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	Callan PWS
Organisation	Irish Water
Scheme Code	1500PUB1003
County	Kilkenny
Site Visit Reference No.	SV22412

Report Detail

Issue Date	28/06/2021
Prepared By	Regina Campbell

Site Visit Detail

Date Of Inspection	26/05/2021	**Announced**	Yes
Time In	11:00	**Time Out**	12:40
EPA Inspector(s) **Additional Visitors**	Regina Campbell		
Company Personnel	Irish Water: Pat Duggan, Catherine Rice. Kilkenny County Council: Andrew Flood, John Ormond*, Niall O' Dwyer** * Attended conference call only ** Attended site visit only		

Summary of Key Findings

1. There is no treatment barrier in place at the Callan Water Treatment Plant (WTP) to prevent *Cryptosporidium* entering the supply. Irish Water should install a barrier against *Cryptosporidium* to ensure the water supply is adequately treated at all times.

2. The supply will be considered for addition to the EPA's Remedial Action List on 31/07/21 under the category Inadequate treatment for *Cryptosporidium*.

3. The audit found that the incident was suitable escalated and managed to protect public health.

Introduction

The Callan Public Water Supply (PWS) serves a population of 2,675 and produces 967 m3/day. The supply is a mix of water from a spring located approximately 800m away (gravity fed to the plant) and from an on-site borehole. Generally the proportion supplied by the spring is 60% with the remainder supplied by the borehole. Kilkenny County Council said that during drier weather a greater proportion may be supplied by the borehole.

The audit was undertaken to assess Irish Water's performance in producing clean and wholesome water following a detection of *Cryptosporidium* in a sample of the final water taken on 12/01/21 (0.0036 count/no. per 10L). Follow up monitoring has been clear to date. There have been no previous detections notified to the EPA.

Supply Zones Areas Inspected

In light of Covid-19 restrictions, the audit comprised of a video conference call with Irish Water and Kilkenny County Council on 25/05/21 followed by a site visit with essential participants on 26/05/21. The water treatment plant processes, borehole and off-site spring were inspected.

1. Incident Management

		Answer
1.1	Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	Yes

Comment

Cryptosporidium was detected in a sample taken at the water treatment plant on 12/01/21 (0.0036 count/no. per 10 L). Genotyping was not possible. Irish Water and Kilkenny County Council consulted with the HSE so as to assess the risk to health and following the risk assessment undertaken the agreed outcome was that further regular monitoring of the supply for *Cryptosporidium* would be undertaken. Investigations undertaken did not link the detection to any particular incident or issues at the plant or at the sources.

Following up sampling taken on 17th/18th January was clear and further monthly monitoring to date has been clear. Monthly *Cryptosporidium* monitoring has been in place since March 2019 and there have been no previous detections notified to the EPA.

The current treatment processes at the Callan WTP do not provide a barrier against *Cryptosporidium* entering the supply.

The supply will be considered for addition to the EPA's Remedial Action List on 31/07/21 under the category Inadequate treatment for *Cryptosporidium*.

2. Source Protection

		Answer
2.1	Is the abstraction source(s) adequately protected against contamination?	No

Comment

The supply is fed by a borehole located at the water treatment plant and an off-site spring located approximately 800m from the plant. Generally the proportion supplied by the spring is 60% with the remainder supplied by the borehole. During drier weather a greater proportion may be supplied by the borehole.

Borehole

Kilkenny County Council did not know when the borehole was constructed and there is no borehole log available. The borehole is located below ground with a lid covering the chamber which is not padlocked. Any surface water that enters the chamber is drained away. The borehole was capped since the last audit. The land in the immediate vicinity of the water treatment plant and borehole is grassland.

Spring

The spring was constructed in 1938 and is gravity fed to the water treatment plant. The spring is surrounded by farmland (grazing and tillage). Access to inspect the spring was not possible as there is no safe and dedicated access path to the spring compound. The spring chamber is surounded by thick vegetation and the area of land where the spring is located is surrounded by a wall and fencing. The caretaker said that the hatches on the spring are not padlocked. There are two inspection hatches on the spring concrete chamber but it was not possible to asses the integrity or condition of the hatches or the concrete chamber. There is an air vent on the chamber and the vents could provide an access point for flies or other small animals. There was evidence of livestock accessing the land adjacent to the spring compound.

Kilkenny County Council said that they intend to provide safe access to the spring for personnel.

Kilkenny County Council confirmed that landowners were written to in 2011 and said that they would be written to again shortly under the European Union {Good Agricultural Practice for the Protection of Wates) Regulations 2014 (S.I. No. 31 of 2014).

There are continuous turbidity and UVT monitors on the combined spring and borehole source with a turbidity alarm of 0.8 NTU and shutdown set at 1 NTU. Monitoring records submitted show stable turbidity and UVT trends in the combined source.

There is very poor raw water characterisation data available. There was one set of results submitted from 2013 and a set of results submitted from February 2021. The February 2021 results showed that *E.coli* was detected in one of the Spring samples (result 1 mpn/100mls).

3. Disinfection

		Answer
3.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes

Comment

There are high and low chlorine alarms and shutdowns in place with monitoring trends available on SCADA. The plant was upgraded under the Irish Water Disinfection Programme in 2019.

The low chlorine alarm is 0.5 mg/l with shutdown at 0.4 mg/l.

