



# Private Drinking Water Monitoring Programme Audit Report

<b>County:</b>	Leitrim	<b>Date of Audit:</b>	26 <sup>th</sup> September 2017
<b>Location visited:</b>	Leitrim County Council Offices	<b>Date of issue of Audit Report:</b>	15 <sup>th</sup> December 2017
		<b>Auditors:</b>	Ms. Derval Devaney (EPA) Dr. John Gray (Consultant)
<b>Audit Criteria:</b>	<ul style="list-style-type: none"> <li>• The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</i>.</li> <li>• The <i>EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Private Water Supplies (ISBN: 978-1-84095-349-7)</i>.</li> </ul>		

## Main Findings

1. Leitrim County Council did not include Small Private Supplies (serving less than 10 m<sup>3</sup>/day on average and less than 50 persons that are part of a commercial or public activity) in its 2016 Compliance Monitoring Programme.
2. Leitrim County Council does not liaise with the private water supplier when compiling the sampling plan for the upcoming year to ensure that the sample locations are representative of the water supply zone.
3. The scope of the compliance monitoring programme was limited in that the distribution of sample days, times and specific locations within the programme was limited to certain locations, days and weeks within each month.
4. Leitrim County Council did not have a written procedure detailing the investigations required to identify reasons for sample results that exceed the parametric values outline in the Drinking Water Regulations (S.I. No 122 of 2014, as amended).
5. There was no audit plan in place for 2016 private regulated supplies. Leitrim County Council highlighted the lack of resources given to this area of enforcement, especially in the event of investigating non-compliant results.

## 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 Leitrim 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 Leitrim was carried out at the Leitrim County Council Offices on 26<sup>th</sup> September 2017. Using a questionnaire as a guide, Leitrim 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.

Leitrim County Council stated there are 71 Public Group Water Schemes, 34 of which supply greater than 10m<sup>3</sup>/day for which 77 check samples and five audit samples were taken. There are 27 privately sourced group water schemes of which 5 supply greater than 10m<sup>3</sup>/day for which 10 check samples and four audit samples were taken. Leitrim County Council have not included Small Private Supplies on their register (serving less than 10 m<sup>3</sup>/ day on average and less than 50 persons that are part of a commercial or public activity) and therefore they do not form part of their Compliance Monitoring Programme.

The audit observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Leitrim County Council:
Mr. David Barry, Executive Scientist Council
Representing the Environmental Protection Agency:
Ms. Derval Devaney, Inspector, EPA
Dr. John Gray, Consultant, John Gray Consultancy

## 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><b>1.</b></p>	<p><b>Compliance Monitoring Programme</b></p> <ul style="list-style-type: none"> <li>a) The 2016 compliance monitoring programme for private water supplies was prepared by Leitrim County Council's Executive Scientist and is kept in electronic format.</li> <li>b) Private Water Suppliers were not consulted when drafting the monitoring programme. Therefore, the auditors were unable to determine if all samples were representative of the water supply zone.</li> <li>c) Leitrim County Council did not include Small Private Supplies (SPS) (serving less than 10 m<sup>3</sup>/ day on average and less than 50 persons that are part of a commercial or public activity) in its 2016 Compliance Monitoring Programme. It stated that the HSE monitors the small private commercial and public supplies (e.g. hotels, B&amp;Bs, crèches, cafes, etc.) However, it is unclear if the monitoring undertaken by the HSE meets the requirements of the parameters to be monitored under the Drinking Water Regulations. Also, Leitrim County Council does not receive the monitoring results from the HSE for these premises or indeed confirmation that these premises were monitored. Leitrim County Council stated that if there is a failure the HSE contacts Leitrim County Council to inform it of the failed result.</li> <li>d) The compliance monitoring programme for 2016 included: a list of all private water</li> </ul>
------------------	--

supplies in the county; the size of each supply and the required number and frequency of all check and audit samples. A factor of 3 (instead of 2.3) was applied to the volume to give the potential population supplied.

