

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	Ballyogarty
Organisation	Irish Water
Scheme Code	3100PUB1018
County	Waterford
Site Visit Reference No.	SV25366

Report Detail	
Issue Date	01/04/2022
Prepared By	Regina Campbell

Site Visit Detail			
Date Of Inspection	14/03/2022	Announced	Yes
Time In	11:00	Time Out	12:00
EPA Inspector(s)	Regina Campbell		
Additional Visitors			
Company Personnel	Irish Water: Pat Duggan, Ronan Walsh Waterford City and County Council (acting under service level agreement to Irish Water): Ciaran Bourke, David Hourigan, James Power		

> Summary of Key Findings

1. A Boil Water Notice (BWN) was placed on the Ballyogarty PWS (Public Water Supply) from 14/02/22 to 18/02/22 due to chlorination failure caused by a blockage of the chlorine injection point. Repair works were undertaken to reduce the risk of the issue reoccurring. The audit found that despite the chlorine alarm activating at 8.45pm on 12/02/22 that the chlorination failure was not identified until the morning of 14/02/22 and such a delay is not acceptable.
2. There is chlorination disinfection only and no treated water storage in the supply. 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 the supply to reduce the risk of a similar incident happening again.
3. Ballyogarty PWS is on the Irish Water National pH file as it has persistent low pH (< 6.5 pH). Remedial works to correct the pH issue are proposed to be completed under Phase 2 of the Irish Water Disinfection Programme and Irish Water should ensure that these works are undertaken without delay.
4. There is no continuous turbidity monitor on the borehole. Irish Water should install a continuous turbidity monitor with alarm so that any turbidity issues with the borehole can be identified.

> Introduction

The Ballyogarty Public Water Supply (PWS) serves a population of 601 and produces 158 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 14/02/22 to 18/02/22 .

> Supply Zones Areas Inspected

The borehole, arsenic removal filtration system and 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>A BWN was placed on the Ballyogarty PWS on 14/02/22 and was lifted on the 18/02/22. The BWN was imposed due to the blockage of the chlorine injection point during the night of 12/02/22 which caused a fitting to burst and resulted in failure of the chlorination disinfection system.</p> <p>According to Waterford City and County Council (WCCC) a low chlorine alarm was issued at 8.45pm on 12/02/22 by the PMAC system 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. WCCC said that the plant is usually visited if an alarm is received and that staff have been trained to escalate any incidents to supervisors. According to WCCC it is not possible to put a cascade system in place using the PMAC system. WCCC confirmed at the audit that the PMAC alert system is operating correctly now.</p> <p>A routine chlorine check at the end of the network on 13/02/22 recorded a chlorine level of 0.6 mg/l.</p> <p>Irish Water confirmed after the audit on 16/03/22 that following further investigation it had been clarified that the PMAC system was operating satisfactorily at the time of the incident. The system generated an alarm and sent it by SMS text. Irish Water also confirmed that due to the technical limitations of the PMAC system it can only send one alarm text for an incident. It is not able to verify if that text has been received. The text alarm does not repeat and there is no cascade functionality in the system. Irish water confirmed that the text alarm for the Ballyogarty PWS has now been amended to include relief operational staff in any warning alarm texts.</p> <p>When the plant was visited on the morning of the 14/02/22 it was found that the chlorination system was not working. The plant was shutdown and Irish Water and the HSE were notified by WCCC which lead to the placing of a BWN. Repairs were undertaken to the dosing equipment. The low chlorine alarm setpoint at the time of the incident was 0.25 mg/l and this has since been raised to 0.55 mg/l. Trends submitted show that there was no chlorine disinfection from between approximately midnight on 12/02/22 to about midday on 14/02/22.</p> <p>Following receipt of satisfactory monitoring results and consultation by Irish Water with the HSE the BWN was lifted on 18/02/22.</p> <p>The delay in discovering the failure of the chlorination disinfection system in 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 once the chlorination failure was identified on 14/02/22 by WCCC.</p>	



2. Disinfection

		Answer
2.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes
Comment		
<p>Disinfection takes place using chlorination (with 10% sodium hypochlorite). Dosing is flow proportional and duty/assist dosing pumps with automatic switchover are in place.</p> <p>A low chlorine alarm of 0.55 mg/l and a high chlorine alarm of 2.5 mg/l are in place. There is no automatic shutdown based on high or low chlorine levels in the final water.</p> <p>Regular monitoring of residual chlorine in the network is undertaken with records reviewed showing levels > 0.1 mg/l.</p>		

