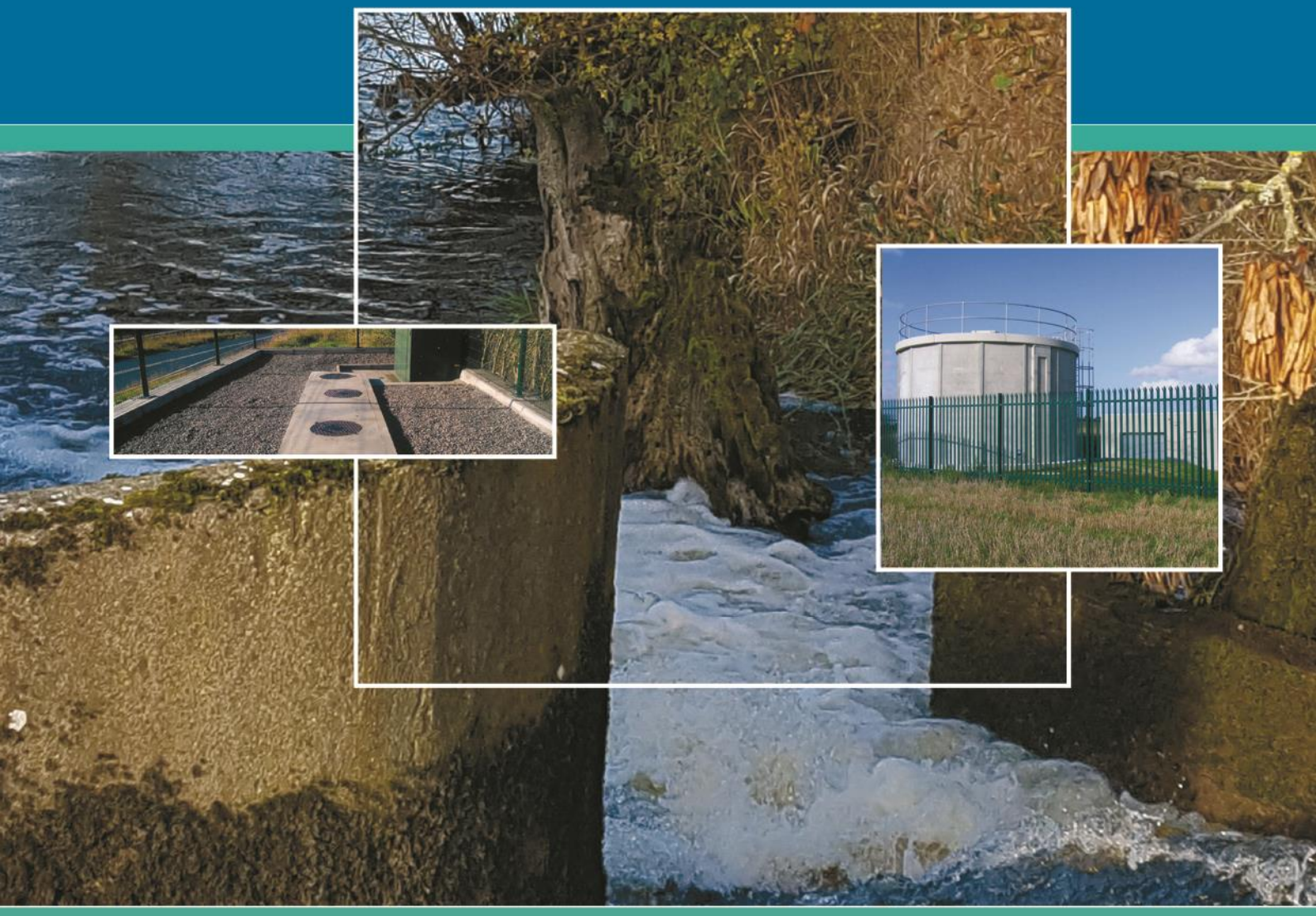
Focus on Private Water Supplies



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Focus on Private Water Supplies

Authors: Michelle Roche and Darragh Page.

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An Ghníomhaireacht um Chaomhnú Comhshaoil
P.O. Box 3000, Johnstown Castle Estate, County Wexford, Ireland

Telephone: +353 53 9160600 Fax: +353 53 9160699
E-mail: info@epa.ie Website: www.epa.ie

LoCall: 1890 335599

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Contents

Infographic 1
Section 1: What are Private Water Supplies? 2
Section 1.1 Who is Responsible for Private Water Supplies? 2
Section 2: Water Quality is Consistently Poorer in Private Supplies 4
Section 2.1: Small Private Supplies have the Poorest Water Quality 4
Section 2.2: Household Wells are High Risk Water Supplies 5
Section 3: Protecting your Private Supply 7
Section 3.1: Improving Water Quality: Group Water Schemes 7
Section 3.2: Improving Water Quality: Small Private Supplies and Household Wells 8
Section 3.3: Local Authority Monitoring and Enforcement 10
Section 4: Conclusions and Recommendations 12
Section 5: Appendices 15

Infographic

Section 1: What are Private Water Supplies?

