

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 | South Louth & East Meath |
| Organisation | Irish Water |
| Scheme Code | 2100PUB1019 |
| County | Louth |
| Site Visit Reference No. | SV20396 |

| Report Detail | |
|--------------------|-----------------|
| Issue Date | 31/07/2020 |
| Prepared By | Ruth Barrington |

| Site Visit Detail | | | |
|----------------------------|---|------------------|-------|
| Date Of Inspection | 03/07/2020 | Announced | Yes |
| Time In | 13:45 | Time Out | 16:25 |
| EPA Inspector(s) | Ruth Barrington | | |
| Additional Visitors | | | |
| Company Personnel | Irish Water: Fran Glancy, Andrew Boylan, Diane Carroll, Denise Treacy*, Dara Chadwick*, Michael Cunniffe (site audit only) DBO contractors MPE: Maura O'Brien, Andrew McCourt, Barry Hennigan* RPS Group: Gerry Bracken, Danny Byrne. * Indicates presence at pre-audit only | | |

> Summary of Key Findings

1. The construction and initial commissioning phase of the upgrade of Staleen Water Treatment Plant has been completed. The upgraded plant provides enhanced processes and controls at the plant, with verified treatment barriers in place. This has improved the security of the supply for the significant population served by this supply across South Louth and East Meath.
2. Irish Water undertook verification monitoring to support the Remedial Action List programme for the South Louth East Meath Public Water Supply. Results obtained from the initial monitoring dates were compliant, with additional sampling results awaited at the time of the audit. The results of the remainder of the programme were provided to the EPA on 17/07/2020, with exceedances of the trihalomethanes parametric value being detected at two locations in the Ardcath area of the network.
3. Irish Water does not appear to have a comprehensive programme to minimise the formation of trihalomethanes within the network. The EPA considers this is necessary for the removal of the supply from the RAL, in order to demonstrate that the THM formation risk is being managed successfully and to prevent further THM exceedances in the extensive distribution network supplied by Staleen Water Treatment Plant.

> Introduction

The South Louth East Meath Public Water Supply serves a population of over 71,000 people across Louth and Meath. The supply is on the EPA's Remedial Action List (RAL) since 2009 due to trihalomethanes above the parametric values specified in the *European Union (Drinking Water) Regulations 2014* as amended, and poor turbidity removal. Staleen Water Treatment Plant has now been upgraded under the RAL action programme to enhance water quality. The upgrade of the water treatment plant included improvements to the operation and control of new and existing processes, additional filtration capacity and upgraded disinfection including the installation of two UV disinfection units. The works and the initial commissioning phase were complete at the time of the audit.

The purpose of the audit was to verify completion of the RAL action programme works as part of the EPA's assessment of suitability of the supply for removal from the RAL. As such the site visit concentrated on those areas of the water treatment plant that have been recently upgraded.

> Supply Zones Areas Inspected

The audit was one of three pilot audits the EPA's Drinking Water Team carried out to test new auditing procedures put in place to address COVID-19 social distancing and enhanced hygiene restrictions/measures. The audit comprised of a video conference meeting with all relevant parties on 02/07/2020, followed by a site visit with essential audit participants on 03/07/2020.



1. Coagulation Clarification Flocculation (CFC) Stage

| | | Answer |
|---|--|--------|
| 1.1 | Were the CFC tanks, channels and weirs observed to be clean, level and well maintained during the audit? | No |
| Comment | | |
| <p>1. The scope of the upgrade included balancing flows across the clarifiers, levelling the channels and optimising the desludging process. It was noted during the audit that there was a broken lamella plate in Tank 1, and channels in all the clarifiers needed cleaning. These items are not included in the upgrade contract and should be addressed through routine site maintenance programmes.</p> | | |



2. Disinfection

2.1

Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?

Answer

Yes

Comment

1. Primary disinfection is achieved using liquid sodium hypochlorite, prior to the upgrade chlorine gas had been in use at Staleen water treatment plant. Two UV units were added as part of the upgrade to provide an additional barrier to *Cryptosporidium* entering supply.

2. The UV system is set to alarm and shutdown the plant to prevent a unit operating out of validation. The UV units are Wedeco branded and validated under the USEPA protocols, with requirements for maximum flow rate of 1,840 m³/h, minimum UV dose of 12 mJ/cm² and minimum UVT of 85%.

