



# Drinking Water Audit Report

<b>County:</b>	Dublin	<b>Date of Audit:</b>	3 <sup>rd</sup> October 2014
<b>Plant(s) visited:</b>	Stillorgan Reservoir	<b>Date of issue of Audit Report:</b>	6 <sup>th</sup> October 2014
		<b>File Reference:</b>	DW2010/23
		<b>Auditors:</b>	Mr Darragh Page Ms Aoife Loughnane
<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 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. There has been an increase in the number of detections of *Cryptosporidium* in the treated water at the Stillorgan Reservoir though levels remain low (usually one oocyst per approx. 1,000 L sample) and at a level where typing is not likely to be possible. Irish Water need to continue to monitor and liaise with the HSE where *Cryptosporidium* is detected.
- ii. The installation of UV treatment of water leaving the reservoir and into supply appears to be progressing in line with the previous timetable supplied to the EPA and is scheduled for completion in June 2015. Irish Water should ensure that there are no delays with this project and that UV is installed at the earliest opportunity.

## 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 Stillorgan Reservoir is an open storage reservoir comprising of three separate ponds, the Lower, Upper and John Gray. Water enters the reservoirs from the Ballymore Eustace and Vartry Reservoir water treatment plants via a 24" and 33" main from Vartry and a 24" and 1000 mm main from Ballymore Eustace. No treatment of the stored water is undertaken other than chlorination.

The opening meeting commenced at 10.00 am at Stillorgan Reservoir. 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 reservoir and disinfection 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)

Mr John Leamy – Compliance Specialist, Irish Water\*

Ms Angela Ryan – Asset Strategy, Irish Water\*

Ms Laura Walsh – Executive Engineer, Dublin City Council\*

Mr Paul Quinn – Inspector, Dublin City Council\*

Mr Niall Armstrong – Project Admin Supervisor, Dublin City Council\*

Mr Stephen Burke – Senior Executive Engineer, Dublin City Council\*

Mr Andrew Boylan – Senior Executive Chemist, Dublin City Council\*

Ms Aileen O’Connell – Central Lab, Dublin City Council\*

Ms Sandra McAleer – Senior Executive Engineer, Dublin City Council\*

Representing the Environmental Protection Agency:

Mr Darragh Page – Inspector

Ms Aoife Loughnane – 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 audit team inspected the perimeter of the Lower, Upper and John Gray reservoirs.</li><li>b. Since the previous audit security arrangements at the entrance have improved. There is CCTV on site with audible warnings when intruders come on to the property. Locked gates have also been installed preventing people from using the walkways over the moat to access the reservoir.</li><li>c. DCC stated that the boundary of the reservoir is walked every day to look for signs of unauthorised access and that during the summer month’s security is put in place to prevent unauthorised swimming.</li><li>d. The site boundary appeared secure and there were no breaches of the perimeter fence or walls evident.</li><li>e. In spite of these arrangements DCC stated that occasionally members of the public do access the site and swim in the reservoir.</li><li>f. Bird control measures have been trialled over the years and are currently being implemented at the reservoir. The bird controller was on site at the time of the audit (twice weekly visits occur). Bird control consists of firing air guns, flying birds of prey and playing distressed bird calls over a loudspeaker. At the time of the audit there were a small number of birds on the reservoir that responded to the bird control measures. Various other measures have been trialled but DCC felt that the current control measures were the most successful to date. Nonetheless small numbers of birds (mainly gulls) did persist in remaining on the reservoir.</li></ul>
2.	<b>Chlorination and Disinfection</b> <ul style="list-style-type: none"><li>a. The supply is currently disinfected using chlorine gas.</li><li>b. A back up supply of sodium hypochlorite is used if needed. Old stock of sodium</li></ul>

