwater tank were not lockable.</li> </ol>
6.	<p><b>Sludge Management</b></p> <ol style="list-style-type: none"> <li>a. Sludge is treated using settlement only. As there is no sludge thickening facilities available on-site, up to 120 tonnes of sludge are removed from site each month and transported to Leixlip WTP for further treatment. Irish Water stated that there is an Asset Needs Brief prepared for the provision of a sludge handling facility on site.</li> </ol>

### 3. AUDITOR'S COMMENTS

In general the plant was well operated and maintained. The upgrade of the filtration control facilities since the previous EPA audit was welcomed.

Aspects of the disinfection at the plant and in the network require optimis. In particular, the primary disinfection via chlorine gas is manually controlled so may not respond quickly to changes in water quality or flow, and there is no automatic switchover between chlorinators in the event of a problem with the duty chlorinator. There is a reported inadequacy in the chlorine residuals at the end of the lines in areas fed from two of the reservoirs (Chapel Street and Ardnabrone).

### 4. RECOMMENDATIONS

#### Source Protection

1. Irish Water should assess the risk posed by pesticide use in the catchment, for example in the forested areas adjacent to Lough Easkey. In the case of potential large scale users such as Coillte, the likely pesticides used should be assessed to ensure these are being monitored in drinking water, and the fact that there is a drinking water abstraction from Lough Easkey should be brought to the attention of forestry operators.

#### Filtration

2. Irish Water should review the operation of the filters to assess whether media replacement or other maintenance work is required.

#### Disinfection

3. Irish Water should as part of the Disinfection Programme Upgrade for this supply, provide duty and standby chlorine dosing pumps with automatic switch over in the event of the failure

of one of the pumps. The upgrade shall also include flow proportional/ residual linked chlorine dosing. A timeframe for the completion of this upgrade shall be provided to the EPA as part of the response to this audit.

4. Irish Water should submit a calculation of the effective chlorine contact time (as Ct) to the Agency.
5. Irish Water should implement a programme to provide adequate free chlorine residual ( $\geq 0.1$  mg/l) throughout the network. This programme should consider the management of water age, potential for installing automated scour facilities at the end of the line, or additional chlorine boosting as appropriate.
6. Irish Water should ensure that results of manual chlorine residuals measured in the network (including the end of lines) are recorded and the data used to manage adequate disinfection.

#### **Hygiene and Housekeeping**

7. Irish Water should ensure that sealed and lockable covers are installed at the two clearwater tank hatches where there is access to treated water.

#### **Sludge Management**

8. Irish Water should progress the plans for sludge thickening facilities on-site to reduce the transport of liquid sludge to Leixlip WTP for treatment.

### **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:**

29/06/2016

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Ruth Barrington

Inspector

Photograph No. 1: Cracked concrete around hatch on clearwater tank

