Drinking Water Audit Report

County:	Monaghan	**Date of Audit:**	27/03/18
Plant(s) visited:	Inniskeen water treatment plant, Scheme Code 2400PUB1009	**Date of issue of Audit Report:**	20/04/18
		File Reference:	DW2018/50
		Auditor:	Ms Pauline Gillard
Audit Criteria:	• The *European Union (Drinking Water) Regulations 2014, as amended*. • *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 Nos. 1 to 15.		

MAIN FINDINGS

i. **There is no slow start or run to waste on the filters following a backwash. Irish Water should assess the feasibility of providing filter run to waste for an appropriate period of time or that there is a slow start when the filter is brought back into use**.

ii. **Chlorine dosing at Inniskeen water treatment plant is currently done on a fixed basis with manual changes. It should be flow proportional or preferably linked to the residual chlorine monitor at the reservoir outlet, so that any changes in the chlorine demand of the treated water can be responded to automatically by the dosing pumps.**

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 in the Iniskeen public water supply.

Inniskeen water treatment plant (WTP) is operated by Veolia on behalf of Irish Water. The raw water is sourced from the River Fane with an abstraction point beside the water treatment plant. Treatment comprises coagulation, clarification, rapid gravity filtration, and chlorination. There is a hydrocarbon monitor at the abstraction point installed following an incident relating to diesel spills in the catchment in 2015. The treatment plant produces approximately 160 m^3/day and serves a total population of 506 people in the Inniskeen area of Co. Monaghan.

The opening meeting commenced at 09.20am at Inniskeen 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 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:

Yvonne Mc Monagle – Drinking Water Compliance

Representing Monaghan County Council

Paul Clerkin – Assistant Engineer

Pascal Rooney – Senior Executive Technician

Representing Veolia

Aaron Murray – Lab Technician

Devyn Hall – Process Technician

Cara Guilfoyle – Process Supervisor

Representing the Environmental Protection Agency:

Pauline Gillard – 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 is the River Fane. The abstraction point is at the end of the weir beside the water treatment plant. There is a hydrocarbon monitor on the river to detect contamination from diesel spills in the catchment. Hydrocarbons are continuously monitored and the plant will shut down automatically if the alarm level is triggered. b. Land use in the immediate vicinity around the Inniskeen water treatment plant (WTP) was agricultural land. c. Inniskeen WTP perimeter is fenced and the site is secure. d. The preparation of a Drinking Water Safety Plan has commenced for Inniskeen public water supply.
2.	**Coagulation, Flocculation and Clarification** a. Ferric chloride is used as a coagulant. pH adjustment is achieved using Sulphuric Acid with a pH monitor on site. The preferred optimum coagulation pH at this plant is pH 6. b. The Dissolved Air Flotation (DAF) unit removes the ferric sludge from the water before the water moves to the rapid gravity sand filter.
3.	**Filtration** a. There is one rapid gravity sand filter at the plant. b. The filter is backwashed once a day. A backwash of the filter was manually triggered during the audit. The auditor observed an even air scour across the filter bed but there was a preferential flow rate on the filter weir during the backwash. c. There is no run to waste or slow start facility after the backwash finishes. Water is returned

	directly into service with the potential for turbidity spikes after backwashing. d. At the time of the audit the treated water turbidity monitor had a reading of 0.39 NTU. The turbidity monitor has an alarm set point of 0.9 NTU.
4.	**Disinfection** a. Disinfection is achieved using chlorine gas. Chlorine gas cylinders are stored in a secure, marked and ventilated room. b. There are duty and standby chlorine dosing pumps with automatic switchover arrangement. The chlorine dose rate is fixed and may be manually changed by the operator. c. There is a chlorine monitor and alarm in place. The low chlorine alarm set point is 0.2 mg/l and high level alarm is 2.7 mg/l. A chlorine level of 0.2 mg/l may not give enough contact time. d. When the chlorine alarm is triggered there is a documented cascade system in place for responding to the alarm. e. The caretaker can access the chlorine data from online monitors remotely via the SCADA system.
5.	**Treated Water Storage and Distribution Network** a. The reservoir was not inspected during the audit. Monaghan County Council advised that the new reservoir had been cleaned in December 2016 and it is scheduled to be cleaned again in 2018. b. Monaghan County Council advised that the free residual chlorine levels at the end of the distribution network are maintained at 0.1mg/l.

3. AUDITORS COMMENTS

Overall Inniskeen Water Treatment Plant was found to be well managed by a dedicated team of staff. However, Irish Water should review the low level chlorine alarm setting to ensure that it is at a level which provides adequate chlorine contact time, address the preferential flow rate on the filter weir and review the run to waste programme. Chlorine dosing should be upgraded from a fixed basis to a flow proportional or residual linked basis.

4. RECOMMENDATIONS

Filtration

1. Irish Water should follow the guidance in the EPA publication "*Water Treatment Manual on Filtration*" and assess the feasibility of providing a filter run to waste for an appropriate period of time or a slow start when the filter is brought back into use.

2. Irish Water should review the operation of the filter weir to ensure that there is no preferential flow during a backwash.

Disinfection

3. Irish Water should review the low level residual chlorine alarm setting to ensure that it is at a level which provides adequate chlorine contact time, having regard to the Ct guidance set out in EPA Advice Note 3.

4. Irish Water should ensure that chlorine dosing is flow proportional or is linked to the residual chlorine monitor. Where the dosing pump is fixed, as it is at Inniskeen WTP, Irish Water should replace the pump with flow proportional pumps or pumps capable of dosing based on the residual chlorine monitor.

Management and Control

5. Irish Water should ensure that hazard mitigation plans, with timeframes, are in place for all hazards identified as high risk in the Drinking Water Safety Plan. Records of progress on these hazard mitigation plans should be kept updated and sent to the EPA.

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:**

Pauline Gillard 20/04/18