

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	Clonbullogue PWS
Organisation	Irish Water
Scheme Code	2500PUB1004
County	Offaly
Site Visit Reference No.	SV22567

Report Detail	
Issue Date	05/08/2021
Prepared By	Daryl Gunning

Site Visit Detail			
Date Of Inspection	02/07/2021	Announced	Yes
Time In	11:00	Time Out	11:35
EPA Inspector(s)	Daryl Gunning		
Additional Visitors			
Company Personnel	Irish Water: Dara Chadwick; Ivan Corcoran*; Michael McArdle Offaly CoCo: Joe Coleman*; Dermot Killeen; Gerry McGarrigle Coffey Group (contractor): Gary Gilliland; Mahsa Foolad *Attended pre-site visit meeting (01/07/21) only. All other personnel attended both pre-site meeting and site visit (02/07/21)		

> Summary of Key Findings

1. The disinfection upgrades at the Figile Bank Water Treatment Plant (WTP) were fully commissioned and fully operational by 16.12.20.
2. Primary disinfection is achieved by ultraviolet (UV) treatment, and the chlorination system provides secondary disinfection to maintain an adequate level of residual disinfection in the distribution network.
3. Irish Water informed the EPA at the audit that formal handover of the disinfection upgrades to Offaly County Council for the Figile Bank WTP is expected to be completed within one month of the date of this audit, following final assessment of process proving data queries.

> Introduction

The Clonbullogue public water supply (PWS) produces approximately 202 m³/day of water serving a population of 868. Raw water is abstracted from the Figile River Well.

This audit is a targeted audit specifically assessing the disinfection systems that have been through Irish Water's Disinfection Programme and reported to the EPA as having been fully commissioned. Disinfection upgrades at the Figile Bank Water Treatment Plant (WTP) consist of: an upgraded chlorination system, a new UV system (primary disinfection), a new borehole control system, and upgraded telemetry system. UV disinfection is currently the primary source of disinfection at the Figile Bank WTP.

> Supply Zones Areas Inspected

This audit assessed the disinfection system at the Figile Bank WTP.



1. Disinfection

		Answer
1.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes
Comment		
All chlorine and UV monitors are within their calibration date.		

		Answer
1.2	Are monitors and alarms operational via dial out and being responded to with a suitable cascade system in place?	Yes
Comment		
Monitors and alarms for the disinfection system operate via dial out and are responded to with a cascade system (there are four Offaly County Council staff on the cascade system).		

		Answer
1.3	Is there a procedure in place for caretakers and contractors to check and sign-off that all alarms have been correctly re-set on completion of any maintenance work?	No
Comment		
Irish Water stated that once the formal handover of the disinfection upgrades to Offaly County Council has been completed, they will ensure that documented alarm response, alarm check, and sign-off procedures will be made available onsite.		

		Answer
1.4	Is the UV system suitably validated?	Yes
Comment		

1. A "VISADES T860F" UV disinfection system was installed and fully commissioned at the WTP by 16.12.20.
2. The UV system is validated to an international validation standard by the Austrian Association for Gas and Oil (OVGW certification). A copy of the validation certificate was provided at the audit.
3. Automatic switch-over of duty and standby UV units occurs every 12 hours.
4. The UV system is alarmed for UV dose as follows: (i) low: 44 mJ/cm³ and (ii) low low: 40 mJ/cm³ and for UVT as follows: (i) low: 85% and (ii) low low: 75%. The UVI alarm (low and low low) is calculated by the intelligent UV ballast system. There is a three minute time delay before the alarms are activated. A cascade system is in place to alert staff in the event of an alarm being triggered. A plant shutdown will occur in the case of a low-low alarm being triggered.
5. Automatic switchover will also occur in the case of UV unit failure. An alert will also be sent out via the cascade system. If both UV units fail, the plant will enter into shutdown mode. An alert will also be sent out via the cascade system.
6. The warm-up time of the UV units is <5 minutes. No water will pass through the UV units during this warm-up period.

		Answer
1.5	Is the UV disinfection system operating within its validated range?	Yes
Comment		
The UV disinfection system was operating within its validated range on the day of the audit. Historical data provided at the audit also indicated that it has been operating within its validated range.		

		Answer
1.6	Are UV lamps replaced at a suitable frequency?	Yes
Comment		
UV lamps are replaced every 9000 hours by suitably trained contractors.		

		Answer
1.7	Is the chlorine dosed appropriately?	Yes
Comment		
<ol style="list-style-type: none"> 1. Raw water from the Figile River Well is disinfected with 10-11% sodium hypochlorite as secondary disinfection. 2. Dosing is flow proportional. There is a duty and standby dosing pump, which is automatically switched over every 3 hours. The chlorine dose is automatically adjusted based on the residual chlorine monitor. 3. Automatic switchover also occurs in the case of pump failure. An alert will also be sent out via the cascade system. If both pumps fail, the plant will enter into shutdown mode. An alert will also be sent out via the cascade system. 4. A chlorine residual of 0.5 mg/l is aimed for leaving the WTP. The chlorine residual monitor (CL001) was reading 0.517 mg/l on the day of the audit. The residual chlorine monitor (CL001) is located at the WTP after a 15 minute contact loop. 		

