



Drinking Water Audit Report

County:	Meath	Date of Audit:	23 rd January 2019
Plant visited:	Trim Water Treatment Plant (scheme code 2200PUB1009)	Date of issue of Audit Report:	5 th April 2019
		File Reference:	DW2018/178
		Auditors:	Michelle Minihan Ruth Barrington
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014), as amended.</i> • <i>The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)</i> • The recommendations specified in the EPA <i>Drinking Water Report.</i> • EPA Drinking Water Advice Notes No.s 1 to 15. • The recommendations in the previous EPA Drinking Water Audit Report (dated 14th March 2018). 		

MAIN FINDINGS

- i. Using the log credits approach, Irish Water has determined that the Trim water treatment plant has a protozoal log credit requirement of 5. As currently set up, and under optimal process conditions, the Trim water treatment plant, using a DAFF and 2 no. Trident filters can provide a protozoal log score of 3. The barrier to *Cryptosporidium* entering Trim public water supply could not be verified as providing adequate protection, as evidenced by two detections of *Cryptosporidium* on 28/11/2018 and 09/01/2019.
- ii. Irish Water needs to submit an action plan and timeframe to the EPA for upgrade of the Trim Water Treatment Plant to address the log deficit.
- iii. Irish Water should take immediate action to clean the TRIDENT filters and ensure that follow up maintenance on the filters is completed.
- iv. Irish water should continue with the weekly *Cryptosporidium* monitoring programme.

1. INTRODUCTION

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 in response to the notification by Irish Water of the detection of *Cryptosporidium* in Trim public water supply on 28/11/18 and 09/01/2019.

Water is abstracted from the River Boyne and an on-site borehole. The treatment for water from the river source undergoes coagulation, flocculation, clarification and filtration, with two TRIDENT filters and one DAFF operating in parallel. At the time of the audit, the DAFF filter remained out of commission since the last EPA audit of March 2018 when significant deficiencies were identified in the efficacy of the DAFF. Disinfection is achieved using sodium hypochlorite

The opening meeting commenced at 2:30 pm at Trim water treatment plant. The scope and purpose of the audit were outlined at the opening meeting, and it was outlined that the focus of the audit would be two recent notifications for *Cryptosporidium* and the performance of the filters which provide the barrier to *Cryptosporidium* in the Trim Water Treatment Plant. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment plant. The audit observations and recommendations are listed in Section 2 and 4 of this report.

The following were in attendance during the audit.

Representing Irish Water:

Michael Cunniffe, Asset Operations Lead
 Fran Glancy, Drinking Water Compliance Analyst
 Andrew Boylan, Drinking Water Compliance Specialist

Representing Meath County Council:

John Gilsean, Engineer
 Helen McDonnell, Executive Environmental Technician
 Maeve Rowley, Environmental Technician
 Seamus Quinn, Plant Caretaker

Representing the Health Service Executive:

Dr. Keith Ian Quintyne, Consultant in Public Health Medicine
 Margaret Kelly, Senior Environmental Health Officer

Representing the Environmental Protection Agency:

Michelle Minihan, Senior Inspector
 Ruth Barrington, Inspector

2. AUDIT OBSERVATIONS

The audit process is a random sample on a particular day of a facility's operation. Where an observation or recommendation against a particular issue has not been reported, this should not be construed to mean that this issue is fully addressed.

