Drinking Water Audit Report

County:	Carlow	**Date of Audit:**	18/6/2014
Plant visited:	Slyguff, Bagnelstown	**Date of issue of Audit Report:**	4/7/2014
		File Reference:	DW2014/255
		Auditors:	Ms Yvonne Doris
Audit Criteria:	• The *European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014).* • *The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)* • The recommendations specified in the EPA Report on *The Provision and Quality of Drinking Water in Ireland.* • The recommendations in any previous audit reports.		

MAIN FINDINGS

i. **The Slyguff supply disinfection system is inadequate and Irish Water is required to upgrade the disinfection system to meet the appropriate criteria set out in *EPA Drinking Water Advice Note No. 3: E. coli in Drinking Water* without delay.**

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. Where the text refers to the Water Service Authority this refers to Irish Water in accordance with Section 7 of the Water Services (No. 2) Act 2013.

The Slyguff supply serves two houses. Volume served is 0.25-0.3 m^3/day. The source is a well about 4km from Bagnelstown, County Carlow. A single UV unit is installed with inadequate monitoring and controls in place. There is no storage in the supply. Prior to about 1995 the two houses were served by privately owned wells, which were both contaminated by the storage of salt (for road salting) in a layby opposite the two houses. Carlow County Council drilled a new well approximately 200m from the two houses in 1995. From 1995 to 2013 the supply received no treatment. Carlow County Council Water Services took the supply in charge in November 2013 and upgraded the supply installing a turbidity meter and a UV unit.

Photographs taken by Yvonne Doris during the audit are attached to this report and are referred to in the text where relevant. The audit commenced at 10.00am at the Slyguff supply. The scope and purpose of the audit were outlined. 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: (* indicates that person was also present for the closing meeting)

Name – Job Title

Liam Brett, Water Engineer, Irish Water*

Michael Brennan, Water Quality Manager, Carlow County Council*

Jerome Sweeney, acting caretaker, Carlow County Council*
Representing the Environmental Protection Agency:
Name – Job Title Yvonne Doris, 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 well is located on the grass verge, adjacent to the R705 Bagnelstown to Graiguenemanagh road, approximately 4km from Bagnesltown (photographs 1 & 2). b. No records of the source were available at the audit (drill logs, details of casing). c. The well is about 45m deep. It is covered by a concrete slab. The wellhead was not inspected as it was not possible to lift the concrete slab. Carlow County Council is procuring a new cover for the well. d. There is no evidence to demonstrate that any work has been done in the catchment to inform farmers of their responsibilities under the Good Agricultural Practice Regulations. e. Grazing animals were observed in the fields adjacent to the pumphouse at the time of the audit. f. No raw water monitoring has been carried out on the Slyguff source. No monitoring for *Cryptosporidium* has been carried out.
2.	**Disinfection** a. A UV unit was installed in January 2014. This is the only form of disinfection on the supply (photograph 3). No Certificate of Validation of the UV unit was available at the audit. There is no Standby UV unit in place. There is no UVT monitor installed and therefore inadequate control and management of the disinfection system. b. A small membrane filter was installed prior to the UV unit. No information on the function or specification of the filter was available at the time of the audit.
3.	**Monitoring and Sampling Programme for treated water** a. A number of samples of treated water have been taken by Carlow County Council Water Services since taking the Slyguff supply in charge and turbidity was >9 NTU.
4.	**Hygiene and Housekeeping** a. Carlow County Council has carried out works since January 2014 to improve the infrastructure at the supply, including improved access, cleaning, plastering and signage at the pumphouse and installation of a UV unit and membrane filter prior to the UV unit.
5.	**Management and Control** a. The disinfection system at the Slyguff supply consisting of a single UV unit does not meet the appropriate criteria set out in *EPA Drinking Water Advice Note No. 3: E. coli in Drinking Water.* b. Carlow County Council installed a turbidity meter on the raw water in January 2014. The turbidity reading at the time of the audit was 0.692NTU. A high level alarm is set at 1NTU. This is alarmed to the caretaker and water quality manager (Eamon Bolger and Michael Brennan). Carlow County Council stated that the turbidity alarm had not been triggered since January 2014.