Answer

1.8	Are manual chlorine tests carried out and recorded on final treated water to compare with the continuous monitor results?	Yes
Comment		
The caretaker takes a daily sample on a handheld chlorine monitor to check the accuracy of the continuous monitors.		

		Answer
1.9	Is there a chlorine residual ≥ 0.1 mg/l throughout the network?	Yes
Comment		
Chlorine residual levels are measured in the network daily. A chlorine residual of >0.1 mg/l is consistently achieved throughout the Clonbullogue PWS network, which demonstrates the water in the distribution network is adequately disinfected		



2. Treatment Process Chemicals

	Answer
2.1 Are treatment process chemicals appropriately managed and stored?	Yes
Comment	
<ol style="list-style-type: none">1. The sodium hypochlorite dosing tank is stored in an appropriately bunded area. There was no evidence of standing water around the dosing points.2. No sodium hypochlorite drums are stored on site. The empty drums are appropriately packaged and removed from site by a contractor as soon as the sodium hypochlorite dosing tank is filled.	



3. Management and Control

3.1

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

Answer

No

Comment

1. The following chlorine alarms are set at the WTP: (i) low: 0.3 mg/l; (ii) low low: 0.2 mg/l; (iii) high: 1.5 mg/l; and (iv) high high: 2 mg/l. There is a 15 minute time delay before the alarms are activated. The low and low-low chlorine alarm set-points are well below the target of 0.5 mg/l chlorine residual concentration in the final water leaving the WTP. Therefore, they might not be set at an appropriate level to ensure that treated water at the extremities of the distribution network contains at least 0.1 mg/l residual chlorine to confirm adequate disinfection.
2. A cascade system is in place to alert staff in the event of an alarm being triggered. A plant shutdown will occur in the case of a low-low or high-high alarm being triggered.



4. Disinfection Programme Audits

		Answer
4.1	Has the system been installed by the Contractor in accordance with the agreed scope of works for the site?	Yes
Comment		
Irish Water confirmed that all disinfection upgrades have been installed by the contractor in accordance with the agreed scope of works for the site. Disinfection upgrades at this WTP consisted of: an upgraded chlorination system, a new UV system, a new borehole control system, and upgraded telemetry system.		

		Answer
4.2	Has the new/upgraded disinfection system been SAT tested, commissioned, available on Telemetry and available for operation?	Yes
Comment		
Irish Water confirmed that the newly upgraded disinfection systems has been System Acceptance Testing (SAT) tested, commissioned, and made available on telemetry and available for operation. A copy of the SAT documentation was provided for inspection at the audit. Commissioning of the newly upgraded disinfection systems was completed in December 2020.		

		Answer
4.3	Have all relevant staff received the appropriate training on the disinfection upgrades?	Yes
Comment		
All relevant staff have been fully trained on the disinfection upgrades at the Figile Bank WTP.		

		Answer
4.4	Have the disinfection upgrades formally been handed over to the LA?	No
Comment		
Irish Water stated that the formal handover of the disinfection upgrades to Offaly County Council is expected to take place within 1 month of the date of this audit, following final assessment of process proving data queries. A Certificate of Completion will be issued once the following are achieved: i) the system has been installed by the contractor in accordance with the agreed scope of works for the site; (ii) the new/upgraded disinfection system has been SAT tested, commissioned, available on Telemetry and available for operation; (iii) appropriate training has been provided to operators; and (iv) the Operational Monitoring Period is complete.		

		Answer
4.5	Are the disinfection upgrades currently in use at the WTP?	Yes
Comment		
<p>All disinfection upgrades are currently in use at the WTP, however, formal handover of the upgrades from the contractor to Offaly County Council will not take place until the final assessment of process proving data queries is complete. The contractor is currently providing ongoing support, guidance, and additional training (as required). This support will be provided until the formal handover has been complete.</p>		

		Answer
4.6	Is the Operational Monitoring Period complete?*	Yes
Comment		
<p>Data from the 30 day operational monitoring period was provided at the audit. A copy of the Operation & Maintenance (O&M) manual was also available for inspection during the audit. This manual will be made available at the WTP once the formal handover procedure has been completed.</p>		

Recommendations

Subject	Clonbullogue disinfection audit recommendations	Due Date	06/09/2021
Action Text	<p>Recommendations</p> <ol style="list-style-type: none">1. Irish Water should provide confirmation to the EPA when the disinfection upgrades at the Figile Bank WTP have been formally handed over to Offaly County Council and confirm that a certification of completion has been issued. This should be completed without delay.2. Irish Water should ensure that the low and low-low chlorine alarm set points are set at an appropriate level to ensure that the target residual chlorine concentration in the final water leaving the WTP is met.3. Irish Water should review the 15 minute time delay on the low chlorine plant shutdown alarm, in order to minimise the risk of inadequately disinfected water being supplied to consumers.4. Irish Water should ensure that the following documentation is made available at the Figile Bank WTP: (i) alarm response, alarm check, and sign-off procedures; and (ii) Operation & Maintenance manual. <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 Aoife Loughnane, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency one month from the date of this audit report 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> <p>Please quote Compliance Plan Number DW20210087 in any future correspondence in relation to this Report.</p>		