

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	Durrus
Organisation	Irish Water
Scheme Code	0500PUB4104
County	Cork
Site Visit Reference No.	SV19582

Report Detail	
Issue Date	11/02/2020
Prepared By	Criona Doyle

Site Visit Detail			
Date Of Inspection	15/01/2020	Announced	Yes
Time In	13:33	Time Out	15:05
EPA Inspector(s)	Criona Doyle Orla Harrington		
Additional Visitors			
Company Personnel	Irish Water: Deirdre O'Loughlin, Oliver Harney, Ciaran Connolly Cork County Council: Michael Russell, Seamus Sutton. EPS: Anthony Barrett		

> Summary of Key Findings

1. The audit confirmed that the upgrade of the Durrus Water Treatment Plant has been completed to in order to reduce the potential for the formation of trihalomethanes in the supply.
2. Irish Water has completed a programme of verification monitoring to demonstrate that the actions undertaken have been adequate. 3 no. consecutive compliant samples for trihalomethanes have been provided from the network.
3. The completion of the works and submission of verification data has allowed the Durrus Public Water Supply (PWS) to be removed from the EPA's Remedial Action List in the Q4 2019 review.

> Introduction

The Durrus Public Water Supply (PWS) was added to the EPA's Remedial Action List in Quarter 4 2016 due to persistent trihalomethanes failures in the supply. *Cryptosporidium* was detected in the supply on the 27/03/2018 and 12/02/2019. The supply serves a population of 360.

The abstraction of water from the river adjacent to the treatment plant has ceased and the slow sand filter at the site has been decommissioned. Following the successful programme of groundwater investigations a production borehole has been commissioned on site to provide the raw water for the supply. The treatment plant has been upgraded and now includes super chlorination to assist iron and manganese removal, pressure filtration, iron and manganese removal (pyrolox filters) and chlorination for disinfection. The slow sand filter is to be converted to a treated water storage tank to provide additional storage.

> Supply Zones Areas Inspected

The purpose of the audit was to verify if the Durrus Public Water Supply can be removed from the EPA's Remedial Action List. The audit included a review of the treatment plant processes to determine progress with the remedial works.



1. Source Protection

	Answer
1.1	Is the abstraction source(s) adequately protected against contamination?
	Yes
Comment	
<p>The borehole which is currently providing water to the treatment plant is located within a locked kiosk. The well head was inspected and production borehole PW01 (formerly TW03), which is currently in use, is well protected in accordance with EPA guidance.</p> <p>Irish Water outlined that one of the trial boreholes (TW01) is to be retained to provide a supplementary source called PW02. The well head for this borehole has yet to be completed in accordance with EPA guidance. The remaining trial borehole TW02 is to be decommissioned.</p> <p>Cork County Council outlined that the map showing the buffer zones required under the Good Agricultural Practice regulations is to be updated to reflect the new groundwater source and letters are to be issued to landowners to inform them of their obligations under the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No. 31 of 2014).</p>	



2. Filtration

2.1

	Answer
Are the filters designed and managed in accordance with EPA guidance?	Yes
Comment	
<p>Two pressure filters have been installed and work in parallel. There is continuous monitoring of the raw water turbidity and turbidity at the outlet from each filter. On the day of the audit the raw water turbidity was 0.071 NTU, Filter no. 1 0.123 NTU and Filter no. 2 0.07 NTU. The filters are backwashed on a timed basis every 48 hours (one filter each night). An automatic backwash of a filter is also instigated at a turbidity of 1 NTU. The contractor for the upgrade works is currently managing the site during the commissioning phase.</p> <p>Two Pyrolox filters (manganese dioxide) are provided for iron and manganese removal. Super chlorination of the raw water takes place prior to the filtration stage to assist with iron and manganese removal. The filters operate in sequence. The backwash sequence for the Pyrolox filters is on a timed basis. It is proposed that samples of treated water will be tested on a weekly basis to monitor the iron and manganese levels in the treated water to inform when replacement of the manganese dioxide media is required.</p>	



3. Disinfection

		Answer
3.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes
Comment		
<p>The residual chlorine levels were available to view on the HMI on the day of the audit but were not on the countywide SCADA. It was outlined that the trends would be accessible to Cork County Council staff from the cloud as a temporary measure from Monday 20/01/20.</p> <p>On the day of the audit the contractor for the upgrade works was responsible for responding to chlorine alarms. Once the continuous chlorine residual trends are accessible on the cloud (estimated date 20/01/20) the responsibility for responding to alarms is to switch back to the normal cascade system of caretaker and relief caretaker. The low level chlorine alarm with automatic shutdown is set at 0.5 mg/l and high level alarm at 2 mg/l.</p>		

