

Site Visit Report

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 water to the visited public supply.

The audit process is a sample on a given date of the facility's operation. Where a finding against a particular issue has been reported this should not be construed to mean that this issue is fully addressed.

Water Supply Zone	
Name of Installation	Clones
Organisation	Irish Water
Scheme Code	2400PUB1002
County	Monaghan
Site Visit Reference No.	SV26228

Report Detail	
Issue Date	05/01/2023
Prepared By	Lorcan Farrell

Site Visit Detail			
Date Of Inspection	30/11/2022	Announced	Yes
Time In	11:15	Time Out	14:10
EPA Inspector(s)	Lorcan Farrell Michelle Roche		
Additional Visitors			
Company Personnel	Irish Water: John Crowe, Thomas Gibbons, John Paul McEntee. Monaghan County Council: Patsy Mannering, Oliver Murtagh, Maria Smyth, Martin Taylor.		

> Summary of Key Findings

- (1) There is no Protozoal barrier in place at Clones water treatment plant (WTP). Monthly monitoring for *Cryptosporidium* in line with Irish Water's *Rationale for Determining the Frequency of Cryptosporidium Monitoring in Public Water Supplies* is in place for the supply.
- (2) A plant shutdown for elevated turbidity in the final water at the plant is not in accordance with the setpoints specified in the the *EPA Water Treatment Manual: Filtration*.
- (3) Clones WTP is undergoing upgrade works with the installation of a pH correction system at the plant to optimise coagulation.

> Introduction

Clones Public Water Supply serves a population of 2,707 people (EDEN figures) and produces between 900 - 1000 m³/day depending on demand. There are five sources for the plant: Corconnelly Lake, Skerrick Lake and Carnroe Lake as well as two boreholes located in Scotshouse village. Corconnelly Lake and both boreholes were in production on the day of the audit. Treatment at the plant consists of coagulation (surface water only), adsorption clarification, filtration, chlorination and fluoridation.

The audit was undertaken to assess Irish Water's performance in producing clean and wholesome water.

> Supply Zones Areas Inspected

The audit comprised of a site visit to Clones WTP and involved an inspection of the treatment plant and reservoir.



1. Source Protection

	Answer	
1.1	Is the abstraction source(s) adequately protected against contamination?	No
Comment		
(1) On the day of the audit Irish Water or Monaghan County Council could not provide dates of when landowners were contacted concerning setback distances for any of the sources of the treatment plant.		



2. Coagulation Flocculation and Clarification (CFC) Stage

2.1

Is the pH within a suitable range for the coagulant used?

Answer

No

Comment

(1) Aluminium sulphate is used as the coagulant for raw surface water at the plant. Raw surface water pH above 7 is typical at the plant (7.3 on the day of the audit) which is not optimal for coagulation using aluminium sulphate.

(2) A pH correction system is currently being installed at the plant. The system consists of sulphuric acid dosing of the raw surface water and soda ash dosing of the filtered water. The system is expected to be operational by Q1 2023 and will lower the pH to a more suitable level for the coagulation process. Training on the operation of the system is to be provided.



3. Filtration

3.1

Does monitoring indicate that the filters are operating effectively?

Answer

No

Comment

(1) A rapid gravity filter is part of the modular unit containing the adsorption clarifier. The media in the filter comprises of gravel, sand, anthracite and manganese dioxide (greensand). The filter media has not been changed in the life of the unit (20 years).

(2) Filtered water turbidity trends were examined on the day of the audit. It was observed that prolonged spikes in filtered water turbidity above 0.3 NTU were occurring after filter backwashes. On the day of the audit, no date was available for when these spikes in filter turbidity started.

(3) The Irish Water Process Operations team is to conduct a full review of the filter turbidity issues being experienced at the plant.



4. Treatment Process Chemicals

	Answer
4.1 Are treatment process chemicals appropriately managed and stored?	No
Comment	
<p>(1) The fill point for the fluorosilicic acid bulk tank is located outside a bunded area. On the day of the audit, the fill point and pipe leading to the bulk tank was supported by a rake.</p> <p>(2) A number of closed cans containing sodium hypochlorite were present in the disinfection kiosk in an unbunded area. Monaghan County Council stated that the cans would be placed within a bunded area.</p>	



