



Drinking Water Audit Report

County:	Co. Wexford	Date of Audit:	15 th February 2018
Plant(s) visited:	- Vinegar Hill Water Treatment Plant, Enniscorthy. - Edermine borehole Scheme Code: 3300PUB1491	Date of issue of Audit Report:	13 th March 2018
		File Reference:	DW2014/300
		Auditors:	Ms Pauline Gillard Ms Michelle Roche
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014), as amended.</i> • The <i>EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)</i> • The recommendations specified in the <i>EPA Drinking Water Report.</i> • EPA Drinking Water Advice Notes No.s 1 to 15. • The recommendations from previous audit report dated 08/10/14. 		

MAIN FINDINGS

- i. **The upgrade of the automatic coagulant dosing system at Vinegar Hill water treatment plant should be completed as soon as possible.**

1. INTRODUCTION

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 drinking water in the Enniscorthy public water supply.

The Enniscorthy public water supply is sourced from the river Slaney and two boreholes at Edermine and Killagooley. Edermine Borehole was inspected at the audit. The treatment plant at Vinegar Hill, Enniscorthy is currently operating at 135 m³/hr for 18-21 hours/day. Plant capacity is 3800 m³/day; Treatment includes chemical dosing with aluminium sulphate and polymer, clarification, filtration, disinfection using sodium hypochlorite and fluoridation. The groundwater from the Edermine and Killagooley boreholes is disinfected using sodium hypochlorite and enters the Vinegar Hill plant at the high level reservoir.

The opening meeting commenced at 10.00am at Edermine Borehole and continued to Vinegar Hill WTP. The scope and purpose of the audit were outlined at the opening meeting. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment

plant. The audits observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Irish Water:

Patrick Duggan – Compliance

Aine Butler – Regulatory Environmental Compliance Analyst

Representing Wexford County Council

Paul Delahunty – Executive Engineer

Fiounuala Callery – Senior Executive Engineer

Terry Moore – Senior General Services Supervisor

Larry Delaney – Caretaker

Tadhg O’Corcora – Area Engineer

Pat Donohoe – Caretaker Vinegar Hill

Representing the Environmental Protection Agency:

Pauline Gillard – Inspector

Michelle Roche - Inspector

2. AUDIT OBSERVATIONS

The audit process is a random sample on a particular day of a facility's operation. Where an observation or recommendation against a particular issue has not been reported, this should not be construed to mean that this issue is fully addressed.

1.	<p>Source Protection</p> <ul style="list-style-type: none"> a. The Edermine borehole is located in a locked concrete shed near the River Slaney. b. The borehole was constructed in 1979 to 19.7m depth. There was steel casing present at the borehole but it was not capped. c. Land-use in the immediate vicinity of Edermine borehole was arable agricultural. d. Vinegar Hill WTP is located at the edge of the town with the land-use in the immediate area as residential. e. Vinegar Hill WTP perimeter is fenced and the site is secure. f. A Drinking Water Safety Plan has commenced at Vinegar Hill WTP.
2.	<p>Coagulation, Flocculation and Clarification</p> <ul style="list-style-type: none"> a. Raw water turbidity and pH is monitored at the intake to the Vinegar Hill WTP. The water is brought in to the plant and aluminium sulphate is injected into the intake line and poly is then dosed into a tank which has baffled walls. b. Lime is added to a mixing tank. c. There are two clarifiers and there are sludge bleeds every 30 minutes for 30 seconds. The caretaker performs longer manual sludge bleeds every two weeks in the summer and more often in the winter. The length of these bleeds is determined by the experience of the caretaker. d. The channel troughs in the clarifier had been levelled since the last audit in 2014 and appeared to be working well.
3.	<p>Filtration</p> <ul style="list-style-type: none"> a. There are three rapid gravity sand filters. Backwash is initiated by the caretaker. b. A backwash of Filter No. 1 was manually triggered during the audit. The auditors observed

