



Drinking Water Audit Report

County:	Galway	Date of Audit:	8 th January 2016
Plant(s) visited:	Carraroe Drinking Water Treatment Plant	Date of issue of Audit Report:	20 th January 2016
		File Reference:	DW2008/552
		Auditors:	Mr. Darragh Page Ms. Aoife Loughnane
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 EPA Report on <i>The Provision and Quality of Drinking Water in Ireland</i>. • The recommendations in any previous audit reports. • The EPA Direction issued under Regulation 10 on 12th May 2014 and associated Action Programme. 		

MAIN FINDINGS

- i. The EPA issued a Direction under Regulation 10 to Irish Water on 12th May 2014 requiring the submission of an action programme no later than 11th July 2014 to secure compliance with the THMs parametric value in the Carraroe PWS. Following the submission of a revised action programme, the action programme was approved by the EPA on 9th September 2014. The action programme required the installation and commissioning of a new solids removal plant ahead of the existing plant to be complete no later than 30th November 2015. The auditors found that the Direction has not been complied with.

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 compliance with the EPA Direction issued to Irish Water on 12th May 2014 and associated Action Programme.

The Carraroe public water supply is sourced from Loughaunwillan Lake and is treated using ozone, GAC filtration, UV disinfection and chlorination. The treatment plant was upgraded in 2011, however this did not result in the water being supplied meeting the trihalomethanes standard specified in the Drinking Water Regulations. Furthermore, the UV unit has not been providing an adequate treatment barrier to prevent *Cryptosporidium* entering the supply due to the fact that it has been operating outside its validated range.

The Direction issued by the EPA on 12th May 2014 required the preparation and implementation of an action programme by Irish Water to secure compliance with the THMs parametric value no later than 30th November 2015.

The opening meeting commenced at 10.00 am at the Carraroe 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:</p> <p>Ms. Anne Bonner - Drinking Water Compliance Specialist, Irish Water Mr. Victor Van Der Walt – Water Treatment Strategy Specialist, Irish Water Mr. Gerard Greally – SLA Lead, Irish Water Mr. Tony Kelly – Senior Executive Engineer, Galway County Council Mr. Fintan Donnelly – Environmental Technician, Galway County Council Mr. Eoin Curran – Area Engineer, Galway County Council Mr. Ronan Griffin – Caretaker, Galway County Council Mr. Jim O’Connell – Technician, Galway County Council</p> <p>Representing the Environmental Protection Agency:</p> <p>Mr. Darragh Page – Senior Inspector Ms. Aoife Loughnane – Inspector</p> <p>Representing the Health Service Executive</p> <p>Mr. Seamus Mitchell – Senior EHO, HSE West.</p>

An overview of the history of communications between the EPA and Irish Water since the issue of the Direction on 12th May 2014 was given by the EPA at the commencement of the audit. The main communications during this period are listed on the table below:

Date	Summary of Communication
12/5/14	EPA Direction issued requiring submission of action programme to the EPA by 11 th July 2014
26/8/14	IW submitted revised action programme stating that IW to replace the GAC media by end of October 2014 and a new solids plant to be installed ahead of the existing plant by the end of August 2015 with the design phase to be complete by the end of November 2014
9/9/14	EPA approved the action programme requiring the plant to be installed and commissioned by 30 th November 2015 and to submit progress reports on 31 st Jan and 31 st July 2015
23/10/14	IW email stating that GAC media would be replaced by 15 th December 2014 and design solution to be ready by 15 th January 2015
5/12/14	IW stated that completion date for new plant now likely to be February 2016
2/2/15	Progress report submitted by IW
18/3/15	IW submitted a more detailed progress report stating that consultant engaged to prepare design but that two options still being considered (1) new plant (2) replace with Galway City supply with a completion date of February 2016 for option 1.
20/4/15	GANTT chart submitted by IW stating that GAC was replaced on 10/4/15 and that selection of optimum treatment solution would be made by IW by 24/4/15 and that an application for planning permission would be made on 8/5/15.
30/7/15	Progress report submitted by IW. No mention of design selected or planning permission application progress.

30/9/15	IW submitted a RAL update indicating that a planning application for upgrade works was currently being prepared.
4/12/15	IW submitted final report indicating that plans were delayed by land restrictions/CPO issues and that planning application is to be submitted in January 2016 and works are expected to be complete by November 2016

