

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	Crehanagh
Organisation	Irish Water
Scheme Code	3100PUB1107
County	Waterford
Site Visit Reference No.	SV26020

Report Detail	
Issue Date	17/10/2022
Prepared By	Regina Campbell

Site Visit Detail			
Date Of Inspection	04/10/2022	Announced	Yes
Time In	13:40	Time Out	14:10
EPA Inspector(s)	Regina Campbell		
Additional Visitors			
Company Personnel	Irish Water: Pat Duggan Waterford City and County Council (acting under service level agreement to Irish Water): Maura Phelan, David Hourigan		

> Summary of Key Findings

1. A precautionary Boil Water Notice (BWN) was placed on the Crehanagh PWS (Public Water Supply) on 10/09/22 due a chlorination failure caused by a blockage of the injector which occurred on 09/09/22. The audit found that the blockage resulted in no chlorine in the supply from about 6pm on 09/09/22 until the following morning at about 8.00am when the chlorination failure was identified and the plant shutdown. Undisinfected water went into the supply overnight and such a delay in responding to the incident is not acceptable. The notice was lifted on the 22/09/22.
2. There is no treated water storage in the supply. In the event of a failure of the chlorination disinfection system there is a risk of inadequately disinfected water entering the supply. Irish Water said that it is intended to install shutdown based on low chlorine levels in the supply to reduce the risk of a similar incident happening again.
3. There are a number of shortcomings at this plant including lack of automatic switchover between the chlorine dosing pumps and lack of a turbidity monitor with alarm and shutdown.
4. Crehanagh PWS is on the Irish Water National pH file as it has persistent low pH (< 6.5 pH). At present there is no timeframe for remedial measures to address the issue.

> Introduction

The Crehanagh Public Water Supply (PWS) serves a population of 18 and produces 6 m3/day (EDEN figures). The source is a borehole located in the planthouse.

The audit was undertaken to assess Irish Water's performance in producing clean and wholesome water following the imposition of a Boil Water Notice (BWN) on the supply from 10/09/22 to 22/09/22.

> Supply Zones Areas Inspected

The borehole and the chlorination disinfection system were inspected.



1. Incident Management

1.1

	Answer
Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	No
Comment	
<p>1. A precautionary Boil Water Notice (BWN) was placed on the Crehanagh PWS on 10/09/22. The BWN was imposed due to chlorination failure caused by a blockage of a chlorine injector point. Trends submitted showed that chlorine levels had started to decrease from around midday on 09/09/22 and that there was no chlorination in the supply from about 6pm on 09/09/22 until 8.10am on 10/09/22 when the plant was manually shutdown. The assist chlorine dosing pump also failed to operate.</p> <p>2. According to Waterford City and County Council (WCCC) a low chlorine alarm was issued by the PMAC on 09/09/22 to operational staff. However the alarm was not received by the staff on duty and there is no explanation as to why the alarm was not received by the staff on this occasion. There is no cascade in place for relief or supervisory staff to respond. Irish Water said that it is intended to upgrade the PMAC system to SCADA but no timeframe is available yet.</p> <p>3. The chlorination failure was identified on the morning of 10/09/22 during routine checks and the plant was manually shutdown at 8.10am.</p> <p>4. Repairs were undertaken to the dosing equipment and the supply was back in operation by 11am on 10/09/22 under a precautionary BWN.</p> <p>5. Following receipt of satisfactory monitoring results and consultation by Irish Water with the HSE the BWN was lifted on 22/09/22.</p> <p>6. The audit found that despite the chlorine alarm activating on foot of the chlorination failure on 09/09/22 that the chlorination failure was not identified until the morning of 10/09/22. The delay in discovering the failure of the chlorination disinfection system is unacceptable and lead to inadequately disinfected water entering the network which caused a risk to public health. The audit found that the incident was suitably escalated by WCCC to Irish Water, HSE and EPA once the chlorination failure was identified on 10/09/22.</p> <p>7. There is no treated water storage in the supply and in the event of a failure of the chlorination system there is a risk of inadequately disinfected water entering the supply. Irish Water said that it is intended to install shutdown based on low chlorine levels in order to prevent a similar incident happening again.</p>	