Almost 20% of people in Ireland get their drinking water from private supplies, usually people living in rural areas. These private drinking water supplies are managed by group water scheme committees, commercial or public bodies or private householders.

Private water supplies fall under four categories as outlined below.

Public Group Schemes are supplies where the abstraction and treatment of the water is managed by Irish Water and the distribution of treated water to the users is managed by a local community group.

Private Group Schemes are supplies where the abstraction, treatment and distribution of treated water are all managed by a local community group.

Small Private Supplies are supplies serving a commercial or public activity, and the abstraction, treatment and distribution of treated water are managed by the commercial or public entity. Examples of commercial or public activities served by small private supplies include pubs and restaurants, crèches and national schools.

Household Wells are supplies that supply a volume of water less than 10 cubic metres a day or serve fewer than 50 people, and do not supply a commercial or public activity. Many private households in rural Ireland are supplied by household wells and the responsibility for managing the supply lies with the householder.

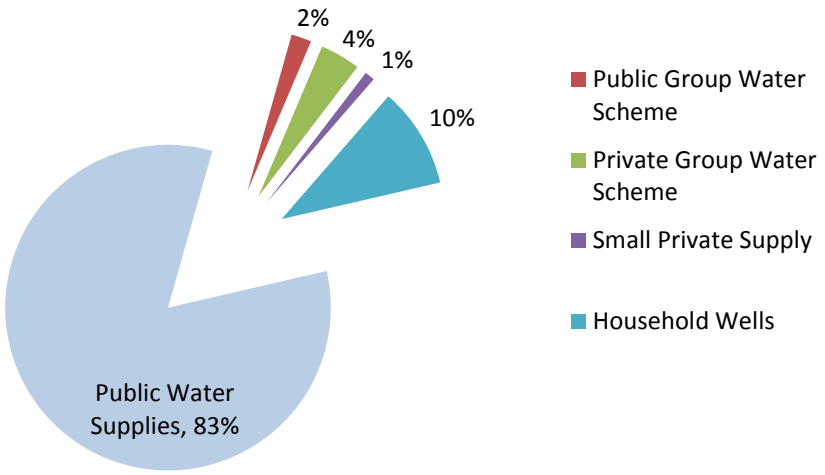


Figure 1: Percentage of Ireland's Population Served by Public and Private Water Supplies

In many areas of rural Ireland private supplies are the most appropriate and efficient way to supply drinking water, however sourcing and cleaning the water to meet the drinking water health and safety standards is a challenging task and requires the correct systems, processes and knowledge.

Section 1.1 Who is Responsible for Private Water Supplies?

Private water suppliers are responsible for providing clean and safe drinking water to consumers. Local Authorities have a responsibility to help private water suppliers achieve this aim, as do the Department of Housing, Planning, Community and Local Government, the EPA and the Health Service Executive (HSE).

Local Authorities are responsible for ensuring private water supplies meet the requirements of the drinking water regulations by:

- Sampling private water supplies to check their water quality.
- Investigating where water quality standards are breached.

- Assisting private supply owners with advice and guidance to improve their water quality.
- Taking enforcement action if private water supplies are not taking steps to improve water quality in supplies that fail to meet the standards.

The **Department of Housing, Planning, Community and Local Government** make funding available to group water schemes and household well owners for improvements to their supplies. The funding is administered and distributed by the **Local Authorities** through:

- Annual subsidies and grants to group water schemes through the Multi-annual Rural Water Programme 2016-2018.
- Household well grants to householders who have their own household wells under the Rural Water Programme.

The **EPA** support the private water supply sector by**:**

- Providing advice and training to local authorities on investigating water quality breaches.
- Publishing drinking water treatment advice and guidance.
- Auditing local authority monitoring programmes.
- Reporting on water quality in private water supplies.

The **HSE** provide advice to the local authorities if a water quality breach is thought to pose a risk to the health of private water supply users.

Section 2: Water Quality is Consistently Poorer in Private Supplies

All water supplies should be monitored on a regular basis in order to assess the quality of the drinking water that is being delivered to users of the supply. Private water supplies serving 50 or more people, (or supplying a volume of more than 10 metres-cubed per day) must be sampled a minimum of two times per year. The quality of drinking water in private water supplies has consistently been lower than that of public water supplies.

Public group water schemes tend to have better water quality than that of other private water supplies. This is because the source of their water comes from fully treated public water supplies. The graph below highlights the disparity in water quality between public and private water supplies.

E. coli is an important indicator of water quality as its presence can cause serious illness to water users, particularly vulnerable users such as children, older people and those with low immunity or underlying medical conditions. The EPA recommends that all water supplies are monitored at least once a year for *E. coli*. There are a number of ways that *E. coli* can enter drinking water sources including poor management of septic tanks, slurry spreading close to surface waters or wells and animals being allowed to roam too close to surface waters or wells. If *E. coli* is found in drinking water it is an indication that the water supply has become contaminated with human or animal waste and may contain associated pathogens. The following sections summarise the monitoring carried out for *E. coli* in Ireland's private water supplies in 2015.