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.	<p>Remedial Works Undertaken to Date</p> <ol style="list-style-type: none"> a. Irish Water stated that since the Direction was issued they have replaced the media in the GAC filters and cleaned out and serviced the ozone tanks (both works were completed in April 2015). Irish Water stated that this initially led to improvements in the UVT of the filtered water (5-6% improvement) but that the GAC filter media became exhausted after five and a half months. b. Irish Water stated that the design of the proposed plant was submitted by contractors to Irish Water in May 2015 and not November 2014 as originally planned. Irish Water stated that they were determining if connection to the Galway City supply was feasible in the short term instead of upgrading the plant. While this was found to be feasible in the long term it was not deemed feasible in the short term (i.e. within the duration of the Direction) and Irish Water then reverted to the plans to upgrade the existing plant. c. Irish Water had intended on submitting a planning application to the planning authority on 8th May 2015 (ref GANTT chart submitted by IW on 20/04/15). However, Irish Water stated that in June 2015 it became aware that there were planning issues relating to the ownership of the site. The auditors pointed out that these planning issues were not communicated to the EPA at the time or in the subsequent progress report of 30th July 2015. The first time Irish Water made the EPA aware of these issues was in the final report dated 4th December 2015 (i.e. after the deadline of the Direction had passed). d. In summary, the action programme submitted by Irish Water and approved by the EPA has not been implemented and the auditors found that there was no solids removal plant on site at the time of the audit. Furthermore, the planning issues remain outstanding and no planning application had been made at the time of the audit. Irish Water stated that an alternative plan, within the existing footprint of the buildings on site was prepared and submitted to IW on 23rd December 2015. This entails the installation of a containerised coagulation and DAF plant capable of treating 100 m³/hr and the replacement of the GAC media in the existing plant with a sand media. The estimated timeframe for completion of these works is November 2016.
2.	<p>UV Disinfection</p> <ol style="list-style-type: none"> a. The original UV treatment unit installed at the Carraroe water treatment plant was a Trojan D06. At the flow rates experienced at the plant the UV unit was validated to 83% UVT. b. Irish Water stated that while replacing the media in the GAC filter had led to an improvement in UVT (by 5-6%) the unit was still operating below 83% UVT which is outside its validated range. c. A second UV unit was installed in September 2015 to split the flow. In accordance with the validation certificate, this allowed the UV units to operate at a lower validated range of 70% UVT. Despite the installation of the second UV unit, Irish Water stated that since

	<p>September 2015 the UVT of the filtered water has been below 70% and therefore outside the validated range. Daily records of the UVT recorded in the monitoring log indicated that the UVT was below 70% on every occasion it was sampled in November and December 2015 and January 2016 to date. On the day of the audit the UVT was 56% meaning the UV system was operating outside its validated range and therefore not operating adequately as a barrier against <i>Cryptosporidium</i>.</p> <p>d. Since 25th November 2015 Irish Water has carried out weekly monitoring for <i>Cryptosporidium</i> (with the exception of the Christmas period) on the raw water at the plant. All 4 results during this period have been clear.</p> <p>e. Irish Water agreed that they will notify the HSE of any detection of <i>Cryptosporidium</i> as soon as they are aware of it.</p>
<p>3.</p>	<p>Distribution Network</p> <p>a. Irish Water stated that Unaccounted for Water (UFW) is over 60% in the Carraroe PWS due to the poor state of mains in some areas.</p> <p>b. Irish Water advised that there is 104 km of watermains in the Carraroe PWS and that a recent contract has been approved to replace 14 km of these mains. This is to start in late January/early February 2016. This will reduce UFW and ensure that the new plant operates below a treatment capacity of 100 m³/d.</p>
<p>4.</p>	<p>Monitoring</p> <p>a. THM monitoring for 2015 indicated that 3 of the 4 samples analysed failed to meet the drinking water standards. The samples taken since the replacement of the GAC media in April 2015 showed some improvement in plant performance as they were lower than prior to its replacement, though 2 of the 3 samples taken since replacement were non-compliant. However, no samples have been taken since September 2015 (after which time the GAC media was exhausted).</p>

3. AUDITORS COMMENTS

The EPA issued a Direction under Regulation 10 to Irish Water on 12th May 2014 requiring the submission of an action programme no later than 11th July 2014 to secure compliance with the THMs parametric value in the Carraroe PWS. Following the submission of a revised action programme, the action programme prepared by Irish Water was approved by the EPA on 9th September 2014. The action programme required the installation and commissioning of a new solids removal plant ahead of the existing plant to be complete no later than 30th November 2015.

At the time of the audit the new solids treatment plant had not been installed or commissioned and the treatment process remained as it was prior to the issue of the Direction (i.e. ozone, GAC filtration, UV and chlorine disinfection). Monitoring results continue to be non-compliant with the trihalomethanes parametric value in 2015 and therefore Irish Water is not in compliance with the Direction. Irish Water indicated that the revised estimated completion date for the plant upgrade works is November 2016.

4. RECOMMENDATIONS

General

1. Irish Water should implement the action programme and ensure that the supply is returned to compliance with the THM parametric value without any further delay.

Management and Control

2. Irish Water should ensure that weekly monitoring for *Cryptosporidium* continues and submit

monthly updates of monitoring results to the HSE and EPA. If any samples test positive for the presence of *Cryptosporidium* oocysts, Irish Water must immediately consult with the HSE to determine if there is a risk to public health.

FOLLOW-UP ACTIONS REQUIRED BY THE LOCAL AUTHORITY

During the audit Irish Water representatives were advised of the audit findings and that action must be taken as a priority by the Irish Water to address the issues raised. This report has been reviewed and approved by Ms Aoife Loughnane, Drinking Water Team Leader.

Irish Water is recommended to put such measures in place as are necessary to implement the recommendations listed in this report. The actions by the local authority to address the recommendations taken will be verified by the Agency during any future audits.

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:

20th January 2016

Darragh Page

Senior Inspector