An evaluation of private water supply regulation in Scotland

Final Report

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### Contents

**Executive summary** .............................................................................................................. 1

1 Introduction ............................................................................................................................ 3
  1.1 Objectives of this study ...................................................................................................... 3
  1.2 Water quality from private supplies ................................................................................... 4
  1.3 Study method ..................................................................................................................... 4

2 Private water supplies regulation in Scotland ....................................................................... 6
  2.1 An overview ....................................................................................................................... 6
  2.2 The regulatory model in Scotland ...................................................................................... 7
  2.3 Cross-working between parties in private water supplies regulation ................................ 10

3 Alternative regulatory models ............................................................................................... 12
  3.1 Lessons from international comparisons .......................................................................... 12
  3.2 Food regulation in Scotland .............................................................................................. 15

4 Analysis of private water supplies regulation in Scotland .................................................... 21
  4.1 Registration of supplies and identification of relevant persons .......................................... 21
  4.2 Selection of sites for testing (site sampling) ...................................................................... 22
  4.3 Site testing - selecting water quality parameters for testing .............................................. 26
  4.4 Site testing - the risk assessment ....................................................................................... 29
  4.5 Maintaining regulatory capabilities .................................................................................. 31
  4.6 DWQR’s role ...................................................................................................................... 33
  4.7 Engagement with private water supply users and owners .................................................. 37
  4.8 Engagement with the general public .................................................................................. 41
  4.9 Case escalation ................................................................................................................... 43
  4.10 Reporting by local authorities ......................................................................................... 46
  4.11 Regulatory collaboration .................................................................................................. 48

5 Conclusions ............................................................................................................................ 50

Annex 1 Summary of findings ..................................................................................................... 53

Annex 2 Private water supplies regulation in other EU Member States .................................... 56

Annex 3 Study evidence gathering ............................................................................................. 62

Annex 4 Study evaluation criteria .............................................................................................. 64
Executive summary

The Scottish Government commissioned this evaluation to gain a better understanding of the capability of the current regulatory framework for private water supplies in Scotland to deliver required water quality improvements. This study followed on from the Scottish Government’s own Private Water Supplies Strategy. It examined current regulation to identify both procedural improvements (what could be done better under current regulations) and substantive improvements (of the regulations themselves).

This study reviewed the current regulatory model for private water supplies in Scotland and identified potential improvements to the current approach. It aimed to capture three key themes: institutional design and governance; regulatory processes and practices; and user experience and behavioural factors. It also considered alternative regulatory models and identified best practice in other regulatory applications, including where these could be applied for private water supplies regulation in Scotland. Evaluation questions were developed with reference to the UK Regulators’ Code, and the Scottish Regulators’ Strategic Code of Practice, which applies to local authorities.

Stakeholder engagement was integral to this study. To supplement the desk research, evidence was gathered through a range of techniques including interviews, online surveys and workshops. Stakeholders participating in the study included local authorities, individual environmental health officers, representative bodies with an interest in private water supplies regulation and staff at the Drinking Water Quality Regulator (DWQR).

This study identified considerable complexity associated with regulating private water supplies, particularly due to the diverse nature of supplies and parties responsible for them. The study also identified considerable scope for private water supply regulators in Scotland (local authorities and DWQR) to improve practices without the need for changes to regulation. Regulatory activities are currently being carried out in different ways across local authorities, reflecting alternative interpretations of private water supply regulations. These alternative interpretations include differences in choosing which sites to sample, how risk-assessments are completed and how information is recorded. Data reporting, while improving, could still be more comprehensive. In particular, current data on compliance with local authorities’ regulatory requirements lacks information about how well they have completed their regulatory duties. Risk assessment compliance data includes completion rates only, with no information requested on the quality or consistency of regulatory practices.

Local authorities could also improve the transparency of their regulatory policies and practices. This would allow them to compare their practices against each other and to identify opportunities for improvement. Greater transparency would also give DWQR more information with which to carry out its supervisory role.

In some key areas local authorities could work together to improve their practices within current regulations. Maintaining appropriate regulatory capabilities is, for some, difficult. This is particularly true for local authorities that have few private water supplies and greater resource constraints. For many, scope for improving data and implementing new methods of engagement with users and owners are limited by this small scale. Cross-working between local authorities has delivered some success, particularly by delivering training so that smaller local authorities can maintain their regulatory capabilities. This cross-working should continue, as there is considerable potential for further cooperation in other areas of regulation. For example, in the use of information and technology to engage, inform and involve owners and user of private water supplies, as already happens in some other Member States.

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DWQR could also report more clearly on its own activities, to provide evidence of the valuable role it plays, as well as ensuring that all local authorities benefit equally from its activities. DWQR could also update the risk assessment tool used by local authorities and provide clearer information on its own role and activities. DWQR could also play a stronger role in helping local authorities to work together across a number of areas of regulation. It could play a key role developing an assessment framework for local authorities’ regulatory practices, building on recent audits of Scottish Borders, or following the template of the voluntary framework applied in animal welfare regulation in Scotland. DWQR could also initiate and lead on the provision of more user-friendly information for users and owners.

Local authorities face significant challenges in meeting their regulatory responsibilities. Decentralisation of regulatory responsibilities may contribute to this, particularly where certain regulatory capabilities or activities could benefit from centralised provision; either by local authorities working together, or through central agencies such as DWQR. Local authorities face competing demands on their time and resources, which appears to limit their appetite or capability to take enforcement action. Furthermore, decentralisation leaves little scope for a strategic approach to either the overall resource put into private water supplies regulation in Scotland (to be compared against public health benefits), or national prioritisation of that resource. Local authorities (and environmental health officers) can prioritise their resource to target supplies or properties considered a higher risk to public health, but can only do so within their respective areas.

Some of the procedural changes identified may initially require additional resource to implement, at least in the short term. In the longer term, some of these changes could deliver resource savings for local authorities. The more substantive changes to private water supplies regulation identified in this study should be implemented only if procedural improvements prove impossible to realise within the current regulatory model.

An alternative would be to consider the allocation of regulatory responsibilities and powers for private water supplies in Scotland. Collaboration between local authorities, or provision of regulatory activities by DWQR, could deliver some regulatory functions more efficiently and help local authorities to mitigate resourcing challenges. For example, a national database of regulatory information for private water supplies could be a useful regulatory tool for local authorities, aid central data gathering by DWQR, and provide strategic data on private supply water quality throughout Scotland. Any review to consider alternative models could examine whether enforcement could be made the responsibility of another (single) body, to ensure appropriate resourcing and consistent application throughout Scotland.

This study examined potential improvements that could be made to private water supplies regulations. Further work to quantify the transitional or ongoing costs of implementing such improvements will be equally important, as will research to quantify the potential benefit that could be delivered by reducing risks to public health from private water supplies. That would require further work to quantify implementation costs for these measures and the potential benefits of reduced health risks. This should be an essential next step towards establishing whether substantive improvements are necessary to deliver the best balance between regulatory burden and minimising the risk to public health.
1 Introduction

Around four per cent of Scottish household and non-household premises are supplied by private water supplies. These may be self-supplied, for example by an individual well, or supplied to multiple premises. Usually private water supplies are found in rural areas, but not exclusively. Generally private water supplies exist where it is too expensive to connect such premises to public water supply provided by Scottish Water, either because of geographical distance or capacity constraints.

