

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.	SV22857

Report Detail	
Issue Date	14/10/2021
Prepared By	Daryl Gunning

Site Visit Detail			
Date Of Inspection	17/09/2021	Announced	Yes
Time In	10:00	Time Out	11:45
EPA Inspector(s)	Donal Howley		
Additional Visitors			
Company Personnel	Irish Water: Thomas Gibbons; Eoin Hughes Mayo County Council: Steven Tonra; Mark O'Donnell; Maria Munnelly		

> Summary of Key Findings

1. There was a chemical spill at Kiltimagh water treatment plant (WTP) on 03/09/21, which occurred due to an operational error while filling the chemical day tanks.
2. There are no standard operating procedures at the Kiltimagh WTP for chemical use on-site (i.e. acceptance of chemicals from suppliers; chemical transfer, chemical management).
3. The drinking water quality entering the Kiltimagh PWS was not affected as a result of this chemical spill.
4. Irish Water notified Inland Fisheries Ireland of the incident, as the chemical discharged into the River Glore. Inland Fisheries Ireland is conducting an investigation into the incident.

> Introduction

The Kiltimagh PWS produces approximately 801 m³/day of water serving a population of 1,618. Raw water is abstracted from the Glore river and treatment includes coagulation, clarification, filtration, and disinfection at the Kiltimagh WTP.

This audit was carried out in response to Irish Water's notification to the EPA of a chemical spill at the plant which occurred on 03/09/21.

> Supply Zones Areas Inspected

As the audit was carried out in response to a chemical spill incident, the areas inspected focused on those relating to the incident which included:

- Chemical storage facilities
- A manhole in the yard which relates to the discharge of the spilled chemical
- River Glore: WTP discharge point and various locations downstream (up to approximately 400m) of the WTP.
Note: the chemical spill entered the river at the discharge point, which is downstream of where the water is abstracted from the river for treatment at the Kiltimagh WTP



1. Incident Management

	Answer
1.1 Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	Yes
Comment	

Irish Water (IW) notified the EPA, Inland Fisheries Ireland (IFI), National Parks and Wildlife Service (NPWS), and the Environmental Section of Mayo County Council (MCC) on 03/09/21 of a chemical spill which occurred at the Kiltimagh WTP, Co. Mayo on 03/09/21. The chemical in question was the coagulant used at the plant, 10% Polyaluminium Chloride (PACl). IW calculated that approximately 4,500L overflowed from the day tanks from 08:22 to 11:01 on 03/09/21.

Cause of Incident

- PACl is stored in a 20,000L external bunded Bulk Storage Tank (BST) at the WTP. PACl is pumped from the BST into two day tanks each with a volume of approximately 1500-1600L.
- At 08:22 on 03/09/21, MCC water services staff commenced filling the day tanks with PACl. As the pump was filling the day tanks, water services staff attended to other duties and did not shut off the flow from the bulk tank to the day tanks (note: typically the day tank takes 20-30 minutes to fill).
- Overflow from the day tanks flow into a channel on the floor and from there via a pipe across the site, discharging into the river. During the audit a manhole in the yard was opened to view this pipe, which is above a drain. A hole was observed in the pipe. IW informed the EPA that the drain also discharges to the river.
- At approximately 10:30, MCC were notified by members of the public of a potential pollution incident at the Glora river and water services staff were contacted by MCC's Environmental Section to investigate. Water services staff returned to the WTP and turned off the flow at approximately 11:01 and immediately notified the appropriate personnel of the chemical spill and began on-site clean-up.

