



Private Drinking Water Supplies Monitoring Programme Audit Report

County:	Cork	Date of Audit:	28 th September 2017
Location visited:	Inniscarra Water Treatment Works	Date of issue of Audit Report:	15 th December 2017
		Auditors:	Ms. Derval Devaney (EPA) Dr. John Gray (Consultant) Mr. Niall Dunne (EPA)
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</i>. • <i>The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Private Water Supplies (ISBN: 978-1-84095-349-7)</i>. 		

Main Findings

- A number of weaknesses in procedures were identified particularly for selecting and taking samples and pre-determining specific sampling locations and dates to ensure samples are evenly spread and representative of the water supply zone.
- Cork County Council does not monitor nursing homes or food premises as it views this to be within the remit of the HSE.
- Although cooperation with the HSE is generally good, some relevant information held by the HSE is not shared with Cork County Council due to data protection issues.
- A large number (302 no.) of small private supplies were not monitored for *E. coli* during 2016.

1. Introduction

Under the *European Union (Drinking Water) Regulations 2014* the Environmental Protection Agency has a supervisory role in relation to the establishment and implementation of monitoring programmes by Local Authorities. This audit was carried out to assess the performance of Cork County Council in carrying out effective monitoring of private drinking water supplies to ensure the provision of clean and wholesome drinking water.

An audit of the 2016 monitoring programme implemented in County Cork was carried out at the Inniscarra Water Treatment Works on 28th September 2017. Using a questionnaire as a guide, Cork County Council staff were interviewed to ascertain the principles and methodology for establishing

monitoring programmes, sample point selection, sample classification, integrity of data reporting and notification procedures.

There are 293 group water schemes in County Cork of which 136 are public group water schemes supplied from public water supplies operated by Irish Water and 157 are private group water schemes. There are also 523 small private supplies listed on Cork County Council's register. The audit observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Cork County Council:
<p>Eliz Hipwell, Cork County Council, Senior Executive Chemist Pat Kelly, Cork County Council, Water Liaison Engineer David Sheehan, Cork County Council, Laboratory Technical Manager Jacinta Reynolds, Cork County Council, Senior Scientist Denis Lyons, Cork County Council, Chief Technician Karen Condon Cork County Council, Assistant Staff Officer</p>
Representing the Environmental Protection Agency:
<p>Ms. Derval Devaney, Inspector, EPA Dr. John Gray, Consultant, John Gray Consultancy Mr. Niall Dunne, Inspector, EPA</p>

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.