		Answer
2.2	Are monitors and alarms operational via dial out and being responded to with a suitable cascade system in place?	No
Comment		
<p>There is a PMAC system in place. WCCC said that it is not possible to have a cascade system in place with the current PMAC system.</p> <p>On 16/03/22 Irish water confirmed that the text alarm for the Ballyogarty PWS has now been amended to include relief operational staff in any warning alarm texts. However there is no way to confirm that the alarms have been received by operational staff.</p>		

		Answer
2.3	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	Yes
Comment		
<p>The chlorine monitor is located after chlorine contact time has been achieved. The site target contact time is 23.40 mg.min/l with effective contact time of 24.87 mg.min/l achieved with a minimum free chlorine after contact time of 0.5 mg/l. At the audit the chlorine reading was 0.62 mg/l which indicated that adequate chlorine contact time is being achieved. A chlorine residual trend for February 2022 was submitted which showed that in general the chlorine trend is stable at 0.6 mg/l.</p>		



3. Management and Control

		Answer
3.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No
Comment		
Irish Water advised that the <i>Cryptosporidium</i> Source Risk Assessment Methodology is currently in development for groundwater sources nationally and so the protozoal compliance log treatment requirement has not been identified for the treatment plant yet.		

		Answer
3.2	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
Comment		
There are no shutdowns based on low or high chlorine levels in the final water. There is no treated water storage at the plant which means that in the event of a chlorination failure that there is a risk of inadequately treated water entering the supply.		

		Answer
3.3	Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?	No
Comment		
There is no turbidity monitor or alarms on the supply. As the source is a borehole it is unknown what turbidity levels are on an ongoing basis.		

		Answer
3.4	Are instrument calibrations within date?	No
Comment		
There were no calibration stickers on the chlorine monitor.		



4. Drinking Water Quality

		Answer
4.1	Have relevant failures to comply with the requirements of the European Union (Drinking Water) Regulations 2014, as amended, been notified to the EPA?	Yes
Comment		
There is persistently low pH (<6.5) in the Ballyogarty supply. The supply is on the Irish Water National pH file and is monitored regularly. Irish Water have said that the pH issue will be addressed under Phase 2 of the Irish Water Disinfection Programme.		

		Answer
4.2	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		
Irish Water said that the supply is not currently being monitored in accordance with Irish Water's Rationale for Determining the frequency of <i>Cryptosporidium</i> Monitoring in Public Water Supplies.		



5. Site Specific Issues

	Answer
5.1 Is the arsenic removal filtration system operating satisfactorily?	Yes
Comment	
<p>There are 2 no. bayoxide media filters at the planthouse which were installed to remove arsenic. According to WCCC, contractors visit the plant twice per year to service the filters and subsequent to the audit Irish Water submitted service records. The filters are backwashed every night. Monthly monitoring of treated water for arsenic is undertaken and the results submitted were satisfactory.</p> <p>However, there were no service stickers on the filter units to indicate when they were last serviced and when the next service is due and Irish Water should ensure that these are provided.</p>	

Recommendations

Subject	Ballyogarty Audit Recommendations	Due Date	01/05/2022
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) ensure that there is a cascade system for responding to alarms generated at the plant b) ensure that there is a documented procedure in place for responding to and escalating all alarms generated at the water treatment plant. The procedure should clearly document the corrective actions and set out delegation of responsibilities and c) ensure that all staff are trained on the alarm response procedures. 2. Irish Water should install automatic shutdown based on low and high chlorine levels in the final water. 3. Irish Water should install a continuous turbidity monitor with alarm at the plant. 4. Irish Water should submit a timeframe to undertake remedial actions to address the pH issue in the supply. 5. Irish Water should a) monitor the supply in accordance with the Irish Water Rationale for Monitoring <i>Cryptosporidium</i> in Public Supplies and b) identify the protozoal compliance log treatment requirement for the plant and address how any log treatment deficit will be addressed. 6. Irish Water should ensure that calibration stickers are clearly displayed on all monitoring equipment. 7. Irish Water should ensure that stickers displaying the service history are placed on the filtration units. <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, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 01/05/22 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 DW20220016 in any future correspondence in relation to this Report.</p>		