	<p>an even air scour and backwash across the filter bed.</p> <ul style="list-style-type: none"> c. The weir wall at the side of the filter is particularly low and the blower is regulated accordingly so they do not lose the sand. The sand was replaced 6 years ago. d. There are alarmed turbidity monitors on each filter and an overall turbidity monitor on the combined filtered water. At the time of the audit the overall turbidity monitor had a reading of 0.036 NTU. The turbidity monitor has an alarm set point of 1 NTU which is considered too high to alert the operator to a plant malfunction. The monitors are calibrated every year.
<p>4.</p>	<p>Disinfection</p> <p><u>Edermine Borehole:</u></p> <ul style="list-style-type: none"> a. The raw water at Edermine borehole is treated with 10-11% sodium hypochlorite with a fixed rate dose. b. Duty and standby chlorine dosing pumps are installed and there is autoswitchover on the pumps. c. There is a portable chlorine monitor at a sample point 1.3km away from the borehole. This is before the first customer is served. d. A chlorine monitor and alarm is in place, with dial out facility to the caretaker's phone. A cascade system is in place to respond to the alarms. The alarm set points are 0.2 mg/l low alarm and 0.8 mg/l high alarm. The alarm has not been triggered since it was installed in the last few months. e. There is adequate chlorine contact time of 30 minutes at a minimum of 0.5 mg/l free chlorine in accordance with EPA Advice Note 3. f. The chlorine monitor was calibrated on 09/02/18 and had a calibration sticker. g. Irish Water stated that Edermine borehole will be upgraded under the National Disinfection Programme. <p><u>Vinegar Hill Water Treatment Plant:</u></p> <ul style="list-style-type: none"> h. Disinfection at Vinegar Hill WTP consisted of chlorination using sodium hypochlorite. i. There are two new chlorine pumps with a fixed rate dose of 1.4L per hour. j. The duty and standby chlorine dosing pumps are monitored and alarmed. The low chlorine alarm set point is 0.3 mg/l and High level alarm 1.3 mg/l. k. When the chlorine alarm is triggered there is a documented cascade system in place for responding to the alarm. l. There is adequate chlorine contact time of 30 minutes at a minimum of 0.5mg/l free chlorine in accordance with EPA Advice Note 3. m. The chlorine monitor was calibrated and had a visible calibration sticker. n. Irish Water stated that Vinegar Hill will be upgraded under the National Disinfection Programme.
<p>5.</p>	<p>Treated Water Storage and Distribution Network</p> <ul style="list-style-type: none"> a. Treated Water is stored in the underground clear water tank on-site. The roof of the clear water tank was sealed and secure. b. The two reservoirs were not inspected during the audit. Wexford County Council advised that one had been cleaned in August and both would be cleaned in the next few weeks.
<p>6.</p>	<p>Chemical storage and bunds</p> <ul style="list-style-type: none"> a. Three drums of sodium hypochlorite were stored at Edermine Borehole without a bund. Wexford County Council stated that the bunds were ordered. The labels on the drums showed a date of 13/12/2017. Irish Water confirmed that there is no expiry date written on the sodium

	<p>hypochlorite delivered to them.</p> <p>b. There was an emergency spill kit available at the borehole.</p>
7.	<p>Hygiene and Housekeeping</p> <p>a. Vinegar Hill WTP was found to be clean and tidy and well run. The caretaker had a great knowledge in running the plant.</p>
8.	<p>Management and Control</p> <p>a. There is a SCADA system at the plant which also allows for online monitoring of plant performance and data trends by the operator.</p>

3. AUDITORS COMMENTS

Overall Enniscorthy (Vinegar Hill) Water Treatment Plant was found to be very well managed by a dedicated team of staff. The upgrade of an automatic coagulant dosing systems should be progressed as soon as possible. This was a recommendation at the last audit in Oct 2014 and has not yet been completed.

4. RECOMMENDATIONS

Source Protection

1. Irish Water should ensure that all borehole linings and seals are maintained in accordance with EPA Advice Note No. 14: Borehole Construction and Wellhead Protection. The borehole at Edermine should be capped to prevent any ingress.

Coagulation, Flocculation and Clarification

2. The upgrade of an automatic coagulant dosing systems should be progressed as soon as possible.

Filtration

3. Irish Water should review the weir level in the filter to ensure that filter sand is not being lost during a backwash.
4. Irish Water should follow the guidance as specified in the EPA publication "*Water Treatment Manual on Filtration*" and in particular the following action is required;
 - i. Review the operation of the filters to ensure that the levels of turbidity in the filtered water are as low as possible and no greater than 0.5 NTU. The Turbidity alarm should be lowered from 1 NTU.

Disinfection

5. Irish Water should progress the Disinfection Programme upgrades at Vinegar Hill water treatment plant and Edermine Borehole.

Chemical Storage and Bunds

6. Irish Water should review chemical storage arrangements at the Edermine Borehole. Chemicals must be stored in bunded areas capable of containing at least 110% of the volume of chemicals stored therein.

FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER

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. This report has been reviewed and approved by Aoife Loughnane, Drinking Water Team Leader.

Irish Water should submit a report to the Agency within one month of the date of this audit report 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 timeframe for commencement and completion of any planned work.

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.

Please quote the File Reference Number in any future correspondence in relation to this Report.

Report prepared by:



Date:

13/03/18

Pauline Gillard

Inspector