All water supplied for human consumption in Scotland must be ‘wholesome’ under Part VIA of the Water (Scotland) Act 1980 (the 1980 Act), which was initially inserted (Water Act 1989, sch.22) to ensure compliance with the First Drinking Water Quality (DWQ) Directive (1980/777/EEC). The current DWQ Directive (1998/83/EC) stipulates specific technical parameters for water supply (Annex A). The principal regulations that govern private water supplies are the Private Water Supplies (Scotland) Regulations 2006 (SSI 2006/209) as amended (the Regulations). There is limited provision for grant aid to householders (the Private Water Supply (Grants) (Scotland) Regulations 2006 (SSI 2006/210)).

Enforcement powers for local authorities, which are set out in the Water (Scotland) Act 1980, were amended to take account of the 2006 Regulations (and later amendments). A Private Water Supplies Technical Manual (‘the Technical Manual’) was launched to give technical and legislative support for local authorities and users and owners of private water supplies. Further technical advice is provided to local authorities by the Drinking Water Quality Regulator for Scotland (DWQR). DWQR has supervisory powers in relation to local authorities’ drinking water quality duties regarding private water supplies (Water Industry (Scotland) Act 2002, s.7).

Scottish Government’s Private Water Supplies Strategy for Improvement (‘the PWS Strategy’) identified an urgent need for improvement in the quality of private water supplies. It has three key objectives:

- a robust, clear regulatory framework to ensure that Scotland is complying with European obligations;
- comprehensive information and advice available for users and owners of private water supplies and local authorities; and
- measureable improvements in compliance and reduction of risk to public health.

1.1 Objectives of this study

The Scottish Government has commissioned this study to gain a better understanding of the reasons behind the current level of performance. Challenges in achieving acceptable levels of compliance for private water supply quality are not unique to Scotland. Many are also observed in other countries with private water supplies. Accordingly, lessons can be learned from best practice in other Member States where regulatory compliance has improved. The study therefore aimed to:

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4 Under the Water (Scotland) Act 1980 (s.6), Scottish Water must connect premises where this can be done at ‘reasonable cost’. There is both regulation and guidance to determine what is ‘reasonable cost’ (Provision of Water and Sewerage Services (Reasonable Cost) (Scotland) Regulations SSI 2015/79; Planning Advice Note 79 Water and Drainage.)

5 There are also relevant provisions in other regulations, especially: the Water Quality (Scotland) Regulations SSI 2010/95; the Public Water Supplies (Scotland) Regulations SSI 2014/364; and most recently the Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations SSI 2015/346 (establishing limits for radon).


An evaluation of private water supply regulation in Scotland

1.2 Water quality from private supplies

The average level of compliance with required water quality standards for Type A (see Section 2.1) supplies has been slowly increasing since 2011, with significant variation in compliance and improvement across tested water quality parameters (Figure 1.1).

Figure 1.1 Type A compliance for mandatory water quality parameters (per cent of sites compliant with required standards)

Source: DWQR Private Water Supplies Annual Reports

Reported compliance rates for smaller Type B supplies vary over time, because each year different sites are sampled and tested for different water quality parameters. Type B sampling is generally carried out only when requested or when problems are identified.

1.3 Study method

This section outlines the method that was used in this evaluation. The method aimed to combine research on the regulations and guidelines for private water supplies (PWS) regulation in Scotland with information and views on the practicalities faced by those involved in private water supplies regulation.

1.3.1 Approach to the evaluation

The evaluation aimed to capture three themes:
An evaluation of private water supply regulation in Scotland

- **institutional design / governance** – examining the formal aspects of regulation related primarily to institutional design and governance arrangements. This captures the ‘top-down’ design elements of the regulatory regime;
- **regulatory processes and practices** – examining the more informal aspects of regulation related primarily to regulatory processes and practices including the approach taken in relation to monitoring and enforcement; and
- **user experience / behavioural factors** – examining the experiences of regulated entities and individuals. This captures the important ‘bottom up’ perspective of parties interacting with the regulatory regime, whose behaviour the regulatory model aims to influence.

### 1.3.2 Evidence sources

The conclusions and recommendations of this study were based on several sources of evidence and data, including:

- an extensive literature review of over 40 publications and reports, including publications relating to experiences and best practice from elsewhere in the EU;
- an online survey of 25 environmental health officers across Scotland;
- an online survey of 25 users and owners of private water supplies;
- interviews with 17 individual stakeholders in private water supplies regulation;
- two stakeholder workshops – including one special meeting of the Royal Environmental Health Institute for Scotland (REHIS) private water supplies (PWS) sub-group.

Annex 3 provides full details of the evidence gathering tasks. Stakeholders consulted for this study included:

- local authority representatives, including Environmental Health Officers;
- other representative bodies (such as the REHIS and Scottish Land and Estates;
- private water supplies users and owners, including an estate manager in Scotland, and
- representatives of DWQR.

Evaluation questions were developed with reference to the UK Regulators’ Code, and the Scottish Regulators’ Strategic Code of Practice, to which local authorities are subject. These evaluation questions were also informed by the PWS Strategy and published research. Findings are presented according to specific activities within PWS regulation in Scotland; mapping of evaluation questions onto these specific activities is detailed in Annex 4.

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2 Private water supplies regulation in Scotland

This section describes the current regulatory model for private water supplies in Scotland.

2.1 An overview

The DWQ Directive requires regulatory authorities in Member States to report on all water supplies of greater than 1,000m³ per day or 5,000 people (‘small’ supplies) (Art.13). In practice this requires that regulatory authorities hold relevant information for these water supplies, such that it can be reported. The recent Framework for Action – a good practice guide – suggests that all supplies should be registered and risk assessed.

A new DWQ Directive (2015/1787/EU) was recently enacted and gives additional flexibility to Member States to sample some parameters less frequently for Directive supplies (Type A supplies in Scotland, see below) but only if a risk assessment has been completed. The Directive references the World Health Organisation (WHO) Guidelines on drinking water quality which recommend Water Safety Planning as an approach to risk assessment and management of supplies.

The Private Water Supplies (Scotland) Regulations came into force in 2006 and updated the previous regulations with best practice relating to the regulation of water quality. Users and owners of private water supplies are responsible for the quality of drinking water from those supplies. Local authorities are responsible for the enforcement of legislation relating to private water supplies, including risk assessment and sampling processes. Local authorities must identify ‘relevant persons’ for each private water supply within their areas (2006 Regs R.4). Relevant persons may provide the supply; occupy the land from which the supply is obtained; or exercise powers of management and control over the supply. The Regulations also provide for ‘responsible persons’ who own or are responsible for domestic distribution systems (pipes, etc.). Authorities must also classify the type of supply (see below).

The division of responsibilities in private water supply regulation in Scotland is unusual in an EU context. Private supplies are regulated through local authority Environmental Health Officers (EHOs). DWQR was established under Part 2 of the Water Industry (Scotland) Act 2002, principally to regulate the public service provider but with supervisory powers in relation to local authorities’ drinking water quality duties (S.7). Under s.16 DWQR has a bare power to require information from local authorities. Local authorities must provide information that they hold which is reasonably requested. If there is a disagreement as to reasonableness, the Ministers’ decision will be final. DWQR must also report annually and from 2014 began to report information on private water supplies separately to its reporting in relation to public water supplies.