Figure 2: *E. coli* Compliance per Water Supply Type from 2011 to 2015

Section 2.1: Small Private Supplies have the Poorest Water Quality

Using *E. coli* as the best representation of a supplies water quality, the EPA's assessment of the sample results highlights that small private supplies (serving 1% of the population) have the poorest water quality. Public group water schemes (serving 2% of the population) have the best water quality reflecting the fact that public supplies generally have a higher level of water quality than private supplies and the water treatment aspect of public group schemes is managed by the public water supply provider, Irish Water.

The table below shows total *E. coli* compliance in public group schemes, private group schemes and small private supplies. Sample results were submitted to the EPA by 28 local authorities for assessment. 3[1] local authorities did not report having any private supplies operating within their jurisdiction. The table does not

[1] Galway City Council, Dublin City Council and South Dublin City Council

cover household wells owned by domestic householders as sampling in these wells is not reported to either the local authorities or the EPA.

Water quality monitoring is also carried out for other microbiological, chemical and indicator parameters and results for these parameters in 2015 are provided in Appendices 1, 2 and 3.

E. coli			
96.3%	100%	96.1%	94.8%
All private supplies complied with the *E. coli* standard.	Public group water schemes supplies complied with the *E. coli* standard.	Private group water schemes supplies complied with the *E. coli* standard.	Small private supplies complied with the *E. coli* standard.
The % compliance figures in this table are based on the number of private water supplies monitored in 2015. A minimum of 986 supplies did not report any monitoring in 2015, therefore the actual % compliance figures may be higher or lower than what is presented in this table.			

Monitoring of Private Water Supplies is Poor

The EPA's assessment of monitoring carried over a one year period found that of the 2,676 private water supplies registered in Ireland, 37% of these were not monitored at all for *E. coli*, corresponding to 92 public group water schemes, 30 private group water schemes and 864 small private supplies. This is worrying as without regular monitoring of a supply the users of the supply may be unwittingly drinking water that is of a poor water quality standard and this could have an impact on their health. Of the small private supplies that were not monitored, 270 are hotels, restaurants or other premises serving food to the public, 99 serve national schools or childcare centres and 23 serve nursing homes.

Section 2.2: Household Wells are High Risk Water Supplies

It is estimated that there are 170,000 household wells in Ireland which supply water to individual private households. These wells are exempt from regulation and responsibility for looking after these wells rests with the householder. It is estimated that up to **30%** of the household wells in Ireland are contaminated by *E. coli* arising from animal or human waste. The HSE has reported a growing number of cases of VTEC – a pathogenic form of *E. coli.* Analysis of cases shows that patients are up to **four times** more likely to have consumed untreated water from household wells.

Ireland has the highest incidence of VTEC in Europe. Since 2011, the HSE has reported more than a doubling of the number of VTEC cases in Ireland as shown in Figure 3 below. Animals, particularly cattle are the main source of VTEC and infection is spread either from direct animal contact or through contaminated food and water. Person to person spread is also common. In other countries the most common source of infection is through food outbreaks.

In Ireland, rural families are commonly affected and much of this is because of contaminated household wells. Consumers of water from household wells are at a much greater risk of VTEC than those who drink water from either public or private mains supplies.

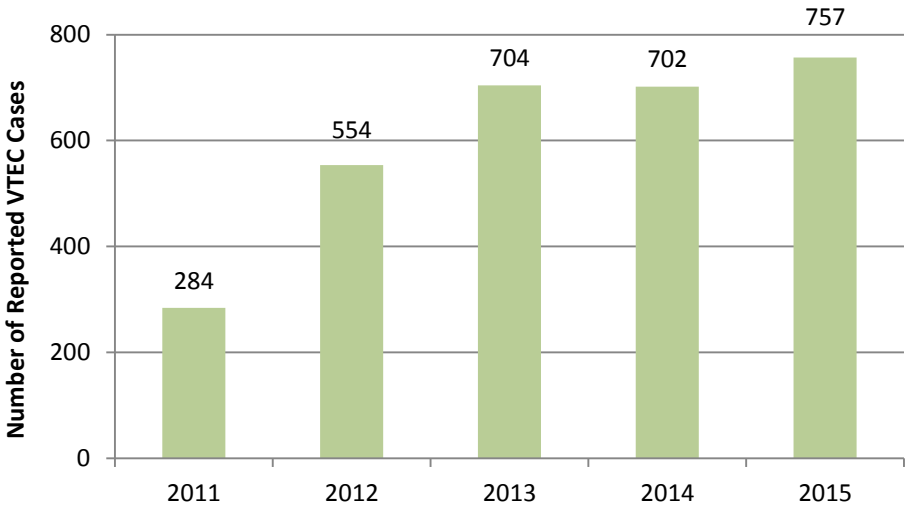


Figure 3: Number of VTEC Cases Reported by the HPSC

Section 3: Protecting your Private Supply

The quality of drinking water in private supplies is inferior in comparison to public supplies. The monitoring figures show that small private supplies tend to have the poorest water quality. Though household wells serving individual houses do not have to be monitored, where monitoring has been carried out it has been found that up to 30% of household wells are contaminated with *E. coli.*

