



Drinking Water Audit Report

County:	Kilkenny	Date of Audit:	30/11/16
Plant(s) visited:	Gowran-Goresbridge-Paulstown, 1500PUB1007	Date of issue of Audit Report:	21/12/16
		File Reference:	DW2016/212
		Auditors:	Ms Michelle Roche Ms Pauline Gillard
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</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. 		

MAIN FINDINGS

- i. **Gowran-Goresbridge-Paulstown water treatment plant was found to be well run with excellent management in place.**
- ii. **Irish Water should install a low level alarm on the raw water UVT monitor as the UV unit is validated based on UVT as well as UVI.**

1. INTRODUCTION

Under the *European Union (Drinking Water) Regulations 2014* 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 Gowran-Goresbridge-Paulstown public water supply.

Treatment at Gowran-Goresbridge-Paulstown water treatment plant comprises of pressure filtration, disinfection using UV treatment and chlorine gas, and fluoridation. The treatment plant produces approximately 854m³/day and serves a total population of 2,400 across a 20km network. The spring source is highly vulnerable with a *Cryptosporidium* Risk Assessment Score of 141 (very high risk).

The opening meeting commenced at 10.30a.m. at Gowran-Goresbridge-Paulstown water treatment plant. 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.

<p>Representing Irish Water: Pat Duggan, Compliance Analyst. Liam Brett, Water Engineer.</p>

Representing Kilkenny Co Council

Seamus Foley, Senior Executive Engineer

Eamon Morrissey, Executive Chemist

Maurice Rafter, Caretaker.

Representing the Environmental Protection Agency:

Ms Michelle Roche, Inspector

Ms Pauline Gillard, 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.	Source Protection a. The source at the Paulstown plant is a spring known as Tobergoolick Pool. The surrounding area consists of a Karst landscape. The Zone of Contribution covers an area of approximately 7,500 acres with mainly farming in this area. In 2011 Kilkenny County Council wrote out to the farmers advising them of their proximity to the source and how to protect the quality of the water supply, in accordance with the <i>European Union (Good Agricultural Practice for the Protection of Waters) Regulations</i> . b. The grid around the abstraction point is cleaned once a year and the land around it is fenced off to prevent livestock entering the source.
2.	Filtration a. There are two pressure filters at the plant which are filled with 15 tonnes of Dryden filter media, three different grades of glass which Irish Water stated performs better than sand. b. Backwashing has been reduced from every second day to once a week with the replacement Dryden media. The caretaker initiates a backwash based on differential pressure and it lasts approximately 25 minutes, followed by 3 minutes of run-to-waste before the filters are brought back into service. c. There are no individual turbidity monitors on the filters but there is a final water turbidity monitor. The reading at the time of the audit on the treated water turbidity monitor was 0.088 NTU and the raw water turbidity monitor was 0.146 NTU.
3.	UV Disinfection a. Disinfection is achieved using UV as the primary disinfectant and chlorine gas as the secondary disinfectant. b. A single Trojan Swift SC B08 disinfection system is in place at the Gowran-Goresbridge-Paulstown plant. c. There are 8 lamps within the UV unit. Kilkenny County Council stated that these lamps are replaced after 9,000-12,000 hours of usage (usually 10,000 hrs.) Irish Water has a service contract with EPS for maintenance of the UV reactor. The maximum time the UV reactor would be out of service is 2 hours, when getting replacement bulbs installed.

	<p>d. Currently the plant is set to alarm and auto shutdown when the UVI drops below 26W/m². The UV validation certificate also states that the raw water UVT must be greater than 86%. There is a raw water UVT monitor at the plant and the monitor was reading 97% at the time of the audit however the UVT monitor is not alarmed.</p> <p>e. The plant will also shut-down if final water turbidity is greater than 0.50 NTU. All alarms and shut-down points are triggered when the set-point value is exceeded for 15 minutes.</p> <p>Chlorine Disinfection</p> <p>a. There are 4 small chlorine gas cylinders in a secure, marked and ventilated room.</p> <p>b. Prior to chlorination the target turbidity of the water is 0.088 NTU.</p> <p>c. There is a chlorine monitor and alarm at the plant which monitors chlorine residuals. The low chlorine alarm setting is 0.1mg/l which is considered to be very low. Irish Water should examine the option of raising it to a higher level.</p> <p>d. Chlorine testing in the network is carried out five days a week.</p> <p>e. Irish Water's disinfection programme will be initiated on site on 5th Dec 2016 and the chlorine gas system will be reviewed.</p>
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3. AUDITORS COMMENTS

Overall Gowran-Goresbridge-Paulstown water treatment plant was found to be very well managed and process documentation was up to date and available at the plant and record keeping was of a very good standard. Irish Water should examine the UV unit specification and the option of installing a UVT alarm on the raw water so that any deviation outside the validated operating range is immediately detected. Kilkenny County Council should ensure that all landowners within the zone of contribution of the source should be reminded of their obligations under the GAP Regulations.

4. RECOMMENDATIONS

Source Protection

1. Irish Water should liaise with Kilkenny County Council to ensure that landowners are written to in order to remind them of their obligations under the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* to ensure, unless an alternative setback distance has been set as per Article 17 that:
 - i. Organic fertiliser or soiled water is not applied to land within 200 m of the abstraction point; and
 - ii. Farmyard manure held in a field prior to land spreading is not placed within 250 m of the abstraction point.

Disinfection

2. Irish Water should install a low level alarm and plant shut-down on the raw water UVT monitor as the UV unit is validated based on UVT as well as UVI. The alarm set-point should be developed in accordance with the validation certificate.
3. Irish Water should ensure that the chlorine residual alarm at the treatment plant is set at an appropriate level to ensure that a minimum chlorine residual of 0.1mg/l can be maintained at the end of the distribution network.

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:

Pauline Gillard
Inspector

21/12/16