



Drinking Water Audit Report

County:	Galway	Date of Audit:	14 May 2014
Plant(s) visited:	Mid Galway Water Treatment Plant	Date of issue of Audit Report:	23 May 2014
		File Reference:	DW2009/400
		Auditors:	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 EPA Report on <i>The Provision and Quality of Drinking Water in Ireland</i>. • The recommendations in any previous audit reports. 		

MAIN FINDINGS

- i. **Irish Water has not carried out an investigation into the effectiveness of the Granular Activate Carbon (GAC) filter or developed documented procedures for the management of the GAC filter in spite of several request for this information by the EPA. If the use of ozone and GAC is to be employed as an organics removal stage Irish Water must prepare and implement these procedures.**
- ii. **Improvements have been made to the quality of the raw water following the installation of a borehole and further are planned (covering and piping of the spring). Once these measures are complete an assessment of the effectiveness on reducing organics levels should be carried out to ensure that the UV is operating within its validated range at all times.**

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 Mid Galway public water supply is sourced from the Daingeanbeg River which is a spring fed river. Two main springs along the banks of the river feed the source. A population of 1,076 persons are served by the public water supply but water is also supplied via the Mid Galway PWS to several other public group water schemes (approx. a further 600 persons in total). An upgrade of the treatment plant was completed in August 2011 and treatment consists of ozonation, granular activated carbon filtration (GAC), chlorination, UV and fluoridation.

The opening meeting commenced at 9:30 am at the Mid Galway 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.

Representing Irish Water: (* indicates that person was also present for the closing meeting)

- Gerard Greally* - SLA Manager, Irish Water
- Clint Walter* - Process Optimisation, Irish Water
- Martin Lavelle* - Senior Engineer, Galway County Council
- Diarmuid Croghan* – Senior Executive Engineer, Galway County Council
- Tara Meehan* – Technician, Galway County Council
- Adrian Raftery* – Executive Engineer, Galway County Council
- Tom Gillhooley* - Caretaker

Representing the Environmental Protection Agency:

Darragh Page – 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.	<p>Source Protection</p> <ul style="list-style-type: none"> a. The source of the Mid Galway PWS is a stream that is fed from a spring approx. 600 m from the abstraction point. The supply is also fed from a borehole supply which supplies 25-30 m³/hr out of a total of 160 m³/hr. b. The two springs and the borehole were inspected as part of the audit. c. Irish Water stated that the springs are to be covered and water is to be piped directly from the spring to the plant to remove surface water run-off currently entering the stream which appears to be increasing the TOC levels in the raw water. There is considerable undergrowth to be cleared before the pipes can be laid and it was reported that this will take place when ground conditions are more favourable. d. Testing was carried out at the time of the audit which indicated that the UVT of the raw water at the spring (83.4%) was better than that in the stream (80%). Irish Water stated that this is expected to improve when the vegetation is removed from the spring (see photo 1). e. Galway County Council stated that the TOC levels in the borehole appear to be lower than that of the spring e.g. a sample on 3rd April 2014 found 3.1 mg/l in stream and 2.56 mg/l in borehole. The UVT was reported to be >90%.
2.	<p>Filtration</p> <ul style="list-style-type: none"> a. The raw water is treated with ozone and then filtered using GAC. b. A previous audit (18 December 2012) recommended that the Water Services Authority should investigate the effectiveness of the GAC to determine whether the media has become exhausted. No information was presented at the time of the audit to indicate that this work had been done. c. This audit also recommended that the Water Services Authority should develop a documented procedure specifying the protocol to be followed to assess the effectiveness of the GAC media on an ongoing basis. No information was presented at the time of the audit to indicate that this work had been done. d. The EPA has requested the information on b and c from Irish Water on numerous occasions

	<p>and has not yet received this information.</p> <ul style="list-style-type: none"> e. Irish Water agreed that the media in use at the Mid Galway PWS is likely to be exhausted as it has not been replaced since the plant was first commissioned. f. Neither Irish Water or Galway County Council were able to state the expected lifespan of the GAC or when it becomes exhausted and therefore no longer effective at removing organics as intended.
3.	<p>Monitoring and Sampling Programme for treated water</p> <ul style="list-style-type: none"> a. The Mid Galway PWS remains on the EPA Remedial Action List due to the difficulties in ensuring that the UVT of the final water is adequate to ensure appropriate disinfection. b. Irish Water stated that the UVT of the final water has improved with the introduction of the borehole and anticipates further improvement once the water is piped directly from the spring. c. Irish Water agreed to send in screenshots of the final UVT once the borehole is in operation two months (i.e. after 22nd June 2014).

3. AUDITORS COMMENTS

It is of concern that neither Irish Water or Galway County Council were able to outline how the ozone and GAC treatment stages should be managed to ensure that there is adequate removal of organics prior to disinfection with UV. The EPA has made repeated requests to both Galway County Council and Irish Water to carry out the required testing to determine how the plant should be managed and to develop appropriate procedures to manage the plant based on this information. This same issue with the management of ozone and GAC plants has occurred in several other water treatment plants in Galway and needs to be resolved by Irish Water as a matter of urgency.

Notwithstanding this, improvements have been made to reduce the organics loading to the plant (the introduction of the borehole) and further are planned (covering and piping of the spring) which may reduce organic levels to a level sufficient to ensure that the security of UV disinfection is improved.

4. RECOMMENDATIONS

Source Protection

1. Irish Water should submit an outline of the timeframe for the completion of the necessary works to cover the spring sources of the Mid Galway PWS and the installation of pipes to pipe water directly to the water treatment plant from the spring.

Filtration

2. Irish Water should investigate the effectiveness of the GAC to determine whether the media has become exhausted. This investigation should assess the effectiveness of the media in removing organics.
3. Irish Water should develop a documented procedure specifying the protocol to be followed to assess the effectiveness of the GAC media on an ongoing basis. The procedure should outline what testing should be carried out to complete this assessment and what conditions would necessitate a replacement of the media.

Disinfection

4. Irish Water should collate and submit the results of UVT monitoring of the final water from the Mid Galway PWS once the borehole has been in operation for a period of at least 2 months.

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 and approved by Mr. Brendan Wall, Manager (Environmental Enforcement).

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.

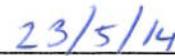
Please quote the File Reference Number in any future correspondence in relation to this Report.

**Report prepared
by:**



Darragh Page
Inspector

Date:



23/5/14



Photo 1. Spring Source of the Mid Galway PWS.