		Answer
3.2	Are duty and standby chlorine pumps/ UV units in operation?	Yes
Comment		
<p>Duty and standby chlorine dosing pumps are provided for the chlorine dosing for the disinfection stage. The dosing is flow proportional and linked to the residual chlorine monitor. The target dose level at the plant is 1mg/l. The new groundwater source was introduced on 14/01/20. It was outlined that the chlorine dose and residual chlorine level in the network will be monitored to establish if the chlorine dose level can be reduced following the introduction of the groundwater source.</p> <p>A separate set of chlorine dosing pumps (duty/standby) are provided for the super chlorination stage to assist in iron and manganese removal.</p>		

		Answer
3.3	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	Yes
Comment		
<p>The residual chlorine levels is being monitored at the outlet from the reservoir. A copy of the contact time calculation was provided which indicated an effective contact time of 29.08mg.min/l.</p>		

		Answer
3.4	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	Yes

Comment

Monitoring of the residual chlorine in the network is undertaken 3 times per week.



4. Reservoirs and Distribution Networks

	Answer
4.1 Is treated water in tanks and reservoirs suitably protected against contamination?	Yes
Comment	
<p>The access hatches on the reservoir were locked and had sealed covers. The storage volume of the reservoir is 273m³. The slow sand filter on site has been decommissioned and is to be converted to a treated water storage tank (270m³ volume) to provide additional treated water storage.</p>	



5. Treatment Process Chemicals

		Answer
5.1	Are treatment process chemicals appropriately managed and stored?	No
Comment		
There was no expiry date on the drums of sodium hypochlorite. The date of manufacture was displayed.		



6. Supply on the Remedial Action List

		Answer
6.1	Is the Action Programme on track to meet the Remedial Action List completion date?	Yes
Comment		
<p>The remedial action list indicates December 2019 as the proposed date of completion of the action programme for the Durrus public water supply.</p> <p>The supply was removed from the RAL in January 2020.</p>		

		Answer
6.2	Do the audit findings support progress made with the Remedial Action List upgrades?	Yes
Comment		
<p>The audit confirmed the commissioning of a new groundwater source has been completed. The treatment process has been upgraded to include the addition of a pressure filtration stage in addition to iron and manganese removal.</p> <p>Irish Water have provided the verification data to demonstrate that the actions undertaken have been adequate to address the elevated levels of trihalomethanes above the standard set in the Drinking Water Regulations.</p>		

		Answer
6.3	Is further information needed to assess completion of the Remedial Action List upgrade?	No
Comment		
<p>Verification data has been provided to demonstrate the actions undertaken have been adequate to achieve compliance with the trihalomethanes parametric value.</p>		



7. Site Specific Issues

	Answer
7.1 Does the upgraded water treatment plant provide an adequate barrier against <i>Cryptosporidium</i> ?	No
Comment	
Irish Water outlined that the revised <i>Cryptosporidium</i> Risk Score is 11.2 (low risk) and that the borehole is classed as a G2 source. Irish Water could not confirm the log credit requirement for the Durrus water supply based on the source categorisation and any potential log deficit. Further information is required from Irish Water in order to assess if an adequate barrier to <i>Cryptosporidium</i> is provided by the new groundwater source and current level of treatment.	

	Answer
7.2 Has EDEN been updated to include the improvements to the treatment process ?	No
Comment	
EDEN has not been updated to include the new source and additional treatment stages provided at the Drimoleague water treatment plant and the revised <i>Cryptosporidium</i> risk score.	

Recommendations

Subject	Durrus Audit RAL Removal	Due Date	11/03/2020
Action Text	<p>Recommendation(s)</p> <ol style="list-style-type: none"> 1. Irish Water should complete the wellhead completion works at borehole TW01 in accordance with EPA Advice Note No. 14: Borehole Construction and Wellhead Protection and ensure borehole TW02 is decommissioned in accordance with good practice for decommissioning of boreholes and wells. 2. Irish Water should update the data on the EPA's EDEN portal in terms of the new source, treatment provided following the plant upgrades and the updated <i>Cryptosporidium</i> risk score. 3. Irish Water should assess the water treatment plant using the Irish Water protozoal compliance criteria and address any log deficit that is identified for the supply following the development of the new groundwater source and upgraded treatment process. 4. Irish Water should monitor the supply in accordance with the Irish Water Cryptosporidium Monitoring Rationale. 5. Irish Water should liaise with Cork County Council to ensure landowners have been written to inform them of their obligations under the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (S.I No. 31 of 2014). 6. Irish Water should confirm that the residual chlorine trends can be viewed on the county wide SCADA. 7. Irish Water should put a system in place to ensure stocks of sodium hypochlorite on site are regularly checked to see if they are in date. 8. Irish Water should assess the water treatment plant using the Irish Water protozoal compliance criteria and address any log deficit that is identified. <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 Regina Campbell, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 11/03/20 detailing how it has dealt with the issues of concern identified during this audit.</p> <p>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 Action Reference Number DW2016/186 in any future correspondence in relation to this Report.</p>		