Regulatory arrangements for private water supplies in Scotland differ according to whether the supply can be exempted from the requirements of the Drinking Water Directive. Local authorities make this classification (2006 Regs, R.6).

- **Type A supply** is that determined to be above 10m³ per day or 50 persons or more, or supplies to commercial or public activities irrespective of size; and

- **Type B supply** is that determined to be below both these limits and serving only domestic premises (and exempt from the DWD).

Local authorities have a duty to complete risk assessments (or update existing assessments) and to carry out annual sampling for specified parameters on all Type A supplies. This involves assessing the source of the private supply and surrounding water catchment area to identify...
potential sources of contamination. Sampling frequencies for Type A supplies are stipulated according to the size of supply (2006 Regs, R.6 and Sch.2). Type A supplies can also be tested more often if a local authority identifies that due to environmental factors the quality of source water is unpredictable.

The Scottish Government introduced a grant scheme in 2006\(^\text{15}\) to assist private water supply owners and users to improve water quality. The scheme offers a non-means-tested maximum contribution of £800 towards the capital cost of improvement measures.

DWQR recently began reporting on local authorities’ duty to complete risk assessments for Type A supplies. Local authorities’ compliance with this requirement showed some improvement from 2013 to 2014\(^\text{16}\). DWQR also reports on local authorities’ compliance with the number of samples that should be taken for type A supplies (Figure 2.1).

**Figure 2.1 Local authorities’ Type A sampling compliance\(^{17}\)**

![Local authorities' Type A sampling compliance graph]

**Source: DWQR Private Water Supplies Annual Reports**

Risk assessments are not required for Type B supplies, but local authorities do have a duty to take action if any private supplies pose an immediate risk to public health. Generally they carry out tests to establish whether this is the case if specific risks are identified to them, or if they receive requests to test water quality. They should also provide ‘advice and assistance’ to enable a relevant person to undertake a risk assessment (2006 Regs R.27). Since Type B sampling is not mandatory, data on Type B sampling are not presented here.

### 2.2 The regulatory model in Scotland

This section outlines the roles of key stakeholders in the regulatory model and their responsibilities in relation to private water supplies regulation in Scotland.

For each supply, ‘relevant persons’ can be those who provide the supply; occupy the land from which the supply is obtained; or exercise powers of management and control over the supply (2006 Regs, R.4).

**Local authorities** have powers and duties in relation to the quality of water from private water supplies\(^{18}\). These may apply to relevant or responsible persons. Many of these duties and powers are stated in the Water (Scotland) Act 1980 (1980 Act).

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\(^{15}\) The Private Water Supplies (Grants) (Scotland) Regulations 2006. Further regulatory guidance on the grant scheme is available on the DWQR website: [http://dwqr.scot/private-supply/regulatory-guidance-and-information/private-water-supply-grants-faqs/#item1](http://dwqr.scot/private-supply/regulatory-guidance-and-information/private-water-supply-grants-faqs/#item1)

\(^{16}\) This is a simple average across local authorities and does not take into account the number of Type A private water supplies within each local authority.

\(^{17}\) Glasgow City report no private water supplies, Dundee City and North Lanarkshire report no Type A private water supplies, but no have Type B private water supplies within their local authority areas.

\(^{18}\) Local authorities have some general responsibilities in relation to public supply as well as their powers and duties over private supply.
There is a general duty on local authorities (1980 Act s.76F) to take all such steps as they consider appropriate for keeping informed about the wholesomeness and sufficiency of private water supplies provided to premises in their area, including every private supply to any such premises.

Once relevant persons are identified (2006 Regs R.4), local authorities have powers and duties to enforce the requirements for those persons to meet PWS regulations:

Section 76G provides general remedial powers for private water supplies. If water for human consumption is (or is likely) not to be wholesome; or the supply has failed, is failing or is likely to fail to provide a sufficient supply of wholesome water; the local authority may serve a notice. For Type A supplies, the local authority shall serve a notice (s.76HA). The notice should specify the matter; steps to be taken to ensure the supply is wholesome and sufficient; and time periods. Relevant persons will then have 28 days to make representations. The notice may designate steps to be taken by the authority or by a relevant person; and require payments by a relevant person to the authority or to another relevant person.

- Steps to be taken may include requiring a supply from Scottish Water and taking such steps in the notice to ensure that this is enabled / complied with.

If a Type A supply is failing and this constitutes a health risk, the local authority must exercise remedial powers as above (s.76G (3A),(3B)). They must also consider the risk caused by an interruption to supply or a restriction in the use of water.

If any required step is not taken in the specified period, the local authority may act using any incidental power. It may recover costs from the person who failed to take the steps.

If representations are made, the Ministers may confirm or vary a notice.

Local Authorities have powers to serve notices requiring information (s.76I) as well as powers of entry for enforcement purposes.

There are also specific provisions regarding private supplies used by the public (for example in commercial or public premises), introduced by the Public Water Supplies (Scotland) Regulations 2014 (SSI 2014/364) (1980 Act s.76FA, 76 FB).

Local authorities have a duty to investigate and report to Ministers when there is a ‘relevant water quality issue’19. The report should indicate the cause of the issue; whether there is a risk to human health; and what steps the authority intends to require. The Minister may issue directions as to how the authority should exercise its functions, especially in relation to advice for consumers.

Local authorities have a duty to serve a notice on the responsible person (responsible for the distribution system) for the purposes of ensuring a wholesome supply and protecting human health (S76FB). The notice must specify the issue or failure; any steps to be taken; time periods; and any advice to be given to consumers. Responsible persons again have 28 days in which to make representations.

- If the relevant water quality issue (or ‘relevant failure’, relating to an indicator parameter) constitutes a potential risk to human health, the local authority must notify the required steps and require advice to be given to consumers. They must also consider the potential risks to health caused by an interruption to supply (s. 76FB).

- After the time for taking any required steps, the local authority must notify the Ministers as to what has been done; and unless the issue / failure is trivial, should notify consumers of any remedial action (s. 76FB).

- Failure to comply with a notice will be an offence.

19 Relevant water quality issues are attributable to the distribution system and would require notification to the Ministers under the 2006 Regulations, R.17, R.18; that is, a breach of the Sch.1 parameters.
There are also powers and duties relevant to enforcement in the 2006 Regulations:

- Under Reg.17, for Type A supplies, where a supply is failing, or likely to fail, microbial or chemical parameters under Sch.1, the authority must identify the cause and extent; which parameters are failing; and whether this is due to the distribution system, its maintenance, or another reason.

- The authority must then notify the relevant person (and the Ministers) of the failure, or likely failure; if the water is being supplied to the public; any action taken by the authority; and any steps that should be taken by consumers; and then relevant persons must notify every consumer; and everyone likely to have been affected insofar as the relevant person has their address.

- Where the failure relates to a distribution system, the authority must also notify the responsible person (after consulting the health board). The notice should specify the nature of the failure; any steps the responsible person and consumers should take; and copy relevant persons. The responsible person must serve a copy of the notice on consumers who may have been / likely to be affected; prominently display such a notice on the premises; and take other steps that the local authority might require.

