



Drinking Water Audit Report

County:	Roscommon	Date of Audit:	03/07/2014
Plant visited:	Castlerea Urban (Demense pumphouse)	Date of issue of Audit Report:	17/7/2014
		File Reference:	DW2008/383
		Auditors:	Ms Yvonne Doris
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 EPA Report on <i>The Provision and Quality of Drinking Water in Ireland</i>. • The recommendations in any previous audit reports. 		

MAIN FINDINGS

- i. The Castlerea Urban public water supply is on the EPA's Remedial Action list of supplies for poor turbidity removal. Raw water turbidity is very variable and can reach >10NTU.
- ii. *Cryptosporidium* was detected on two occasions in 2014 when samples were taken at the Demense pumphouse. A Boil Water Notice was placed on the supply on 1st February 2014 and is still in place. There is no barrier to *Cryptosporidium* in place on the supply.
- iii. On 10th June 2014, the EPA issued a direction to Irish Water to install a *Cryptosporidium* barrier on the supply by 30th June 2015.

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. 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) Act 2013.

Castlerea Urban public water supply serves 1,800 people in Castlerea town. The source is extremely vulnerable groundwater from Silver Island Springs which flows by gravity, 1.5 miles to the Demense pumphouse on the outskirts of Castlerea town. Raw water is chlorinated and fluoridated before distribution. There is no other treatment and no barrier to *Cryptosporidium* in place on the supply. The Castlerea Urban supply is on the EPA's Remedial Action List for poor turbidity removal. A Boil Water Notice to consumers of the supply is in place since 1st February 2014.

Photographs taken by Yvonne Doris during the audit are attached to this report and are referred to in the text where relevant. The opening meeting commenced at 15.10 at the Demense pumphouse. 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. 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)

Name – Job Title

Sean Higgins, Water Engineer, Irish Water*

Vincent Walsh, Senior Executive Engineer, Roscommon County Council*

Gerry Healy, caretaker, Roscommon County Council*

Representing the Environmental Protection Agency:

Name – Job Title

Yvonne Doris, 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> <ul style="list-style-type: none">a. The source of the supply, Silver Island Springs was not visited as part of this audit. Water from Silver Island Spring flows by gravity from the spring via two pipes (one is clay) to the Demense pumphouse, a distance of 1.5 miles. The source produces a high quantity of water but is of poor quality (often high turbidity after heavy rain). Demand in the supply is 850m³/day.b. Continuous monitoring of raw water pH and turbidity is in place. The raw water turbidity monitor was reading 0.2NTU at the time of the audit. Raw water turbidity can vary from between 0.2 and >10NTU.c. The GSI report <i>Castlerea Water Supply Scheme Longford Spring and Silver Island Spring, Groundwater Source Protection Zones</i> (GSI, 2003) delineated the source protection zone for the Silver Island Spring as extremely vulnerable due to significant karstification. The zone of contribution (ZOC) comprises five springs including Silver Island Spring. Groundwater within any part of the ZOC could reach the spring within 100 days and the entire ZOC should be classified as the Inner Protection Area. The report found total and faecal coliforms in the raw water samples and suggested that a source of contamination is likely to be organic waste, possibly farmyard wastes. The GSI recommended that, all potential hazards in the ZOC should be adequately assessed.d. Roscommon County Council has carried out some catchment work in the catchment. Farmers have been notified of the drinking water abstraction. Farm inspections and septic tank inspections were conducted. There was a high rate of failure of septic tank inspections in Roscommon. Slurry storage problems were identified in the catchment and remedial works are underway with good co-operation from farmers.
2.	<p>Chlorination and Disinfection</p> <ul style="list-style-type: none">a. Sodium hypochlorite (14%) is dosed neat at between 1.4 - 1.8mg/l at a fixed rate (pumping is constant) and manually adjusted based on chlorine residuals in the network (typically 0.4mg/l) to achieve 1.1mg/l leaving the reservoir. Chlorine residuals are heavily influenced by rainfall events (when turbidity is elevated in the raw water) and disinfection can be compromised during these periods.b. Duty and standby dosing pumps with automatic switchover are in place (photograph 1). Chlorine monitor with a low alarm of 0.6 and an unknown high alarm dial out to the caretaker and supervisor. Chlorine contact time is >1 day but the effective chlorine contact time has not been calculated. Chlorine residual from the rising main leaving the pumphouse at the time of the audit was 1.35mg/l.