- e) Two check samples for each scheme listed in the compliance monitoring programme for 2016 were scheduled regardless of volume or population (all supplies supply a volume of 60 m<sup>3</sup>/day or less). The size of the schemes (population and volume) were recorded in the compliance monitoring programme.
- f) 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.
- g) Samples are generally taken from cold water tap in the kitchen in consumers' properties. Samples are not taken from outside taps.
- h) 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 Leitrim County Council staff to the network schematics has not been possible although they are held within Leitrim County Council's Rural Water Division.
- i) Some parameters are analysed at Leitrim County Council's laboratory at Carrick-on-Shannon and others at the Roscommon laboratory, both being accredited for their particular analyses.
- j) A critical review of the temporal and spatial distribution of sampling, to ensure sampling represents the supplies as accurately as possible has not been carried out for County Leitrim. Reliance is placed on the predetermined sampling plan and sampler's choice of sampling location. The sampler does however record the GPS co-ordinates of the sample location.
- k) Upon review of the 2016 sampling data returns submitted to EPA it is evident that most samples from private water supplies for bacteriological analysis were taken on Monday or Tuesday with a very few taken on Wednesday. None were taken on any other day of the week or at weekends.
- l) The data for total coliforms shows that the first sample date for Leitrim County Council was 11 January 2016 and the last 6 December 2016. If these circumstances are repeated year on year then it is apparent that no compliance samples are taken for Leitrim County Council for a period approaching six weeks.
- m) None of the audit parameters were included in the 2016 private supplies compliance monitoring programme. Minor shortfalls in sampling during 2016 occurred for 13 private water supply schemes. Shortfalls for Drumaleague Group Water Scheme for *E. coli* were attributed to inconsistent reporting of results (counts per 100ml and MPN). Keshcarrigan Group Water Scheme was not included on the sampling programme as it was believed that it had been taken over by Irish Water. Leitrim County Council confirmed after the audit that the Keshcarrigan Group Water Scheme (GWS) was taken over by Irish Water and therefore removed from the sampling programme for 2016. Leitrim County Council stated it would update EDEN with this information and insert a close out date for the scheme.
- n) Two public group water schemes were not monitored for *E. coli* in 2016. Keshcarrigan GWS (as it was taken over by Irish Water and removed from the 2016 monitoring programme) and Tully GWS was not monitored as the output was less than 10m<sup>3</sup>/day. Following a review of population and output in November 2016, Tully GWS was added to the sampling programme for 2017.
- o) It was noted that information held on EDEN relating to water treatment at five private water supplies were incorrect, namely Carrigallen GWS (groundwater source); Cornashamsoge (mountain stream); Drumeela Drinking Water Scheme (spring);

	<p>Mohercregg (mountain spring); and Sliabh an Iarainn. Also, Drumaleague was listed as a private GWS on the 2016 DW Returns when it was confirmed during the audit that it was a Public GWS. Leitrim County Council stated it would review the private supplies and update the information on EDEN accordingly.</p>
<b>2.</b>	<p><b>Operational Monitoring Programme</b></p> <p>a) An operational monitoring programme for 2016 was not prepared by Leitrim Co. Co for private supplies. However, scheme owners may carry out their own operational monitoring of raw and treated water.</p>
<b>3.</b>	<p><b>Monitoring Programmes for Specific Parameters</b></p> <p>a) In the event that tankers are deployed to a private supply in an emergency, the sampling protocol according to the EPA handbook would be followed.</p>
<b>4.</b>	<p><b>Sampling Procedures</b></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 Leitrim County Council's shared drive. Individual samplers do not hold their own copy. Leitrim County Council staff carry out the sampling. The HSE sample small private supplies (SPSs). Leitrim County Council is to get a list of SPSs sampled by the HSE.</p> <p>b) Daily worksheets are provided to the samplers by the Executive Scientist and include date of sampling, location and type of sample (check or audit). 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. If these were unavailable, the sampler would contact the Executive Scientist for an alternative address. However, the time constraint of returning samples to the collection point by 14:30 may preclude prolonged searching for alternative sample points although this constraint is not identified in the sampling procedures.</p> <p>c) A field sheet for audit samples was examined which contained details of date, sampler, reference, sample identity, weather and any other comments. Sample details are written on the relevant bottles in permanent marker pen. Containers for audit samples are provided by Roscommon Laboratory together with labels with appropriate codes. Leitrim County Council samplers add their own numbers to the labels. Sample numbers are taken from a consecutive listing and any duplication of numbering would be immediately obvious.</p> <p>d) Compliance samples are pre-designated as such and as the containers are pre-labelled before filling, it is not possible to alter the designation. The auditors were not able to inspect sample handling at the laboratory.</p> <p>e) A chain of custody is maintained throughout and a copy of such a form was inspected on the Executive Scientist's computer. The sampler, and presumably the Executive Scientist, are authorised to make changes to details of samples received.</p>
<b>5.</b>	<p><b>Data Handling</b></p> <p>a) Analytical and associated data is recorded both in the laboratory (Roscommon County Council) and by Leitrim County Council. When analytical data is transferred to Leitrim County Council it is entered on to the Labworks system by the sampler, who confirms that analysis is complete. The entries are then authorized by the Executive Scientist.</p> <p>b) If a result on the database is subsequently shown to be incorrect it may be changed</p>