2. Source Protection

		Answer
2.1	Is the abstraction source(s) adequately protected against contamination?	No
Comment		
<p>There were no borehole log details available at the audit.</p> <p>The planthouse is located in an agricultural area. WCCC could not confirm when landowners had last been written to in relation to the requirements of the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014).</p> <p>There is no turbidity monitor on the borehole so there is no information available on any variability that may exist in groundwater turbidity levels.</p>		



3. Disinfection

		Answer
3.1	Are monitors and alarms operational via dial out and being responded to with a suitable cascade system in place?	No
	Comment	
	Alarms are issued by the PMAC system to operational staff simultaneously. However there is no system in place to escalate alarms if staff on duty do not respond to the alarm.	
		Answer
3.2	Are duty and standby chlorine pumps/ UV units in operation?	No
	Comment	
	There is a duty and assist chlorine pump. However WCCC said that the pumps are not rotated to keep them primed and that automatic switchover cannot be relied upon if the duty pump fails. Chlorine is dosed flow proportionally. The residual chlorine monitor was reading 0.6 mg/l at the audit.	
		Answer
3.3	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	No
	Comment	
	Records reviewed showed that there were some weeks where chlorine monitoring was not undertaken in the network several times a week. Records showed that the chlorine residual is ≥ 0.1 mg/l in the network.	



4. Management and Control

		Answer
4.1	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
Comment		
There is no shutdown based on high or low chlorine or high turbidity at the plant.		

		Answer
4.2	Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?	No
Comment		
The low chlorine alarm of 0.28 mg/l should be reviewed to ensure that adequate chlorine is available to ensure chlorine contact time is achieved.		



5. Drinking Water Quality

	Answer
5.1 Is <i>Cryptosporidium</i> monitoring being carried out in accordance with Irish Water's 'Rationale for Determining the Frequency of <i>Cryptosporidium</i> Monitoring in Public Water Supplies'?	No
Comment	
<p>Irish Water have not been monitoring the supply in accordance with Irish Water's Rationale for Determining the Frequency of <i>Cryptosporidium</i> Monitoring in Public Water Supplies.</p> <p>The protozoal log treatment requirement has been identified as log 3 and there is no protozoal barrier at the plant.</p>	

Recommendations

Subject	Crehanagh Audit Recommendations	Due Date	17/11/2022
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 a) provide an explanation why the low chlorine alarm generated on 09/09/22 was not received by operational staff and b) confirm that the PMAC alarm system is operating correctly and that alarms are received by all relevant staff c) ensure that a cascade system is in place for responding to all alarms and d) upgrade the PMAC system to SCADA. 2. Irish Water should a) review the low chlorine alarm setpoint to ensure the minimum chlorine level is maintained for adequate contact time at all times; b) install shutdown based on low or high chlorine levels in the supply; and c) install duty and standby pumps chlorine dosing pumps with automatic switchover in the event of failure of one of the pumps. The pumps should be regularly switched over to keep them primed. 3. Irish Water should install a turbidity monitor with appropriate alarms and shutdowns on the supply. 4. Irish Water should a) commence monitoring in accordance with the Irish Water Rationale for Determining the Frequency of <i>Cryptosporidium</i> in Public Water supplies and b) provide an action programme to address the log treatment deficit in the supply. 5. Irish Water should submit a programme of works with timeframes to address the persistent low pH issue in the supply. 6. Irish Water should ensure that monitoring of residual chlorine is undertaken several times a week in the network. 7. Irish Water should liaise with Waterford City and County Council and confirm that relevant landowners have been written to in relation to setback distances in accordance with the European Union (Good Agriculture Practice for the Protection of Waters) Regulations 2014 (SI No. 31 of 2014) for the source of the supply. <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 17/11/22 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.</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 DW20220131 in any future correspondence in relation to this Report.</p>		