

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	Kiltimagh PWS
Organisation	Irish Water
Scheme Code	2200PUB1017
County	Mayo
Site Visit Reference No.	SV25376

Report Detail	
Issue Date	31/03/2022
Prepared By	Ruth Barrington

Site Visit Detail			
Date Of Inspection	03/03/2022	Announced	Yes
Time In	11:45	Time Out	13:45
EPA Inspector(s)	Ruth Barrington		
Additional Visitors			
Company Personnel	Irish Water: Thomas Gibbons, Eoin Hughes Mayo County Council (working under Service Level Agreement to Irish Water): Mark O'Donnell, Imelda O'Donnell, Maria Munnelly, Seamus Rooney		

> Summary of Key Findings

1. Automatic shutdowns had been disabled at Kiltimagh Water Treatment Plant (WTP) on 01/02/2022 during repairs of a major leak close to the WTP. The shutdown settings were not enabled after the repair was complete. A procedure has since been put in place at the WTP to control suspension of shutdowns during maintenance or repair works.
2. Low chlorine alarms generated in the early hours of 02/02/2022 did not dial out according to the protocol assigned and visible on the site HMI screen. During the investigation carried out by Mayo County Council, different alarm priorities set on the telemetry supplier's systems were identified. Alarm priorities for Kiltimagh Water Treatment Plant have been reviewed and aligned with the on-site HMI since the incident.
3. A site specific Incident Communication Response Chart was in place at Kiltimagh Water Treatment Plant prior to the incident. This process for escalating and acting on a disinfection failure within Mayo County Council was not followed on 02/02/2022, with the result that inadequately disinfected water continued to enter the network for 4.5 hours after Mayo County Council operational staff arrived on the site on the morning of 02/02/2022.

> Introduction

The Kiltimagh Public Water Supply (PWS) serves a population of 1,618 with water abstracted from the River Glore and treated at Kiltimagh Water Treatment Plant (WTP). A Boil Water Notice (BWN) was placed on the supply from 02/02/2022 to 04/02/2022 following inadequately disinfected water entering the supply for a period of 7 hours on 02/02/2022. This audit was undertaken to assess the measures taken by Irish Water and Mayo County Council to prevent similar incidents occurring in future.

> Supply Zones Areas Inspected

The audit was carried out on-site at Kiltimagh Water Treatment Plant. The scope of the audit included the events leading up to the Boil Water Notice imposed on 02/02/2022, and revised procedures and controls in place at the water treatment plant.



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?	No
<p>Comment</p> <p>1. A major leak occurred on the treated water main close to Kiltimagh WTP on 01/02/2022. The WTP was required to be shutdown in order to fix the leak. To bring the WTP back online, water is required in the clearwater tank and so automatic shutdowns were disabled to allow water into the clearwater tank without triggering further shutdowns. On completion of the plant restart, the automatic shutdowns should have been restored by Mayo County Council prior to leaving the site late in the evening of 01/02/2022. This did not happen and the WTP operated overnight without the protection of automatic shutdown settings.</p> <p>2. In the early hours of 02/02/2022, the chlorine analyser reached the high chlorine trigger of 2.2mg/l which shutdown the chlorine dosing pumps. The control programme was set to re-start dosing at 2.0 mg/l but neither of the pumps started up as intended, with the result that the chlorine residual continued to decrease, reaching zero at around 04:30 a.m.</p> <p>3. The failure of the chlorine pumps to re-start has been investigated by Mayo County Council and Irish Water since the incident. It was found that chlorine analyser reagents had been changed prior to the incident and there was a quality issue with the new batch which caused blockages within the sample tubing. The analyser tubing has been replaced at Kiltimagh WTP and replacement tubing at other water treatment plants in Co. Mayo which used the same reagent are scheduled. The brand of reagent used has also been changed.</p> <p>4. Since the shutdowns were not enabled, the water treatment plant continued to operate in the absence of chlorine dosing.</p> <p>5. The lack of chlorine dosing was not escalated correctly by Mayo County Council operational staff on arrival at the WTP on the morning of 02/02/2022. The procedure set out in the Incident Communication Response chart was not followed with the result that Mayo County Council engineering staff and Irish Water were not aware that the plant shutdown did not operate, although the chlorine failure overnight was known and a maintenance visit was scheduled to address this.</p> <p>6. The WTP was not fully shut down until 11.30 a.m. following a conversation between operational and engineering staff from Mayo County Council during which the continued operation of the WTP without chlorine dosing was raised. Water which had no chlorine residual entered supply for a total of 7 hours (from 04:30 to 11:30 on 02/02/2022).</p> <p>7. Consultation with the HSE resulted in a Boil Water Notice being immediately placed on the supply, to last until chlorine residuals could be proven in the supply network. This data was available on the 04/02/2022, when the BWN was lifted.</p> <p>8. There was no formal procedure in place governing the disabling of shutdowns at Kiltimagh WTP during repairs or maintenance, and their restoration once work is complete and the WTP is back in production. A procedure has since been developed and was available during the audit.</p> <p>9. Mayo County Council described that the absence of the automatic shutdown was compounded by issues with the priority settings placed on chlorine residual alarms. While Council staff believed that these were assigned High Priority as indicated on their HMI screen at the water treatment plant, it was confirmed by the telemetry supplier prior to the audit that there were additional conflicting and over-riding priorities assigned within their systems which prevented immediate dial out.</p> <p>10. Mayo County Council staff stated that they had queried the status of dial outs at Kiltimagh WTP with the telemetry supplier due to the automatic shutdown on residual chlorine being triggered over the weekend of 29/01/2022 to 30/01/2022. While the automatic plant shutdown as intended during that time, staff did not receive the text alarm notification. The auditor was informed by Mayo County Council that a full written response from the telemetry supplier to this query was not received until the day prior to the EPA audit, and that there is no ongoing support or maintenance contract in place with the telemetry supplier on completion of the Irish Water Disinfection Programme. Since the incident, the alarm settings have been reviewed and aligned to the intended priorities.</p>	