	<p>before the data is archived. After archiving, only the Executive Scientist has editing rights. The system can produce an audit trail of access to the system and of data entries.</p> <ul style="list-style-type: none"> <li>c) If the data from the laboratory is shown subsequently to be incorrect, a new laboratory report would be issued with corrected data to be entered on the Labworks system.</li> <li>d) While the private water supplier is notified of a failure it was not evident on the day of the audit that compliant results are being issued to the private water suppliers. Results are not published on Leitrim County Council website.</li> </ul>
<p><b>6.</b></p>	<p><b>Exceedances of Parametric Values</b></p> <ol style="list-style-type: none"> <li>1. Documented procedures are being developed to deal with exceedances of microbiological, chemical and indicator parametric values as they occur. Leitrim County Council stated it consults with the HSE for health advice upon receipt of a failure from the lab and there is a tracker spreadsheet in place with lists the failures and actions taken. The Private Water Supplier is notified of a failure and this may be followed by an action letter or re-test depending on the failure that occurred.</li> <li>2. There are no procedures in place to guide the identification of reasons for non-compliant results and remedial actions required but Leitrim County Council stated it is aware of what actions are required.</li> <li>3. Eight samples taken during 2016 showed exceedances of the respective parametric value. Two samples from Ballinagleragh Private GWS on 10<sup>th</sup> August and 8<sup>th</sup> November in 2016 each contained 1 coliforms/100ml.</li> <li>4. A sample from the Drumeela Drinking Water Scheme on 5<sup>th</sup> April 2016 contained 4 <i>Clostridium perfringens</i>/100ml. A further sample from the Drumeela National School contained glyphosate at a concentration of 0.382µg/l. Upon a site inspection by Leitrim County Council it was evident that this failure was attributed to the spraying of pesticides in an area upslope of the borehole which was not capped. Remediation of this deficiency had not been completed at the time of the audit and Leitrim County Council stated further enforcement action will be taken.</li> <li>5. The HSE notify Leitrim County Council regarding data on fluoride concentrations who investigated an exceedance in 2016 when a pump failed.</li> <li>6. Cornashamsoge Private GWS is on a long-term Boil Water Notice since 2000 (affecting a population of approximately 71 persons). The Boil Water Notice is on Leitrim County Council's website. Leitrim County Council staff are operating the water treatment plant however the plant is of insufficient size. The scheme has enlisted the services of a consultant to review the raw water characteristics to profile the water to better determine appropriate treatment required to ensure full compliance.</li> <li>7. There was no audit plan in place for 2016 private regulated supplies. Leitrim County Council highlighted the lack of resources given to this area of enforcement.</li> <li>8. Non-compliant data is reported to the EPA by Leitrim Co. Co as part of the 2016 Drinking Water Returns.</li> </ol>

### **3. Auditors comments**

It is acknowledged that resources are lacking within Leitrim County Council to carry out its full duties as the supervisory authority over private regulated water supplies. However, the EPA is concerned that Leitrim County Council is not carrying out audits and inspections of regulated private supplies as required and the monitoring of small private supplies are omitted from Leitrim County Council's register. In addition to this, for the supplies that are monitored by the Council, there is the potential for none, other than non-compliant results, to be issued to private water suppliers.

