



Drinking Water Audit Report

County:	Co. Louth	Date of Audit:	04/12/2018
Plant(s) visited:	Tallanstown water treatment plant and reservoirs Scheme Code 2100PUB1005	Date of issue of Audit Report:	20/12/2018
		File Reference:	DW2018/187
		Auditors:	Ms 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> • <i>The 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 <i>EPA Drinking Water Report.</i> • EPA Drinking Water Advice Notes Nos. 1 to 15. 		

MAIN FINDINGS

- i. **The condition of the rapid gravity filter at Tallanstown water treatment plant was poor. Irish Water should ensure the filter is cleaned and assessed with a view to replacing the filter media and verifying the performance of the filter bed pipework.**
- ii. **The sampling point for the chlorine residual monitor is located within the clearwater tank and therefore the trend in residual chlorine is unrepresentative. Irish Water should relocate the chlorine residual sample point to a location after contact time for chlorine disinfection has been achieved.**
- iii. **Chemical dosing on-site is manually controlled. The dosing rate is based on turbidity readings but there is no system of jar testing to inform the manual dose changes. Irish Water should ensure that facilities are provided to allow regular jar testing, to determine the optimum chemical coagulant dose and pH for the treatment of water.**

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 in response to the notifications by Irish Water of the failure to meet the manganese and aluminium parametric values on sampling dates since 01/10/2018 in the Tallanstown public water supply.

The Tallanstown Public Water Supply (PWS) serves a population of approximately 1,900. Water is abstracted from the River Glyde and treated by coagulation, flocculation and clarification (CFC), filtration and disinfected using sodium hypochlorite generated by on-site electrochlorination. While the catchment close to the abstraction point is agricultural, there is a discharge point 21 km upstream of the water treatment plant from the Saint Gobain gypsum mine, comprising groundwater from mine dewatering. Since late September 2018, there has been an increase in the volume of this discharge after the collapse of an area in Co. Monaghan linked to the use of part of the mine to store pumped groundwater. An enhanced programme of monitoring has been undertaken by both Irish Water at the

raw and treated water, and by Saint Gobain at a number of sampling points on the Rivers Burske and Glyde.

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

<p>Representing Irish Water:</p> <p>Andrew Boylan – Drinking Water Compliance Specialist Fran Glancy – Water Compliance Monitoring Analyst Daniel Mulvey – Compliance Support Officer</p> <p>Representing Louth County Council:</p> <p>Chris Tormey – Senior Executive Technician Alan McAleer – Caretaker James O’Hagan- Executive Engineer</p> <p>Representing the Environmental Protection Agency:</p> <p>Ruth Barrington – Inspector</p>
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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. The immediate vicinity of the abstraction point is in agricultural use. Across the river from the plant, the hedge has been removed between a field cleared for cereal crop and the river. This may affect the risks posed by any pesticide usage in this area. b. The discharge from Saint Gobain mine dewatering activity is located 21 km upstream of the drinking water abstraction. Irish Water initiated a programme of raw and final water monitoring on 01/10/2018 in response to the increase in the discharge from this licensed facility. The programme has detected one exceedance of the aluminium parametric value and four exceedances of the manganese parametric value in the final treated water, as well as general increases in the levels of these parameters in both raw and treated water. Sulphate levels are also elevated above previous results, while still compliant with the parametric value. c. At the time of the audit, the source of these elevated levels of manganese, aluminium and sulphate could not be attributed directly to the increased discharge from Saint Gobain, although the timing coincided with increased discharge from the mine dewatering activity. d. Since the audit, additional items have been added to the Saint Gobain monitoring requirements by the EPA’s Licence Enforcement Team. This information can be made available to Irish Water for use in planning corrective actions and the potential need for increased level of water treatment at the Tallanstown WTP.
<p>2.</p>	<p>Coagulation, Flocculation and Clarification</p> <ol style="list-style-type: none"> a. The River Glyde is prone to rapid water quality changes after rainfall. b. Chemical dosing on site is controlled manually and is carried out by staff based on turbidity monitoring. There is no regular programme of jar testing to enable rapid planned response to raw water changes and no facilities on-site for this testing to be carried out.

