



Drinking Water Audit Report

County:	Roscommon	Date of Audit:	10 th April 2015
Plant(s) visited:	Hughestown, Cortober, County Roscommon.	Date of issue of Audit Report:	11 th May 2015
		File Reference:	DW2015/63
		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 <i>EPA Drinking Water Report</i>. • The recommendations in any previous audit reports. 		

MAIN FINDINGS

- i. Following the detection of *Cryptosporidium* in the Hughestown PWS in a sample taken on 30th March 2015, abstraction from the borehole at Hughestown has ceased and half of Hughestown supply consumers are being served water from the Carrick-on-Shannon PWS and the other half are being served by the Boyle/Ardcarne PWS.
- ii. The new treatment plant at Boyle/Ardcarne is in operation. The process-proving stage is yet to be verified and the Boil Water Notice on the Boyle/Ardcarne PWS will remain in place until this is complete. Therefore the consumers of the Hughestown supply area now being served by the Boyle/Ardcarne PWS were been placed on a Boil Water Notice (approximately 340 persons) on 8th April 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 in response to the notification by Irish Water dated 10th April 2015 of the detection *Cryptosporidium* oocysts (1 oocyst in 1937 litres; 0.005/10L) in the Hughestown public water supply.

The Hughestown public water supply serves 678 people from Hughestown into Cortober village on the outskirts of Carrick-on-Shannon, including the Woodbrook public group water scheme (about 100 houses) and a small portion of the town of Carrick-on-Shannon (a total of about 30 houses). The plant is operated by Glan Agua Limited under a Design, Build Operate contract. 800m³/day is abstracted from one of three wells at the plant. Treatment consists of chlorination only. There is no barrier to *Cryptosporidium* should it be present in the raw water. Disinfected water is served directly to consumers – there is no reservoir in the network. The supply had not been assigned a unique supply code and details of the supply had not been reported to the EPA. Following this audit, on 22nd April 2015, Irish Water informed the EPA that the water abstracted from the Hughestown boreholes was being treated at the Boyle (Rockingham) treatment plant where there is a barrier to *Cryptosporidium*.

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 10.00am at the Hughestown supply. 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: (* indicates that person was also present for the closing meeting)

Name – Job Title

Anthony Skeffington, SLA Above Ground Lead, Irish Water*

Anne Bonner, Compliance Specialist, Irish Water*

Vincent Walsh, Acting Senior Executive Engineer, Roscommon County Council*

Dessie Gardiner, Plant Operator, Glan Agua Limited.*

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.	Source Protection <ul style="list-style-type: none">a. At the time of the audit the Hughestown source was not being abstracted as customers were being supplied from either the Boyle/Ardcarne or the Carrick-on-Shannon supplies.b. Three boreholes, drilled in 2007, are located at the Hughestown treatment plant. One borehole has been in operation between October/November 2014 and 9th April 2015, when the <i>Cryptosporidium</i> sample result 0.005/10L was received (see photograph 1). Prior to October/November 2014 a single older well was serving the Hughestown supply (see photograph 2).c. The three wells drilled in 2007 are 120m deep, cased to 30m depth and yield between 1,850 and 2,500 m³/day. Well logs were available for inspection at the audit.d. The boreholes are not numbered or labelled. They are in large concrete chambers. The wellheads are above ground level. The joins in the concrete rings forming the wellhead chambers are not sealed. The access hatches were not sealed to prevent water ingress and were unlocked. There was water in the borehole chambers. The well operating up to 9/4/15 had no access hatch in place (see photograph 3).e. The <i>Cryptosporidium</i> risk assessment score has not been calculated by Irish Water or Roscommon County Council (RCC) for the Hughestown supply. RCC expect the score will be high risk.f. A Zone of Contribution to the well(s) has not been delineated.g. An old trial wells is unsealed and may provide a conduit to the aquifer (see photograph 4).
2.	Chlorination and Disinfection <ul style="list-style-type: none">a. The disinfection system was not in operation at the time of the audit.b. Disinfection was by 10/11% sodium hypochlorite dosed neat at 0.9-1.0mg/l. About 10 litres per day were used. The operator topped up the day tank with about 60 litres when the tank was running low. The system consisted of duty and standby chlorine dosing pumps, with automatic switchover. A chlorine monitor, alarmed to the site operator was in place. The contact time calculation was unknown at the time of the audit. There is no booster chlorination in the network.
3.	Monitoring and Sampling Programme for treated water <ul style="list-style-type: none">a. Since 2007 one <i>Cryptosporidium</i> sample per year has been taken in the Hughestown supply in March/April. Roscommon County Council stated that no samples detected <i>Cryptosporidium</i>. For two days prior to the sample there was heavy rain.b. Irish Water/RCC have no plans to resample for <i>Cryptosporidium</i> as the Hughestown source water is not in use and will not be used until it is connected to and treated by the Boyle/Ardcarne treatment plant (which has filtration and UV treatment).