Action taken

- A contractor attended the site on 04/09/21 to carry out a full clean-up of the WTP internal channel network and to sandbag the channel outlet to ensure no further discharge occurred during the clean-up period. The contractor also bunged up the manhole as part of the clean-up process.
- MCC carried out remediation works from the WTP outlet to the confluence of the Glora and Pollagh rivers on 04/09/21. A jet-vacuum system was used to remove isolated pockets of PACl deposits that had accumulated in areas with restricted river flows.
- IW corresponded with the IFI on 03/09/21 and 15/09/21 to discuss the planned clean-up operation and river sampling. IW confirmed that the IFI's investigations estimated that >500 fish were killed as a result of the incident and that rehabilitation works may be necessary to re-populate this section of the river with fish.
- IW confirmed that MCC undertook inspections of the river Glora on 04/09/21, 05/09/21, and 06/09/21 and noted that there was no further visual evidence of dead fish or PACl deposits during these inspections.
- River sampling was conducted on the day of incident (03/09/21). A sample collected at the WTP discharge point recorded an aluminium result of 142,455 ug/l.
- Further sampling conducted on the 06/09/21 and 20/09/21 indicated that the levels of aluminium had reduced since the incident. A sample collected 150m downstream of the WTP on 20/09/21 recorded a result of 687 ug/l, which still indicates an elevated level of aluminium in the river.
- IW confirmed on 12/10/21 that a contractor installed a new PACl day tank filling system at Kiltimagh WTP (new control panel; non-return valve; overflow tank). There is now a 3-tier system in place which will prevent overflow and spillage from the tanks. In order to fill the day tanks, there is a push-button system which initiates filling. When this button is pressed, the tank will fill for a period of < 5 minutes. Should the tank become full within this timeframe, level sensor probes in each day tank will trigger the transfer pump cut-off, preventing an overflow. Should either of these systems fail, there is a final failsafe system. Should the PACl overflow from the day tanks, it will flow into the new overflow tank which also contains a level probe set at approximately 100mm from the bottom of the tank. Should this level sensor detect liquid at this level it will trigger the transfer pump to cut-out.
- IW confirmed that they are developing a standard operating procedure (SOP) for chemical use on site, with MCC. The SOP will include: acceptance of chemicals from suppliers, chemical transfer, and management of chemicals.
- IW confirmed that drinking water quality entering the Kiltimagh PWS was not affected as a result of this chemical spill.

The river discharge point and various locations downstream (up to approximately 400m) of the WTP were visually inspected on the day of the audit. No visual signs of PACl residuals or fish kills were observed.



2. Treatment Process Chemicals

2.1

	Answer
Are treatment process chemicals appropriately managed and stored?	No
Comment	
<ol style="list-style-type: none">1. Irish Water confirmed that MCC water services staff supervise all chemical deliveries.2. Irish Water confirmed that there is a standard operating procedure (SOP) for chemical deliveries. However, this SOP is not in use at the Kiltimagh WTP and was not available for inspection at the audit.3. Although there is a procedure for filling the day tanks at the Kiltimagh WTP and a daily note is made in the on-site diary that top-ups have been completed, Irish Water confirmed that there is no documented SOP for this procedure at the WTP.	



3. Sludge Management

		Answer
3.1	Is sludge arising from the treatment processes adequately managed?	No
Comment		
<ul style="list-style-type: none">• There is no sludge holding facility at the WTP and the sludge draw-off from the clarifier is discharged to the river Glore every 15 minutes.• At the audit, Irish Water noted the possibility of providing an attenuation tank prior to the river discharge point.		

Recommendations

Subject	Kiltimagh audit recommendations	Due Date	15/11/2021
Action Text	<p data-bbox="279 342 523 371">Recommendations</p> <ol data-bbox="300 400 1401 891" style="list-style-type: none"><li data-bbox="300 400 1401 488">1. Irish Water should ensure that standard operating procedures for chemical use on-site (acceptance of chemical deliveries; chemical transfer, chemical management) are made available at the Kiltimagh water treatment plant.<li data-bbox="300 517 1401 573">2. Irish Water should ensure that operators receive the appropriate training in relation to chemical use on-site at water treatment plants.<li data-bbox="300 602 1401 689">3. Irish Water should review the sludge management procedures at the Kiltimagh water treatment plant to ensure sludge arising from the treatment processes is adequately managed.<li data-bbox="300 719 1401 806">4. Irish Water should carry out further sampling of the River Glore, and carry out further remediation works if necessary, to ensure no further Polyaluminium Chloride residuals remain in the river.<li data-bbox="300 835 1401 891">5. Irish Water should repair the pipe located in the manhole inspected during the audit, as appropriate. <p data-bbox="279 974 810 1003">Follow-Up Actions required by Irish Water</p> <p data-bbox="279 1032 1390 1088">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 data-bbox="279 1117 1417 1146">This report has been reviewed and approved by Aoife Loughnane, Drinking Water Team Leader.</p> <p data-bbox="279 1176 1378 1232">Irish Water should submit a report to the Agency one month from the date of this audit report, detailing how it has dealt with the issues of concern identified during this audit.</p> <p data-bbox="279 1261 1422 1317">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 data-bbox="279 1346 1426 1402">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> <p data-bbox="279 1431 1410 1487">Please quote Compliance Plan Number, DW20210134, in any future correspondence in relation to this Report.</p>		