

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	DLR Zone 6
Organisation	Irish Water
Scheme Code	1000PUB1006
County	Dublin
Site Visit Reference No.	SV22208

Report Detail	
Issue Date	19/02/2021
Prepared By	Aoife Loughnane

Site Visit Detail			
Date Of Inspection	10/02/2021	Announced	Yes
Time In	11:25	Time Out	12:45
EPA Inspector(s)	Aoife Loughnane Michelle Minihan		
Additional Visitors			
Company Personnel	Irish Water: Andrew Boylan, John Leamy, Joe O'Reilly, Edward Haythornthwaite, Emily Mulqueen Dublin City Council: Ned Fleming, Martin Hession		

> Summary of Key Findings

1. An incident occurred at Vartry water treatment plant on Saturday 30th January 2021 following heavy rainfall when a drainage ditch overflowed across recently excavated land and washed some exposed soil into the slow sand filters. Two affected filters were removed from service and another one was throttled back by 50%. Irish Water's risk assessment determined that the incident posed minimal risk of contamination of the final treated water. Overall this incident was a near miss and could have had much larger implications if the final treated water quality had been compromised.
2. The incident investigation found that an earthen bank was not properly reinstated after pipe laying work for the new Vartry water treatment plant. This area of disturbed ground was the pathway for the overflow from the ditch into the filters. Irish Water should use the lessons learned from this incident to mitigate the risk of this happening at other water treatment plants where construction works are being carried out.

> Introduction

Vartry water treatment plant provides drinking water to over 200,000 people in Wicklow and Dublin. Treatment consists of slow sand filtration and disinfection by chlorination. A new water treatment plant is currently under construction on the existing site.

There are 7 supplies on the EPA's Remedial Action List which are fed by Vartry water treatment plant. The RAL completion date for the upgrade of Vartry water treatment plant is July 2021.

This audit was carried out in response to an incident involving an overflow from a ditch into the slow sand filters on 30th January 2021.

> Supply Zones Areas Inspected

The audit comprised of a video conference meeting on 10th February 2021. A site visit was not undertaken due to Covid-19 risk.



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
Comment	
<p>1. During heavy rain in the early hours of Saturday 30th January, there was an overflow from a ditch that runs between the existing plant and the adjoining construction site of the new plant. The overflow ran across recently excavated land (associated with the new plant works) and washed the exposed soil into the canal which feeds the slow sand filters. This resulted in elevated turbidity levels in Filters 7, 8 and 11 and in the combined filtered water and final water leaving the plant.</p> <p>2. The incident was discovered at approx. 09:30 when DCC operational staff arrived on site. The following immediate corrective actions were taken:</p> <ul style="list-style-type: none"> • Chlorine dosing was increased to ensure satisfactory chlorine residual in the final water. • Filter performance was assessed and Filters 7 & 8 were removed from service, with Filter 11 throttled back by 50%. • Attempts were made to contain the overflow with sandbags until Irish Water's contractor arrived on site with excavation machinery to increase the height of the drain berm. Daily checks of the ditch are now being conducted. • Reactive investigative samples were collected and found no evidence of microbiological contamination. • The entire incident was captured by the monitoring program in place at the plant for Cryptosporidium and Giardia. The sample results subsequently found no detections. • Chlorine levels were monitored downstream in the distribution network and remained satisfactory. • Conductivity levels were monitored at the plant and remained within normal range. <p>3. Irish Water and Dublin City Council undertook a risk assessment of water quality and consulted with the HSE regarding the risk to public health. The outcome was that the incident posed minimal risk to public health. The HSE agreed on the remedial measures and continued monitoring.</p> <p>4. Irish Water and Dublin City Council's investigation found that an earthen bank was not reinstated properly following pipe laying work for the new plant in Autumn 2020. This area of disturbed ground was the pathway for the overflow from the ditch into the slow sand filters. Irish Water stated that one of the lessons learned from this incident is to ensure that drain berms and excavated areas are reinstated promptly during construction works.</p> <p>5. Irish Water and Dublin City Council's investigation identified that the ditch is used as an outfall for an overflow from Roundwood waste water treatment plant, however they determined that any waste water overflow would have been considerably diluted with rainfall and local drainage from surrounding land.</p> <p>6. The turbidity monitor on the final water at Callow Hill showed that from 10:45 the turbidity levels began to continuously rise from 0.22 NTU reaching a maximum of 0.65 NTU at 17:30. After that time, the levels started to continuously drop.</p> <p>7. Irish Water calculated that approximately 750m³ of water with turbidity greater than 0.5 NTU went into distribution, which represents approx. 1.5% of the overall daily water production at the plant. The EPA disagrees with Irish Water's application of 0.5 NTU in calculating the quantity of water impacted during this incident. During the audit, DCC staff confirmed that the winter average combined filter turbidity is 0.3 NTU. Therefore, the EPA considers that figure would have been more appropriate to use in the risk assessment to quantify the volume of impacted water.</p> <p>8. All affected filters have now returned to service with the exception of Filter 8 which has been drained down and cleaned and is currently being run to waste until the filter is sufficiently ripened and turbidity reduces to an appropriate level. Filter 8 being out of service reduces the volumetric production capacity at the plant, where capacity is under pressure to meet the water supply needs of Wicklow and Dublin.</p>	