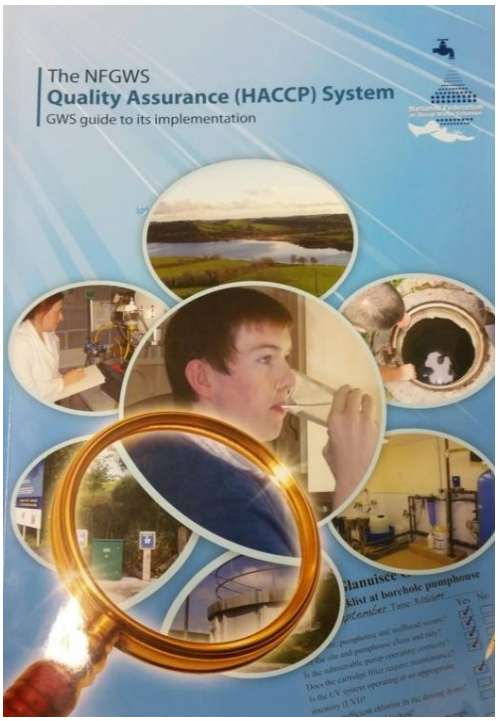
Section 3.1: Improving Water Quality: Group Water Schemes

Management Committee

Public and private group water schemes typically have a management committee of volunteers in place for their supply. The group is responsible for delivering good quality water to the users. The management committee ensure that investment is targeted to key areas such as source protection or treatment and regular operational checks are carried out on the supply. Operational checks can include, inspecting the raw water source, making sure that treatment is working correctly and taking some simple water quality indicator tests such as total coliforms and chlorine residuals. Group water scheme management committees are greatly assisted in their roles by the National Federation of Group Water Schemes (NFGWS).

National Federation of Group Water Schemes

The NFGWS represent and negotiate on behalf of group water schemes in a financial capacity but also offer a huge amount of education and operational support to group water schemes, to help achieve high water quality standards. The NFGWS have driven water quality improvements in the group water sector through initiatives such as Design Build Operate bundling projects, the NFGWS Quality Assurance system, sourcing on-going training for members of group water schemes, holding conferences and publishing a quarterly newsletter to support and educate their members.




RURAL WATER NEWS
Magazine of the Group Water Scheme Sector
Autumn 2016 Volume 18 Issue 3
Expert Panel recommends RWP investment priorities
Water Quality
In this issue:

Figure 4: NFGWS Quality Assurance Implementation Guide and Quarterly Newsletter. www.nfgws.ie

Quality Assurance System

The NFGWS Quality Assurance system is an assessment tool that schemes can use to identify water quality risks in their supply and put in place corrective actions to mitigate against those risks. The NFGWS have

published an implementation guide for the quality assurance system. Having a quality assurance system in place for your group water scheme is a condition for receiving the annual scheme subsidy from the Department of Housing, Planning, Community and Local Government.

The NFGWS quarterly newsletter shares information and innovations among group schemes and is a forum for the NFGWS to highlight recurring water quality issues that they note when visiting schemes around the country. Group schemes can also learn about new technologies and developments in the sector through the newsletter.

Both the NFGWS Quality Assurance (HACCP) System implementation guide and the newsletter can be found on the NFGWS website www.nfgws.ie.

Source Protection

An important area where group water schemes can mitigate against water quality risks is around the water source. The NFGWS launched a programme in 2013 to assess drinking water sources and identify protection measures that could be put in place at those sources. The programme will run until 2018 and will cover just under 300 group water schemes.

DHPCLG Remedial Action List for Group Water Schemes

The Department of Housing, Planning, Community and Local Government have developed a Remedial Action List for Group Water Schemes (RAL_GWS). The list, which is based on the EPA's Remedial Action List for public water supplies, will identify group water schemes that are at risk of supplying poor quality drinking water because their water treatment systems are inadequate. Group water schemes on the list will be prioritised for grants to improve their treatment systems. The list was started in 2016 and will be added to in 2017.

Section 3.2: Improving Water Quality: Small Private Supplies and Household Wells

Small private supplies serve the public through hotels, schools, nursing homes, etc. and therefore they are important in terms of water quality and public health. Over 90% of small private supplies have a groundwater well as their source and so many of the measures that supply owners can take to ensure good water quality focus on protecting and maintaining the well.

As the water quality protection initiatives that apply to small private supplies also apply to householders with household wells, this section will cover both small private supplies and household wells.

