



Drinking Water Audit Report

County:	Donegal	Date of Audit:	26/03/2019
Plant(s) visited:	Glenties/Ardara Water Treatment Plant Scheme Code 0600PUB1070	Date of issue of Audit Report:	17/04/2019
		File Reference:	DW2009/14
		Auditor:	Ruth Barrington
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014) as amended</i> • RAL Programme and Irish Water Quarterly Progress Trackers for Glenties/Ardara Public Water Supply • The recommendations in the previous EPA audit report dated 26/04/2018 		

MAIN FINDINGS

- i. The works for delivery of the Remedial Action List (RAL) programme for Glenties/Ardara public water supply to minimise THM formation and provide a *Cryptosporidium* barrier are well advanced on-site, but the completion has been delayed from January to April 2019, and verification monitoring is now expected to take place until the end of June 2019.
- ii. The upgraded plant controls and alarms had not been connected into the SCADA system at the time of the audit. Irish Water should ensure that this work is completed without delay to allow the full functionality of the new plant and alarms to be available and to validate disinfection.
- iii. Irish Water should provide results in June 2019 of the ongoing monitoring programme to demonstrate the impact of the works at the Glenties water treatment plant and in the network, to allow EPA consideration of removal of the supply from the RAL.

1. INTRODUCTION

Under the *European Union (Drinking Water) Regulations 2014 as amended* 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 Irish Water's progress on the completion of the upgrade works for the Glenties/Ardara public water supply (PWS) under the RAL programme.

The Glenties/Ardara public water supply is on the Remedial Action List due to persistent trihalomethanes (THM) failures and the lack of a barrier to *Cryptosporidium* entering supply. An upgrade of the water treatment plant is in progress, with the installation of additional microstraining capacity, the upgrade of the disinfection system including the installation of UV disinfection units to provide a *Cryptosporidium* barrier, and air stripping to reduce the formation of THM. An additional air stripping facility is to be added at the reservoir in Ardara due to concerns over the risk of network THM formation in the extensive area served by the Glenties/Ardara public water supply. The completion date for the upgrade works had been January 2019 but this has been further delayed until the end of April 2019 with a verification monitoring period until the end of June 2019.

The opening meeting commenced at 09.30 a.m. at Glenties/Ardara 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.

Representing Irish Water:

Eamonn Doherty – Engineer

Yvonne McMonagle – Drinking Water Compliance Analyst

Hugh Kerr – Drinking Water Consultant Asset Planning

John O’Kelly – Resident Engineer

Niall Doherty – Resident Engineer

Representing Donegal County Council:

Michael Breslin – Waterworks Inspector

Paul McCloskey – Supervisor

Eoin Kerrane – Area Manager

Adrian Gillespie – Executive Engineer

Representing Veolia Water:

Hugh Doherty

Representing the Environmental Protection Agency:

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. Remedial Action List programme

- a. The microstrainers on site are to be further enhanced with the provision of an additional unit (currently two are in place). These microstrainers have a pore size of 100 microns and are used for the removal of shrimp larvae from the raw water. The additional unit will assist the operators to provide an enhanced maintenance and cleaning programme for the microstrainers as there will then be some spare capacity.
- b. UV disinfection has been provided as a *Cryptosporidium* inactivation barrier. Wedeco duty and standby units have been installed and are operating since 14/01/2019.
- c. The US EPA validation for the units provides for a flow of up to 120 m³/hour, a minimum UVT of 54% and minimum UV dose of 120 J/m², which is adequate as a *Cryptosporidium* inactivation barrier, but which does not provide full primary disinfection.
- d. Primary disinfection is achieved by chlorination using sodium hypochlorite. The dosing, storage and control systems have been upgraded with residual linked chlorine dosing in place.
- e. The Grid Bee air stripping system is designed to volatilise the THM precursors which if they remained in the water could react with the residual chlorine to form THM. The equipment is in place and operational within the on-site reservoir since 11/02/2019, but additional works are required on the reservoir vents to improve the air flow and assist the volatilisation process.
- f. On-site validation of the air stripping has not yet commenced to assess the percentage THM removal. Network sampling undertaken in March indicates a 30% removal capacity. The auditor noted compliant network results were obtained during March 2019, but results were at the higher end of compliance ranging from 81- 96 µg/l against the limit of 100 µg/l. Staff indicated that it was expected that ongoing optimisation and the replacement of vents at the on-site reservoir would result in improved performance in THM reduction.
- g. The recent further delays in completion of the RAL programme works were mainly due to

	<p>two elements, firstly delays to the installation of an upgraded power supply and secondly, the recognition that a further measure against THM formation would be needed to address the Ardara area within the network. This has resulted in an additional air stripping facility being planned for the Ardara reservoir which is due for completion by mid-April 2019.</p> <p>h. Chlorine residual alarms remain effective through online monitoring and the telemetry system at the old plant and are dialled out to relevant staff via a call centre.</p> <p>i. The alarms and inhibits for the newly upgraded plant (e.g. on UVT, UV dose, flow rate through UV, or low chlorine) are operational on site but have not yet been tied in to SCADA to allow a prompt and timely response in the event of warning alarms. That is, a high priority alarm which is linked to a shutdown will operate but will not be communicated other than on the HMI screen (with the exception of the chlorine residual alarm system described under point (h) above).</p> <p>j. An Uninterruptible Power Source (UPS) has been delivered to site but has not yet been commissioned. Together with the strengthened power supply this will assist in mitigating against power cuts.</p>
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3. AUDITOR’S COMMENTS

The progress of the RAL Programme works for the Glenties/Ardara public water supply, while delayed from Q1 to Q2 2019, are welcome. The completion of these works will assist in the delivery of a safe and secure water supply to the 3,688 people whose drinking water is provided from this treatment plant. Irish Water should prioritise the final works on this supply including the facilities at Ardara Reservoir and the continuation of the programme of monitoring to demonstrate the effectiveness of treatment.

4. RECOMMENDATIONS

Remedial Action List Programme

1. Irish Water should complete the works at Glenties/Ardara water treatment plant to enhance the air stripping process to volatilise the THM precursors, such as the installation of vents on the reservoir with improved air flow.
2. Irish Water should complete the provision of air stripping facilities on the Ardara Reservoir intended to minimise THM formation in the network due to extended water age.
3. Irish Water should continue the programme of verification monitoring to support the removal of the supply from the Remedial Action List on the basis of the reduction in THM formation and compliant results at the plant and in the network. These results should be provided to the EPA in time for the Q2 RAL review.
4. Irish Water should complete the works required to add the upgraded plant controls including alarms and inhibits to SCADA to allow the full functionality of the systems to be implemented.


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 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:

17/04/2019

Ruth Barrington

Inspector