- Similar provisions apply under Reg.18 for failure of the indicator parameters. Under Reg.18A, the authority must take steps to notify consumers or ensure that consumers are notified, of any remedial action under a notice under s.76G of the 1980 Act, unless the failure is trivial.

- Under Reg.28, for Type B supplies, there are similar provisions as for Reg.17, but referencing a shorter set of microbiological and chemical parameters (Sch.1 table D). Reg.29 provides monitoring powers and duties for Type B supplies.

- Local authorities should maintain registers of private supplies in their area (Reg.34), including whether it is Type A or B; the details of every relevant person; the addresses of every premises served; a description of the supply, including location; the average volume and number of persons supplied; any treatment; any departures authorised; the results of sampling; any enforcement notices under the 1980 Act s.76G and 76H; and a copy of any risk assessment; and this should be updated each year.

- By Reg.35 this should be available to the public. Local authorities shall provide information reasonably requested to the Ministers, the Scottish Environment Protection Agency (SEPA), and the local Health Board; and to neighbouring authorities. The register should be provided annually to SEPA; and each year a completed Annual Return made to the DWQR, SEPA and the Health Board. (In practice DWQR will forward reports to SEPA and the Health Boards.)

- By Reg.36, public and commercial premises with private supply shall display a notice provided by the local authority.

DWQR was established under Part 2 of the Water Industry (Scotland) Act 2002 (WISA). It has enforcement powers in relation to Scottish Water (‘public water supplies’) and supervisory powers in relation to local authorities’ drinking water quality duties (WISA s.7). Ministers may direct DWQR.

- DWQR has power to require information from local authorities and local authorities must provide information they hold where it is reasonably requested by DWQR. If there is a disagreement as to reasonableness, the Ministers’ decision is final (WISA s.16).

- DWQR must make an annual report (s.17). It has reported separately for private water supplies since 2014. The statutory powers give no guidance or detail as to how reports should be provided, or data collected and maintained. DWQR does provide guidance to
local authorities on reporting\textsuperscript{21} and this contains useful explanations of their obligations relating to monitoring.

These powers and the processes behind the regulatory model are summarised in Figure 2.2.

\textbf{Figure 2.2} An overview of regulation of private water supplies

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.png}
\caption{An overview of regulation of private water supplies}
\end{figure}

\section*{2.3 Cross-working between parties in private water supplies regulation}

Many parties work together to deliver the requirements of private water supplies regulation in Scotland, including the following key stakeholders that are not directly involved in regulation.

\textit{Royal Environmental Health Institute of Scotland}

The REHIS Public Health and Housing Working Group coordinates cross-working among local authorities on private water supplies, as part of its wider remit. Issues with private water supplies are addressed by the REHIS private water supply sub-group (‘the Subgroup’). The Subgroup facilitates discussion and best practice sharing among local authorities. It also allows for local authorities to communicate with DWQR and Scottish Government and vice versa. The sub-group has addressed the impact of policy decisions on regulatory practices and helped to coordinate training. It also contributed to the Technical Manual, which gives advice to professionals regulating private water supplies and to private water supplies users and owners.

\textit{Society of Chief Officers of Environmental Health Scotland}

The PWS subgroup also works closely with the Public Health Lead of the Society of Chief Officers of Environmental Health Scotland (SOCOEHS) to ensure that operational and strategic issues relating to drinking water quality are considered. SOCOEHS supports EHOs ‘on the ground’ by supporting risk assessment methods. It aims to protect and enhance the role of EHOs within local authorities and has developed two performance standards to support local authorities on PWS activities.

\textit{Health Protection Scotland}

Health Protection Scotland (HPS) provides consultancy services and technical support to the Scottish Government and DWQR on chemical and biological testing parameters, participates in DWQR workshops and engages directly with certain local authorities on emerging issues and management of outbreaks via EHOs and local health boards.

\textsuperscript{21} \url{http://dwqr.scot/media/11422/information-letter-1-2011-information-return-guidance-and-specification.pdf}
HPS is also working closely with these stakeholders towards the development of risk assessment criteria to support the VTEC E.coli O571 Action Plan, particularly in relation to improved communication of public health risks (although the work is still at an early stage). Currently the level of engagement between HPS and local authorities differs across local authorities. HPS also engages with local authorities via local stakeholder groups that promote dialogue with users and owners of private water supplies.

**Other cross-working**

The PWS Strategy underlines the need for private water supplies monitoring and enforcement activities to complement the enforcement of environmental protection and guidance activities (for example, addressing diffuse water pollution from agriculture). In practice, DWQR shares consolidated local authority data with SEPA, in order for local authorities to meet their obligations to provide information to SEPA\(^\text{22}\).

Some EHOs reported that they engage with the Housing Division of the Scottish Government to understand the implications of housing legislation for responsibility and management of private water supplies. Scottish Land and Estates and the National Farmers’ Union of Scotland have participated in DWQR workshops so as to advise their membership on issues relating to PWS management. Individual members typically engage with EHOs and the PWS Subgroup to get a better understanding of policy requirements.

3 Alternative regulatory models

This section summarises lessons for private water supplies regulation in Scotland that can be learned from case studies of other regulatory models. It takes examples from private water supplies regulation in other EU countries and from food regulation in Scotland. Findings from this research have been incorporated into the analysis of private water supplies in Scotland (Section 4 below).

In all 28 European Union (EU) Member States, national legislation ensures compliance with the Drinking Water Directive, which assigns responsibilities to national, regional or local institutions for the monitoring of water supplies. Member States have taken different approaches to implementing these responsibilities.

The Water Safety Plan approach (WSP) of the World Health Organisation provides guidance on regulation in the small-scale water supplies sector. Implementation varies across Member States, with some adopting Water Safety Plans as a requirement for supplies serving large numbers of people and implementing more simplified plans or checklists for smaller domestic supplies.

3.1 Lessons from international comparisons

This section describes key features of interest from private water supply regulation in Germany, Finland, Ireland, Spain, Belgium and the Netherlands.

3.1.1 The role of Local Health Authorities and health experts

In Germany and the Netherlands, regional or local health inspectors have a formalised role in the risk assessment and monitoring of private water supplies. This recognises the complex nature of health risks arising from such supplies. In the Netherlands, Regional Public Health Inspectors are responsible for coordination between local authorities and national public health authorities. In Germany, non-compliant private water supplies are reported to the local health authority and communications are issued on behalf of the local medical officer. Cases can also involve the federal state, usually the State Health Department, if enforcement action is required.

In Scotland, the VTEC E.coli 0157 Action Plan underlined the potential role of a partnership approach between DWQR, LAs and health authorities towards improving awareness of potential risks amongst users and owners of private water supplies. Regional health experts on PWS - or a national health risk coordinator - could support such a risk communication strategy while also providing support to local authorities on an ad-hoc basis.

3.1.2 Enforcement guidance from a central authority

In Ireland local authorities are the regulatory authority for private water supplies in their respective areas. Responsibilities and powers were clarified in a 2014 statutory instrument, amending the 2007 Irish Drinking Water Regulations.

In addition to the requirements included in the preceding 2007 Drinking Water Regulations, the 2014 amendments also set a binding framework for audit of supply performance.

