

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	Abbeyleix 1 PWS
Organisation	Irish Water
Scheme Code	1600PUB1056
County	Laois
Site Visit Reference No.	SV24246

Report Detail	
Issue Date	07/02/2022
Prepared By	Orla Harrington

Site Visit Detail			
Date Of Inspection	25/01/2022	Announced	Yes
Time In	11:00	Time Out	12:35
EPA Inspector(s)	Orla Harrington		
Additional Visitors			
Company Personnel	Irish Water: Andrew Boylan, Clare Dowling, Eamon Connolly Laois County Council (operating under Service Level Agreement to Irish Water): Tom O'Carroll, Larry Gittens, Francis Hegarty Coffey Group (Contractor): Kieran O'Haire		

> Summary of Key Findings

1. The purpose of the audit was to assess the suitability of the Abbeyleix 1 Public Water Supply (PWS) for removal from the EPA's Remedial Action List (RAL). The Abbeyleix 1 PWS is on the EPA's RAL since Quarter 2 2019 due to inadequate treatment for *Cryptosporidium*.
2. Irish Water installed a new ultraviolet (UV) disinfection system at the Abbeyleix water treatment plant. Primary disinfection is achieved by chlorination, and the UV disinfection system is designed to inactivate *Cryptosporidium*. The use of both methods is a multi-barrier approach which provides full-spectrum pathogen control, to help safeguard drinking water.
3. The audit found that the new UV disinfection system was operating within its validated range, and there were appropriate alarms and controls in place to ensure the UV system operates as a *Cryptosporidium* barrier. Based on the audit findings, the EPA is satisfied to remove Abbeyleix 1 PWS from the RAL published at the end of January 2022.

> Introduction

Abbeyleix 1 PWS supplies a population of 1,893 people with a volume of approximately 810m³/day. Raw Water is abstracted from two spring source waters; Augheerish Spring and Maxwell Spring / Ballyglisheen Well. Treatment consists of disinfection (chlorination and UV).

Abbeyleix 1 PWS was added to the RAL in Quarter 2 2019 following an EPA audit on 23/07/2019 which highlighted treatment deficiencies at the plant. Irish Water's RAL action programme involved the installation of UV disinfection at the Abbeyleix water treatment plant to provide a barrier to *Cryptosporidium* entering the water supply. Construction and commissioning is complete and the UV disinfection system was in operation at the time of the audit.

The purpose of the audit was to verify if Abbeyleix 1 PWS can be removed from the EPA's Remedial Action List.

> Supply Zones Areas Inspected

The audit comprised of a site visit to the new UV disinfection system at Abbeyleix water treatment plant.



1. Disinfection

1.1

		Answer
Is the UV system suitably validated?		Yes
Comment		
<p>1. The new UV disinfection system comprises of two Wedeco LBX 90e UV reactors in a duty-standby arrangement with automatic switchover if the duty UV unit fails for any reason. There is also a scheduled changeover of the UV units every 12 hours.</p> <p>2. During the audit, the auditor examined plates attached to both reactors indicating the validation criteria for the units. Irish Water provided a confirmation of validation letter from the UV manufacturer subsequent to the audit, confirming that the UV system is validated to operate within a specified range. The UV units are validated to operate at a flow of 40m³/hr and deliver a dose of 40mJ/cm² at 70% UVT. The UV units are linked to a continuous UVT and dose monitor. The HMI displayed the following for Unit No. 2, which was in operation at the time of the audit: UVT 96.6%, Red Dose 116.36 mJ/cm², flow 32.7m³/hr and Power 50%. The UV disinfection system was operating within its validated range during the audit.</p> <p>3. However access to trends is limited as results have not been incorporated on the county wide SCADA system so cannot be accessed remotely by operators. The auditor also noted that a maintenance schedule will need to be put in place for the continued successful operation of the UV disinfection units.</p> <p>4. The minimum validated dose is 40 mJ/cm² and the plant is alarmed and programmed to automatically shutdown if the UV dose falls below 40 mJ/cm². There is also automatic shutdown of the UV system if the UVT reaches 70% (delay of 120 seconds).</p> <p>5. Irish Water advised that the UV units provide a validated UV disinfection specification suitable for a 3 log inactivation for <i>Cryptosporidium</i> and <i>Giardia</i>.</p>		



2. Supply on the Remedial Action List

2.1

Do the audit findings support progress made with the Remedial Action List upgrades?

Answer

Yes

Comment

Irish Water's action programme to address the RAL risk at Abbeylax water treatment plant was to install UV disinfection at the plant. The EPA audit found that Irish Water has installed a new UV disinfection system to address the lack of a *Cryptosporidium* barrier and based on audit findings the EPA is satisfied to remove Abbeylax 1 PWS from the RAL.

2.2

Is further information needed to assess completion of the Remedial Action List upgrade?

Answer

No

Comment

Prior to the audit, Irish Water submitted details of the new UV disinfection system and UV operational data for 60 days (from 02/10/21 to 26/11/21). During the audit, the EPA requested Irish Water to submit a cover letter from the UV manufacturer to verify that the Abbeylax UV disinfection system is validated to operate within its specified range. On 26/01/22, Irish Water submitted the requested information to the satisfaction of the EPA.



3. Site Specific Issues

3.1

Is the plant operator fully trained on the operation and control of the UV disinfection system?

Answer

No

Comment

Coffey Water Ltd were contracted by Irish Water to deliver the new UV disinfection system. Irish Water confirmed that training was provided to plant staff in September 2021. Currently the contractors carry out any UV maintenance work. Irish Water confirmed that further training will be provided to the plant operators prior to the formal handover from Coffey Water Ltd estimated to be sometime in October 2022.

Subject	Abbeyleix Audit Recommendations [25/01/22]	Due Date	07/03/2022
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 ensure that the UV disinfection system operates within its validated range at all times, to ensure an adequate <i>Cryptosporidium</i> barrier from Abbeyleix water treatment plant. 2. Irish Water should ensure that the operators of Abbeyleix water treatment plant are fully trained in the operation and control of the UV disinfection system, before it is formally handed over from the contractor. 3. Irish Water should ensure that there are standard operating procedures in place for routine and periodic check and maintenance activities to be undertaken by the plant operator on the UV system. 4. Irish Water should ensure that suitable trended data is available for use by plant operators (e.g through the county wide SCADA) to assess and respond to water quality trends. <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 Ruth Barrington, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 07/03/22 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>		