The high chlorine alarm is 1 mg/l with shutdown at 1.2 mg/l.

		Answer
3.2	Are monitors and alarms operational via dial out and being responded to with a suitable cascade system in place?	Yes

Comment

Alarms are sent to three personnel at the same time with the duty caretaker responsible for responding to alarms.

		Answer
3.3	Are duty and standby chlorine pumps/ UV units in operation?	Yes

Comment

There are duty and standby chlorine dosing pumps with automatic switchover in place.

		Answer
3.4	Is the chlorine dosed appropriately?	Yes

Comment

10% sodium hypochlorite is dosed flow proportionally.

		Answer
3.5	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	Yes

Comment

Residual chlorine is monitored after the reservoir where contact time has been completed.

		Answer
3.6	Does the trend in chlorine residual at the treatment plant indicate adequate and stable levels of disinfection?	Yes

Comment

Trends submitted for April 2021 showed adequate and stable levels of chlorination in the final water.

		Answer
3.7	Is there adequate chlorine contact time before the first connection?	Yes

Comment

The chlorine contact time was confirmed to be 23.59 mg.min/l which is adequate.

		Answer
3.8	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	No

Comment

Records of residual chlorine monitoring in the network reviewed showed gaps of up to 5 days in May 2021, and a gap of up to 11 days in April 2021 between monitoring dates.

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

Comment

Records reviewed for April and May 2021 showed chlorine residual of ≥ 0.1 mg/l in the network.

4. Reservoirs and Distribution Networks

		Answer
4.1	Are reservoirs adequately inspected and maintained?	No
	Comment	
	Kilkenny County Council said that there had been a delay in inspecting the reservoir due to a health and safety issue with the access ladder. It is intended that the reservoir will be inspected in 2021.	

5. Treatment Process Chemicals

		Answer
5.1	Are treatment process chemicals appropriately managed and stored?	Yes

Comment

25 L drums of 10/11% sodium hypochlorite are stored in a bunded area. The PCS number was displayed and the drums had an expiry date (09/21) displayed.

6. Management and Control

		Answer
6.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No

Comment

Irish Water said that the source score calculation for the Callan source has not yet been finalised using the new evidence based model. Irish Water said that the working log treatment requirement is log 4 and that this score includes a penalty of +1 for no sanitary survey.

		Answer
6.2	Are instrument calibrations within date?	Yes

Comment

All instruments inspected were within calibration date.

7. Drinking Water Quality

		Answer
7.1	Is Cryptosporidium monitoring being carried out in accordance with Irish Water's 'Rationale for Determining the Frequency of Cryptosporidium Monitoring in Public Water Supplies'?	Yes

Comment

Monthly *Cryptosporidium* monitoring is being undertaken.

8. Fluoridation

		Answer
8.1	Are the fluoride bulk tank and day tank arrangements appropriate?	No

Comment

The bulk tank is bunded and located in a secure compound. The fluoridation room is ventilated. The day tank is on a weighing scales and in a bund. Kilkenny County Council said that the fluoride day tank is filled up about once per week. However, the 2016 *Code of Practice on the Fluoridation of Drinking Water* recommends that a maximum of 3 days supply should be stored in the day tank.

		Answer
8.2	Is the fluoridation dosing system appropriately controlled?	Yes

Comment

The fluoride dosing arrangements were upgraded in 2020. Dosing is flow proportional with duty/standby dosing pumps. There are anti-suction valves and regular servicing of the pumps.

Recommendations

Subject	Callan Audit Recommendations	Due Date	28/07/2021
Action Text	**Recommendations** 1. Irish Water should install a suitable barrier against *Cryptosporidium* on the Callan PWS to ensure that the water supply is adequately treated. 2. Irish Water should confirm the protozoal log treatment requirement for the plant and identify how any log deficit will be addressed. 3. Irish Water should undertake monitoring in accordance with the Irish Water Rationale for Determining the Frequency of *Cryptosporidium* Monitoring in Public Water Supplies. 4. Irish Water should liaise with Kilkenny County Council and confirm that relevant landowners have been written to in relation to setback distances in accordance with the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* for the source of the supply. 5. Irish Water should provide safe access to the spring source and undertake a thorough assessment of the integrity of the concrete chamber, inspection hatches and air vent and undertake any repairs necessary. 6. Irish Water should ensure that the borehole chamber is padlocked. 7. Irish Water should undertake regular monitoring of the raw water sources (including *E. coli)* in order to characterise the sources on an ongoing basis. 8. Irish Water should monitor residual chlorine in the network, including extremities, several times per week to ensure a minimum residual chlorine of >0.1 mg/l is maintained. 9. Irish Water should ensure that the day storage tank for fluoride contains a maximum of 3 days capacity and that the maximum capacity be as close to that sufficient to treat one day's maximum water output for the plant as practicable. Irish Water should refer to the 2016 Code of Practice for Fluoridation of Drinking Water (prepared by the Irish Expert Body of Flourides and Health). 10. Irish Water should provide safe access for inspection of the reservoir and ensure that the reservoir is inspected and cleaned out on a regular basis and any maintenance and repairs completed as soon as possible after the need has been identified. **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 Dr. Michelle Minihan, Senior Inspector, Drinking Water Team. Irish Water should submit a report to the Agency on or before 28/07/21 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 time frame 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 Action Reference Number DW20210003 in any future correspondence in relation to this Report.		