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23 The WSP is aimed at practitioners in the water sectors at all levels (i.e. source protection, treatment processes at supply and household level and distribution of drinking-water). The WSP explains how to prioritise hazards and how to develop and implement generic water technology safety plans. Water suppliers can find checklists that may help them improve the quality of their supply (e.g. Community checklist for monitoring a protected spring and Checklist for operation and maintenance of a protected spring).

The Environmental Protection Agency (EPA) must supervise the performance of Irish Water and each local authority of their monitoring functions under those Regulations. It also may direct Irish Water or a local authority to comply with the Regulations (Regs. 7 (12)). It may also direct local authorities to make changes to monitoring programmes submitted to the EPA (Regs. 7(6)). Local authorities must respond to periodic Environmental Protection Agency (EPA) requests for information on individual failures to meet required water quality standards for private water supplies.

The EPA also directs local authorities on enforcement measures to ensure that the necessary corrective action occurs25. The EPA does so by issuing guidelines on the nature and timing of remedial, enforcement or other relevant action under the Regulations. Local authorities are required by the regulations to take such guidelines fully into account when fulfilling their regulatory duties. The EPA can also take legal action against private water suppliers that fail to take appropriate remedial measures as directed – or fail to submit an action plan for remediation within 60 days of being directed to do so26.

3.1.3 Group improvement schemes

In Ireland, group improvement schemes emerged in the 1950s-60s as a means to consolidate private water supplies and improve local authorities’ monitoring efficiency. Consolidation of public and private group schemes occurred rapidly in the 1970s through the coordinated efforts of farming groups and local cooperatives as a means of pooling risks and costs of supply maintenance. In recent years, growing concern about the viability of smaller schemes - due to the increasing costs of meeting compliance with the Drinking Water Directive - has led to further amalgamation of smaller schemes into larger schemes27.

In Ireland, participating groups have 20-year operating and maintenance contracts that help to create a long-term solution and lower the costs of water quality improvements. Grouped contracts for maintenance offer cost efficiencies in the region of 25 per cent over traditional improvement routes for private water supplies28.

These schemes have typically proved more successful on larger private estates, where there is a coordinating party and an agreement can be made to share ongoing maintenance and improvement costs through a Water Safety Plan. These schemes have also received considerable levels of government funding, which may be a further contributing factor in their reported success.

3.1.4 A quality assurance scheme can help users and owners to maintain water quality and demonstrate quality for users

A quality assurance scheme has been implemented in Ireland by the National Federation of Group Water Schemes (NFGWS), which is the representative body for group water schemes in Ireland. This scheme aims to help groups to manage and monitor water quality of small water supplies.

Membership of the scheme is mandatory for any group scheme that wishes to receive funding to implement water quality improvements. Membership entails completing checks, typically assessed by a representative of NFGWS, to ensure the credibility of the scheme. These are summarised in a reference document that describes the standards that need to be met to gain quality assurance. The quality assurance scheme sets standard operating procedures in the

28 As discussed in A2.3.
maintenance and improvement of supplies, including standard courses of corrective action when water quality is compromised. Actions taken in relation to such supplies must also be recorded for future reference.

A scheme such as this could help to engage users and owners of private water supplies in Scotland, while providing useful information with regard to the maintenance and improvement of water quality. It could also provide users and owners on larger supplies with a means to communicate the quality of their supplies to the public. The Irish context within which this scheme differs from Scotland is that group supplies are generally larger than many supplies in Scotland. This could limit the applicability of such schemes in Scotland.

3.1.5 A georeferenced database

In Spain and Finland electronic databases have been created to register information about private water supplies. In Spain this is mandatory for larger supplies and voluntary for smaller supplies (depending on the number people served by the supply). The database includes details of the supply and a recorded history of monitoring and sampling data. The Spanish database is publicly available, while in Finland the database is accessed and maintained by local authorities.

Creating such a database for Scotland could provide a way for local authorities to make information available to the public on the monitoring of private water supplies, as well as their performance in terms of compliance with water quality standards. It could be feasible to implement a similar system in Scotland; individual supplies have in recent years been assigned unique registration codes to ease monitoring. DWQR has access to land use geographical information datasets maintained by the Scottish Government that could also be incorporated into the database. This could mean such a database could help with the identification of strategic priorities for private water supply quality, by linking water quality with outbreaks of diseases associated with contaminated supply. Having a readily available georeferenced database of supplies, with details on their historical performance, could enable comparisons to be made between supplies and outbreaks, to identify and prioritise supplies associated with more significant public health risks.

3.1.6 Accessible online information for users and owners

In Ireland, the EPA and local authorities have worked to improve the accessibility of online resources for private water supplies users and owners, including provision of clear outlines of responsibilities and best practice for ongoing management of private water supplies. The EPA’s ‘Protect your Well’ web app supports users and owners to take steps to maintain and properly manage their supply outside of the formal sampling and risk assessment regime.

In Germany, authorities have produced a simple guide for users and owners to support the identification of typical biological hazards through sanitary assessment and proper management.

In Scotland, the key reference for the monitoring and management of supplies is the PWS Technical Manual dating from 2006, as well as a range of other guidance documents produced by DWQR to support local authorities. According to evidence collected by users and owners in this study, much of this information is perceived as somewhat technical and inaccessible for lay audiences. DWQR itself expressed the view that the Technical Manual requires updating, including to improve its accessibility.

3.1.7 Summary

Table 3.1 summarises the examples described in this section.
Table 3.1 EU best practice and applications to the Scottish context

<table>
<thead>
<tr>
<th>Best practice examples</th>
<th>Member State</th>
<th>Potential lesson for private water supply regulation in Scotland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of Local Health Authorities and health experts</td>
<td>Germany</td>
<td>■ There may be scope for an expanded role for Local Health Boards in Scotland, particularly with regard to better engagement from Type B users and owners, as these authorities typically carried more ‘weight’ and have key skills in risk communication</td>
</tr>
<tr>
<td>The Netherlands</td>
<td></td>
<td>■ Potential for greater cooperation between adjoining LAs and local/central government in managing common risks</td>
</tr>
<tr>
<td>■ Scope for developing shared capacities in PWS at the regional level, as appropriate to the number of supplies (for example, through collaboration between Health Boards)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforcement powers for a central authority</td>
<td>Ireland</td>
<td>■ EPA has powers to require local authorities to take enforcement action, providing strategic overview and prioritisation of enforcement</td>
</tr>
<tr>
<td>Quality assurance scheme linked to Water Safety Plans</td>
<td>Ireland</td>
<td>■ A quality assurance scheme for users and owners allows them to demonstrate compliance, using tools, information and prompts developed through the scheme. Advice includes on monitoring, testing and measures to improve supplies</td>
</tr>
<tr>
<td>■ This also gives users and owners a tool with which to communicate the quality of their supplies to the public</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic database as a tool for authorities and owners/users</td>
<td>Spain</td>
<td>■ Could help assess wider environmental risks to supplies (e.g. agricultural waste, historical pollution) when combined with substantial GIS data currently held by the Scottish Government and its agencies</td>
</tr>
<tr>
<td>■ Could help to improve data recording and use throughout regulatory activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online resources for users and owners</td>
<td>Ireland</td>
<td>■ Technological solutions help users and owners to find information online and use a web app to help them monitor water quality</td>
</tr>
<tr>
<td>Group improvement schemes</td>
<td>Ireland</td>
<td>■ Group improvement schemes can help to implement improvement measures at source, rather than at supply, and to overcome some of the barriers that prevent individuals from treating their supply (at source or at premises)</td>
</tr>
</tbody>
</table>

### 3.2 Food regulation in Scotland

This section examines the regulatory model implemented for food regulation in Scotland and lessons that could be applied to private water supplies regulation in Scotland. Key findings that can be applied to private water supplies regulation in Scotland are incorporated into Section 4.