A number of weaknesses in procedures were identified, particularly the lack of pre-determined alternative sampling locations where it was left to the discretion of sampler to choose locations that were representative of the supply. Sampling dates should be chosen to ensure samples are evenly spread and representative of the water supply zone.

In addition, none of the audit parameters were included in the 2016 private supplies compliance monitoring programme. In accordance with the EPA's Handbook for Private Supplies, Leitrim County Council should carry out a risk assessment to determine what audit parameters to include in the check monitoring for private supplies. Also, details pertaining to the list of such private supplies should be accurate and up to date in Leitrim County Council's own register and on EDEN.

Should Leitrim County Council wish to consult ISO standards for further information on sampling, the following documents may be of assistance:

- National Standards Authority of Ireland I.S. ENISO 19458:2006 Water quality sampling for microbiological analysis.
- ISO 5667-5:2006 Water quality – Sampling- Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems.
- ISO 19458:2006 Water quality – sampling for microbiological analysis.
- ISO 5667-3:2012(en) Water quality – Sampling-Part 3:Preservation and handling of water samples.

### **4. Recommendations**

#### **Compliance Monitoring Programme**

1. Leitrim County Council should:
  - a) liaise with the private water supplier (e.g. a GWS) when compiling the sampling plan for the upcoming year to ensure that the sample locations are representative of the water supply zone;
  - b) consult with the HSE for information regarding addresses of Small Private Supplies to be sampled in future, the agreed parameters to be sampled to satisfy the Drinking Water Regulations and put in place a procedure for the HSE's communication of both compliant and non-compliant results to Leitrim County Council
  - c) 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; and
  - d) include in the compliance sampling programme a predetermined narrow window of sampling dates to samplers, specific sampling locations and predetermined alternative sample locations in the event that a sample location is unsuitable or inaccessible.

2. Leitrim County Council should carry out a risk assessment in consultation with the private water supplier for each of its small private water schemes of < 100 m<sup>3</sup>/d to determine what 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. Any monitoring of small private supplies not carried out by the HSE should be catered for by Leitrim County Council.
3. Leitrim County Council should ensure its register and EDEN database is kept up-to-date (e.g. correct treatment is documented for private water supplies, close out any supplies no longer in use, ensure correct scheme code is listed – PUG, PRI, etc.).
4. Leitrim County Council should ensure staff have access to the network schematics held within Leitrim County Council's Rural Water Division as required.

### **Sampling Procedures**

5. Leitrim County Council should ensure that samplers hold their own copy of the sampling manual and, as a controlled document, its distribution is recorded.

### **Data Handling**

6. Leitrim County Council should provide a copy of the monitoring results to the private water suppliers.

### **Exceedances of Parametric Values**

7. Although a written procedure for dealing with sample results that exceed the parametric values outlined in the Drinking Water Regulations (S.I. No 122 of 2014, as amended) is being developed, this should be finalised and issued formally as soon as possible.

The procedure should include detailed guidance on the actions to be taken to investigate and identify any exceedance of any parameter and determine its cause and any remedial action required. The circumstances that constitute trivial and the more serious exceedances should be clearly defined.

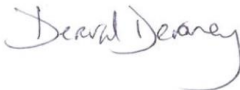
8. Leitrim County Council is advised, in its supervisory authority role, to follow-up with further enforcement action to ensure the Drumeela National School supply is remediated so that the supply is safe and secure in the provision of clean and wholesome water.
9. Leitrim County Council should fulfil its duties as the supervisory authority for private water supplies, in light of the apparent shortfall in the completion of its full duties and functions (e.g. auditing) in 2016 under the Drinking Water Regulations due to the lack of resources.

### **Follow-Up Actions Required by Leitrim County Council**

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

Leitrim 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 Leitrim County Council to address the recommendations will be verified by the Agency during any future audits.

**Report prepared by:**



**Date:**

15 December 2017

---

John Gray

Consultant

Derval Devaney

Inspector