

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	an Mhín Aird No. 1 PWS (060D)
Organisation	Uisce Éireann
Scheme Code	1300PUB1042
County	Kerry
Site Visit Reference No.	SV30531

Report Detail	
Issue Date	24/10/2024
Prepared By	Regina Campbell

Site Visit Detail			
Date Of Inspection	10/10/2024	Announced	Yes
Time In	11:00	Time Out	12:20
EPA Inspector(s)	Regina Campbell		
Additional Visitors			
Company Personnel	Uisce Éireann: Tommy Roche, Sharon O' Dwyer, Eoin O' Connell. Kerry County Council (working in partnership with Uisce Éireann): Seamus O' Mahony, Seamus King, Tim Foley		

> Summary of Key Findings

1. Exceedances of the trihalomethane drinking water limit of 100 ug/l have been notified to the EPA in An Mhin Aird No. 1 public water supply across two months in 2024 (sample dates 15/04/24 and 23/08/24). Uisce Éireann are undertaking monthly monitoring for trihalomethane in the network to determine if the issue is persistent.
2. It is likely that the exceedances are caused by high organics in the lake source that react with chlorine and result in trihalomethane formation.
3. Uisce Eireann are examining interim and long term measures to address the trihalomethane formation risk.
4. There are no shutdowns on the disinfection systems at the plant which means that there is a risk of inadequately treated water entering the supply in the event of an operational issue at the plant.

> Introduction

An Mhin Aird No. 1 PWS serves a population of 406 and produces 477 m³/day according to information on the EPA's Eden system (2024 figures).

Raw water is sourced from Lough Bhearna na Gaoithe. Treatment consists of pressure filtration prior to UV disinfection (protozoal barrier), primary disinfection via chlorination and final pH correction using caustic soda.

The audit was undertaken in response to exceedances of the trihalomethane (THM) parametric value of 100 ug/l in the supply on the following dates in 2024: 1 no. exceedance on 15/04/24 (107 ug/l) and 3 no. exceedances on 23/08/24 (range 147-176 ug/l).

> Supply Zones Areas Inspected

The pressure filters, UV system and chlorination system were inspected.



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
<p>Comment</p> <p>1. The audit was undertaken in response to exceedances of the trihalomethane parametric value in An Mhin Aird No. 1 Public Water Supply (PWS) on the following dates in 2024: 1 no. exceedance on 15/04/24 (107 ug/l) and 3 no. exceedances on 23/08/24 (range 147-176 ug/l).</p> <p>2. In response to the initial exceedance in April, Uisce Éireann said that there was no regular scouring programme on the supply however the network was flushed on the 11th, 12th, 19th & 23rd April at various locations.</p> <p>3. Further exceedances were found in 3 no. samples taken on 23/08/24 in locations in the network (range 147-176 ug/l) and in a sample taken of the water leaving the plant which indicates THM is formed at the plant.</p> <p>4. Kerry County Council said that the lake source water is high in organics with UVT averaging between 70- 80%. They said that the heavy rainfall experienced during the year has increased the organic load in the source water which is leading to THM levels in exceedance of the drinking water limit of 100 ug/l. The UVT of the water on the day of the audit was 76%, raw water turbidity was 0.910 NTU and final water turbidity was 0.22 NTU. UVT of the water rarely goes above 80%.</p> <p>5. There is a damaged GAC vessel inside in the plant house. Kerry County Council said that if this vessel is repaired and put back into operation, it might be possible to treat the water to lower THM formation. However the vessel is of an old type design and operation of the GAC vessel in the long term may not be feasible.</p> <p>6. Uisce Éireann consulted with the HSE in relation to all of the THM exceedances having completed an initial risk assessment. Taking this risk assessment into account the HSE deemed the incidents did not pose a risk of such significance that consumers should be notified immediately.</p>	