3.	<p>Treated Water Storage</p> <p>a. Castlerea tower reservoir was visited as part of the audit. It was constructed in the 1950s. It was cleaned in 2007. The top of the reservoir was not inspected as access was unsafe (photograph 3)</p>
4.	<p>Monitoring and Sampling Programme for treated water</p> <p>a. No <i>Cryptosporidium</i> has been detected in the treated water since February 2014.</p>
5.	<p>Hygiene and Housekeeping</p> <p>a. Waste material was being stored at Castlerea Tower reservoir (photograph 2)</p>
6.	<p>Management and Control</p> <p>a. The Castlerea Urban public water supply is on the EPA's Remedial Action list of supplies for poor turbidity removal. There is no barrier to <i>Cryptosporidium</i> in place on the supply. <i>Cryptosporidium</i> was detected on two occasions in 2014. A Boil Notice was placed on the supply on 1st February 2014. On 10th June 2014 the EPA issued a direction to Irish Water to install a <i>Cryptosporidium</i> barrier on the supply by 30th June 2015.</p> <p>b. Pipework laying is underway to connect Silver Island Springs with Longford Springs/Borehole (source of Castlerea Regional supply) and is due to be completed by the end of 2014.</p> <p>a. Manual records are kept by the caretaker in the plant diary</p>
7.	<p>Complaints from Consumers</p> <p>a. Roscommon County Council receive complaints of coloured water from consumers</p>

3. AUDITORS COMMENTS

Irish Water should install an appropriate barrier to *Cryptosporidium* on the Castlerea Urban supply to prevent the entry of *Cryptosporidium* if it is present in the raw water so as to secure compliance with the drinking water standards and improve the security of the supply

4. RECOMMENDATIONS

Source Protection

1. The Water Services Authority should characterise the variability in raw water quality and compile a source water safety plan in order to mitigate any risks to the abstracted water (http://whqlibdoc.who.int/publications/2009/9789241562638_eng_print.pdf). Trends in raw water quality should be analysed and used to determine the optimum treatment conditions for the water at the plant. Data should be used to identify whether rapid variations in raw water quality give rise to problems with the treatment process.
2. The Water Services Authority should have regard to the information and recommendations of the GSI report Castlerea Water Supply Scheme Longford Spring and Silver Island Spring, Groundwater Source Protection Zones (GSI, 2003).
3. The Water Services Authority should liaise with the River Basin District team responsible for implementing the Water Framework Directive and establish links with the Environment Sections in relevant local authorities in the catchment to ensure that they are aware of the issues potentially impacting on the raw water abstraction point. The Water Services Authority should identify all potentially polluting discharges into the catchment of the water source and implement mitigation measures, where appropriate, to reduce the potential impact of these discharges.

Disinfection

4. The Water Services Authority 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. The Water Services Authority should submit a calculation of the effective contact time to the Agency.

Treated Water Storage

5. The Water Services Authority 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.
6. The Water Services Authority should ensure that all vents and access hatches on the reservoir are secured against ingress of animals or deliberate introduction of any contaminant or acts of vandalism.

Hygiene and Housekeeping

7. The Water Services Authority should remove waste material from the Castlerea Tower Reservoir to a facility authorised for such waste.

Management and Control

8. The Water Services Authority should install a barrier to prevent *Cryptosporidium* entering the supply if it is present in the raw water.

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 by Mr Nigel Hayes, Drinking Water Inspector.

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.

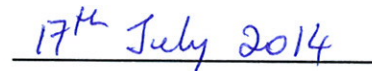
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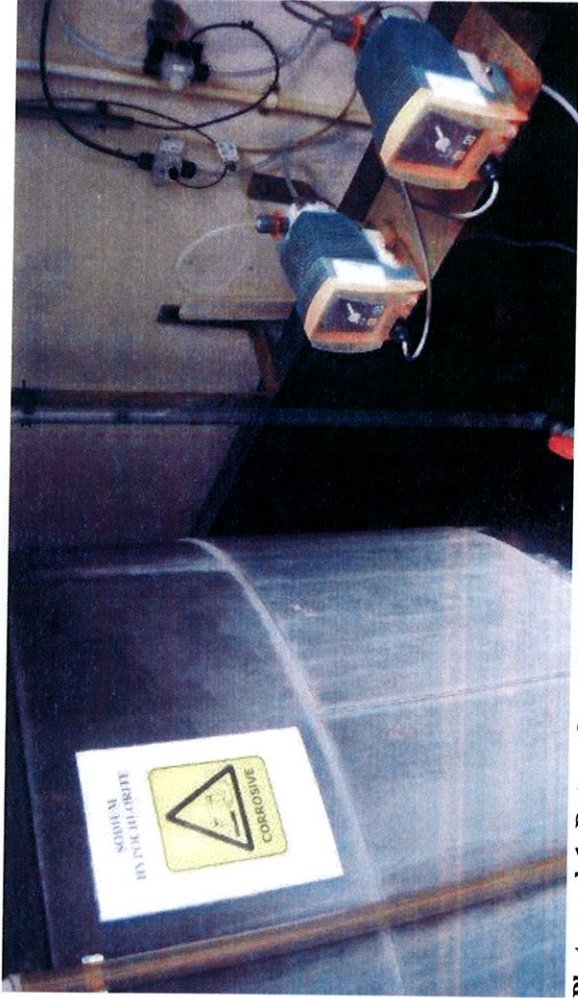

Yvonne Doris

Inspector

Date:


17th July 2014

*2003, Geological Survey of Ireland (GSI) "Castlerea Water Supply Scheme, Longford Spring and Silver Island Spring, Groundwater Source Protection Zones".



Photograph 1: Duty and standby chlorine dosing pumps



Photograph 2: Waste material stored at Castlereva tower reservoir



Photograph 3: Castlereva tower reservoir