Protect Your Well Application

The EPA developed a Protect Your Well web application that provides a step by step guide to inspecting your well for contamination or the risk of contamination. The application provides a number of recommendations to help improve your well protection based on the answers you provide. Recommendations include advice for properly sealing the wellhead, ensuring septic tank effluent or slurry does not enter the well and disinfecting the well if necessary. The Protect Your Well application can be found on the EPA website at http://erc.epa.ie/water/wells/#.WFqgLapprq5. In addition a brief animated video providing a summary of the main risks to your well is available at https://www.youtube.com/watch?v=Vm7R1MMz1D8.

The EPA website also contains a section on Household Information on Private (household) Wells (http://www.epa.ie/water/dw/hhinfo/) which gives advice on protecting your well, testing and treatment of your well water and dealing with complaints. It also has a section on frequently asked questions.

Annual *E. coli* Testing

An important aspect of assessing the water quality of any well is regularly testing the water for microbiological contamination and *E. coli* in particular. For small private supplies serving 50 or more people (or producing a volume of water greater than 10 metres-cubed per day) the water must be sampled at least twice a year for *E. coli*. For household wells and small private supplies serving less than 50 people (or producing less than 10 metres-cubed per day) the responsibility for testing the well lies with the well owners and the EPA recommend that the water is tested at least once a year for *E. coli,* preferably following heavy rain when the supply is most at risk.

Household Well Grant

For householders that own their own household well, a grant of up 75% of the costs subject to a maximum of €2,031.58 is available from the Department of Housing, Planning, Community and Local Government to assist with protecting and maintaining your household well or installing basic treatment like disinfection or filtration systems. Householders whose properties are more than seven years old are eligible for the grant and the proposed work must cost more than €635. Householders can apply for the grant through their local authority. The grant may be referred to as a private well grant or domestic well grant by different local authorities. More information on the household well grant is available at http://www.housing.gov.ie/water/water-services/rural-water-programme/private-wells or your local authority website.

Connecting to a Public Water Supply

Where a small private supply or household well owner finds that the quality of their drinking water is consistently poor and the work or financial cost of cleaning and maintaining their well is too onerous the supply owners may consider connecting to the public water supply. Connecting to the public water supply removes the responsibility from the supply owners of ensuring that the public, their customers or their families are drinking good quality water, which will not cause any health impacts. Details of how to connect to the public water supply are on the Irish Water website (https://www.water.ie/connections/).

Section 3.3: Local Authority Monitoring and Enforcement

The local authorities are the water quality regulators for public group schemes, private group schemes and small private supplies and are responsible for ensuring that water quality of these supplies meets the water quality standards out in the 2014 drinking water regulations. In order to ensure good water quality in private supplies local authorities carry out annual monitoring of supplies and have a number of enforcement powers available to them if private supplies fail to react to poor water quality results. Household wells are not regulated by local authorities.

Annual Monitoring Programmes

To assess the water quality of private supplies local authorities produce an annual monitoring programme which should ensure that every private supply serving a population greater than 50 people or supplying a volume of water greater than 10 metres-cubed per day is monitored at least twice a year. The aim of the monitoring programmes is to designate sample locations and times at the beginning of each year and ensure that there is an adequate distribution of different sample properties and times. Local authorities should liaise with group water scheme committees to verify that the properties chosen are actually served by the group water scheme being targeted. If samples show a failure in water quality the supply owners should be notified immediately so they can address the cause of the failure.

Local Authority Audits

Auditing water supplies is an important enforcement tool that local authorities can use to investigate the reasons for poor water quality results or identify risks with the supply that could lead to future water quality failures. Auditors inspect areas like the protection of the source, the type of treatment in place on the supply and the control and management of the treatment systems. The auditor then makes recommendations to the water supply on improvements that need to be made to better protect the quality of the water being produced. **9** local authorities reported conducting 56 private water supply audits.

Table 1: Audits carried out by Local Authorities in 2015

Local Authority	No. of audits conducted in 2015
Clare County Council	6
Cork County Council	10
Galway County Council	1
Kilkenny County Council	7
Laois County Council	9
Meath County Council	4
Tipperary County Council	5
Wexford County Council	8
Wicklow County Council	6

Directions

Directions are a further enforcement tool available to local authorities and are legally binding instructions to water suppliers to carry out particular actions with the aim of correcting a water supply issue. If water supplies fail to comply with a Direction they can be prosecuted in court. Typically Directions are issued in cases where a water supply has failed to act on the local authorities' recommendations.

9 Directions were issued to private water supplies by 5 local authorities.

Table 2: Directions Issued by Local Authorities in 2015

Local Authority	No. of Directions issued in 2015
Cavan County Council	1
Cork County Council	1
Tipperary County Council	1
Wexford County Council	4
Wicklow County Council	2

Section 4: Conclusions and Recommendations

This report highlights that water quality in private water supplies lags behind that of public water supplies. Small private supplies and household wells tend to have lower water quality than public or private group schemes. There are a number of actions that supply owners and local authorities can take to improve water quality in this sector and ensure user's health is protected.