2. Filtration

	Answer	
2.1	Are the filters designed and managed in accordance with EPA guidance?	No
Comment		
<p>There are two pressure filters that operate in parallel. The purpose of the pressure filters is to lower turbidity levels in the water prior to UV disinfection. However there is no turbidity monitor at the point of disinfection. The only turbidity monitor is at the outlet of the reservoir which is not sufficient.</p> <p>There is also a GAC vessel at the plant which is not in operation. The vessel is leaking and needs to be fixed.</p>		

	Answer	
2.2	Does monitoring indicate that the filters are operating effectively?	No
Comment		
<p>See point 2.1 above. There is no turbidity monitor on either filter or on the combined filters to indicate that the filters are operating effectively.</p>		



3. Disinfection

		Answer
3.1	Is the UV system suitably validated?	Yes
Comment		
<p>There is a duty/standby Trojan swift SC UV system in place with automatic switchover. The plate attached to the unit indicates that the operating range of the unit is UVT > 70% and flow < 30 m3/hr.</p> <p>The UVT on the day was 76% and flow was 23.3 m3/hr. The UV dose displayed on the HMI was 37.82 mJ/cm2. The purpose of the UV system is to provide a 3 log barrier to <i>Cryptosporidium</i> prior to primary disinfection via chlorination.</p> <p>There was no validation certificate available on the day of the audit for the UV system.</p>		

		Answer
3.2	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	No
Comment		
<p>Records submitted after the audit showed that there are gaps of up to 6 days between monitoring for residual chlorine in the network.</p>		



4. Reservoirs and Distribution Networks

	Answer
4.1 Is the distribution network adequately maintained to protect drinking water quality?	No
Comment	
<p>Uisce Éireann said that there is no regular scouring programme on An Mhin Aird No.1 supply.</p> <p>A regular scouring programme may assist to lower THM formation risk in the network.</p>	



5. Management and Control

		Answer
5.1	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No
Comment		
There are no shutdowns on high turbidity, low UV dose, low UVT or high and low chlorine levels in order to prevent the entry of inadequately treated water entering the network.		

		Answer
5.2	Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?	No
Comment		
The time delays on the UVT, chlorine, pH and turbidity alarm settings are all 20 minutes which is too long to alert operators to deteriorating water quality and/or the failure of a critical treatment process.		

		Answer
5.3	Did treatment process trends demonstrate that data was being captured and recorded at all times?	No
Comment		
The UV dose is displayed on the HMI. However it is not trending correctly on SCADA.		



6. Site Specific Issues

	Answer	
6.1	Is the correct source listed on the EPA EDEN system?	No
Comment		
The current Lough Bhearna na Gaoithe source is not listed on the EPA Eden system. The system lists two old sources that are no longer used.		

	Answer	
6.2	Is there a documented site specific incident response and incident escalation process?	No
Comment		
There is no site specific incident response procedure displayed at the water treatment plant with site specific contacts and trigger levels.		

Recommendations

Subject	An Mhin Aird No. 1 Audit Recommendations	Due Date	24/11/2024
Action Text	<p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</p> <ol style="list-style-type: none">1. i) Provide an update on interim and long- term measures to ensure compliance with the THM parametric value; ii) undertake regular scouring of the network to minimise levels of THM formation and iii) monitor for THM monthly at representative points in the network and notify the EPA of any exceedances.2. i) Confirm that the UV dose is trending correctly on the SCADA system and ii) submit the validation certificate for the UV system.3. Reduce the time delays on the chlorine, turbidity, pH and UVT alarms to ensure that the operator can respond to any treatment issue in a timely manner.4. Install a turbidity monitor with alarm after the pressure filters to ensure that turbidity is < 1 NTU at the point of disinfection.5. Display the incident escalation flowchart at the plant with site specific contacts and trigger levels.6. Ensure that monitoring of residual chlorine is undertaken in the network at representative locations several times a week.7. Update EDEN with the correct source for the supply. <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 24/11/2024 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>		