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4th July 2014

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**Re: Drinking Water Audit – Ballyconnell Co. Cavan Public Water Supply, File Ref.
DW2009/129**

Dear Mr O'Leary,

The Environmental Protection Agency carried out an audit of the Ballyconnell Drinking Water Treatment Plant, sources and reservoirs on 1st July 2014. The audit was carried out as part of the role assigned to the EPA under the *European Union (Drinking Water) Regulations 2014*, and as a follow up to reported completion of the Remedial Action List works for this supply.

A copy of the audit report from the visit is attached, includes a number of important recommendations in relation to the treatment plant and water supply. The EPA advises that Irish Water should address these recommendations as a matter of priority.

Please note that this audit report will be placed on the EPA's Website one month from the date of issue of this letter at the following link: <http://www.epa.ie/pubs/advice/drinkingwater/audits/>. The EPA recommends that Irish Water publish EPA drinking water audit reports and your response to the audit reports in a prominent position on your website to facilitate public access.

Please respond to the EPA within one month of the date of this letter with details on the action taken or planned (with timeframes) to address the recommendations in the attached audit report.

Yours sincerely,



Ruth Barrington
Inspector
Office of Environmental Enforcement

cc: Mr Seamus Granahan, Mr Martin Temple (by email)





Drinking Water Audit Report

County:	Cavan	Date of Audit:	1 st July 2014
Plant(s) visited:	Ballyconnell Drinking Water Treatment Plant and Reservoir Scheme Code 0200PUB0105	Date of issue of Audit Report:	4 th July 2014
		File Reference:	DW2009/129
		Auditor:	Ms Ruth Barrington
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 the previous EPA audit report dated 31st August 2009. 		

MAIN FINDINGS

- i. **The new borehole, plant, rising main, reservoir and distribution main are all now in place, with the plant having been commissioned in November 2013.**
- ii. **The supply is on the Remedial Action List (RAL). Following the audit, the auditor recommends that it should be removed from the RAL as the original HSE concerns have been addressed.**

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, and to assess the new plant and associated improvements to the supply.

The Ballyconnell PWS supplies water to a population of approximately 1000 people in Ballyconnell town with a production of around 850 m³/day. The supply is on the Remedial Action List due to HSE concerns as treatment had previously been disinfection only with a spring and borehole source. This audit was carried out following the commissioning of the new sources, plant, rising main and reservoir. The supply is now fed by two borehole sources, with treatment being pressure filtration, chlorination and UV disinfection. Facilities for chemical dosing/coagulation have been built into the plant but were not in use at the time of the audit.

Photographs taken by Ruth Barrington during the audit are attached to this report and are referred to in the text where relevant.

The opening meeting commenced at 10.30 a.m. at Ballyconnell 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.

<p>Representing Irish Water: (* indicates that person was also present for the closing meeting)</p> <p>Mr Gary Boyd – Executive Engineer (Cavan County Council)*</p> <p>Mr Martin Temple – Water/Wastewater Engineer (O&M NW Region, Irish Water)*</p> <p>Mr Brendan Smith – Resident Engineer (Cavan County Council)</p> <p>Mr Adrian Burke – Assistant Chemist (Cavan County Council)*</p> <p>Mr John Denning – Senior Executive Engineer (Cavan County Council)*</p> <p>Mr Andrew Young – Project Manager, Glan Agua</p> <p>Mr John Fay – Operator, Glan Agua</p> <p>Representing the Environmental Protection Agency:</p> <p>Ms Ruth Barrington – Inspector</p>