2. Management and Control

		Answer
2.1	Is there a documented alarm response procedure?	Yes
Comment		
<p>1. A documented alarm response is in place at Kiltimagh Water Treatment Plant. It follows the template provided by Irish Water and rolled out nationwide in 2021, with operator training and site specific amendments tailored to Mayo County Council and Kiltimagh PWS. The auditor considered that the procedure and contact details were properly documented and provided clear instructions for operator action during a disinfection incident.</p> <p>2. The procedure was not followed by the Mayo County Council operational staff on-site during the incident on 02/02/2022. The absence of a chlorine residual was not communicated to the Mayo County Council supervisor immediately when operational staff arrived on site, and Mayo County Council engineering staff were only informally notified later in the morning of 02/02/2022.</p>		

		Answer
2.2	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	Yes
Comment		
<p>1. Kiltimagh Water Treatment Plant has automatic shutdowns (inhibits) on residual chlorine and turbidity to prevent inadequately disinfected water entering the network. However, during emergency works on 01/02/2022 to repair a major leak on the treated water mains, the plant inhibits were disabled to allow the clear water tank to fill and for the water treatment plant to be restarted. Following the plant restart and due to operator error, the inhibits were not restored in the early hours of 02/02/2022.</p> <p>2. At the time of the incident on 02/02/2022, there was no procedure governing the temporary removal of inhibits during specific repairs or maintenance. A procedure has since been implemented by Mayo County Council and this, based on a tag in/out system, was in place at the time of the audit.</p> <p>3. A further mitigation measure is planned by Mayo County Council whereby a repeater alarm will dial out repeatedly to remind operators when inhibits are suspended. Quotes for providing this alarm at Kiltimagh WTP were being sought at the time of the audit.</p> <p>4. Reviews of other WTP alarm settings and inhibits for disinfection and protozoal log requirements are planned as part of the drinking water safety plan's Asset Management Improvement Plan for Kiltimagh Public Water Supply. These settings were not assessed as part of this audit.</p>		

		Answer
2.3	Have the recommendations from the previous EPA audit been satisfactorily addressed?	No
Comment		
<p>1. A recommendation remains in progress from the previous EPA audit on 14/10/2021, relating to management of sludge from Kiltimagh WTP which is currently discharged to the River Glore. Further updates on that recommendation should be provided against this current audit report for convenience in reporting.</p>		

Recommendations

Subject	Kiltimagh Audit Recommendations 03/03/2022	Due Date	29/04/2022
Action Text	<p>Recommendations</p> <p>Irish Water is responsible for ensuring a safe and secure supply of drinking water. To address the issues described in this report, Irish Water should implement the following recommendations without delay.</p> <ol style="list-style-type: none">1. Irish Water should ensure that operational staff are adequately trained and resourced to respond appropriately to incidents and emergencies. Full training should be provided to all relevant staff, including relief or stand-in staff, on the new procedure governing temporary suspension of automatic shutdowns, and the use of the planned repeater alarms.2. Irish Water should provide confirmation that the issues with alarm prioritisation and reported inconsistencies between site HMI details and those of the telemetry supplier, have been closed out at Kiltimagh WTP and the other treatment plants in Co. Mayo which were referred to during the audit.3. Irish Water should ensure the completion as planned of scheduled maintenance to replace chlorine analyser tubing at the identified water treatment plants in Co. Mayo. <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 Michelle Minihan, Senior Inspector, Drinking Water Team.</p> <p>Irish Water should report to the EPA on or before 29/04/2022 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 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>		