#### 3.2.1 An overview

This section examines key aspects of regulatory activities in food regulation that are most relevant to private water supplies regulation. However, differences between the two regulatory models and the nature of contamination risks also need to be considered. For example,
solutions of contamination in water supplies can be complex and even relatively low-risk sources (such as groundwater) may become contaminated in a range of different ways.  

**Overview of food safety regulation in Scotland**

Local authorities’ regulatory responsibilities for food safety are similar to those in private water supplies regulation. Food safety regulation in Scotland is the responsibility of local authorities, with oversight from Food Standards Scotland (FSS). Local authorities monitor, inspect and enforce food business operators (FBOs) using risk-based approaches to monitoring, inspection and enforcement measures. Local authorities decide the scope and frequency of their regulatory measures, based on their judgement of what is proportionate in relation to the scale and probability of hazards associated with non-compliance.

The scope of FSS’s oversight responsibilities is defined within the Food (Scotland) Act 2015. The 2015 Act gives powers to the FSS which in many ways are analogous to the powers of DWQR in the public water supply domain.

Section 19 gives FSS a duty to acquire, compile and review information and section 20 gives a power to carry out ‘observations’ that would include information about food production or supply, or premises (reported on an ongoing basis and uploaded to the UK Food Surveillance System). Section 21 gives powers of entry – though not to domestic premises – and powers to take samples. Another core remit of FSS is in setting performance standards for food and feed authorities at the local authority level. This is established in Section 23 of the Act.

FSS also undertakes audits of Local Authorities’ enforcement measures against the feed and food law standards in the Framework Agreement that establishes minimum standards of performance across a range of enforcement measures. This document was developed in consultation with Local Authorities through the Food Standards Agency (FSA) Enforcement Liaison group.

This includes public reporting on internal resources (financial allocations, staffing allocations and ongoing training programmes) and details of quality assessment measures in place for internal monitoring of enforcement procedures. The Framework Agreement also requires LAs to have a publically available enforcement policy in place.

FSS also collects data from LAs through the Local Authority Food Enforcement System. Information requested is broadly similar to the annual local authority data return to DWQR but also includes statistics on the risk ratings assigned to individual businesses for food hygiene and food standards. These data are used to assess both the levels of regulatory actions undertaken by LAs, and the outcomes (in terms of compliance levels) achieved by these actions. The LAFES is thus an important basis for the auditing process of LAs as well as allowing benchmarking of performance against other LAs.

Outside the 2015 Act, a separate order (Section 104) under the Scotland Act was used to designate FSS as a non-ministerial office of the Scottish Administration, alongside the Scottish Government. As with DWQR, FSS is not directly accountable to Ministers and has operational autonomy. FSS and DWQR can each be directed by Scottish Ministers.

This provision is intended to add flexibility in the relationship between the Scottish Government and FSS – allowing them to work together across policy areas in a way that does not put the independence of FSS at risk.

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3.2.2 Selection of sites for testing (site sampling)

This section explores how FBOs are chosen for testing in the food industry in Scotland. Sampling of food businesses and foodstuffs is the responsibility of local authorities under the Code of Practice issued by the FSA under the Food Safety Act (1990). This Code of Practice states that routine sampling is an essential element in delivering a well-balanced enforcement service and notably calls for local authorities to create a sampling strategy that details their sampling priorities.

Local authorities take a risk-based approach, designed to minimise the regulatory burden on food businesses while mitigating public health risks. According to the Association of Public Analysts (APA), inspection frequency is based on the type of food products being handled (some food products are deemed to be a higher risk than others), the scale of the business, and each FBOs history of compliance.

The APA has produced guidance on risk-based sampling. Each local authority should (under the Food Act) have a designated public analyst in place to assure the safety and correct description of food. In practice, analyst resources are often shared between LAs. The guidance promotes a risk assessment of every food product on the market against a number of parameters to produce a relative sampling rate for that product. However, the Scottish Food Environment Liaison Committee reports that in practice this is not achievable in most cases.

This has placed an increasing onus on FSS to support the adoption of a more strategic approach to sampling across local authorities as through the provision of guidance. This includes:

- intelligence-based sampling – where there is intelligence pointing to potential non-compliance relating to an individual FBO gained through regular inspections, surveys or customer complaints;
- monitoring specific trends – where there is a specific change in legislation, enforcement or technology, or an emerging issue that may result in increased risk of contamination of specific foods; and
- verification of systems of (food safety) control applied by individual food businesses (e.g. through surveys).

Sampling intelligence is also supported by the regular pooling and maintenance of data. The Food Surveillance System UK (FSSUK) is a system that facilitates electronic recording of sampling data that can be shared with laboratories that carry out testing. The resulting data are held in a national database allowing local and national interpretation of sampling activity and food quality. The Scottish Food Environment Liaison Committee reports that routine use of the FSSUK is fundamental to sampling. It ensures that local authorities collect all essential sample information by allowing data to be pooled and allows guidance to be formulated to ensure the most effective and efficient use of resources.

3.2.3 Site testing - selecting parameters

Local authorities generally decide which food safety parameters to sample. Each local authority develops an annual sampling programme based on the profile of businesses within...
its area and ad-hoc guidance and data produced by FSS. These programmes are further supported by sampling ‘toolkits’ developed by FSS and updated regularly by the Scottish Food Environment Liaison Committee (SFELC)\textsuperscript{34}.

- One sampling toolkit gives advice on prioritising businesses to sample from, based on statutory obligations, effective food safety enforcement and optimising the value obtained from sampling. Businesses are split into three priority levels for sampling.

- Another sampling toolkit uses data gathered from surveys and FSS to guide LAs on selecting sample types and analysis suites within businesses. The advice highlights food and analysis combinations which pass or fail more regularly as well as combinations where there is a lack of sample data. This tool is updated regularly as the sampling database evolves.

### 3.2.4 Site testing - risk assessments

In food hygiene, risk rating systems are widely used by food authorities as a tool to gauge the targeting and appropriate frequency of inspections. Each business within a local authority area receives a score, which informs inspection frequency and also enforcement measures. Local authorities determine the rating for each business based on the type of foodstuffs supplied, the type of business, the ‘likelihood of compliance’ (which is assessed at site) and the business’ historical food safety performance. This rating also determines the scope of the risk assessment itself and the frequency with which it is renewed. Hazard assessments are generally sourced from scientific advice on the risk of exposure to specific pathogens from specific foodstuffs.

Research suggests that risk assessment methods adopted by EHOs may be ineffective when deciding which business to inspect where officers have insufficient capacities in certain issues or risks\textsuperscript{35} and that inspections alone may not be sufficiently protective against food poisoning outbreaks\textsuperscript{36,37}. The use of hazard analysis and critical control point (HACCP) methods appears relatively well developed within food safety risk assessment and incorporates routine food hygiene and user behavioural elements within the likelihood of compliance assessment.