Some recommendations are universal and apply to all private water supplies and household wells while others are specific to a particular water supply type or to the local authorities.

All Water Supplies	• **Monitor** all supplies serving a population greater than or equal to 50 people or supplying a volume of water greater than or equal to 10m^3/day, **at least twice a year**. • **Monitor** all supplies for ***E. coli*** **at least once a year**, regardless of the size of the supply. • Construct wellheads above ground level and **seal and cap** the wellhead[2]. • **Fence** off around the well and surface water abstraction points to prevent animal access. • Be aware of **set-back distances** for landspreading close to wells or surface water abstraction points and ensure that any local landowners falling within these set-back distances are aware of them. • **Do not use pesticides** or other chemicals around a well or surface water abstraction point. • **Visually inspect** abstraction points for contamination on a regular basis.

Figure 5: Wellhead constructed above ground level and borehole fully capped and sealed

Figure 6: Borehole fully capped and sealed and in a locked chamber

[2] See EPA guidance on borehole construction and wellhead protection – Advice Note 14.

Group water schemes will typically have some form of treatment in place and those treatment systems need to be maintained and correctly managed.

Public and Private Group Water Schemes	• **Ensure** disinfection is in place at all surface water supplies or those influenced by surface water and, where chlorine is used, ensure that a minimum chlorine residual of 0.1 mg/l can be detected at the last customer on the network. • When using chlorine as a primary disinfectant ensure a **minimum contact time** of 15 mg.min/l with the treated water before the water reaches the first customer on the network. • **Ensure** that adequate controls and management tools are in place for treatment systems. Chemicals should be fit for drinking water purposes and in date and a user guide should be available. • Implement the guidance developed by the National Federation of Group Water Schemes on **Quality Assurance (HACCP) System** by Group Water Schemes.

Figure 7: Sodium Hypochlorite disinfection system with bunded day tank and duty and standby dosing pumps

Household well owners (both small private supply owners and private householders) should pay particular attention to the protection of their well as the majority of household wells have no form of water treatment in place. If household wells owners notice signs of contamination around their well they should take the necessary actions to improve well protection and disinfect their well. For private householders the household well grant may assist with covering the cost of remedial works.

Household Well Owners	• Monitor all household wells for ***E. coli* at least once a year.** • Use the EPA Protect Your Well application to **assess your well** for contamination at least once a year. • **Disinfect boreholes and household wells** if any microbiological failures, particularly *E. coli* are identified.

Local authorities are responsible for ensuring that public and private group schemes and small private supplies are adequately monitored throughout the year. Where monitoring shows poor water quality local authorities are also responsible for ensuring action is taken to rectify water quality issues.

Local Authorities	• **Inform** private supplies **of their monitoring results** as soon as they become available. • **Use the enforcement powers** available to local authorities to drive water quality improvements. Prioritise supplies that have serious water quality issues or slow to implement local authority recommendations. • **Investigate all failures** to meet water quality parametric values in private water supplies to ensure the cause of the failure is identified and appropriate corrective action is taken. Particular focus should be given to parameters that can impact **human health** such as *E. coli.*

Section 5: Appendices

Appendices 1, 2, and 3 list compliance results and percentages for three groups of regulated private drinking water supplies:

- Public Group Schemes
- Private Group Schemes
- Small Private Supplies.

Appendix 4 lists, for each county or area, the number of private water supplies and the populations served by each supply type. It also lists the number of boil notices in place and the population affected and the number of audits and directions taken in 2015.

Appendix 1: Public Group Water Schemes – Zones Monitored and Samples Analysed in 2015

Parameter	No. of Zones Monitored	No of Zones with Exceedances	% of Zones Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Microbiological						
E. coli	406	0	**100**	958	0	100
Enterococci	36	0	**100**	40	0	100
Chemical						
1,2-dichloroethane	59	0	**100**	60	0	**100**
Antimony	60	0	**100**	61	0	**100**
Arsenic	61	0	**100**	62	0	**100**
Benzene	59	0	**100**	61	0	**100**
Benzo(a)pyrene	59	0	**100**	60	0	**100**
Boron	60	0	**100**	61	0	**100**
Bromate	75	1	**98.7**	91	1	**98.9**
Cadmium	60	0	**100**	61	0	**100**
Chromium	60	0	**100**	61	0	**100**
Copper	60	1	**98.3**	62	1	**98.4**
Cyanide	52	0	**100**	52	0	**100**
Fluoride	105	0	**100**	183	0	**100**
Lead	76	0	**100**	93	0	**100**
Mercury	59	0	**100**	60	0	**100**
Nickel	60	0	**100**	61	0	**100**
Nitrate	142	0	**100**	280	0	**100**
Nitrite (at tap)	241	0	**100**	506	0	**100**
Nitrites (at WTW)	55	0	**100**	124	0	**100**
PAH	59	0	**100**	60	0	**100**
Pesticides - Total	59	1	**98.3**	60	1	**98.3**
Selenium	60	0	**100**	61	0	**100**
Tetrachloroethene & Trichloroethene	59	0	**100**	60	0	**100**
Total Trihalomethanes	74	8	**89.2**	78	10	**87.2**
Indicator						
Aluminium	305	8	**97.4**	683	9	**98.7**
Ammonium	406	0	**100.0**	959	0	**100.0**
Chloride	60	0	**100.0**	61	0	**100.0**
Clostridium perfringens	376	3	**99.2**	877	3	**99.7**
Coliform Bacteria	406	12	**97.0**	958	13	**98.6**
Colony Count @ 22°C	59	0	**100.0**	60	0	**100.0**
Colour	406	8	**98.0**	958	18	**98.1**
Conductivity	390	0	**100.0**	928	0	**100.0**
Iron	282	3	**98.9**	593	6	**99.0**
Manganese	154	2	**98.7**	289	5	**98.3**
Odour	911	2	**99.8**	916	2	**99.8**
pH	406	7	**98.3**	959	16	**98.3**
Sodium	60	0	**100.0**	61	0	**100.0**
Sulphate	59	0	**100.0**	60	0	**100.0**
Taste	386	0	**100**	916	0	**100**
Total Organic Carbon	59	1	**98.3**	60	1	**98.3**
Turbidity (at tap)	347	1	**99.7**	819	3	**99.6**
Turbidity (at WTW)	55	5	**90.9**	124	5	**96.0**

