# 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** | Carrickmacross |
| **Organisation** | Irish Water |
| **Scheme Code** | 2400PUB1005 |
| **County** | Monaghan |
| **Site Visit Reference No.** | SV25554 |

## Report Detail

| | |
|---|---|
| **Issue Date** | 10/06/2022 |
| **Prepared By** | Criona Doyle |

## Site Visit Detail

| | | | |
|---|---|---|---|
| **Date Of Inspection** | 20/05/2022 | **Announced** | Yes |
| **Time In** | 10:38 | **Time Out** | 11:32 |
| **EPA Inspector(s)** | Criona Doyle | | |
| **Additional Visitors** | Lorcan Farrell; Patricia Mallen; Denise McElvaney. | | |
| **Company Personnel** | Irish Water: Yvonne McMonagle.<br><br>Veoila (acting under DBO contract to Irish Water): Robert McCann; Aaron Murray; Sean Cronin. | | |

## Summary of Key Findings

(1) Disinfection consists of chlorination and ultraviolet (UV) treatment. The audit found that the disinfection system was operating satisfactorily during the inspection.

(2) There is no facility to switch over to a standby UV unit as only a single duty UV unit is provided. There is no documented procedure for responding to the chlorine and UV disinfection alarms. A copy of the validation cert for the UV unit was not available at the audit.

(3) Monitoring of residual chlorine should include the network extremities.

## Introduction

The Carrickmacross Public Water Supply (PWS) produces approximately 1,236m3/d of water serving a population of 5,293 (EDEN figures). The audit focused on the disinfection system at the Carrickmacross WTP. This site was not surveyed or upgraded under Irish Water's Disinfection Programme.

## Supply Zones Areas Inspected

This audit assessed the chlorination and UV disinfection system at the Carrickmacross WTP.

## 1. Disinfection Programme Audits 2022

| | | Answer |
|---|---|---|
| 1.1 | Is chlorination used for primary disinfection? | No |

| | | Answer |
|---|---|---|
| 1.2 | Can you establish what type of chlorine disinfectant is used? | Yes |

| | | Answer |
|---|---|---|
| 1.3 | Are there duty and standby chlorine dosing pumps in place? | Yes |

| | | Answer |
|---|---|---|
| 1.4 | Is there automatic switchover in the event of failure of one of the chlorine dosing pumps? | Yes |

| | | Answer |
|---|---|---|
| 1.5 | Is the chlorine dosing rate flow proportional? | Yes |

| | | Answer |
|---|---|---|
| 1.6 | Is the chlorine dosing rate fixed? | Not Applicable |

| | | Answer |
|---|---|---|
| 1.7 | Can IW / LA confirm the target residual chlorine level for the final water leaving the plant? | Yes |

| | | Answer |
|---|---|---|
| 1.8 | Is there a continuous residual chlorine monitor on the final water? | Yes |

| | | Answer |
|---|---|---|
| 1.9 | Can data trends from the online residual monitor be viewed on site? | Yes |

| | | Answer |
|---|---|---|
| 1.10 | Are there low and high chlorine alarm settings? | Yes |

| | | Answer |
|---|---|---|
| 1.11 | Is there an alarm response procedure available on site for responding to chlorine alarms? | No |

**Comment**

There is no documented alarm response procedure for responding to chlorine alarms.

| | | Answer |
|---|---|---|
| 1.12 | Is there automatic shutdown of the supply in the event of the chlorine level dropping below the low chlorine alarm setting or rising above the high chlorine alarm setting? | Yes |

| | | Answer |
|---|---|---|
| 1.13 | Are service due / monitoring instrument calibration dates for the chlorine monitors within date? | Yes |

| | | Answer |
|---|---|---|
| 1.14 | Is the site specific contact time being achieved ? If answer is NO, proceed to question 15 | Not Applicable |

| | | Answer |
|---|---|---|
| 1.15 | Is the minimum effective contact time of 15 mg. min/l being achieved? | Not Applicable |

| | | Answer |
|---|---|---|
| 1.16 | Is the residual chlorine level ≥ 0.1 mg/l at the extremity of the distribution network? | Yes |