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>1.</p>	<p>Source Protection</p> <ol style="list-style-type: none"> a. Abstraction for the supply is from two boreholes located in a secure compound adjacent to the treatment plant, refer to photographs 002.jpg and 007.jpg. b. Both wellheads are covered and located within lockable concrete chambers. The wellheads and chambers are elevated to protect them from flooding from the nearby lake. c. Information was available at the audit to indicate that at least some of the landowners within the relevant setback distances had been advised of their responsibilities under the <i>European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014</i> (SI No.31 of 2014). d. The <i>Cryptosporidium</i> risk assessment was Very High Risk, based on the old source and plant utilising chlorination only. The risk assessment has not yet been revised considering the new source and plant.
<p>2.</p>	<p>Coagulation, Flocculation and Clarification</p> <ol style="list-style-type: none"> a. There is provision through a separate dosing system for pre-chlorination to control iron and manganese. This has not been used since the plant was commissioned as raw water levels have been favourable. b. There is provision for coagulation using aluminium sulphate but this has not been used since the plant was commissioned as raw water quality has been favourable. c. Online monitoring of raw water for turbidity, colour and pH is provided and used for the assessment of the level of treatment required.
<p>3.</p>	<p>Filtration</p> <ol style="list-style-type: none"> a. Filtration is achieved using four pressure filters (refer to photograph 008.jpg), with contact coagulation occurring (if in use) above the media. b. Continuous turbidity monitoring is also provided on the outlet of each filter and on the combined final treated water.

4.	<p>Chlorination and Disinfection</p> <ul style="list-style-type: none"> a. Liquid sodium hypochlorite is used at the plant for disinfection. Dosing is flow proportional and the aim is to meet a residual of 0.5 mg/l leaving the plant and 0.4 mg/l at the reservoir. b. There is an online chlorine residual monitor in place at the reservoir and no connections prior to the reservoir. Chlorine contact time was calculated at 175 minutes. c. Duty and standby chlorine dosing is provided with automatic switchover and alarms to SCADA and to Glan Agua staff phones. d. A duty UV system (refer to photograph 015.jpg) is provided by way of Cryptosporidium barrier. The unit (Wedeco Spektron) is ÖNORM validated. The validation certificate was made available to the auditor by Glan Agua staff following the audit.
5.	<p>Treated Water Storage</p> <ul style="list-style-type: none"> a. Two new reservoirs were constructed as part of the upgrade of the supply (refer to photograph 017.jpg), and allow about 1.5 days storage, although there would be a pressure drop in areas of the town if this length of storage was utilised. b. The reservoirs were visited during the audit. They are above ground reservoirs located in a secure compound with a kiosk provided for monitoring equipment.
6.	<p>Monitoring and Sampling Programme for treated water</p> <ul style="list-style-type: none"> a. In addition to the online monitors in place, which are actively used to track the operation of the plant, chlorine residuals are measured in the network. Staff said that there remains some adjustments which may be made to chlorine dosing once current works on conservation measures have been completed (in approximately six weeks), removing some old cast iron and PVC mains. b. Chlorine residuals in the network were above 0.1 mg/l for the months of May and June 2014.
7.	<p>Hygiene and Housekeeping</p> <ul style="list-style-type: none"> a. The plant, borehole compound and reservoir compound are all new and well maintained.
8.	<p>Management and Control</p> <ul style="list-style-type: none"> a. The plant shuts down in response to alarm situations which are not resolved by automatic chlorine dosing switchover.

3. AUDITOR'S COMMENTS

The auditor welcomed the commissioning of this new plant. With the proper on-going operation and maintenance, it should continue to provide a safe supply of drinking water to the Ballyconnell PWS.

4. RECOMMENDATIONS

Source Protection

1. The Water Services Authority should review the *Cryptosporidium* risk assessment to consider the new source and facilities available at the plant.
2. The Water Services Authority should ensure that each of the neighbouring farmers are aware of their responsibilities under the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* and 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. The Water Services Authority should ensure that the periodic inspections of the plant would include observations made in the immediate vicinity, e.g. the 200- 250 m setback distances. The aerial photographs prepared to show the setback distances can be used to assist in these inspections to ensure activities within these zones are appropriate.

Disinfection

4. The Water Services Authority should review the chlorine dosing and network residual chlorine levels on the completion of the mains replacement programme, to minimise the risk of chlorination by-product formation while not compromising disinfection.

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 Ms Yvonne Doris, 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:



Ruth Barrington

Inspector

Date:

4th July 2014



002.jpg



007.jpg



008.jpg



015.jpg



017.jpg

