

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	Urlingford-Johnstown PWS
Organisation	Irish Water
Scheme Code	1500PUB1015
County	Kilkenny
Site Visit Reference No.	SV18300

Report Detail	
Issue Date	19/11/2019
Prepared By	Regina Campbell

Site Visit Detail			
Date Of Inspection	13/09/2019	Announced	Yes
Time In	11:00	Time Out	12:35
EPA Inspector(s)	Regina Campbell		
Additional Visitors			
Company Personnel	Kilkenny County Council: John Ormond, Kevin Hogan, Michael Shortall, Ken Boland. Irish Water: Patrick Duggan, Colin Cunningham, P.J. Phelan.		

> Summary of Key Findings

1. *Cryptosporidium* was detected in the Urlingford-Johnstown supply on 13/08/2019. At the time of the detection the only treatment barrier in operation was chlorination. UV disinfection is currently being installed at the treatment plant and this, when operational, will provide an effective barrier to *Cryptosporidium*.
2. Irish Water should complete the installation and commissioning of the UV disinfection system and submit validation and verification data to demonstrate that the UV units are operating satisfactorily.

> Introduction

The Urlingford-Johnstown Public Water Supply (PWS) serves a population of approximately 1,700. The raw water is sourced from two boreholes (located at the treatment plant) and two springs located approximately 2km from the plant. Approximately 500 m³/day is produced with 40% sourced from the boreholes and the remainder sourced from the springs. During the winter, the proportion of water sourced from the springs increases. At the time of the audit, water was being disinfected by chlorination. A disinfection upgrade is underway at the plant which will result in UV disinfection being put in place. This audit was carried to assess Irish Water's performance in producing clean and wholesome water following the detection of *Cryptosporidium* in the supply on 13/08/2019. All of the sources were in use at the time of the detection. Resampling results have been clear.

> Supply Zones Areas Inspected

The two boreholes, treatment plant facilities and one of the springs were examined as part of the audit.



1. Source Protection

	Answer
1.1	Is the abstraction source(s) adequately protected against contamination? Comment <p>Both groundwater boreholes are located in concrete chambers at the treatment plant. It is estimated that the boreholes were constructed around 2003 but no borehole logs were available and the construction details could not be verified. The lids covering the boreholes chambers may not be adequate to prevent surface water ingress into the chamber. Borehole 1 did not appear to be capped. It could not be confirmed if the boreholes are lined and sealed in accordance with the requirements of EPA <i>Drinking Water Advice Note 14: Borehole Construction and Wellhead Protection</i>.</p> <p>The lids covering the inspection hatches at the Tobar Padraig spring (Spring No. 2) are not adequately sealed to prevent surface water ingress and there was a crack in one of the lids. The lids should be replaced and the area surrounding the hatches should be kept clear of vegetation. The second spring is located in a forested area and was not visited during the inspection.</p> <p>Kilkenny County Council said that local landowners had been informed of their obligations regarding the buffer zones required under the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (S.I. No. 31 of 2014).</p> <p>The EPA's EDEN system does not contain up to date information in relation to the current sources for this supply.</p>



2. Disinfection

		Answer
2.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes
Comment		
<p>1. The chlorine disinfection system is verified using monitors and high and low alarm set-points are in place. Chlorine trends were available for inspection.</p> <p>2. The site is currently undergoing a disinfection upgrade. Duty and standby UV units (Visades) were on site but were not operational yet. Irish Water estimated that the units would be operational in a few weeks. Information and verification data will then be gathered to demonstrate that the UV units are suitably validated and operating satisfactorily.</p>		

		Answer
2.2	Are duty and standby chlorine pumps/ UV units in operation?	Yes
Comment		
<p>1. Duty and standby chlorine pumps are in operation with automatic changeover in place.</p> <p>2. The site is currently undergoing a disinfection upgrade. Duty and standby UV units were on site but are not operational yet and have not been validated. See Section 2.1 above.</p>		

		Answer
2.3	Is the chlorine dosed appropriately?	Yes
Comment		
<p>1. Chlorine (10-11% sodium hypochlorite) is dosed flow proportionally with residual trim.</p>		

		Answer
2.4	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	No
Comment		
<p>1. At the moment, the residual chlorine level is monitored on the rising main leaving the plant. This is before the treated water enters the reservoir and before contact time is achieved and so is not a suitable monitoring point to monitor the target residual chlorine level. There is no residual chlorine monitor after the reservoir. I was informed that there are no service connections prior to the reservoir.</p>		

		Answer
2.5	Does the trend in chlorine residual at the treatment plant indicate adequate and stable levels of disinfection?	Yes
	Comment	
	The SCADA trend was viewed and indicated adequate and stable levels of chlorination.	