3. AUDITORS COMMENTS

The Slyguff supply disinfection system is inadequate and Irish Water is required to upgrade the disinfection system to meet the appropriate criteria set out in *EPA Drinking Water Advice Note No. 3: E. coli in Drinking Water* without delay. An appropriate disinfection system where UV Treatment is in place is one where the following is in exists:

1. **A validated UV treatment system that operates within its validated range at all times;**
2. **A continuous monitoring device recording UVI or UVT. The monitor should be alarmed to notify Irish Water in the event of a drop below the validated range;**
3. **Duty/standby UV units in place with automatic changeover, in the event of failure of one of the UV disinfection units, or alternatively automatic shutdown if the UVT drops below its validated range.**

4. RECOMMENDATIONS

Source Protection

1. The Water Services Authority should implement the requirements of 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 25 m of the abstraction point; and
ii. Farmyard manure held in a field prior to landspreading is not placed within 50 m of the abstraction point.

2. The Water Services Authority should examine the appropriateness of the setback distances in the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* for the source of the supply. The Water Services Authority should have regard to the EPA guidance on alternative setback distances.

3. The Water Services Authority should carry out increased monitoring on the raw water 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.

4. The Water Services Authority should characterise the variability in raw water quality and compile a source water safety plan in order to mitigate any risks to the abstracted water (http://whqlibdoc.who.int/publications/2009/9789241562638_eng_print.pdf). Trends in raw water quality should be analysed and used to determine the optimum treatment conditions for the water at the plant. Data should be used to identify whether rapid variations in raw water quality give rise to problems with the treatment process.

5. The Water Services Authority should ensure that the wellhead is raised above ground level, borehole linings and seals are maintained and a lockable cover is installed.

Disinfection

6. The Water Services Authority should ensure that the UV disinfection system is validated in accordance with an appropriate internationally accepted validation system.

7. The Water Services Authority should ensure that the UV disinfection system operates within its validated range at all times.

8. The Water Services Authority should ensure that there are duty and standby UV disinfection arrangements with automatic changeover in the event of failure of one of the UV disinfection units.

9. The Water Services Authority should install a continuous UVI or UVT monitor at the point of disinfection and this monitor should be alarmed and linked to a recording device to ensure that any deviation of the quality of water outside the validated range for the UV treatment system or a failure of the UV disinfection system is immediately detected.

Distribution System

10. The Water Services Authority should investigate whether flushing and scouring of the mains is required and commence a programme of flushing and scouring if required.

Management and Control

11. The Water Services Authority should use the Cryptosporidium Risk Screening Methodology as outlined in *EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)* to determine the relative risk of contamination of the supply with *Cryptosporidium*. Following the risk screening the Water Services Authority should identify and implement measures to reduce the risk at the plant.

12. A Drinking Water Safety Plan approach to the operation of all treatment plants should be developed by the Water Services Authority and to provide safe and secure drinking water the water supplier must have in place a management system that has identified all potential risks and implemented reduction measures to manage these risks.

13. The Water Services Authority should ensure that hazard mitigation plans, with timeframes, are in place for all hazards identified as high risk in the Drinking Water Safety Plan. Records of progress on these hazard mitigation plans should be keep updated and maintained for inspection by the EPA.

14. A documented system of regular internal auditing and supervision of the treatment plant by Senior experienced personnel in the Water Services Authority should be implemented and copies of quality assurance checks and audits records kept on site for inspection by the Agency.

Monitoring and Sampling Programmes for Treated Water

15. The Water Services Authority should undertake monitoring for *Cryptosporidium* in the raw and treated water.

FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER

During the audit the Water Services Authority representatives were advised of the audit findings and that action must be taken as a priority by the Water Services Authority to address the issues raised. This report has been reviewed by Mr Nigel Hayes, Drinking Water Inspector.

The Water Services Authority 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: Yvonne Doris

Yvonne Doris

Inspector

Date: 4th July 2014

Photograph 1: Slyguff abstraction and treatment

Photograph 2: Wellhead cover adjacent to road

Photograph 3: Treatment of Slyguff supply