<p>1. Compliance Monitoring Programme</p>	<p>a) The 2016 compliance monitoring programme for private water supplies was prepared by Cork County Council. Sampling is generally based on population as surveyed by Cork County Council Surveys are carried out every five years. Individual properties and areas supplied by each scheme are mapped. Private suppliers were not consulted when drafting the monitoring programme. Therefore, the auditors were unable to determine if there were samples which were not representative of the water supply zone.</p> <p>b) Colour coded maps showing the location and extent of group water schemes were examined for Zone 1 and Zones 2, 3 and 4. Schemes were classified as:</p> <ul style="list-style-type: none"> Local Authority, Private and Cork County Council maintained Local Authority, Public and Cork County Council maintained Well, Private and not Cork County Council maintained Well, Private and Cork County Council maintained Well, Public and Cork County Council maintained Local Authority ownership to be confirmed. <p>c) The sampling programme is reviewed at the end of the year to take account of changes in population or volume supplied. However, most schemes are small with few changes being made year on year. Additional information regarding population may be derived from the secretaries of the schemes.</p>
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- d) Although Cork County Council has taken into charge some private group schemes, a number of other schemes could not be taken into charge but are being maintained by the Local Authority with some operational or capital funding being derived from the NFGWS.
- e) Specific sample locations, collection dates and suitable alternative sample locations were not pre-determined in the 2016 monitoring programme. Sample locations were selected by the sampler based on personal knowledge of the area.
- f) Samples are generally taken from cold water tap in the kitchen in consumers' properties. Samples are not taken from outside taps.
- g) Should access to the selected sample point not be possible, the selection of alternative premises is based on the sampler's local knowledge and awareness of the supply network. The procedure is not formalised. Access by Cork County Council to network schematics has not been possible although they are held by Rural Water.
- h) Failures of compliance samples in private supplies are not required to be notified to the EPA as the Local Authority is the supervisory authority/regulator for such supplies. Fourteen boil water notices were issued to small private supplies during 2016 and advice to boil water was issued to three group water schemes in 2016. The majority of these notices were lifted during 2017.
- i) The local authority confirmed that if <20 total coliforms/100ml were detected, it would probably not take action although in the event of >20/100 being detected, action would probably be taken, such as an audit. An audit is always carried out when an *E. coli* failure occurs. There were 12 audits carried out in 2016.
- j) Open files, approximately two per annum, are reviewed with the HSE's Environmental Health Officer.
- k) A register of small private supplies is being trialled nationally in 2017. Issues of maintenance of the register on-line and security are of concern and it was noted that some Local Authorities publish anonymised data with locations being excluded. A spreadsheet was examined which identified some 66 small private schemes having non-compliant samples. Relevant sample details, associated information and actions taken were recorded.
- l) There is a protocol for operating group water schemes similar to that in place for public schemes. Advisory letters are sent to group water schemes affected by non-compliant samples requesting the submission of an action plan within 60 days identifying remedial actions. It was noted that hotels and similar properties would generally take remedial action in the event of non-compliant water before receiving a request for action information from the local authority.
- m) The required numbers of check and audit samples are recorded in the sampling protocol. Details of the source water type, treatment provided, daily output and population served are noted.
- n) Audit samples are taken at randomly selected locations. The locations of samples taken in previous years is reviewed by the Water Liaison Engineer to ensure that the current year's locations truly represent the quality of the water supplied throughout the supply areas.
- o) Should it not be possible to take a sample from the pre-determined location, adjacent properties would be approached up to a maximum of three attempts. All sampling locations are at the consumers' tap or taps in public or commercial buildings.
- p) The EPAs 2016 Drinking Water Returns show 18 private supplies in County Cork had a shortfall in the required sampling frequency. In addition, 302 small private supplies listed on the EPA's Drinking Water Returns 2016 were not monitored at all during 2016 for *E. coli*.
- q) Of the small private supplies, 82 were also recorded as having "0" population and "0" volume supplied. This was attributed to Cork County Council not having this information to hand.
- r) A list of 523 small private supplies was available on the day of the audit, which included

	<p>hotels and bed and breakfast establishments with small populations or volumes supplied.</p> <p>s) The HSE has confirmed in recent communications with the EPA that although it monitored private supplies in the past, it may not do so in future unless it is to honor a contractual agreement already in place. Cork County Council stated it was to meet with the HSE to discuss this matter.</p> <p>t) Cork County Council stated it would in future prioritise sampling from national schools and those properties historically sampled. Regarding community centers, public buildings and pre-schools, a countrywide review is under way under the food monitoring programme and a report is awaited. Cork County Council is confident that it is informed by HSE of failures at public nursing homes but Cork County Council and the EPA is not informed of compliant properties since this data is not made available by the HSE to Cork County Council. The Local Authority stated it may add such properties to its sampling programme for 2018.</p> <p>u) Cork County Council claim that since it began auditing private supplies, the occurrence of non-compliance has reduced significantly. Cork County Council confirmed that, if possible, it plans to sample nursing home by the end of the year.</p> <p>v) There were apparent shortfalls showing on the EPA’s query on the 2016 Drinking Water Returns for some chemical parameters for Carlton Holiday Village, Youghal. However, Cork Co. Co stated it had sampled the premises on three occasions during 2016. A sample taken by HSE on 21st December 2015 contained 5 total coliforms/100ml. Cork County Council was informed and further samples were taken on 23rd August 2016 (10 total coliforms), 24th October 2016 (9 total coliforms/100ml and 3 <i>E. coli</i>/100ml) and 12th December 2016 (free from coliforms and <i>E. coli</i>). The EPA has investigated its shortfall reports and anomalies were identified. The EPA is currently reviewing this process and is liaising with Irish Water on this matter. How results are entered and reported to the EPA and how the query is determined forms part of this review.</p> <p>w) An apparent shortfall in samples from Carrig Ri Leamleara in 2016 was attributed to data being recorded for a sampling point that is on the same supply but has a different scheme code. Indeed, it was discovered during the audit that this supply has 2 different private supply scheme codes in EDEN. Two samples were in fact taken on 28th June and 27th September from Carrig Ri Leamleara private supply during 2016 which contained 29 total coliforms/100ml with 0 <i>E. coli</i>/100ml, and 56 total coliforms/100ml and 5 <i>E. coli</i>/100ml respectively. Cork County Council also stated that the HSE were monitoring this supply under the food safety requirements. Data from the HSE is not published on its website nor routinely sent to Cork County Council (if compliant) because of concerns regarding data protection.</p>
<p>2.</p>	<p>Operational Monitoring Programme</p> <p>a) An operational monitoring programme for 2016 was not prepared by Cork County Council for private supplies. However, scheme owners may carry out their own operational monitoring of raw and treated water.</p>
<p>3.</p>	<p>Monitoring Programmes for Specific Parameters</p> <p>a) If tankers are deployed in an emergency, the sampling protocol according to the EPA handbook would be followed. Tankers have not been deployed recently.</p>
<p>4.</p>	<p>Sampling Procedures</p> <p>a) There are documented and comprehensive procedures for taking check and audit samples, including a record of amendments, which are held electronically on Cork County Council’s shared drive. Individual samplers do not hold their own copy.</p>

