Drinking Water Audit Report

County:	Mayo	**Date of Audit:**	12/12/2017
Plant(s) visited:	Kiltimagh water treatment plant Scheme Code 2200PUB1017	**Date of issue of Audit Report:**	21/12/2017
		File Reference:	DW2013/68
		Auditor:	Ms Ruth Barrington
Audit Criteria:	• The *European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014) (as amended).* • The recommendations specified in the EPA *Drinking Water Report*. • The recommendations in the previous EPA audit report dated 14/08/2013.		

MAIN FINDINGS

i. **Irish Water has demonstrated that the upgraded treatment facilities at Kiltimagh water treatment plant for chemical dosing and disinfection are operating satisfactorily and producing water quality which complies with the requirements of the *European Union (Drinking Water) Regulations 2014 (as amended)*. On this basis, Kiltimagh will be removed from the EPA's Remedial Action List when the Q4 RAL update is published.**

ii. **Irish Water should implement a system for routine chlorine residual monitoring in the network, to support the optimisation of the sodium hypochlorite disinfection system and provide operational information in the longer term.**

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 the performance of Irish Water in providing clean and wholesome drinking water following the completion of the Remedial Action list (RAL) action programme for Kiltimagh public water supply.

The Kiltimagh Public Water Supply (PWS) is on the EPA's Remedial Action List due to treatment and management issues, particularly in the coagulation, flocculation and clarification stages and in disinfection, which had been identified in previous EPA audits in 2009 and 2013. Irish Water has completed the required upgrade works to the plant, most recently providing enhanced chemical dosing facilities and controls, and a new disinfection process.

The supply serves 1640 people and produces approx. 700m^3/day. Water is abstracted from the River Glore and treated at the plant by coagulation, clarification, filtration, disinfection using sodium hypochlorite and fluoridation.

The audit commenced at 14.10 p.m. at Kiltimagh Water Treatment Plant. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment plant. The audit observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Irish Water:

Mr Sean Higgins – Asset Operations Lead
Mr Pat O' Sullivan – Drinking Water Compliance Specialist
Mr Thomas Gibbons – Drinking Water Compliance Analyst

Representing Mayo County Council
Mr Keiran Shally – Operations Water Services
Mr Michael McDermott – Water Services
Mr Stephen Tonra – Water Services

Representing Glan Agua
Mr Niall McIntyre – Project Engineer
Mr Conor Callagy – Commissioning Engineer

Representing the Environmental Protection Agency:

Ms 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.	**Chemical Treatment and Filtration** a. Coagulation is carried out using polyaluminium chloride (PAC) and polyelectrolyte. b. Enhanced controls over chemical dosing have been provided since the previous EPA audit, including static mixing, duty and standby coagulant and polyelectrolyte pumps with automatic changeover, and PAC dosing is now linked to UVT bands. c. Raw water from the river is typically in the range 1.5-2.5 NTU. At the time of the audit, Filter 1 was achieving 0.049 NTU and Filter 2 was achieving 0.067 NTU. Final water was 0.03 NTU. d. The turbidity sample pumps for Filters 1 and 2 are to be moved under the upgrade contract. The current location has been assessed by Irish Water as unsuitable (in a confined space) and more appropriately sized sample pumps are needed for representative samples.
2.	**Disinfection** a. Filtered water is now disinfected using sodium hypochlorite, where chlorine gas had been used prior to the upgrade. b. Sodium hypochlorite is dosed flow proportionally with residual trim based on a new chlorine monitor location with adequate contact time. c. Duty and standby chlorine dosing is in place with automatic switchover. d. Chlorine alarms are activated at a warning level of 0.6 mg/l with a plant shutdown triggered after 100 seconds at 0.3 mg/l. e. There is approximately 12 hours storage capacity in the terminal reservoir in the event of a plant shutdown. f. There is secondary chlorination at the reservoir which was not examined as part of the audit. g. At the time of the audit there was no regular system set up for routine manual chlorine monitoring in the network. h. There are two online chlorine monitoring points in the network located after the terminal

	reservoir and after Trenaglearagh reservoir to reflect chlorine boosting at these locations. Data from these monitors is accessible to the plant operators.
3.	**Monitoring and Sampling Programme for treated water** a. Monitoring for trihalomethanes was carried out during November with compliant levels recorded. b. Irish Water will be undertaking an assessment of THM formation potential across Coagulation Flocculation and Clarification (CFC) plants in the North-West Region during 2018. Kiltimagh will be one of the supplies assessed during that programme.
4.	**Management and Control** a. Information on the new disinfection system is available via SCADA as part of the IW disinfection programme, however the planned county wide SCADA upgrade will be required before full functionality on the CFC stage is available. The SCADA upgrade is expected during 2018. b. Alarms generated are communicated via cascade system to operators' phones. c. Irish Water have provided satisfactory operational data from September to November 2017 to support the removal of Kiltimagh from the Remedial Action List.

3. AUDITOR'S COMMENTS

The audit found that Irish Water has carried out works at Kiltimagh water treatment plant to implement the remaining recommendations of the EPA audit report dated 14th August 2013, specifically those relating to the coagulation, flocculation and clarification processes and to disinfection.

Irish Water has provided operational data from September to November 2017 which demonstrates that the plant is operating satisfactorily and producing water quality which complies with the requirements of the *European Union (Drinking Water) Regulations 2014 as amended*. The auditor recommends that Kiltimagh is removed from the EPA's Remedial Action List when the Q4 RAL update is published.

Irish Water should continue the optimisation of the disinfection system at the plant, with particular attention on the use of network chlorine residual monitoring to verify plant performance.

4. RECOMMENDATIONS

Disinfection

1. Irish Water should establish a scheduled programme of residual chlorine monitoring in the network, to demonstrate adequate free residual chlorine levels at the end of the distribution network of at least 0.1mg/l and to assist in optimising the plant performance following the introduction of sodium hypochlorite.

Management and Control

2. Irish Water should ensure that the planned county wide SCADA upgrade is implemented to include access to the CFC stage at Kiltimagh water treatment plant.

3. Irish Water should complete the works on the filter turbidity sampling pumps to provide suitably representative samples for the online turbidity monitors.

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 EPA 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:** 21/12/2017

Ruth Barrington

Inspector