5. Management and Control

		Answer
5.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No
Comment		
<p>(1) There is no verified Protozoal treatment barrier in place at Clones WTP. This is due to: (i) filtered water turbidity regularly exceeding 0.3 NTU and (ii) the Protozoal log treatment requirement remaining unknown. Monthly monitoring for <i>Cryptosporidium</i> in line with Irish Water's <i>Rationale for Determining the Frequency of Cryptosporidium Monitoring in Public Water Supplies</i> is in place for the supply.</p> <p>(2) Information submitted by Irish Water before the audit stated that the log treatment requirement of the plant falls into the default 3 log requirement category. It was also stated that further analysis of groundwater sources was needed to confirm the calculated log treatment score and that this would be completed in 2023.</p>		

		Answer
5.2	Is the plant suitably managed and controlled to maintain the designed log credit on each treatment stage?	No
Comment		
<p>(1) There is a single adsorption clarifier in operation at the treatment plant which combines clarification and filtration in a single modular unit. The system has separate upward flow roughing filters for incoming groundwater (treated with potassium permanganate) and surface water (treated with potassium permanganate and aluminium sulphate). Clarification is achieved through the roughing filters before entering a common rapid gravity filter section. It was stated at the audit that the system has been in operation for twenty years and is in need of refurbishment. There are no current plans to refurbish the unit.</p> <p>(2) Filtered water turbidity at the plant regularly spikes above 0.3 NTU after backwashes. The reason for this is currently unknown. A full review of filter turbidity issues is to be completed by the Irish Water Process Operations team that are currently undertaking work onsite.</p>		

		Answer
5.3	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
Comment		
<p>(1) The final water turbidity shutdown level at the plant is 1 NTU for 15 minutes. This shutdown delay is not in accordance with the 3 minute delay as specified in the <i>EPA Water Treatment Manual: Filtration</i>.</p>		

5.4

Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?

Answer

Yes

Comment

(1) The disinfection system at the treatment plant has recently been upgraded under the Irish Water Disinfection Programme. Appropriate alarms/shutdown setpoints are in place at the plant and have been confirmed by Irish Water. However, on the day of the audit, operational staff could not access these alarm/shutdown setpoints via SCADA and were only available via the HMI located in the disinfection kiosk.



6. Site Specific Issues

	Answer
6.1 Are waste materials removed from site in an appropriate manner?	No
Comment	
<p>(1) There was a quantity of old/cracked asbestos pipes located on open ground close to the new disinfection kiosk at the treatment plant. Monaghan County Council stated that a specialist contractor is to be sought to safely remove the material from site. No timeframe was available for when this work will be completed.</p>	

Recommendations

Subject	Clones PWS Audit Recommendations	Due Date	02/02/2023
Action Text	<p>Recommendations</p> <p>Irish Water is responsible for ensuring a safe and secure supply of drinking water. To address these issues Irish Water should implement the following recommendations without delay.</p> <ol style="list-style-type: none"> 1. Irish Water should: (i) confirm the Protozoal log treatment requirement for the plant and (ii) confirm how any log deficit will be addressed. 2. Irish Water should assess the operation of the adsorption clarifier/filtration system to ensure that levels of turbidity in the filtered water are as low as possible and no greater than 0.3 NTU so as to maintain an effective protozoal barrier. 3. Irish Water should ensure that a plant shutdown on the final water leaving the plant is controlled by the regulatory 1 NTU (with a maximum delay of 3 minutes) as detailed in the <i>EPA Water Treatment Manual: Filtration</i>. 4. Irish Water should ensure that all process optimisation works at the plant are completed and should include: (i) introduction of pH correction and (ii) training for all staff in the operation of newly installed/upgraded treatment processes 5. Irish Water should ensure that all asbestos waste onsite is collected and disposed of in an appropriate manner. 6. Irish Water should ensure that all residual chlorine alarm/shutdown setpoints should be present and easily accessible on plant SCADA/HMI. 7. Irish Water should liaise with Monaghan County Council to ensure that local landowners have been written to in relation to their obligations under the <i>European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022</i>, as amended. 8. Irish Water should review chemical storage arrangements at the treatment plant. Chemicals should be stored in bunded areas capable of containing at least 110% of the volume of chemicals stored therein. Fill points for storage tanks should be within bunded areas. <p>Follow-Up Actions required by Irish Water</p> <p>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.</p> <p>This report has been reviewed and approved by Ruth Barrington, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 02/02/2023 detailing how it has dealt with the issues of concern identified during this audit.</p> <p>The report should include details on the action taken and planned to address the various recommendations, including time frame for commencement and completion of any planned work.</p> <p>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.</p>		