	<p>hypochlorite (approx. 40 no. 50 L drums) were being stored in the manifold building. DCC stated that these were being removed.</p> <ul style="list-style-type: none"> <li>c. The chlorine monitor records total chlorine and is taking a sample from approx. 1 m downstream of the chlorine injection point. In spite of the proximity (and the potential for inadequate mixing) the reading was relatively stable.</li> <li>d. IW stated that the chlorination system is being reviewed as part of the upgrade works and the dosing and monitoring points will be examined at this time.</li> <li>e. The contract for the upgrade of the disinfection system to include UV is progressing on schedule and is currently at design phase. IW stated that there are no delays with the previous timetables provided and a completion date of 3 June 2015 is anticipated.</li> </ul>
<b>3.</b>	<p><b>Monitoring and Sampling Programme for treated water</b></p> <ul style="list-style-type: none"> <li>a. The results of monitoring for <i>Cryptosporidium</i> at the Roundwood Reservoir, Callow Hill (source of 50% of the water in the reservoir) and Stillorgan Reservoir outlet were examined. These results show that the frequency of samples detecting <i>Cryptosporidium</i> increased in 2013 and 2014. In particular, there was a high frequency of detection in 2014 in January (6 of 8 samples), February (6 of 6 samples) and March (5 of 10 samples) and again in September (5 of 6 samples) in the Stillorgan RHS main sample location. A second sample location on the Brewery Road was introduced in 2014 and showed similar patterns of detection. Significantly less detections were recorded in the Roundwood water indicating that the likely source is the reservoir itself.</li> <li>b. The turbidity results from the turbidity monitor were examined and appeared to satisfactory with levels averaging at 0.4 NTU.</li> </ul>
<b>4.</b>	<p><b>Management and Control</b></p> <ul style="list-style-type: none"> <li>a. IW stated that tenders for the Vartry Water Supply Project were submitted on the 2<sup>nd</sup> October 2014 and are to be assessed in the coming weeks. This project includes provision to commence the project to provide covered storage at the Stillorgan Reservoir. The current appointment will include provision to install backpumping, inlet/bypass construction as well as planning and related aspects for the provision of covered storage.</li> <li>b. IW stated that the provision of covered storage is depending on the construction of strategic storage reservoir for Ballymore Eustace water and the commencement of the major new source for Dublin.</li> </ul>

### 3. AUDITORS COMMENTS

The risk of the open storage of treated drinking water has been highlighted by the EPA in the previous audit in 2010. Since this audit, improvements have been made at site to prevent unauthorised access and to control animal access to reservoir. However, until such time as the reservoir is covered or UV treatment is installed there will remain a risk of contamination, particularly from the bird population. The project to install UV appears to be on track with a completion date of June 2015. IW should ensure that this work is completed as quickly as possible to address the immediate risk. Longer term the open storage of treated drinking water should cease and plans were presented by Irish Water during the audit outlining a plan to achieve this. This should also be completed at the earliest opportunity.

### 4. RECOMMENDATIONS

1. Irish Water should continue to submit a quarterly report summarising *Cryptosporidium* monitoring at the Stillorgan Reservoir unless there is a rise in the number of oocysts detected in a sample or there is an increase in illness within the community and it is suspected that this is due to the water supply. If this occurs Irish Water should notify the EPA immediately using the online drinking water notification system.
2. Irish Water should report on progress with the installation of UV at the Stillorgan Reservoir as part of the quarterly report.

3. Irish Water should remove all old/expired stock of sodium hypochlorite from site at the Stillorgan Reservoir. These chemical should be disposed of in an appropriate manner.
4. Irish Water should arrange for birds counts at the reservoir to determine the species present and the patters of birds using the reservoir. These counts should be used to determine whether there is a link between the number of birds or species using the reservoir and the *Cryptosporidium* detections. Observations on bird numbers should also be recorded during the *Cryptosporidium* monitoring events and daily security checks. Increased bird control should be considered at times where bird numbers at expected to peak or where observations show increased numbers of birds using the reservoir.

### **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 the Water Services Authority to address the issues raised. This report has been reviewed and approved by Ms Brendan Wall, Manager (Environmental Enforcement).

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:**

3<sup>rd</sup> October 2014

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Inspector