

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	Borrisokane
Organisation	Irish Water
Scheme Code	2800PUB1002
County	Tipperary
Site Visit Reference No.	SV22339

Report Detail	
Issue Date	12/05/2021
Prepared By	Criona Doyle

Site Visit Detail			
Date Of Inspection	23/04/2021	Announced	Yes
Time In	14:30	Time Out	15:05
EPA Inspector(s)	Criona Doyle		
Additional Visitors			
Company Personnel	Irish Water: Pat Duggan, Duane O'Brien. Tipperary County Council: Aidan Delaney, Edward Treacy, John Crowley.		

> Summary of Key Findings

(1) A Boil Water Notice was placed on the Borrisokane Public Water Supply (PWS) on 01/04/21 following the detection of *Cryptosporidium* in the supply in a sample taken on 30/03/21 (0.28 count /no. per 10L). *Cryptosporidium* was also detected in a further sample taken on 12/04/21 (0.092 count / no. per 10L). The audit found that the incident was suitably escalated and managed to protect public health.

(2) At present there is no treatment barrier in place 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 and complete the works without delay. Irish Water have commenced data gathering on site to determine if a temporary UV unit can be sourced in advance of the disinfection programme upgrade works which include the installation of a permanent UV disinfection system. Irish Water are also examining if the disinfection programme works at Borrisokane PWS can be prioritised and included as part of the 2021 programme of works for Co. Tipperary.

(3) The supply was added to the EPA Remedial Action List on 30/04/21 under the category inadequate treatment for *Cryptosporidium*.

> Introduction

The Borrisokane Public Water Supply (PWS) serves a population of 1,752 and produces 670m³/day. The source of the supply is a spring located on the treatment plant site. Treatment includes aeration for iron and manganese removal, chlorination and fluoridation. The audit was undertaken to assess the performance of Irish Water in providing clean and wholesome drinking water following the detection of *Cryptosporidium* in the Borrisokane Public Water Supply (PWS) on the 30/03/21 and 12/04/21. The supply was placed on a Boil Water Notice on 01/04/21, on the advice of the HSE, following the detection of *Cryptosporidium*.

> Supply Zones Areas Inspected

The audit consisted of a video conference call with Irish Water and Tipperary County Council staff. The Borrisokane water treatment plant was not visited during the audit due to COVID-19 restrictions. The audit included an assessment of the treatment process in place at the water treatment plant.



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?	Yes
Comment	
<p>On 01/04/21 Irish Water received confirmation that <i>Cryptosporidium</i> had been detected in a final treated water sample taken at the Borrisokane WTP on 30/03/21 (0.28 count /no. per 10L). Irish Water and Tipperary County Council consulted with the HSE which resulted in a Boil Water Notice (BWN) being placed on the supply on 01/04/21. Irish Water notified the EPA of the detection of <i>Cryptosporidium</i> and the placing of the BWN on 01/04/21.</p> <p>Following the <i>Cryptosporidium</i> detection Irish Water and Tipperary County Council carried out an investigation of the operation of the water treatment plant. No specific issues or incidents were identified as having occurred that would result in <i>Cryptosporidium</i> being present. No changes were observed in the water clarity, taste, odour or chlorine demand. No turbidity trend data was available for review for the period prior to the <i>Cryptosporidium</i> detection as a continuous turbidity monitor has yet to be installed in response to the previous EPA audit recommendation (audited 28/05/19).</p> <p>Irish Water requested genotyping from the laboratory and the results were awaited on the day of the audit. <i>Cryptosporidium</i> was not detected in the resample taken on 05/04/21.</p> <p>Tipperary County Council Environment Section undertook a source inspection on 13/04/21 and no specific activities in the surrounding area were identified as being the likely cause of the <i>Cryptosporidium</i> detection.</p> <p>On 16/04/21 the EPA received a notification from Irish Water confirming a second <i>Cryptosporidium</i> detection in the final treated water in a sample taken at the WTP on 12/04/21 result (0.092 count / no. per 10L). A further sample was taken on 19/04/21 which was clear for <i>Cryptosporidium</i>.</p> <p>Upgrade works were due to commence in 2022 at the Borrisokane WTP under the Irish Water Disinfection Programme. In response to the <i>Cryptosporidium</i> detection continuous UVT and turbidity monitors had been installed at the WTP in advance of the audit. UVT and turbidity trend data and flow rate data were being gathered to determine if a suitable temporary UV unit could be sourced in advance of the installation of the permanent UV unit which was to take place under the Disinfection Programme works. The expected completion date for the installation of the temporary UV unit and permanent UV unit could not be confirmed at the audit.</p> <p>Following the audit Irish Water confirmed on 23/04/21 that the current date for delivery of the works at Borrisokane under the Disinfection Programme is 2022 and that Irish Water are examining if the upgrade works at the Borrisokane PWS can be prioritised and included as part of the 2021 Disinfection Programme works for Co. Tipperary.</p> <p>Following the audit the Borrisokane PWS was added to the EPA's Remedial Action List, on 30/04/21, under the category inadequate treatment for <i>Cryptosporidium</i>.</p>	