	<ul style="list-style-type: none"> c. The poly dosing location is directly underneath a weir prior to the clarifier. There is potential for the turbulence from this weir to disrupt floc formation and to affect the formation of a sludge blanket within the clarifier.
3.	<p>Filtration</p> <ul style="list-style-type: none"> a. There is one rapid gravity filter in use on site, and one which has been out of use (and empty) for some years. b. The filter which is in operation was in poor condition. Dirt and algae were evident on the media surface and on the tank walls, and the date when the filter media was last replaced was not available. c. Backwash is manually controlled and there are no facilities for run to waste or slow start after backwashing the filter.
4.	<p>Disinfection</p> <ul style="list-style-type: none"> a. The assessment phase of Irish Water’s Disinfection Programme is underway for the Tallanstown WTP. b. Disinfection at the Tallanstown water treatment plant is achieved using sodium hypochlorite generated using on-site electrochlorination (OSEC). c. The sample point for the online chlorine residual monitor is located within the clearwater tank. The location is not optimised as chlorine levels within the tank fluctuate according to mixing and the demand placed on the plant, which operates for 12-15 hours per day. d. There were several potential points for contamination to enter the clearwater tank, through the open vertical pipe vents and an incomplete cover around the chlorine dosing pipework on top of the tank. e. Contact time for chlorine disinfection was unknown during the audit, however it was stated that there are no connections prior to the off-site reservoirs, so contact time is likely to be adequate.
5.	<p>Management and Control</p> <ul style="list-style-type: none"> a. There is no overall SCADA system to assist the operator in the day to day management of the plant. While there is substantial monitoring being carried out at the plant and in the network, an overview of the data is not always possible to discern trends in plant performance. b. During the audit it was identified that the facilities for jar testing to assist in the determination of chemical dosing rates are available at Ardee WTP. c. The WTP log book records were examined during the audit. The results of testing are noted but in some cases there was a lack of consistency between different personnel filling out the records. It was also noted that there is no scope to record interventions, where work was carried out in response to a recorded result.

3. AUDITOR’S COMMENTS

Tallanstown Water Treatment Plant produces water which, prior to October 2018, had been largely compliant for drinking water parameters which are treatable using conventional water treatment facilities (there is however an open EPA file on pesticides in Tallanstown PWS resulting from activities in the catchment). Since 1st October 2018 there has been a series of exceedances of the manganese and aluminium parameters, along with elevated levels of these parameters in the raw water. Irish Water should further assess the source of these increased levels along with a review of the treatment currently provided on-site, to ensure that the plant is capable of treating the raw water abstracted from the River Glyde, and capable of responding to variations in raw water quality. In addition to the changing quality of the raw water, a number of the observations during the audit indicate a need to upgrade the filtration and disinfection facilities at the plant.

4. RECOMMENDATIONS

General

1. Irish Water should review the treatment provided at Tallanstown Water Treatment Plant to ensure that it is sufficient to respond to changing raw water conditions, with a particular focus on manganese, aluminium and sulphate levels as well as chemical dosing protocols to respond to changes in raw water quality.

Source Protection

2. Irish Water should liaise with the relevant catchment stakeholders under the Pesticide Action Plan to raise awareness of the drinking water abstraction point on the River Glyde and of responsible pesticide use.

Coagulation, Flocculation and Clarification

3. Irish Water should ensure that the coagulation, flocculation and clarification processes at the water treatment works are regularly inspected to confirm optimal operation across changing weather conditions. Jar testing of the raw and coagulated waters should be carried out as outlined in Section 3.3.1 and Appendix C of the EPA publication "*Water Treatment Manual: Coagulation, Flocculation and Clarification*" to determine the optimum chemical coagulant dose and pH for the treatment of the water. The frequency of checks should be appropriate to the nature of supply and changing condition. Results should be recorded at the treatment works and used for control of the treatment plant.

Filtration

4. Irish Water should review the operation of the rapid gravity filter with a particular emphasis on the following:
 - i. the need for filter media replacement (including provision for manganese removal);
 - ii. The efficacy of the backwash sequence including an assessment of pipework and nozzles;
 - iii. the cleanliness and safe cleaning procedures for the filter;
 - iv. the management of filter backwash and the potential for providing a filter slow start or run to waste following backwash.

Disinfection

5. Irish Water should review the contact time for chlorine disinfection to ensure that the effective contact time achieved is 15mg.min/l and that the first connections are receiving appropriately disinfected drinking water. Irish Water should submit a calculation of the effective contact time to the Agency.
6. Irish Water should re-locate the chlorine residual monitoring point to a location after contact time has been achieved.
7. Irish Water should ensure that all vents and ducting on the clearwater tank are secured against ingress of animals, introduction of any contaminant or acts of vandalism.

Management and Control

8. Irish Water should ensure that the plant operators have access to trended information (e.g. via SCADA) on plant operation and water quality, to enable a timely response in the event of changing water quality or equipment malfunction.
9. Irish Water should ensure that plant records are maintained so as to provide consistency between personnel and allow for tracking of corrective actions in response to observations made on plant performance.

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:

20/12/2018

Ruth Barrington

Inspector