<p>4.</p>	<p>Exceedances of the Parametric Values</p> <ul style="list-style-type: none"> a. Between 30/3/15 and 31/3/15 a sample of 1937 litres was tested for the presence of <i>Cryptosporidium</i> at the Backweston Reference Laboratory and 1 oocyst was detected. Results of genotyping tests are awaited. b. Since 9/4/15 the Woodbrook public group water scheme and about 50 properties in Cortober are being supplied by the Boyle/Ardcarne public water supply and the remainder of the Hughestown supply area is being served by the Carrick-on-Shannon public water supply. c. The customers (approximately 340) served by the Boyle/Ardcarne supply were placed on a Boil Water Notice on 9/4/15. Leaflets were hand delivered to individual customers and copies of leaflets were provided to the operators of the Woodbrook public group water scheme to be distributed to customers. d. Irish Water plans to pump water to the Boyle/Ardcarne treatment plant where it will be treated (filtration, UV, chlorination) and delivered to the Hughestown supply area from the Boyle/Ardcarne treatment plant. The Hughestown supply will no longer exist and the Hughestown well(s) will become an additional source for the Boyle/Ardcarne supply. There is no timeframe for the completion of this connection. e. Prior to the treatment of water abstracted from the Hughestown source and treated at the Boyle (Rockingham) treatment plant the following actions are to be completed by Irish Water/RCC: <ul style="list-style-type: none"> i. Catchment protection measures under the Good Agricultural Practice Regulations ii. Raw water monitoring iii. Calculation of <i>Cryptosporidium</i> risk assessment score iv. Decommissioning of the old well and the trial well (pre 2007).
<p>5.</p>	<p>Chemical storage and bunds</p> <ul style="list-style-type: none"> a. Approximately 250 empty sodium hypochlorite drums were being stored in the container that had been in use to disinfect the supply since November 2014.
<p>6.</p>	<p>Hygiene and Housekeeping</p> <ul style="list-style-type: none"> a. Gravel and other materials were stored surrounding the old wells (unsealed) (see photograph 2). b. The site is still under construction and is not fully snagged. It has yet to be commissioned.
<p>7.</p>	<p>Management and Control</p> <ul style="list-style-type: none"> a. The length of network in the Hughestown supply was not known at the time of the audit. b. Flushing and scouring of the network is done weekly. c. Apart from two recent samples, raw water and treated water monitoring results were not available for inspection at the time of the audit. Roscommon County Council stated that monitoring results for the Hughestown supply would have been reported to the EPA as part of the Boyle/Ardcarne public water supply but it was not known the number of samples that have been reported. d. Irish Water should review the use of wells at Hughestown and decommission any wells which will not be used and ensure a programme for the maintenance of wells is in place for wells that will be used intermittently. e. The Boyle/Ardcarne treatment plant is designed to operate at a maximum of 250m³/hour. Currently, 130m³/hour is served to the Boyle area, 75m³/hour to the Ardcarne area, and when the Hughestown area is served from Boyle/Ardcarne a further 33m³/hour will be served from Boyle/Ardcarne – a total of 238 m³/hour. This equates to 12m³/hour of headroom (5%). Irish Water has a target of 10% headroom at treatment plants. f. Unaccounted for water in the Hughestown supply is estimated to be about 52%. Bulk meters are in place. Large leaks are detected quickly.

3. AUDITORS COMMENTS

Catchment protection measures and wellhead protection works should be undertaken and completed without delay to protect the source water at Hughestown. Commissioning of the Hughestown plant should be completed.

4. RECOMMENDATIONS

Source Protection

1. Irish Water should ensure that the source protection and catchment risk assessment score for the *Cryptosporidium* risk assessment is calculated without delay and appropriate measures implemented to reduce the risk should the overall score calculated be high or very high risk.
2. Irish Water should implement the requirements of the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* to ensure, unless an alternative setback distance has been set as per Article 17 that:
 - i. Organic fertiliser or soiled water is not applied to land within 200 m of the abstraction point; and
 - ii. Farmyard manure held in a field prior to landspreading is not placed within 250 m of the abstraction point.
3. Irish Water should examine the appropriateness of the setback distances in the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* for the source of the supply. The Water Services Authority should have regard to the EPA guidance on alternative setback distances.
4. Irish Water should carry out regular monitoring on all raw water sources and should include monitoring for *E.coli* bacteria, as an indicator of trends in assessing water quality and to determine the degree of treatment and controls required in the supply.
5. Irish Water should install a continuous automatic turbidity monitor to alert plant operators of any changes in raw water quality.
6. Irish Water 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.
7. Irish Water should ensure that all borehole linings and seals are maintained, borehole chambers are sealed to prevent water ingress and access hatches are locked. Water in the wellhead chambers should be removed.
8. Irish Water should decommission the now redundant boreholes at Hughestown in accordance with the appropriate best practice guidelines (such as the UK Environment Agency's guidance on Decommissioning Redundant Boreholes and Wells or by SEPA's Good practice for decommissioning redundant boreholes and wells) to prevent the risk of it presenting a preferential pathway for the entry of contaminants to the aquifer.

Hygiene and Housekeeping

9. Irish Water should undertake a complete review of housekeeping and waste storage at the plant and take measures to ensure that the plant is kept well maintained, clean and tidy.
10. Irish Water should remove the empty sodium hypochlorite drums in the chlorine dosing hut (approximately 250) and dispose of them appropriately.

Management and Control

11. Irish Water should upload details of the Hughestown public water supply to EDEN without delay.
12. Irish Water should have a leakage management programme in place to reduce the amount of unaccounted for water.
13. Irish Water should review the capacity of the Boyle/Ardcarne treatment plant to serve the Hughestown area. Domestic metering telemetry data should be reviewed to detect and repair leaks. Irish Water should ensure that the target of 10% headroom at the Boyle/Ardcarne treatment plant is achieved.

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 and approved by Mr Darragh Page, Drinking Water Team Leader.

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.

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

Report prepared by: Yvonne Doris Date: 11th May 2015

Yvonne Doris
Inspector



Photograph 1: Borehole that was in operation up until the *Cryptosporidium* result 0.005/10L was received on 9th April 2015.



Photograph 3: Operational borehole without locked access hatch.



Photograph 2: Borehole that served the Hughtestown supply prior to October/November 2014 with gravel and other materials surrounding the unsealed well.



Photograph 4: An old trial well that should be decommissioned.