	<p>b) Daily worksheets are provided to the samplers by the Chief Technician and include date of sampling, location and type of sample. If it is not possible to collect the designated sample the fact is recorded on the Labworks system and the sample re-scheduled. Alternative sample locations would be the properties adjacent to the specified location or a nearby fixed point if available.</p>
<p>5.</p>	<p>Data Handling</p> <p>a) Analytical and associated data is recorded both in the contract laboratory and by Cork County Council. When analytical data is transferred to Cork County Council it is entered on to the Labworks system by the sampler, who confirms that analysis is complete. The accuracy of the data recorded is verified by the Chief Technician or Data Manager.</p> <p>b) If a result on the database is subsequently shown to be incorrect it may be changed before the data is archived. After archiving, only the Chief Technician or Data Manager have editing rights. The system can produce an audit trail of access to the system and of data entries.</p> <p>c) Compliance monitoring data is not made available on Cork County Council’s website and a hardcopy of the monitoring results is not routinely sent to private suppliers. The private supplier does receive a copy of the results taken on its supply if it is requested.</p>
<p>6.</p>	<p>Exceedances of Parametric Values</p> <p>a) There are documented procedures for dealing with exceedances of microbiological and chemical parametric values. There is also a procedure for dealing with exceedance of indicator parametric values.</p> <p>b) Cork County Council has in place a document entitled “Internal protocol on receipt of non-compliances for public supplies”, issue No 8, dated September 2017 which identifies, amongst other issues, situations requiring notification to EPA; protocol/actions for exceedances; detection of <i>Cryptosporidium</i> and <i>Clostridia</i>. It identifies broadly the need to investigate causes of exceedances but does not sufficiently detail specific actions to guide the identification of reasons for non-compliant results.</p> <p>c) Quarterly meetings are held between senior officers including, as required and appropriate, the Assistant County Manager, the County engineer, the Director of Services and Environmental Water Service.</p> <p>d) The HSE and Cork County Council have in place a joint, draft, comprehensive documented procedure dated December 2011 for responding to incidents involving water supplies. Kerry County Council also participates in the document. Progress meetings are held to update actions taken in response.</p> <p>e) The HSE notifies Cork County Council of outbreaks of disease or clusters of illness. Cork County Council would investigate and take samples.</p>

3. Auditors comments

Arrangements by Cork County Council to assess the quality of private water supplies for 2016 were not totally satisfactory.

The auditors noted the detailed record maps of the supply arrangements. However, several weaknesses in procedures were identified particularly the lack of a documented procedure for selecting and taking samples and the lack of pre-determined specific sampling locations and dates to ensure samples are evenly spread and representative of the water supply zone. It was also noted that the documented procedures to be followed in the event of exceedances lacked detailed guidance on the investigations required to identify the causes of the exceedance.