Appendix 2: Private Group Water Schemes – Zones Monitored and Samples Analysed in 2015

Parameter	No. of Zones Monitored	No of Zones with Exceedances	% of Zones Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Microbiological						
E. coli	388	15	**96.1**	1354	20	**98.5**
Enterococci	215	2	**99.1**	237	2	**99.2**
Chemical						
1,2-dichloroethane	232	0	**100**	239	0	**100**
Antimony	236	0	**100**	244	0	**100**
Arsenic	237	0	**100**	248	0	**100**
Benzene	232	0	**100**	238	0	**100**
Benzo(a)pyrene	232	0	**100**	237	0	**100**
Boron	236	0	**100**	244	0	**100**
Bromate	233	2	**99.1**	239	2	**99.2**
Cadmium	236	0	**100**	247	0	**100**
Chromium	236	0	**100**	247	0	**100**
Copper	236	0	**100**	251	0	**100**
Cyanide	230	0	**100**	235	0	**100**
Fluoride	238	0	**100**	266	0	**100**
Lead	237	0	**100**	315	0	**100**
Mercury	232	0	**100**	238	0	**100**
Nickel	236	0	**100**	247	0	**100**
Nitrate	308	1	**99.7**	612	1	**99.8**
Nitrite (at tap)	306	1	**99.7**	799	1	**99.9**
Nitrites (at WTW)	7	0	**100**	13	0	**100**
PAH	233	0	**100**	238	0	**100**
Pesticides - Total	233	1	**99.6**	238	1	**99.6**
Selenium	236	0	**100**	244	0	**100**
Tetrachloroethene & Trichloroethene	232	0	**100**	239	0	**100**
Total Trihalomethanes	233	10	**95.7**	255	11	**95.7**
Indicator						
Aluminium	310	5	**98.4**	927	5	**99.5**
Ammonium	388	2	**99.5**	1344	2	**99.9**
Chloride	236	1	**99.6**	244	3	**98.8**
Clostridium perfringens	326	11	**96.6**	1060	13	**98.8**
Coliform Bacteria	388	49	**87.4**	1354	63	**95.3**
Colony Count @ 22°C	231	11	**95.2**	240	11	**95.4**
Colour	385	22	**94.3**	1339	38	**97.2**
Conductivity	388	0	**100**	1352	0	**100.0**
Iron	317	6	**98.1**	844	7	**99.2**
Manganese	278	9	**96.8**	494	9	**98.2**
Odour	376	1	**99.7**	1098	2	**99.8**
pH	388	21	**94.6**	1350	36	**97.3**
Sodium	239	1	**99.6**	252	1	**99.6**
Sulphate	235	1	**99.6**	243	1	**99.6**
Taste	365	2	**99.4**	1269	2	**99.8**
Total Organic Carbon	231	1	**99.6**	238	1	**99.6**
Turbidity (at tap)	358	1	**99.7**	1196	1	**99.9**
Turbidity (at WTW)	20	1	**95.0**	26	1	**96.2**

Appendix 3: Small Private Supplies – Zones Monitored and Samples Analysed in 2015