2. Management and Control

		Answer
2.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No
Comment		
<p>1. Irish Water has not yet identified the protozoal log treatment requirement for the Vartry Reservoir source. As a surface water source, it requires a minimum of 3 log credits for protozoa reduction. Slow sand filtration is eligible for 2.5 log treatment credits. This means that Vartry water treatment plant is currently operating at a protozoal compliance log deficit.</p> <p>2. The slow sand filters are almost at end of life and will be taken out of production when the new Vartry water treatment plant commences operation this summer.</p> <p>3. There is a Cryptosporidium/Giardia monitoring programme in place for the final treated water at two locations (Reservoir at Plant and Callow Hill) which are sampled twice per week. There have been sporadic detections of Cryptosporidium/Giardia in the final treated water. Following each protozoal detection, Irish Water notifies the EPA and consults with the HSE regarding the risk to public health.</p>		

		Answer
2.2	Are suitable alarm settings in place to alert operators to deteriorating water quality and/or the failure of a critical treatment process?	Yes
Comment		
<p>1. There are turbidity monitors on the individual filters, the combined filtered water and the final water. At the time of the incident, there were no turbidity alarms in place.</p> <p>2. Following the incident a new alarm has been put in place where if turbidity in the combined filter water exceeds 0.5 NTU, text messages are sent to DCC Operations staff including: the plant manager, the site foreman, and the staff member on-call.</p>		



3. Site Specific Issues

		Answer
3.1	Is there a Drinking Water Safety Plan in place for the Vartry Water Supply Scheme?	No
Comment		
During the audit, Irish Water confirmed there is no Drinking Water Safety Plan in place for the Vartry Water Supply Scheme.		

		Answer
3.2	Did the incident notification meet EPA requirements?	No
Comment		
Irish Water alerted the EPA to the incident by text message on Saturday and followed up by text message on Sunday. However, Irish Water did not officially notify the incident to the EPA until 16:48 on Monday 1st February. This timeframe does not meet the EPA requirements for notification of incidents and emergencies, set out in the EPA Handbook for Public Water Supplies. Irish Water explained the reason for the delayed notification was because they were focussed on the risk assessment and consultation with the HSE regarding the risk to public health.		

Recommendations

Subject	Vartry WTP Virtual Audit Recommendations	Due Date	19/03/2021
Action Text	<p>Recommendations</p> <ol style="list-style-type: none">1. Irish Water should ensure that the lessons learned from this incident are applied at other water treatment plants where construction works are being carried out, in order to mitigate the risk of this type of incident occurring at another site.2. Irish Water should ensure that incidents affecting public water supplies are notified promptly to the EPA as soon as possible after Irish Water becomes aware of the incident, and no later than 11:00 am on the next working day.3. Irish Water should complete a Drinking Water Safety Plan for the Vartry Water Supply Scheme. <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 Dr. Michelle Minihan, Senior Inspector, Drinking Water Team.</p> <p>Irish Water should submit a report to the Agency on or before 19th March 2021 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> <p>Please quote the Compliance Plan Number in any future correspondence in relation to this Report.</p>		