



Drinking Water Audit Report

County:	Galway	Date of Audit:	13 May 2014
Plant(s) visited:	Cleggan/Claddaghduff Water Treatment Plant	Date of issue of Audit Report:	23 May 2014
		File Reference:	DW2010/110
		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. An investigation into the cause of the THM exceedances following the guidelines in EPA Advice Note No. 4 has not been carried out as previously recommended. This investigation should be carried out and the results of this assessment submitted to the EPA.
- ii. Two potential sources of contamination of the lake were identified on the day of the audit, cattle accessing the lake and the proximity of onsite domestic wastewater treatment systems. The potential for contamination from these sources should be assessed and actions taken where necessary to reduce the risk.

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 in response to the notification by Irish Water dated of the failure to meet the Trihalomethanes and Bromate parametric value (as specified in Table B of Part 1 of the Schedule of the Regulations) in the Cleggan/Claddaghduff. 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 Cleggan/Claddaghduff PWS serves a population of 1,025 persons and supplies approx. 500 m³/d. Treatment consists of dissolved air flotation following the addition of alum and soda ash, rapid gravity filtration and disinfection (chlorination and UV). The plant is run by a Design Build Operate contractor TSSL which is managed by Galway County Council which report to Irish Water.

Photographs taken by Darragh Page during the audit are attached to this report and are referred to in the text where relevant.

The opening meeting commenced at 14:30 at the Cleggan/Claddaghduff 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: (* indicates that person was also present for the closing meeting)</p> <p>Gerard Greally* – SLA Manager, Irish Water</p> <p>Tim O’Connor* - SLA Lead, Irish Water</p> <p>Martin Lavelle* - Senior Engineer, Galway County Council</p> <p>Tony Kelly* - Senior Executive Engineer, Galway County Council</p> <p>Eoin Curran* - Executive Engineer, Galway County Council</p> <p>Pat Collins*- Operations Manager</p> <p>Fintan Joyce* - Plant Operator</p> <p>Representing the Environmental Protection Agency:</p> <p>Darragh Page – Inspector, EPA</p>
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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 Cleggan/Claddaghduff public water supply is Courhoor Lough. This is a small lake surrounded by agricultural land (grazing) and one off housing. b. The lake is not fenced off and cattle were observed in the lake near upstream of the intake point. There are also a number of houses on septic tanks close to the lake shore (see photo 1).
2.	<p>Coagulation, Flocculation and Clarification</p> <ul style="list-style-type: none"> a. The raw water is treated using dissolved air flotation following the addition of alum and soda ash. The DBO contractor stated that the raw water is relatively stable with a colour average of 65 Hz which occasionally goes up to 100 Hz. The target pH is 6.25 and it was also reported that there is little pH variation in the lake. b. The plant is run for 10-12 hours per day in two or three runs based on the volume in the reservoir. c. The plant was not running during the audit.
3.	<p>Filtration</p> <ul style="list-style-type: none"> a. The filter is a layered rapid gravity filter. b. A backwash of the filter could not be observed during the audit as the plant was not running. c. The results from the turbidity monitor were observed and were generally low (<0.2 mg/l).
4.	<p>Chlorination and Disinfection</p> <ul style="list-style-type: none"> a. There is a duty only UV unit in place at the plant, however it is an unvalidated unit. This

	<p>unit is managed by replacing bulbs as per manufacturers specifications and has a UVI alarm.</p> <ul style="list-style-type: none"> b. Chlorination is achieved by using 14% sodium hypochlorite. There is a duty/standby dosing arrangement in place and the dosing is based on residual from the reservoir (which is part of the DBO contractors responsibility). c. The residual chlorine levels leaving the reservoir were observed on the SCADA and were generally 0.5 mg/l. d. Galway County Council carry out sampling at the extremities of the network and stated that the levels are generally in the range of 0.3 mg/l. e. Some manual sampling is also done at the reservoir but the results are not recorded alongside the results of the chlorine monitor for comparison. f. The low alarm settings on the chlorine monitor are 0.2 mg/l. The DBO contractor stated that he could not recall the alarm having been activated.
5.	<p>Treated Water Storage</p> <ul style="list-style-type: none"> a. The treated water is pumped to a storage reservoir nearby. b. The external surface of the sides of the reservoir were observed and appear to be in good condition, however the roof of the reservoir was not examined for health and safety reasons. The ladder attached to the reservoir did not have a cage nor where there any railings on the roof of the reservoir.
6.	<p>Monitoring and Sampling Programme for treated water</p> <ul style="list-style-type: none"> a. Online monitoring of the final water for chlorine, turbidity and aluminium were examined on the SCADA and the results were all observed to be within acceptable ranges.
7.	<p>Exceedances of the Parametric Values</p> <ul style="list-style-type: none"> a. Two exceedances of the parametric values for Bromate and Trihalomethanes were notified to the EPA in 2013 b. Monitoring on 23 August 2013 for bromate subsequent to the initial failure indicated compliance with the parametric value. No monitoring since this was reported to the EPA. c. Galway County Council stated that although the contractor had been recommended to switch to low bromide sodium hypochlorite this had not taken place and was not planned. d. THM monitoring subsequent to the failure on 16 July 2013 was carried out on 23 August 2013 and was compliant although one result was close to the parametric value (96.6 µg/l). No monitoring since this date was submitted to the EPA. Galway County Council stated that they intend to carry out three months monitoring commencing end May/early June. e. Galway County Council stated they carried out flushing in the network to reduce the potential for THM formation but no assessment of THM formation potential as recommended in EPA Advice Note No. 4 has been carried out in spite of the need for such an assessment being identified by Galway County Council in October 2013. f. Galway County Council stated that they intend to examine the levels of chlorine being dosed as there is a residual of 0.3 mg/l at the extremities of the network which may give some scope to reduce the chlorine dose without compromising disinfection.

3. AUDITORS COMMENTS

There has been poor communication from Irish Water to the EPA concerning this supply and in spite of several requests no response from Irish Water to these requests relating to the Cleggan/Claddaghduff PWS had been received by the EPA at the time of the audit.

Irish Water has not carried out a THM assessment as outlined in EPA Advice Note No.4 in spite of the need for such an assessment being identified. This assessment should be carried out without delay to ensure that any remedial measures to reduce the THM levels are targeted where they will be most effective.

4. RECOMMENDATIONS

Source Protection

1. Irish Water should take action to ensure that the source is made secure to prevent livestock access.
2. Irish Water should identify any domestic waste water treatment systems in the vicinity of the lake that have the potential to impact on the quality of water in the lake and carry out inspections of these systems.

Disinfection

3. Irish Water should ensure that the results from the chlorine monitor and handheld chlorine analyser are recorded together to ensure that the results from the analyser are correct.
4. Irish Water should carry out an investigation into the cause of the 2013 THM exceedances in the Cleggan/Claddaghduff PWS. This investigation should follow the guidelines issued in EPA Advice Note No.4 and should be submitted to the EPA when complete.
5. Irish Water should ensure that any reduction in chlorine dose rate at the plant does not compromise chlorine levels in the network and that a minimum of 0.1 mg/l at the extremities of the network are maintained at all times.
6. Irish Water should increase the frequency of bromate monitoring beyond that required in the Drinking Water Regulations in line with the risk based approach to monitoring.

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