Although cooperation with HSE is generally good, some relevant information held by HSE is not shared with Cork County Council. As the Supervisory Authority of private regulated supplies, Cork County Council needs to satisfy itself that private supplies are being monitored at the required frequency and for the correct parameters to ensure wholesome clean water is being delivered to its consumers. Not having a list of supplies or parameters being monitored by the HSE nor having sight of all these results suggests Cork County Council's monitoring compliance function may not be fully met within its functional area as required by Regulation 7 of the Drinking Water Regulations.

4. Recommendations

Compliance Monitoring Programme

1. Cork County Council should:
 - a) liaise with the private water supplier (e.g. a group water scheme) when compiling the sampling plan for the upcoming year to ensure that the populations, volumes and sample locations are representative of the water supply zone;
 - b) establish a formal protocol for the selection of random addresses for sampling at consumer's premises and for the selection of alternative addresses if required;
 - c) ensure that the spread of sample days, times and locations within a monitoring programme is as wide as possible to ensure that compliance samples are representative of water quality consumed throughout the year as required by the Drinking Water Regulations. To this end the local authority should pursue its enquiries with Rural Water in Cork County Council regarding mains layouts;
 - d) formalise the decision regarding the level of coliforms present in a sample which would trigger remedial action;
 - e) finalise the arrangements regarding a trial online register in 2017 of private supplies and adopt the register for future use;
 - f) carry out a risk assessment in consultation with the private water supplier for each of its small private water schemes of < 100 m³/d to ensure that all relevant data is recorded in the register of private supplies (including populations and volumes), that the correct numbers of samples are taken and the correct audit parameters are to be included in the check monitoring, as required in accordance with Section 3 Paragraph 2.6 of the EPA's Handbook for Private Water Supplies;
 - g) ensure that the private schemes being maintained by Cork County Council meet the drinking water standards and liaise with Irish Water to determine if such schemes can be taken in charge by Irish Water; and

- h) ensure its staff has access to the network schematics held by Rural Water in Cork County Council as required.
2. The auditors noted and welcomed the close cooperation between Cork County Council and the HSE. Cork County Council should further pursue its enquiries with the HSE to ensure it is notified and obtains copies of both non-compliant and compliant samples taken on regulated private supplies by the HSE. The list of premises to be monitored and parameters to be sampled should be agreed with the HSE at the beginning of the year to ensure (a) all regulated premises are monitored and (b) the specific parameters are monitored at the required frequencies in accordance with the requirements of the Drinking Water Regulations.
3. The EPA recommends that small private supplies (regardless of size) should be monitored for *E coli* at least once per year. Supplies equal to or greater than 50 persons should be monitored at least twice per year. This should be catered for within Cork County Council's compliance monitoring programme for 2018 and onwards.
4. Regarding the colour coded maps showing the location and extent of group water schemes in Co. Cork, Cork County Council should determine who is responsible for those classified as "Local Authority ownership is to be confirmed."
5. Cork County Council should ensure their register of supplies, and similarly EDEN, is kept up-to-date. For example, Carrig Ri Leamleara private supply should only have one scheme code.

Sampling Procedures

6. Cork County Council should ensure that the comprehensive documented procedures for taking compliance samples are held by samplers.

Data Handling

7. Cork County Council should provide a copy of the monitoring results to the private water suppliers.

Exceedances of Parametric Values

8. Cork County Council should:
 - a) develop further its procedure for responding to exceedances to include detailed guidance on the investigations required to guide the identification of the cause of such exceedance; and
 - b) finalise and adopt the draft documented procedure for responding to incidents involving water supplies; and
 - c) finalise the HSE and Cork County Council joint, draft, comprehensive documented procedure dated December 2011 for responding to incidents involving water supplies.

Follow-Up Actions Required by Cork County Council

This report has been reviewed and approved by Aoife Loughnane, Drinking Water Team Leader.

Cork County Council is recommended to put such measures in place as are necessary to implement the recommendations listed in this report. The actions taken by Cork County Council to address the

recommendations will be verified by the Agency during any future audits.

Report prepared by:

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Date:

12 December 2017

John Gray

Consultant

Derval Devaney

Inspector