### 3.2.5 Transparency of regulation

Food safety regulators reportedly sometimes experience problems in taking formal legal action because of the way in which many food safety laws and regulations have been drafted\textsuperscript{38}. Often national or European laws are drafted differently, with the latter being more general and taking the form of broad principles. In domestic law the Food Safety Act creates general offences whereas regulations made under it can be very detailed. According to the SFELC, this can complicate enforcement procedures by causing confusion, but regulatory instruments are commonly used for such purposes.

National regulations adopt multiple and sometimes conflicting regulatory styles. Whereas the Food Safety Act focuses on command-and-control based regulation, HACCP principles are found in food hygiene regulation. Although both are inspection-focused, they require the enforcement agency to operate in different ways. For example, HACCP may require the


\textsuperscript{36} Tebbutt, G.M. (2007) “Does microbiological testing of foods and the food environment have a role in the control of foodborne disease in England and Wales?” 102(4) Journal of Applied Microbiology 883–891

agency to act as an educator rather than enforcer, but where training fails the fall-back remains formal enforcement, with its attendant risks. The lessons here for PWS regulation are that a clear structure for the escalation of non-compliance cases is needed, as appropriate to the scale of the violation. The use of ‘pre-notices’, for example, may act as a useful transition between educational and advisory activities and formal action.

3.2.6 Maintaining regulatory capabilities

One of the major challenges for food safety regulation is reliance on risk-based inspection. According to one analysis, prioritising larger sites over smaller sites for inspection can gloss over difficulties of smaller businesses (particularly a lack of familiarity with food hygiene good practice or skills relating to HACCP methods).

Another key issue is that local authority officers, such as EHOs, can only establish compliance through inspections. According to one study of the UK food safety regime, such inspections are typically the main means of advising and educating small businesses. Consequent self-regulation is very dependent on the regulatory capacity of the individual business. Generally, it is most suited to large, well-informed and well-resourced companies, but is also influenced by the readiness of companies to self-regulate.

3.2.7 Owner and user engagement

FSS and local authorities put considerable efforts into engaging with food businesses, through a range of awareness-raising and capacity-building activities. This includes engaging with food businesses and food suppliers to help strengthen self-regulation – particularly in relation to emerging information about food safety risks. This includes marketing campaigns, guidance and public events. Social marketing techniques are widely used to identify key audiences and tailor messages accordingly.

According to an FSS representative, a major challenge lies in communicating the benefit of managing risks to small businesses and the wider public, as a means of fostering greater self-regulation. One example of the type of guidance developed by FSS in this regard is the CookSafe manual – which helps catering businesses to understand and implement simple HACCP-based systems and an Action Plan to fit their specific needs.

3.2.8 Escalation processes

As with PWS Regulation, EHOs typically have considerable flexibility to decide how to escalate cases where food safety standards are not being met. As one representative of FSS reported, compliance is the main objective for EHOs, and the preferred methods are cooperative in nature. Legal enforcement proceedings extend to the serving of notices of full or partial closure of premises if there is evidence of persistent non-compliance or a specific threat to the public, but (according to the FSS representative) in practice this is rarely applied as episodes of non-compliance are usually linked to a failure to understand requirements or a lack of technical ability to do so.

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### 3.2.9 Summary

Table 3.2 summarises the examples of practices within food regulation that are relevant for comparison with private water supplies regulation in Scotland. These examples are considered in the analysis section below and incorporated into the study findings.

<table>
<thead>
<tr>
<th>Area</th>
<th>Best practice from food regulation</th>
</tr>
</thead>
</table>
| Sampling                    | - Local authorities are required to create sampling strategies detailing priorities and FSS increasingly supports a strategic approach to sampling across all local authorities.  
  - Sampling prioritisation is supported by electronic pooling of data, which can be shared among regulatory stakeholders  
    - In private water supplies, this could support surveillance-based sampling for emerging risks (e.g., E.coli 0571 or lead contamination) and improve information on regulatory and water quality performance over time |
| Parameter selection         | - 'Toolkits' use data gathered from surveys and FSS to guide local authorities on selecting which businesses to sample from and types of sampling to complete |
| Risk assessment             | - Experience from food safety suggests that such approaches help promote greater day-to-day management of risks outside of formal inspection regimes and can lessen the regulatory and enforcement burden overall  
  - Water Safety Plans could adapt this to be tailored to the diversity of supply types and long-term management responsibilities |
| Promoting public engagement | - FSS, local authorities and health authorities work closely and engage with key public stakeholders, particularly with regard to engaging with emerging information about food safety risks and self-regulating. This includes marketing campaigns, guidance and public events. |
4 Analysis of private water supplies regulation in Scotland

This section of the report describes findings in ten areas of the regulatory model for private water supplies in Scotland, as outlined in Table 4.1.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Relevant section</th>
<th>Key areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td>Section 4.1</td>
<td>Registration of supplies and identification of relevant persons</td>
</tr>
<tr>
<td></td>
<td>Section 4.2</td>
<td>Selection of sites for testing (site sampling)</td>
</tr>
<tr>
<td></td>
<td>Section 4.3</td>
<td>Site testing - selecting water quality parameters for testing</td>
</tr>
<tr>
<td></td>
<td>Section 4.4</td>
<td>Site testing - the risk assessment</td>
</tr>
<tr>
<td></td>
<td>Section 4.5</td>
<td>Maintaining regulatory capabilities</td>
</tr>
<tr>
<td></td>
<td>Section 4.6</td>
<td>DWQR’s role</td>
</tr>
<tr>
<td>Improvement</td>
<td>Section 4.7</td>
<td>Engagement with private water supply users and owners</td>
</tr>
<tr>
<td></td>
<td>Section 4.8</td>
<td>Engagement with the general public</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Section 4.9</td>
<td>Case escalation</td>
</tr>
<tr>
<td></td>
<td>Section 4.10</td>
<td>Reporting by local authorities</td>
</tr>
<tr>
<td>Overall</td>
<td>Section 4.11</td>
<td>Regulatory collaboration</td>
</tr>
</tbody>
</table>

Each section describes current regulatory responsibilities, key findings and evidence, and potential procedural and substantive improvements that could be implemented. Table A1.1 summarises the findings of this section (see Annex 1).

4.1 Registration of supplies and identification of relevant persons

This section describes findings in relation to the registration of supplies and identification of relevant persons for private water supplies in Scotland.

Current regulations and responsibilities

Local Authorities have a duty to prepare and maintain a register of every private supply in its area (2006 Regs, R.34), including information as to the type of supply, the relevant persons, the source, the average volume, and any treatment.

Local Authorities must identify ‘relevant persons’ for each private water supply within their areas (2006 Regs, R.4). For each supply, a ‘relevant person’ can be those persons who provide the supply; occupy the land from which the supply is obtained; or exercise powers of management and control over the supply (2006 Regs, R.4). The Regulations also provide for ‘responsible persons’ who own or are responsible for domestic distribution systems (pipes etc.).

Local Authorities have powers and duties in relation to the quality of water from private water supplies\(^1\). These may apply to relevant or responsible persons.

