



Drinking Water Audit Report

County:	Offaly	Date of Audit:	14/07/2017
Plant visited:	Dunkerrin Water Treatment Plant Scheme Code: 2500PUB1007	Date of issue of Audit Report:	17/07/2017
		File Reference:	DW2017/64
		Auditors:	Ms Pauline Gillard Mr Darragh Page
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. **Dunkerrin public water supply had an *E.coli* exceedance on 10th July 2017 in an area supplied from Jones' Well. The audit team was satisfied that disinfection at Jones' Well was found to meet the minimum criteria as set out in EPA Advice Note No. 3 – *E. coli* in Drinking Water.**
- ii. **Irish Water should carry out further investigations into the *E.coli* exceedance.**

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 in response to the notification by Irish Water dated 12th July 2017 of the failure to meet the *E. coli* parametric value (as specified in Table A of Part 1 of the Schedule of the Regulations) and the subsequent imposition of a boil water notice in the Dunkerrin PWS.

The Dunkerrin public water supply consists of four wells/springs that supply water to the area around Dunkerrin. The Jones' Well and the Dunkerrin wells were examined during the audit. The *E. coli* failure was in the area supplied by Jones's Well. The audit focused on the disinfection system and source protection of both sources. Treatment at Jones's Well consists of chlorination and UV disinfection while it consists of chlorination only at the Dunkerrin source. The supply provides water to 1,237 people.

The opening meeting commenced at 10.00 am at Jones's Well. 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:

Aoife Lambe – Compliance Analyst
 Tseolopile Tlou – Operations Water Engineer
 Andrew Boylan – Compliance Specialist

Representing Offaly County Council

Bernadette Doheny – Senior Executive Technician
 Joe Coleman – Senior Executive Engineer
 Pat Devereux - Caretaker

Representing the Environmental Protection Agency:

Pauline Gillard – Inspector
 Darragh Page – Senior 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.

<p>1.</p>	<p>Source Protection</p> <p>Jones's Well</p> <ol style="list-style-type: none"> Jones's Well is a spring source with the collection chamber dug to a depth of around 2 metres. The collection chamber is in cased above ground and there is no direct pathway from the surface into the spring at the collection chamber. An area of approximately 12 acres around the spring is leased by Offaly County Council and was taken out of agricultural use to provide a buffer around the source of the spring. <p>Dunkerrin</p> <ol style="list-style-type: none"> The Dunkerrin source is a spring with the collection chamber dug to a depth of around 2 metres. The collection chamber is cased above ground and there is no pathway from the surface into the spring at the collection chamber. The spring is located at the side of a road in the village. On the other side of the road the land is used for agriculture. There is a community centre immediately adjacent to the site and there is a septic tank at the rear of the community centre. However, it appears that the septic tank is downgradient of the spring. The community centre has a recycling centre and four metal and glass recycling receptacles are located immediately upgradient of the spring.
<p>2.</p>	<p>Disinfection</p> <p>Jones's Well</p> <ol style="list-style-type: none"> Disinfection consisted of chlorination and UV treatment. The chlorination system met the minimum criteria for disinfection in the EPA Advice Note No. 3 – <i>E. coli</i> in Drinking Water as the following were in place: <ol style="list-style-type: none"> Chlorine monitor and alarm Duty and standby pumps with autochangeover

