Site Visit Report

Under the *European Union (Drinking Water) Regulations 2014* as amended, the Environmental Protection Agency (EPA) is the supervisory authority in relation to Uisce Éireann and its role in the provision of public drinking water supplies. This audit was carried out to assess the performance of Uisce Éireann in providing clean and wholesome water to the public water supply named below.

The audit process is a sample of the performance of a water treatment plant and public water supply on a given date.

Water Supply Zone

Name of Installation	Rahan-Agall/Hollimshill PWS
Organisation	Uisce Éireann
Scheme Code	2500PUB1015
County	Offaly
Site Visit Reference No.	SV27529

Report Detail

Issue Date	14/03/2023
Prepared By	Lisa Noone

Site Visit Detail

Date Of Inspection	17/02/2023	**Announced**	Yes
Time In	10:30	**Time Out**	12:30
EPA Inspector(s) **Additional Visitors**	Lisa Noone		
Company Personnel	Uisce Éireann: Ed Haythornthwaite, Joseph Moran, Michael McArdle, Kieran Gaffney Offaly County Council (working in partnership with Uisce Éireann): John Daly, Joe Coleman, Clodagh Graham, Catherine Casey, Jimmy Croome		

Summary of Key Findings

1. The audit found a number of shortcomings at Rahan Water Treatment Plant (WTP) in relation to the documentation of alarm and incident procedures as well as the cascade system currently place for response to alarms by operational personnel.

2. Current alarm set-points and continuous monitoring at the plant were found to be inadequate. Uisce Éireann stated that a full telemetry upgrade programme is scheduled for the coming months for the WTP.

3. In addition, no chlorine contact time calculation was available for the WTP.

Introduction

Rahan - Agall and Holmshill Public Water Supply (PWS) serves a population of approximately 1,129 in Rahan, Co. Offaly, with an average of 1,000m3 of treated water being produced at the plant per day. The Rahan WTP is fed by three groundwater boreholes; Agall Borehole located away from the main treatment works supplies raw water to a mixing tank at the plant, and an additional two boreholes at Rahan WTP which operate in duty/standby mode supplementing the supply as required.

The treatment at the plant comprises of chlorination and fluoridation and storage on-site in a circular reservoir with a capacity of approximately 392m3. The WTP is currently in a commissioning phase for installation of UV treatment on site, due for completion within the next number of months.

The audit of Rahan - Agall/Holmshill WTP was carried out to assess the performance of Irish Water in providing clean and wholesome drinking water.

Supply Zones Areas Inspected

The audit comprised of a site visit to Rahan WTP and involved an assessment of the alarms/inhibits at the treatment plant and the procedures in place to ensure appropriate management and oversight of same.

1. Alarms, Inhibits & Oversight Audits 2023

		Answer
1.1	Is there a documented site specific incident response and incident escalation process?	No

Comment

1. There is no documented site-specific incident response detailing contacts for escalation and relevant trigger levels at the WTP.

		Answer
1.2	Did UÉ confirm the target residual for chlorine contact time?	No

Comment

1. At the time of the audit, no contact time (Ct) calculation could be provided by Uisce Éireann for the Rahan - Agall/Holmshill drinking water supply.

2. Uisce Éireann were requested to provide the Ct calculation following the audit but this has not been provided to date.

		Answer
1.3	Is continuous monitoring located appropriately to verify treatment performance?	No

Comment

1. Continuous raw water turbidity monitoring is in place for individual groundwater boreholes, however there is no combined borehole turbidity monitoring at the outlet of the mixing chamber or inlet of the reservoir to verify turbidity levels prior to disinfection.

		Answer
1.4	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No

Comment

1. An alarm setting is in place for Agall borehole and both Holmshill borehole 1 and 2 for a turbidity of 1NTU for 3,600 seconds (1 hour). The alarm setpoints for turbidity had been altered in the week prior to the audit during the commissioning of variable speed drives at the WTP for the control and regulation of the borehole pump speed.

2. A time delay of 1 hour prior to alarm generation is considered too long to allow a timely and effective response by operational staff.

		Answer

1.5	Are dial out arrangements suitable to allow a timely response?	No

Comment

1. Critical alarms are dialled-out on a group-basis to the site caretaker and four additional operational personnel. Alarms are responded to on a hierarchical basis, however there is no way of verifying that they have been responded to.

2. Uisce Éireann stated that a full telemetry upgrade programme is scheduled for the coming months for the WTP, and the dial-out alarm system will be reviewed at this stage.

		Answer
1.6	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No

Comment

1. There is no automatic plant shutdown in the event of critical disinfection failure, high or low residual chlorine or elevated turbidity. Plant shutdown can be carried out manually at the WTP only.

		Answer
1.7	Is there a documented alarm response procedure?	No

Comment

1. There is no documented site specific procedure detailing how alarms are responded to at the WTP.

Recommendations

Subject	Rahan - Agall/Holmshill Audit 17/02/2023	Due Date	14/04/2023
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay:** 1. Update the Uisce Éireann Incident Communications Response Guidance Form with site specific information including contacts for escalation and relevant trigger levels protecting critical processes at the water treatment plant. 2. Submit a site-specific chlorine contact time calculation to the EPA. In the interim, Uisce Éireann should ensure that the minimum WHO specified contact time of 15mg.min/l is achieved at the WTP and that the first connections are receiving appropriately disinfected water. 3. Examine the feasibility of installing a continuous monitor for combined borehole turbidity at the outlet of the mixing chamber or the inlet of the reservoir to verify that water turbidity is <1NTU at disinfection. 4. Put in place appropriate alarm set-points controlled by the regulatory 1NTU turbidity on Agall Well and both Holmshill boreholes, as detailed in the *EPA Water Treatment Manual: Filtration.* 5. Install an automatic shutdown of the plant for high turbidity and high/low chlorine residual setpoints to ensure adequately disinfected water is being supplied to consumers. The chlorine residual alarm level should reflect the minimum free chlorine concentration required at the Ct validation point as outlined in the contact time calculations to be submitted. 6. Put in place an appropriate cascade system for responding to alarms generated at the plant which allows for verification that an alarm has been responded to. 7. Put 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. **Actions required by Uisce Éireann:** During the audit, Uisce Éireann representatives were advised of the audit findings and that action must be taken by Uisce Éireann to address the issues raised. Uisce Éireann should submit a report to the EPA on or before 14/04/2023 detailing the actions taken and planned, with timescales, to close out the above recommendations. The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.		