1.	<p>Action Plan to deal with <i>Cryptosporidium</i></p> <ol style="list-style-type: none"> a. <i>Cryptosporidium</i> (0.06 occysts/10L) was detected in a sample taken of the final water at the Trim Water Treatment Plant on 26/11/18. It was not possible to determine the <i>Cryptosporidium</i> genotype due to insufficient number of oocysts. b. Following consultation with the HSE, it was determined that the exceedance did not constitute a risk to public health, as historic results for the supply had been compliant for <i>Cryptosporidium</i> and there had been no community notified cases of Cryptosporidiosis in the previous 12 weeks linked to the Trim public water supply. It was further noted that there had been a major weather event which had coincided with the 24-hour sampling period – Storm Diana on the 27th and 28th November 2018. c. <i>Cryptosporidium</i> of (0.01 occysts/10L) was then detected in a sample taken of the final water at the Trim Water Treatment Plant on 09/01/19. d. The barrier to <i>Cryptosporidium</i> entering Trim public water supply is provided by 1 No. DAFF filtration unit and 2 No. Trident filter units. At the time of the audit the DAFF filter remained out of operation, as it had been since March 2018. e. Irish Water has classified the source as a S3 which has the same requirements as a G5 groundwater source: “High risk (with microbiological contamination) – spring or bored well, water drawn < 10m, in lowland catchment with high concentration of cattle, sheep, horses
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	<p>or humans in immediate vicinity or upstream or water treatment outfall upstream". The protozoal log credit requirement is 5 and the current log credit score is 3, under optimal operation conditions.</p> <p>f. A monthly <i>Cryptosporidium</i> monitoring programme has been in place since March 2018 in response to a recommendation in the previous EPA audit report.</p> <p>g. On the day of the audit, the HSE representatives confirmed that there was no evidence of illness in the community associated with the detection of <i>Cryptosporidium</i> in the water supply. They are closely monitoring the situation and will continue to do so.</p>
2.	<p>Filtration</p> <p>a. Filtration involves use of two adsorption clarifiers/filters (TRIDENT) and a dissolved air flotation filter (DAFF). When all three are operating, flow is split evenly through all three filters. At the time of the audit the DAFF remained out of commission since the last audit in March 2018, and the flow is currently split evenly through the two TRIDENT filters.</p> <p>b. A backwash of TRIDENT 1 was observed during the audit. It was noted that the channel was dirty and some boils in the media were observed during the backwash.</p> <p>c. The caretaker informed the audit team that the TRIDENT units are backwashed up to 4 times in a 24-hour period.</p> <p>d. Since the last audit, the DAFF unit has been upgraded and the filter media has been replaced. SCADA is now operational and it is possible to trend the data provided.</p> <p>e. The audit team considered that the DAFF remaining out of commission is placing additional strain on the operation of the TRIDENT units and is a risk to the integrity of the <i>Cryptosporidium</i> barrier. The audit team was informed that the DAFF is expected to be returned to operations within the week following the audit.</p> <p>f. Irish Water were advised that when the DAFF is successfully returned to operation, both TRIDENT audits will need to have operational maintenance performed on them.</p>
3.	<p>Management & Control</p> <p>a. Irish Water should ensure that there is redundancy capacity on the final treated turbidity monitor, with spares available onsite in the event of a monitor failing to operate.</p> <p>b. Irish Water should ensure that operators receive training on new SCADA monitoring system and that operators use the online monitoring tool to verify the process is performing optimally and to understand the final water quality implications of changes in the performance of the plant.</p>

3. AUDITORS COMMENTS

This audit was carried out in response to two detections of *Cryptosporidium* in Trim public water supply. The audit found that the DAFF remained out of commission since the previous EPA audit of March 2018 but was due to be returned to operation within the week following the audit. The DAFF unit had filter media had been replaced and SCADA is now operational and it is possible to trend the data provided. It was the opinion of the audit team that the DAFF remaining out of commission placed additional strain on the operation of the TRIDENT units and is a risk to the integrity of the *Cryptosporidium* barrier.

Irish Water were advised that when the DAFF is successfully returned to operation, both TRIDENT units will need to have operational maintenance performed on them. Irish Water advised that this maintenance is expected to be undertaken in Q1 and Q2 2019.

The audit team also noted that staff at the plant would require training on the operation of the new SCADA system, as this would allow staff to verify that the treatment process was performing in an optimal manner and would also allow staff to use the SCADA as a tool to investigate when changes are identified in the operation of the plant.

4. RECOMMENDATIONS

1. Irish Water should submit an action programme and timeframe for the upgrade of the Trim Water Treatment plant to ensure that an adequate barrier for *Cryptosporidium* is put in place.
2.
 - a. Irish Water should ensure that immediate action is taken to verify the performance of the filters at the Trim Water Treatment plant to ensure a log credit removal of 3 is being provided by existing optimal filter operation.
 - b. Irish Water should identify an action plan to address the deficiencies in the filtration systems to ensure a protozoal log credit requirement of 5 is achieved under optimal operating conditions.
3. Irish Water should take immediate action to clean the TRIDENT units and ensure that maintenance on both units is completed.
4. Irish Water should continue the weekly programme of *Cryptosporidium* monitoring in Trim public water supply. If any oocysts are detected during the monitoring programme, Irish Water should immediately notify the HSE and EPA.
5. Irish Water should ensure that staff at the plant receive training on the operation of the new SCADA system and staff should use this online monitoring tool to verify the treatment process is performing optimally and to inform their investigations when changes are identified in the operation of the plant.
6. Irish Water should ensure there are back up turbidity monitor probes at the plant to ensure there is redundancy capacity as these monitors can fail regularly.
7. Irish Water should ensure that sampling points are located at representative points.

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 Ruth Barrington, Inspector, Drinking Water Team.

Irish Water should submit a report to the Agency within one month of the date of this audit report 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 timeframe 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 File Reference Number in any future correspondence in relation to this Report.

Report prepared by: _____ *Michelle Minihan.* _____ Date: 5th April 2019 _____

Michelle Minihan