Drinking Water Audit Report

County:	Monaghan	**Date of Audit:**	19/06/2017
Plant visited:	Crosses, Monaghan Water Treatment Plant (WTP)	**Date of issue of Audit Report:**	11/07/2017
		File Reference:	DW2017/80
	Scheme Code: 2400PUB1024	**Auditors:**	Ms Pauline Gillard Ms Ruth Barrington
Audit Criteria:	• The *European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014).* • *The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)* • The recommendations specified in the EPA *Drinking Water Report*. • EPA Drinking Water Advice Notes No's 1 to 15.		

MAIN FINDINGS

i. **The disinfection system at Monaghan (Crosses) water treatment plant is due to be upgraded under Irish Water's National Disinfection Programme, by changing from chlorine gas to sodium hypochlorite.**
ii. **There is currently no run to waste facility or slow start after filter backwashing.**
iii. **The plant's SCADA system needs to be updated so that operational performance trends can be reviewed at the plant.**

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 to consumers on Monaghan public water supply.

There are two treatment plants used for the Monaghan public water supply, Toghan and Crosses. The scope of this audit covers Crosses WTP only. The raw water is sourced from eight boreholes, of which three are currently in use. Treatment comprises pre-treatment with Potassium Permanganate, cascade aeration, rapid gravity sand filtration, pH correction, fluoridation and chlorination. The treatment plant produces approximately 1500 m^3/day and serves a total population of 8812 people in the Monaghan supply area.

The opening meeting commenced at 2.00pm at Monaghan (Crosses) WTP. 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:

Yvonne Mc Monagle – Drinking Water Compliance
Justin Doran – DBO Engineer
Peter Gallagher – IW Lead

Representing Monaghan County Council
Paul Clerkin – Assistant Engineer
Pascal Rooney – Technician
Eugene Hickey – Senior Executive Engineer
Dermot Skeath – Caretaker

Representing the Environmental Protection Agency:
Pauline Gillard – Inspector
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.	**Source Protection** a. The source of the raw water comprises of 8 boreholes. Three are in use for the Monaghan supply and five are not in use. b. The catchment around the plant comprises of agricultural land. c. The raw water inlet chamber at the plant is capped and locked securely. d. A Drinking Water Safety Plan is not yet in place for Monaghan public water supply.
2.	**Filtration** a. There are 3 rapid gravity sand filters at the plant. The filters comprise of sand and potassium permanganate to assist with iron removal. b. A filter backwash is initiated every three days. There is no run to waste or slow start facility after the backwash finishes. There are 3 turbidity monitors after the filter. c. The filters are cleaned once a year.
3.	**Disinfection** a. Disinfection is achieved using chlorine gas. Chlorine gas cylinders are stored in a secure, marked and ventilated room. b. There is a chlorine monitor and alarm in the plant. In the event of a failure there is no automatic shutdown of the plant. c. When the chlorine alarm is triggered there is a cascade system in place for responding to the alarm. d. The caretaker cannot access the chlorine data from online monitors remotely. e. When changing the chlorine gas cylinders, two caretakers (safety trained) perform the necessary maintenance together. f. There is adequate chlorine contact time of 30 minutes at a minimum of 0.5 mg/l free chlorine, in accordance with EPA Advice Note 3.

	g. The date of calibration printed on the chlorine pump was not correct according to Monaghan County Council. h. Under Irish Water's National Disinfection Programme, Irish Water plans to replace the chlorine gas at this treatment plant with liquid chlorine.
4.	**Distribution System** a. A review of network chlorine data records showed that on 07/03/17, Derry Road had a free residual chlorine concentration of 0.03 mg/l which is below the minimum criteria of 0.1 mg/l to ensure adequate disinfection.
5.	**Chemical storage and bunds** a. All chemicals were adequately bunded and locked at the treatment plant.
6.	**Management and Control** a. At the audit SCADA data was requested by the auditors to review the treated water chlorine trends. The current SCADA programme was not able to provide the information.

3. AUDITORS COMMENTS

Monaghan Crosses water treatment plant was found to be clean, tidy and well maintained. Irish Water should address the Monaghan WTP under the disinfection programme, the run to waste programme, and review and upgrade the SCADA system.

4. RECOMMENDATIONS

Filtration

1. Irish Water should install run to waste or slow start after the backwash finishes on each filter.

Disinfection

2. Irish Water should ensure when changing from chlorine gas to sodium hypochlorite under the disinfection programme that dosing of chlorine is flow proportional or is linked to the residual chlorine monitor.

Distribution System

3. Irish Water should ensure that free residual chlorine levels at the end of the distribution network are maintained at 0.1mg/l.

Management and Control

4. Irish Water should ensure that hazard mitigation plans, with timeframes, are in place for all hazards identified as high risk in accordance the Drinking Water Safety Plan approach to managing water supplies. Irish Water should provide information to the EPA on the projects that

are highlighted through the statement of needs process for Monaghan PWS, and how these correspond with identified risks.

5. Irish Water should update the SCADA system to address any deficiencies in the current system so that trends can by analysed to assist in running the plant. The Plant staff should have access to the chlorine data from online monitors remotely.

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 Ms 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:** 04/07/2017

Pauline Gillard 04/07/2017

Inspector