3. Validation information was available in the contactor's report provided by Irish Water to the EPA prior to the audit. The commissioning phase had highlighted the requirement for a "Fail to Start" alarm and shutdown on the UV units which has also been provided on the chlorine disinfection. If the standby does not enter service when prompted, the Fail to Start shutdown will prevent inadequately disinfected water from entering the network.

4. Manufacturer's validation tags were displayed on the UV units at the time of the audit.



3. Supply on the Remedial Action List

| | Answer |
|---|--------|
| 3.1 Do the audit findings support progress made with the Remedial Action List upgrades? | Yes |
| Comment | |
| <p>1. The work on the upgrade of the Staleen Water Treatment Plant has been completed and was summarised at the pre-audit meeting. Processes and controls have been upgraded to enhance the treatment barriers in place at Staleen Water Treatment Plant, to address both the RAL action programme for minimising THM formation, and providing UV disinfection as an additional <i>Cryptosporidium</i> barrier.</p> <p>2. The scope of the upgrade included improvements to the operation and control of new and existing processes, new chemical storage and handling areas, additional filtration capacity and upgraded disinfection including the installation of two UV disinfection units. The operation of the treatment plant was reviewed by the EPA at the pre-audit meeting and during the on-site audit.</p> <p>3. Treatment for the removal of the organic precursors of THM has been enhanced at Staleen Water Treatment Plant. The upgraded coagulation, flocculation and clarification (CFC) stages of treatment followed by rapid gravity filtration, and accompanied by appropriate pH and dosing controls, have been demonstrated through the commissioning phase as being adequate to deliver THM compliance at the water treatment plant.</p> | |

| | Answer |
|--|--------|
| 3.2 Is further information needed to assess completion of the Remedial Action List upgrade? | Yes |
| Comment | |
| <p>1. The verification monitoring results for sampling undertaken on 17/06/2020 were assessed during the audit. These were compliant for THM, however it was noted at the closing meeting that some of the network results (e.g. at Cairns Reservoir Outlet and Ardcath Cemetary), while compliant, were elevated above 80 ug/l.</p> <p>2. Subsequent to the audit, Irish Water provided additional verification monitoring results from 25/06/2020 and 02/07/2020 which showed exceedances of the THM parametric value at two locations in Ardcath. The highest value, of 104.1 ug/l, was recorded at Ardcath Cemetary on 25/06/2020.</p> <p>3. There is currently no overall THM minimisation programme in place for the extensive network served by the South Louth East Meath supply, to ensure compliance throughout likely seasonal variations in THM formation and considering water age within the network. At the time of the audit, there was no information available to show how network levels of THM would be maintained in compliance with the parametric value. The staff present at the audit outlined that flushing in parts of the network would be difficult to plan during drought conditions such as existed at the time of the audit.</p> | |



4. Site Specific Issues

| | Answer |
|--|--------|
| 4.1 Is pest control appropriate at the water treatment plant? | No |
| Comment | |
| A rodent bait box was observed close to the main reception access door to the water treatment plant. The use of rodenticides at the water treatment plant should be avoided unless absolutely necessary and in that case restricted to a limited use until the problem is brought under control. | |

Recommendations

| | | | |
|--------------------|--|-----------------|------------|
| Subject | South Louth East Meath RAL audit recommendations | Due Date | 31/08/2020 |
| Action Text | <p>Recommendation</p> <ol style="list-style-type: none">1. Irish Water should prepare a network THM management programme to mitigate against the formation of trihalomethanes and to comply with the parametric values in the South Louth East Meath Public Water Supply network. This programme should include consideration of elements such as managing water age, flushing schedules, targeted reservoir cleaning, the feasibility of automatic scour valves, provision for drought periods and the challenges of maintaining a programme across two local authority functional areas.2. Irish Water should ensure that the clarifier channels are maintained free of sludge/ algal build up through routine scheduled site maintenance. The lamella plates should be examined in detail and any broken plates should be replaced as part of routine site maintenance.3. Irish Water should review the use of rodenticide on-site. This should be avoided unless absolutely necessary and in that case restricted to a limited use until the problem is brought under control. Irish Water should have regard to <i>EPA Advice Note No. 13: Pesticides in Drinking Water</i> in this review. <p>Follow-Up Actions required by Irish Water</p> <p>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.</p> <p>This report has been reviewed and approved by Aoife Loughnane, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 31/08/2020 detailing how it has dealt with the issues of concern identified during this audit with actions taken and planned to address the various recommendations, including time frame for commencement and completion of any planned work.</p> <p>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.</p> <p>Please quote the Action Reference Number in any future correspondence in relation to this Report.</p> | | |