	<ul style="list-style-type: none"> iii. Flow proportional dosing iv. Adequate chlorine contact time (52.5 mins) <p>c. The results of chlorine levels in the final water taken from the chlorine monitor reading at the end of the contact time were stable and adequate from the time the spring was brought back into production on 6th July 2017. At no time during this period did the levels drop below the alarm setting of 0.25 mg/l.</p> <p>d. Daily monitoring for chlorine is undertaken in the network and the results were adequate from the time the spring was brought back into production on 6th July.</p> <p>e. Two drums of sodium hypochlorite on site had expiry dates of 14/07/17 while a third had an expiry date of 25/05/17. Irish Water informed the EPA that they would immediately arrange for these drums to be replaced and to have the old stock disposed of.</p> <p>f. The UV system met the minimum criteria for disinfection in the EPA Advice Note No. 3 – <i>E. coli</i> in Drinking Water as the following were in place:</p> <ul style="list-style-type: none"> i. Validated UV system. ii. The UV unit operated within its validated range at all times since the source was brought into service on 6th July 2017. iii. UV monitor and alarm (set to ensure a dose rate of 80 mJ/cm² with an alarm setting of 40 mJ/cm²) iv. A single UV lamp with autoshutoff in the event of malfunction of the system <p>g. There was no evidence that the disinfection system failed at any time since the source was recommissioned on 6th July and it was unlikely to have been a cause of the <i>E. coli</i> failure on 10th July.</p> <p>Dunkerrin</p> <ul style="list-style-type: none"> h. Disinfection consisted of chlorination only. i. The chlorination system met the following minimum criteria for disinfection in the EPA Advice Note No. 3 – <i>E. coli</i> in Drinking Water: <ul style="list-style-type: none"> i. Chlorine monitor and alarm ii. Duty and standby pumps with autochangeover iii. Flow proportional dosing j. Adequate chlorine contact time was not in place as water is supplied directly to consumers after chlorination. k. The results of chlorine levels in the final water taken from the chlorine monitor reading at the end of the contact time were stable and adequate from the time the spring was brought back into production on 6th July 2017. At no time during this period did the levels drop below the alarm setting.
3.	<p>Exceedances of the Parametric Values</p> <ul style="list-style-type: none"> a. An <i>E. coli</i> failure detected in a sample taken on 10th July was notified to the EPA on 12th July. The sample contained 44 <i>E. coli</i> and 866 coliforms. The sample contained 0.58 mg/l free chlorine and 0.64 total chlorine. The sample location was supplied by water from the Jones's Well source. b. The cause of the <i>E. coli</i> failure was under investigation by Irish Water at the time of the audit. Resampling was undertaken on 13th July and was to be taken on 14th and 15th July. c. Prior to the completion of the audit Irish Water advised that the results of sampling on 13th July had been received and were compliant. All samples had adequate levels of chlorine.

3. AUDITORS COMMENTS

There was no evidence of any issues with the operation of the disinfection system at the Jones's Well that might have contributed to the *E. coli* failure on 10th July 2017. The disinfection system was found to meet the minimum criteria as set out in EPA Advice Note No. 3 – *E. coli* in Drinking Water. However, the management of disinfectant in the supplies needs to improve as one of the drums of sodium hypochlorite had passed its expiry date while all others at the Jones's Well and Dunkerrin source were due to expire on the day of the audit.

4. RECOMMENDATIONS

General

1. Irish Water should review the arrangements for the management of chemicals at water treatment plants in Offaly and ensure that sodium hypochlorite is not used once it has passed its expiry date.
2. Irish Water should carry out a full investigation to determine the cause of this *E. coli* failure (and the others in the Bree, Birr, Banagher and Mullingar Regional supplies) and determine what actions should be taken to prevent a reoccurrence.

Disinfection

3. Irish Water should review the contact time at the Dunkerrin source and ensure that a minimum contact time of 15 mg/min/l is in place in the supply.

Source Protection

4. Irish Water should review the source protection around the Dunkerrin spring. Irish Water should determine if the septic tank, agricultural activities and the recycling centre are having an impact on the raw water quality in the spring
5. Irish Water should carry out monitoring on the Dunkerrin source and should include monitoring for *E. coli* bacteria, as an indicator of trends in assessing water quality and to determine the degree of treatment and controls required in the supply. In particular, Irish Water should determine whether UV treatment is required based on the raw water quality and the risks to the source.

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 Darragh Page, Senior Inspector.

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

17/07/2017