

Site Visit Report

Under the *European Union (Drinking Water) Regulations 2023*, 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	Killybegs
Organisation	Uisce Éireann
Scheme Code	0600PUB1094
County	Donegal
Site Visit Reference No.	SV28262

Report Detail	
Issue Date	17/11/2023
Prepared By	Maria O'Connell

Site Visit Detail			
Date Of Inspection	17/10/2023	Announced	Yes
Time In	12:00	Time Out	13:52
EPA Inspector(s)	Maria O'Connell Ruth Barrington		
Additional Visitors			
Company Personnel	Fionnuala Bonner - Uisce Eireann Sean Gallagher - Area Supervisor, EPS Shane McCloskey - Caretaker, EPS		

> Summary of Key Findings

1. It was noted that the alarm set points for the “Low” and “Low Low” residual chlorine alarms were set at 0.6mg/l and 0.5mg/l respectively. However the minimum free chlorine level after contact time according to chlorine contact time calculation was 0.8mg/l at the time of the audit.
2. There is no plant shutdown on low residual chlorine readings as per the EPA Water Treatment Disinfection Manual.
3. The water treatment plant alarm history was not available on the SCADA system on site at the time of the audit.
3. A plastic (open top) drum (approx. 200lts) was noted on top of the contact tank and was discharging its contents (rainwater) to the contact tank once the water level within it reached the outlet pipe in the drum. The drum and ancillary equipment were used for a previous application which has now ceased.
4. A significant amount of waste chemical product was noted in the pre soda injection area and sodium hypochlorite storage bunds.
5. The scope of the current plant upgrades was not clear at the time of the audit.
6. Access to the post contact tank chlorine monitor was limited due to the commencement of construction works on site.

> Introduction

The Killybegs public water supply scheme serves a population of 4,420 with the source of raw water for the supply abstracted from Lough Adeery. The Killybegs water treatment plant was originally commissioned in 1994. Since March 2022 the plant is operated under contract by EPS Ltd. The treatment plant was upgraded in 2020 and groundworks for further plant upgrades had commenced on site at the time of the audit. Water treatment at the Killybegs water treatment plant consists of pre-treatment pH adjustment, coagulation, flocculation and clarification (CFC), pre-chlorination (for manganese), rapid gravity filtration followed by chlorination and post pH adjustment. Previous elevated levels of manganese prompted the water supplier to provide additional treatment via chlorine oxidation. Average water production is 2,945.00m³/day. Large demand variations can occur due to fish processing and tourism seasons. The audit was undertaken to assess Uisce Éireann’s performance in producing clean and wholesome water focusing on the alarms and inhibits in place at the treatment plant and the procedures in place to ensure appropriate oversight of treatment processes.

> Supply Zones Areas Inspected

The audit included a site tour of the treatment processes at Killybegs water treatment plant, interviews with Uisce Éireann and EPS staff as well as reviews of the continuous online turbidity and chlorine residual trends and critical alarm set points. The abstraction source and off-site treated water reservoirs were not visited as part of the audit.



1. Disinfection

	Answer
1.1	Is there a suitable monitoring frequency for residual chlorine in the network with records available? No
Comment	
No network residual chlorine monitoring records were available at the time of the audit	



2. Alarms, Inhibits & Oversight Audits 2023

	Answer	
2.1	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	Yes
Comment		
A chlorine residual monitor was in place after contact time but was not accessible at the time of the audit due to site preparation works. Duty and standby dosing pumps with automatic changeover were confirmed on site.		

	Answer	
2.2	Is suitable continuous monitoring in place to verify treatment performance?	No
Comment		
At the time of the audit it was noted that there was no continuous monitoring for pH at the plant which can have implications in terms of optimising dose control.		

	Answer	
2.3	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No
Comment		
High and low alarm setpoints were in place based on the output of the post-dosing chlorine monitor and the chlorine contact time verification monitor. The post reservoir "Low" set point was noted at 0.6 mg/l while "Low Low" point was 0.5mg/l. However the minimum free chlorine amount according to the contact time calculation submitted was 0.8mg/l. The high and high alarm set points were noted at 2.50mg/l and 2.60 mg/l respectively at the time of the audit.		
There is no online continuous monitoring for pH at the plant and therefore no alarms regarding this parameter.		

	Answer	
2.4	Has UÉ carried out an alarm and inhibit review at the water treatment plant?	No

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

The only plant shutdown is based on the final water turbidity monitor which has a high warning alarm 0.6 NTU and a plant shutdown setpoint of 0.9 NTU with a 3 minute time delay (180secs). This shutdown time delay is in accordance with the 3-minute delay specified in the EPA Water Treatment Manual: Filtration.

There are no shutdowns based on high and low chlorine readings.

2.6

		Answer
	Is there a documented alarm response procedure?	No
Comment		
There is an EPS documented alarm response procedure in place however it was not available at the time of inspection.		

Recommendations

Subject	Killybegs Audit Recommendations 2023	Due Date	07/12/2023
Action Text	<p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendation(s) without delay.</p> <ol style="list-style-type: none">1. Ensure that the alarm set points for the low residual chlorine alarms are amended to enable a minimum of 0.8mg/l of residual chlorine as per the chlorine Ct calculation submitted to the EPA. The alarms should align with the guidance outlined in the <i>EPA Water Treatment Disinfection Manual</i> as regards levels and time delays.2. Ensure the installation of an automatic plant shutdown should chlorine concentration after contact time fall below the target value/timeframe. See <i>EPA Water Treatment Disinfection Manual</i>.3. The water treatment plant alarm history should be made available on the SCADA system to the plant operator to improve operational oversight of plant performance.4. The weekly alarm tests should be recorded and retained on site to demonstrate proactive management of alarms.5. The drum located on top of the contact tank and any ancillary equipment should be removed from this location immediately and disposed of appropriately.6. The significant amount of waste chemical product noted in the pre soda dosing area and the sodium hypochlorite storage bunds should be removed and disposed of appropriately.7. During plant upgrades access to critical equipment and infrastructure should be maintained, i.e. chlorine monitoring point after contact time and details of the plant upgrade works (including timeframes for completion) should be submitted to the EPA.8. Network sampling results for September and October 2023 (for this supply) should be submitted to the EPA.9. Submit a copy of the approved alarm response procedure for the water treatment plant to the EPA. <p>Actions required by Uisce Éireann</p> <p>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.</p> <p>Uisce Éireann should submit a report to the EPA on or before 17th December 2023 detailing the actions taken and planned, with timescales, to close out the above recommendations.</p> <p>The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.</p>		