**Comment**

Monitoring of residual chlorine levels is taking place at a number of locations several times per week but the monitoring locations are not close to the extremities of the network.

| | | Answer |
|---|---|---|
| 1.17 | Is UV treatment used for primary disinfection? | Yes |

| | | Answer |
|---|---|---|
| 1.18 | Are there duty and standby UV units in operation? | No |

**Comment**

There is one UV unit on site (duty unit).

| | | Answer |
|---|---|---|
| 1.19 | Is there automatic switchover between the duty and standby UV units in the event of failure of the duty unit? | No |

**Comment**

There is no standby UV unit on site.

| | | Answer |
|---|---|---|
| 1.20 | Is there automatic plant shutdown in the event of UV units failing or operating outside of their validated range? | Yes |

| | | Answer |
|---|---|---|
| 1.21 | Is there continuous monitoring of the UV units to verify operation within validation range at all times? | Yes |

| | | Answer |
|---|---|---|
| 1.22 | Can data trends from the online UV monitor(s) be viewed on-site? | Yes |

| | | Answer |
|---|---|---|
| 1.23 | Is there an alarm response procedure available on site for responding to UV alarms ? | No |

**Comment**

There is no documented alarm response procedure for responding to UV alarms.

| | | Answer |
|---|---|---|
| 1.24 | Are service due / monitoring instrument calibration dates for the UV units within date? | Yes |

| | | Answer |
|---|---|---|
| 1.25 | Is a copy of the validation certificate for the UV disinfection system available on site ? | No |
| | **Comment** | |
| | A copy of the UV validation certification was not available on site. | |

| | | Answer |
|---|---|---|
| 1.26 | Is there a plate on the UV unit with the validation criteria? | Yes |

| | | Answer |
|---|---|---|
| 1.27 | Did IW confirm that the UV units are operating within the validation range? | Yes |

| | | Answer |
|---|---|---|
| 1.28 | Have all relevant staff received training on the disinfection upgrades? | Not Applicable |
| | **Comment** | |
| | Not applicable as upgrade works have not been undertaken. | |

## 2. Site Specific Issues

| | | Answer |
|---|---|---|
| 2.1 | Have staff been trained on the UV disinfection system? | No |
| | **Comment** | |
| | Operational staff reported that training has not been provided on the UV disinfection system. | |

## Recommendations

| Subject | Carrickmacross- Disinfection Audit | Due Date | 11/07/2022 |
|---|---|---|---|
| Action Text | **Recommendations**<br><br>**Irish Water is responsible for ensuring a safe and secure supply of drinking water. To address these issues, Irish Water should implement the following recommendations without delay.**<br><br>1. Irish Water should ensure that monitoring of residual chlorine is undertaken several times a week at different points of the network to include the network extremities.<br>2. Irish Water should ensure that there are duty and standby UV disinfection units with automatic changeover or plant shutdown in the event of failure of one of the UV disinfection units.<br>3. Irish Water should ensure that a copy of the validation certificate is maintained demonstrating that the UV unit is validated to an appropriate international validation standard.<br>4. Irish Water should ensure that (a) there is a documented alarm response procedure and (b) ensure that all staff are trained on the alarm response for UV and chlorine alarms.<br><br>**Follow-Up Actions required by Irish Water**<br><br>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.<br><br>This report has been reviewed and approved by Regina Campbell, Drinking Water Team Leader.<br><br>Irish Water should submit a report to the Agency on or before 11/07/22 detailing how it has dealt with the issues of concern identified during this audit.<br><br>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.<br><br>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.<br><br>Please quote the Compliance Plan DW20220052 in any future correspondence in relation to this Report. | | |