		Answer
2.6	Are manual chlorine tests carried out and recorded on final treated water to compare with the continuous monitor results?	Yes
	Comment	
	Manual chlorine tests are performed by the caretaker and recorded in the plant log book.	

		Answer
2.7	Is there adequate chlorine contact time before the first connection?	Not Applicable
	Comment	
	The chlorine contact time calculation was not available at the audit and so this could not be verified on the day of the audit.	

		Answer
2.8	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	Yes
	Comment	
	Residual chlorine levels are checked in the network several times a week and results are recorded in the plant logbook.	

		Answer
2.9	Is there a chlorine residual ≥ 0.1 mg/l throughout the network?	Yes
	Comment	

Results reviewed at the audit were satisfactory.



3. Treatment Process Chemicals

		Answer
3.1	Are treatment process chemicals appropriately managed and stored?	No
Comment		
The current supplier of the sodium hypochlorite disinfectant does not provide an expiry date.		

		Answer
3.2	Are chemicals appropriately produced/ approved and suitable for use in drinking water treatment?	No
Comment		
There was no PCS number, as required under the Biocides Regulations, available for the sodium hypochlorite is use at the plant.		



4. Management and Control

		Answer
4.1	Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?	Yes
	Comment	
	<p>1. High (2.2 mg/l) and low (0.8mg/l) warning alarms are in place for the chlorine disinfection system.</p> <p>2. A high warning alarm is in place for turbidity (0.8 NTU) in the final water.</p> <p>3. However, as outlined previously, the UV disinfection system is not operational yet. It is intended that UV alarms will be in place for this system once operational.</p>	
		Answer
4.2	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	Yes
	Comment	
	<p>1. A shutdown setpoint of 1 NTU is in place for turbidity in the final water.</p> <p>2. Shutdown set-points are in place for high and low chlorine levels.</p> <p>2. As outlined previously, the UV disinfection system is not operational yet and so no details of shutdown setpoints were available. When commissioned, it is intended that UV shutdown and alarm setpoints will be in place to prevent inadequately treated water from entering the network.</p>	
		Answer
4.3	Are relevant alarms dialled out via a cascade system to allow a timely response by plant operators?	Yes
	Comment	
	<p>There are currently two people in the cascade system for responding to alarms.</p>	
		Answer
4.4	Is the data obtained from sampling and monitoring used to actively inform the processes on site and in the distribution network?	Yes



5. Drinking Water Quality

5.1

Have relevant failures to comply with the requirements of the European Union (Drinking Water) Regulations 2014, as amended, been notified to the EPA?

Answer

Yes

Comment

There was one *Cryptosporidium* detected on 13/08/2019 and this was notified to the EPA. No other failures have been notified to the EPA.

Recommendations

Subject	DW2019/152 Urlingford-Johnstown Audit Recommendations	Due Date	19/12/2019
Action Text	<p>Recommendation(s)</p> <ol style="list-style-type: none"> 1. Irish Water should undertake any works necessary to ensure that the well-heads of boreholes 1 and 2 are constructed, sealed and protected in accordance with <i>EPA Drinking Water Advice Note No. 14: Borehole Construction and Wellhead Protection</i>. 2. Irish Water should ensure that the inspection hatches at the Tobar Pdraig spring are refurbished in order to prevent contamination from surface water ingress. 3. Irish Water should review Spring No. 1 in the forested area to ensure that the source is adequately protected. 4. Irish Water should update EDEN with the current sources for this supply. 5. Irish Water should provide a timeframe for completion and commissioning of the UV disinfection system. 6. Irish Water should submit the following information to demonstrate that the UV units are suitably validated and operating satisfactorily; <ul style="list-style-type: none"> • A copy of the UV validation cert. • Two months graphed flow data; • Two months graphed UVI/UVT data; • Two months graphed turbidity monitoring results; • Details of the alarm and shutdown set-points for both the UV units. 7. Irish Water should submit a calculation of the effective contact time. 8. Irish Water should put a system in place so that stocks of sodium hypochlorite on-site are regularly checked to ensure that they are in date. 9. Irish Water should ensure that all disinfectants used in drinking water treatment are authorised and appropriately labelled in accordance with the EU Biocides Products Regulation (518/2012) and associated Irish regulations (<i>European Union (Biocidal Products) Regulations, 2013</i>). <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 Dr. Michelle Minihan, Senior Inspector, Drinking Water Team.</p> <p>Irish Water should submit a report to the Agency on or before 19/12/2019 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 the Action Reference Number DW2019/152 in any future correspondence in relation to this Report.</p>		