Parameter	No. of Zones Monitored	No of Zones with Exceedances	% of Zones Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Microbiological						
E. coli	896	47	**94.8**	1517	50	**96.7**
Enterococci	253	15	**94.1**	401	16	**96.0**
Chemical						
1,2-dichloroethane	20	0	**100.0**	23	0	**100.0**
Antimony	34	0	**100.0**	37	0	**100.0**
Arsenic	40	0	**100.0**	43	0	**100.0**
Benzene	21	0	**100.0**	25	0	**100.0**
Benzo(a)pyrene	22	0	**100.0**	26	0	**100.0**
Boron	34	0	**100.0**	37	0	**100.0**
Bromate	21	0	**100.0**	25	0	**100.0**
Cadmium	38	0	**100.0**	41	0	**100.0**
Chromium	39	0	**100.0**	42	0	**100.0**
Copper	165	1	**99.4**	173	1	**99.4**
Cyanide	20	0	**100.0**	23	0	**100.0**
Fluoride	37	0	**100.0**	50	0	**100.0**
Lead	293	3	**99.0**	359	3	**99.2**
Mercury	26	0	**100.0**	29	0	**100.0**
Nickel	40	0	**100.0**	43	0	**100.0**
Nitrate	651	8	**98.8**	977	9	**99.1**
Nitrite (at tap)	447	0	**100.0**	793	0	**100.0**
Nitrites (at WTW)	22	0	**100.0**	26	0	**100.0**
PAH	28	0	**100.0**	31	0	**100.0**
Pesticides - Total	40	0	**100.0**	43	0	**100.0**
Selenium	20	0	**100.0**	23	0	**100.0**
Tetrachloroethene & Trichloroethene	18	0	**100.0**	21	0	**100.0**
Total Trihalomethanes	20	0	**100.0**	23	0	**100.0**
Indicator						
Aluminium	359	5	**98.6**	665	7	**98.9**
Ammonium	926	19	**97.9**	1532	23	**98.5**
Chloride	134	1	**99.3**	143	1	**99.3**
Clostridium perfringens	320	8	**97.5**	529	8	**98.5**
Coliform Bacteria	896	157	**82.5**	1516	182	**88.0**
Colony Count @ 22°C	25	3	**88.0**	28	3	**89.3**
Colour	804	28	**96.5**	1329	34	**97.4**
Conductivity	935	3	**99.7**	1546	3	**99.8**
Iron	637	53	**91.7**	1034	62	**94.0**
Manganese	295	36	**87.8**	357	39	**89.1**
Odour	847	3	**99.6**	1346	3	**99.8**
pH	934	188	**79.9**	1542	268	**82.6**
Sodium	60	8	**86.7**	65	8	**87.7**
Sulphate	53	0	**100.0**	59	0	**100.0**
Taste	625	6	**99.0**	943	8	**99.2**
Total Organic Carbon	16	0	**100.0**	17	0	**100.0**
Turbidity (at tap)	933	42	**95.5**	1543	47	**97.0**
Turbidity (at WTW)	359	5	**98.6**	665	7	**98.9**

Appendix 4: Water Quality and Enforcement Information for Private Water Supplies by County/Area in 2015

	Public Group Schemes[1]		Private Group Schemes[1]		Small Private Supplies[1]		Boil Notices		Directions	Audits
County/ Area[2]	Number	Population	Number	Population	Number	Population	Number	Population Affected	Number Issued	Number
Carlow			4	1,851						
Cavan	1	90	25	26,326	75	3,675			1	
Clare	93	19,339	14	14,235	22	1,550	6	-		6
Cork			24	2,134	418	846	16	70	1	10
Cork City					1	50				
Dun Laoghaire Rathdown					1	400				
Donegal	7	3,140	6	754	27	1,402				
Dublin City[3]										
Fingal					1	300				
Galway	62	11,223	74	29,239	103	0				1
Galway City[3]										
Kerry	39	9,599	10	1,775	76	3,737				
Kildare			5	2,110	18	1,805				
Kilkenny	25	2,166	25	3,497	153	3,091				7
Laois	31	1,523	17	5,001	145	2,576	8	517		9
Leitrim	77	6,769	11	1,998	1	90				
Limerick	38	7,044	24	7,280	17	120	5	1,342		
Longford			3	350	17	120	6	-		
Louth			7	3,376	9	970				
Mayo	66	12,486	54	28,646	66	210				
Meath			3	1,600	161	336	8	-		4
Monaghan			13	25,443						
Offaly	11	1,145	16	11,823	29	1,967	4	1,070		
Roscommon	21	4,464	10	5,460	14	0				
Sligo	8	644	13	5,973	5	850	3	207		
South Dublin[3]										
Tipperary			39	8,026	121	3,440			1	5
Waterford			2	130	17	605				
Westmeath	19	2,238	3	900	60	112				
Wexford			6	3,370	77	2,036	13	1,380	4	8
Wicklow			10	952	126	9,311	38	2,231	2	6
Totals:	**498**	**81,870**	**418**	**19,2249**	**1,760**	**39,599**	**107**	**6,817**	**9**	**56**

[1] Full list of private supplies available at http://www.epa.ie/pubs/advice/drinkingwater/publicdrinkingwatersupplies/; [2]Drinking Water Monitoring results and water supply details for each year since 2000 for each county is available at http://erc.epa.ie/safer/resourcelisting.jsp?oID=10206&username=EPA%20Drinking%20Water.; [3]No private water supply details were submitted for this County/Area for 2015.