

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	Dunshaughlin
Organisation	Irish Water
Scheme Code	2300PUB1007
County	Meath
Site Visit Reference No.	SV18392

Report Detail	
Issue Date	25/11/2019
Prepared By	Daryl Gunning

Site Visit Detail			
Date Of Inspection	08/10/2019	Announced	No
Time In	11:00	Time Out	12:15
EPA Inspector(s)	Daryl Gunning Aoife Loughnane		
Additional Visitors			
Company Personnel	Irish Water: Andrew Boylan, Francis Glancy; Michael Cunniffe Meath County Council: Helen McDonnell, Paul McKown, Declan Keaating, Siobhan Johnston		

> Summary of Key Findings

1. There was an iron exceedance at Dunshaughlin WTP on the 8th August 2019 due to an accumulation of iron in the clearwater tank and reservoir.
2. The reservoir and clearwater tank were cleaned in September 2019 to remove accumulations of iron and manganese.
3. Cast iron mains replacement on Main Street, Dunshaughlin has been pushed out to Q2/Q3 2020.
4. There is no automatic shutdown of the water treatment plant in the event of low chlorine levels, requiring the caretaker to visit the plant if an alarm is received.

> Introduction

The source of the Dunshaughlin Public Water Supply (PWS) is seven boreholes, one located at the water treatment plant (WTP) site and a further 6 across the network. A total of 3 boreholes are currently operational (including the borehole located on the site of the WTP). The Dunshaughlin PWS provides 2212 m³/day to a population of 7574. Treatment consists of chlorination with 14-15% sodium hypochlorite, pre-filtration oxidation in a DAF unit (note: no coagulants are used in this process) to remove iron and manganese, rapid-gravity filtration, and fluoridation using hydrofluosilicic acid. The reservoir (water tower) has a storage capacity of 24-26 hours and was cleaned in September 2019. The audit was undertaken to investigate the progress made to resolve the iron exceedances (5 in 2019) in this supply.

> Supply Zones Areas Inspected

A full site tour of the water treatment plant was conducted; including an inspection of the borehole located on the site of the WTP.



1. Source Protection

	Answer
1.1 Is the abstraction source(s) adequately protected against contamination?	Yes
Comment	
Borehole number 5, located at the WTP site, was visited during the audit. <ol style="list-style-type: none">1. The borehole was drilled in 2004 and has a G1 classification.2. The borehole was adequately capped and located in a lockable chamber.3. No ingress of surface water into the chambers was evident.4. A turbidity of 0.032 NTU was noted at this borehole.	



2. Coagulation Clarification Flocculation (CFC) Stage

2.1

Were the CFC processes visually observed to be operating appropriately during the audit?

Answer

Yes

Comment

1. The Dunshaughlin WTP was built in 2008 and was designed as a CFC plant. However, the CFC process is not currently utilised (no coagulants are dosed) at this WTP as there is not enough colloidal material in the raw water.
2. The 60m³ DAF unit is currently utilised to oxidise iron and manganese prior to filtration.



3. Filtration

3.1

	Answer
Are the filters designed and managed in accordance with EPA guidance?	Yes
Comment	
<ol style="list-style-type: none">1. Turbidity monitors on each of the three rapid-gravity filters have been installed and are due to be commissioned.2. The filters backwash every 10 hours and run to waste for 3 minutes following backwashing.3. The filter media consists of 800mm of sand and 200mm of Manganese dioxide. This filter media is 10 years old.4. Removal performance of iron from raw (1.6mg/l) to final water (0.2mg/l) is approximately 87%.	



4. Disinfection

		Answer
4.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes
Comment		
<ol style="list-style-type: none">1. Chlorine alarms are sent out to all relevant personal simultaneously.2. There is no automatic shutdown of the water treatment plant in the event of a low chlorine alarm.3. Chlorine levels are monitored online through the SCADA system.4. There are three chlorine monitors present on the final water.5. The alarm setpoints are as follows: (i) High-High: 1 mg/l; (ii) High: 0.70 mg/l; (iii) Low: 0.20 mg/l; (iv) Low-Low: 0.1 mg/l.		
		Answer
4.2	Are duty and standby chlorine pumps/ UV units in operation?	Yes
Comment		
<ol style="list-style-type: none">1. 14/15% sodium hypochlorite is dosed at a rate of approximately 4.4 mg/l.2. There are two chlorine injection points (duty/standby) present and dosing is flow proportional.		
		Answer
4.3	Is there a chlorine residual ≥ 0.1 mg/l throughout the network?	Yes
Comment		
<ol style="list-style-type: none">1. Chlorine levels are measured after the reservoir (tower). The target free chlorine level is 0.4 - 0.5 mg/l. Chlorine levels in the network are monitored on a daily basis.2. A chlorine level of 0.1mg/l is being achieved at the main street, Dunshaughlin.3. There is no chlorine boosting in the distribution network.		



5. Reservoirs and Distribution Networks

		Answer
5.1	Is treated water in tanks and reservoirs suitably protected against contamination?	Yes
Comment		
The 660m ³ baffled clearwater tank is adequately covered and locked.		



6. Drinking Water Quality

6.1

	Answer
Have failures of the parametric values or the detection of pathogenic micro-organisms or parasites in the water supply been adequately investigated?	Yes
Comment	
<ol style="list-style-type: none">1. There was one iron exceedance at Dunshaughlin WTP in 2019 due to an accumulation of iron in the reservoir and clearwater tank.2. The clearwater tank and reservoir were cleaned in September 2019 to remove residual iron and manganese. Irish Water are awaiting sampling results post-reservoir cleaning.3. Two to five customer complaints a week are received in relation to brown discolouration of the water.4. Complaints are received from a widespread area across the network. There were 4 iron exceedances across the network in 2019.5. Meath County Council plan to flush the network. If this does not achieve satisfactory results, they will consider ice-pigging.6. Cast iron mains (laid in 1952) replacement on Main Street, Dunshaughlin was due to be completed in Q2/Q3 2019, however, this has been delayed until Q2/Q3 2020.7. The reservoir and clearwater tanks were cleaned in September 2019 to remove accumulations of iron and manganese.	



7. Sludge Management

	Answer
7.1 Is sludge arising from the treatment processes adequately managed?	Yes
Comment	
<ol style="list-style-type: none">1. Poly is dosed to thicken the filter backwash sludge. The sludge is removed from site on a quarterly basis.2. The supernatant is discharged to the stream at the back of the WTP. Meath County Council Environmental officers have sampled this discharge to ensure that there is no negative environmental impact on the stream.	



8. Site Specific Issues

	Answer
8.1 Is the treated water fluoridated in accordance with EPA guidance?	Yes
Comment	
<ol style="list-style-type: none">1. Fluoride is injected prior to the treated water entering the reservoir and is flow proportional.2. There are duty and standby dosing pumps and dosing is switched between the two pumps every 2 hours to prevent air-locking.3. Bench testing of fluoride levels is conducted daily.	

Recommendations

Subject	Dunshaughlin Audit Recommendations	Due Date	04/12/2019
Action Text	<p>Recommendations</p> <ol style="list-style-type: none">1. Irish Water should investigate the installation of auto shutdown of Dunshaughlin water treatment plant in the event of low chlorine levels leaving the plant.2. Irish Water should reprioritise mains rehabilitation works on main street, Dunshaughlin, to ensure satisfactory water quality in the distribution network. <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 Aoife Loughnane, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 4th December 2019 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 DW2019/43 in any future correspondence in relation to this Report.</p>		