2. Source Protection

2.1

	Answer
Is the abstraction source(s) adequately protected against contamination?	Yes
Comment	
<p>The supply is fed by a covered spring. Following the previous EPA audit (28/05/19) Irish Water carried out an assessment of the integrity of the spring cover (raw water) and reported that it is fit for purpose to prevent animal access and bird droppings.</p> <p>Prior to the <i>Cryptosporidium</i> detections there was no online turbidity monitor in place at the WTP. The EPA had recommended in the previous audit (28/05/19) that a turbidity monitor should be installed and Irish Water were progressing this under the County Tipperary Disinfection Programme works.</p> <p>Irish Water submitted the raw water monitoring data prior to the audit. Raw water monitoring data was available for the period 2017 to 2021. The data indicates low level <i>E. coli</i> detections in the raw water on all sampling dates with the counts generally < 10 MPN / 100mls. The highest <i>E. coli</i> result of 27 MPN / 100 ml was recorded on 15/09/2020. Monitoring of <i>Cryptosporidium</i> did not take place on the supply prior to 2021. <i>Cryptosporidium</i> was detected in the first sample taken from the supply on 30/03/21.</p> <p>Tipperary County Council Environment Section undertook a source inspection on 13/04/21 and no specific activities in the surrounding area were identified as being the likely cause of the <i>Cryptosporidium</i> detection. There was no evidence of landspreading in the vicinity of the source. The landuse in the area was grazing of sheep and lambs. It was outlined at the audit that Tipperary County Council Environment Section intend to write to the relevant landowners in May 2021 in relation to the requirements of the European Union (Good Agricultural Practice for the Protection of Water) Regulations 2014 (SI No. 31 of 2014).</p>	



3. Disinfection

		Answer
3.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes
Comment		
Trend data is available and indicates a stable trend. Details of the alarm set points are provided below.		

		Answer
3.2	Are monitors and alarms operational via dial out and being responded to with a suitable cascade system in place?	Yes
Comment		
A text alert is sent on all alarms to the duty caretaker, standby caretaker and supervisor.		

		Answer
3.3	Are duty and standby chlorine pumps/ UV units in operation?	Yes
Comment		
<p>Chlorine gas is currently used for disinfection. The chlorine dosing is fixed as the volume of water pumped is fixed and chlorine demand is stable. There are duty / standby chlorine dosing pumps with automatic switchover.</p> <p>It is proposed to install UV as the primary disinfection system with chlorination to provide secondary disinfection. The disinfection programme upgrade works include the switch over from chlorine gas to sodium hypochlorite (10-11%) for chlorination purposes. The permanent UV disinfection system when installed will operate on the basis of duty / standby UV units. The temporary UV disinfection system will have a duty unit only.</p>		

		Answer
3.4	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	No
Comment		

A residual chlorine monitor is located on the inlet to the WTP. There is no residual chlorine monitor after the reservoir to verify that contact time has been achieved. This is outstanding since the previous audit.

		Answer
3.5	Is there adequate chlorine contact time before the first connection?	Yes
Comment		
The contact time calculation was provided and indicates a contact time of 98.48 mg.min/l.		

		Answer
3.6	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	No
Comment		
The network residual chlorine level monitoring records indicate all levels were > 0.1 mg/l. The data submitted indicated that while monitoring is undertaken at a number of locations the frequency is limited to once per week.		



4. Management and Control

	Answer	
4.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No
Comment		
<p>The site is in the process of being assessed to determine the protozoal log treatment requirement under the updated Irish Water methodology. At present, until the sanitary survey is completed, the WTP is classed as having a log credit requirement of 4 log total which includes a 1 log penalty for no sanitary survey. It is proposed that the sanitary survey will be completed once COVID restrictions allow and the log credit requirement and any associated log deficit will be confirmed by Irish Water.</p>		

	Answer	
4.2	Have the recommendations from the previous EPA audit been satisfactorily addressed?	No
Comment		
<p>Two audit recommendations from the previous audit on 28/05/19 have not been fully completed to date. These being:</p> <ul style="list-style-type: none">• Irish Water is requested to confirm if there is an online turbidity monitor in place at the WTP and provide details of the turbidity alarm set point.• Irish Water should ensure that the residual chlorine monitor is located at a suitable location after contact time has been achieved. <p>The turbidity monitor was installed by 23/04/21 but the turbidity alarm set point could not be confirmed at the audit.</p> <p>In accordance with EPA Advice Note 3 a chlorine monitor must be installed at the appropriate location following disinfection i.e. after the appropriate contact time.</p> <p>These two outstanding recommendations have been included in this audit report. Irish Water and Tipperary County Council had intended to do these works under the Disinfection Programme works.</p>		

Recommendations

Subject	Borrisokane PWS Site Visit 2021	Due Date	12/06/2021
Action Text	<p>Recommendation(s)</p> <ol style="list-style-type: none"> 1. Irish Water should install a suitable barrier to prevent <i>Cryptosporidium</i> entering the Borrisokane PWS to ensure 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 ensure that the residual chlorine monitor is located at a suitable location after contact time has been achieved. 4. Irish Water should complete the installation and commissioning of the turbidity monitor and provide details of the alarm setpoints. 5. Irish Water should liaise with Tipperary County Council to ensure that all landowners are made aware of the setback distances in the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No. 31 of 2014) for the source of the supply. 6. Irish Water should ensure that monitoring of the residual chlorine is undertaken several times a week at different points on the network to include the network extremities. 7. Irish Water should notify the EPA of any changes to the HSE advice. <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 Regina Campbell, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 12/06/21 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 DW20210039 in any future correspondence in relation to this Report.</p>		