4.1.1 Findings

Local authorities take different approaches to identifying relevant persons and it was not clear that all local authorities maintain up to date information identifying relevant persons on their register of private supplies. Some local authorities reported that they identify relevant persons

\(^1\) Local authorities have some general responsibilities in relation to public supply as well as their powers and duties over private supply.
only when necessary, as an early stage in the enforcement process applied to any private water supplies that do not meet water quality standards. This may reflect local authorities’ reports that identifying relevant persons can often be challenging and time consuming.

4.1.2 Potential for procedural improvements within current regulations

Evidence from private water supply regulation in other Member States suggests that an electronic database of supplies and relevant persons could be created. Centralised data could be used to record information efficiently and act as an information tool for all parties in the regulatory process. This could make existing data available to all regulatory stakeholders. This could also be used as a public resource, by allowing public access to the information. This has been implemented in Spain, where the database is accessible to the public and can be used for public engagement purposes as well as by regulatory stakeholders.

4.1.3 Potential for substantive improvements to current regulations

The registration of private water supplies on an electronic database could be made mandatory by updating the Regulations. In Belgium the registration of small-scale water supplies onto such a system has been implemented as a voluntary measure only. However, some supplies have not registered, leading to an incomplete database. This suggests that registration may need to be mandatory or implemented through local authorities in order to achieve a comprehensive register.

In Finland, municipal health authorities create registers of all the supplies in their area and make them available to the public on a national electronic database. All private water ‘suppliers’ (except those serving just one dwelling) must be accepted by the relevant municipal health authority before they start operating. Each time a change in water source or treatment is made, suppliers must obtain a new acceptance.

This could be onerous to implement in the short term. To mitigate this, a threshold could be applied, below which supplies could be exempted. In Finland, supplies that serve only one household premises are exempted. Alternatively, the database could be created and made mandatory only for Type A supplies.

4.2 Selection of sites for testing (site sampling)

This section describes findings on PWS regulation in Scotland on a selection of Type A sites for testing. The Regulations allow local authorities some flexibility to determine site sampling methods that best reflect the regulations (see box below).
Current regulations and responsibilities

It is local authorities’ responsibility (as Monitoring Authorities), to ensure samples are taken that:

- for Type A supplies, are representative of water quality throughout the year (Reg.22). Where a Type A supply serves a number of premises, those premises are to be tested at random (unless Scottish Ministers direct otherwise). The number of samples should be distributed equally in time and location and should be representative of the quality of water consumed or available for consumption throughout the year; and

- for Type B supplies, the Regulation enables local authorities to take samples which it considers necessary to establish the ‘wholesomeness’ of the water (Reg.29). Samples should be representative of the quality of water throughout the year, and if the supply serves a number of premises, sampling should be from premises selected at random.

- Regulation 7 provides for the point of compliance, where samples should be taken; for example from the tap.

The Regulations also state that local authorities may charge for expenses incurred when sampling premises up to a maximum limit specified by the Regulations (Reg.33).

LAs are required to submit certain data to DWQR annually on the rate of compliance with sampling regulations, referred to as the annual return. Currently, this annual return does not require identification of where a sample was taken.\(^{42}\)

The Regulations state that sampling should be representative of water quality throughout the year. Stakeholders, including multiple EHO representatives and academics, identified this as an important factor that EHOs should consider when choosing sampling location and frequency, as does the PWS Technical Manual.\(^{43}\)

In 2011 DWQR identified that where local authorities reported their compliance with the Regulations in terms of audit monitoring (Regulation 20 and Schedule 2, Table B), not all were compliant.\(^{44}\) In response, DWQR began publishing local authorities’ compliance with sampling requirements in 2013.

4.2.1 Findings

Local authorities primarily use a risk-based approach to their sampling practices. Local authorities reported focusing sampling on properties considered more likely to cause public health risks, within individual supplies. Generally these were reported to be commercial premises such as catering outlets, hotels or restaurants. This approach aims to maximise the efficiency with which local authorities can target their limited resources to preserve public health. The Private Water Supplies Technical Manual (Technical Manual)\(^{45}\) recognises this and notes the importance of using the risk assessment as a tool to determine the appropriate frequency of sampling.

Generally local authorities reported that if a private water supply is classified as Type A because of a commercial property on that supply, the commercial property will be the focus of sampling. This is intended to reflect the higher risk to public health associated with the

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commercial property. Sampling of Type B sites was generally reported to be only completed when certain triggers occurred, such as complaints about the quality of supply or requests for testing. One local authority noted that practically speaking, its risk-based approach means that for premises that it considers to be high risk, it samples more frequently than the Regulations require for premises.

**Local authorities’ site-selection practices vary, as the Regulations allow room for interpretation.**

Local authorities generally do not make policies on site selection public and did not make any such documents available to this study, nor are these documents made available to DWQR. Evidence that practices vary is based on workshops and interviews with local authorities, so it has not been possible to complete a review of documented practices across local authorities to verify these accounts. For example, some local authorities treat households on Type A supplies the same as households on Type B supplies (which include most households). Others rotate testing for such household premises.

One local authority considered the Regulations to imply that sampling of household premises on Type A supplies should be treated the same as commercial premises. However, it thought this was impractical given the limited resources available to local authorities for private water supplies regulation.

**Type B premises are sampled less frequently, reflecting the lack of requirement in the Regulations for local authorities to monitor these supplies regularly.** One local authority reported that Type B premises are usually sampled when an owner or user requests it because of a property sale or because of a requirement to have a certificate of water quality (for example prior to applying for the grant scheme). Supplies may be identified as potentially non-compliant through risk assessments of nearby supplies and identification of relevant persons. Local Health Boards also recommend sampling in the event of outbreaks of gastrointestinal diseases, which can be another trigger for testing.

Until the PWS Scotland (2006) Regulations came into place, some authorities undertook sampling of Type B supplies every five years to test compliance levels. This remains the case in England and Wales.

**Local authorities’ practices concerning charging for sampling also vary.** Local authorities reported different approaches during the stakeholder workshops held for this study. Some choose not to charge users and owners for repeated testing, to avoid any disincentive to facilitate that testing, while others charge for all tests in accordance with the Regulations. Further, some publish charging schedules online, while others do not.

### 4.2.2 Potential for procedural improvements within current regulations

Steps could be taken to establish best practice in sampling methods. The Technical Manual provides advice on sampling methods, however it is clear that local authorities’ interpretation of this guidance leads to varied practices. Establishing best practice would create a standard against which local authorities’ practices could be assessed. This could also help local authorities to identify improvements to their own practices in comparison with the best practice benchmark. DWI provides some guidance on sampling practices in England and Wales. However this advice is not consolidated into a single, up-to-date Code of Practice on sampling or other related regulatory activities.

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47 Some Local Authorities do not publish charging schedules, while others do. For example, Scottish Borders publishes a full charging schedule, [http://www.scotborders.gov.uk/info/1231/environmental_health/1344/private_water_supplies](http://www.scotborders.gov.uk/info/1231/environmental_health/1344/private_water_supplies)

The FSA (for England and Wales) has a more consolidated approach. It has implemented a Code of Practice, issued under the Food Safety Act (1990). This requires routine sampling and calls for local authorities to create a sampling strategy that details their sampling priorities. While no such code of practice exists in private water supplies regulation, a similar model could be implemented without recourse to a legislative requirement; either collectively by local authorities, or by DWQR.

In Scotland the REHIS Subgroup is increasingly attempting to address common challenges such as E.coli or lead contamination through working group meetings. Local authorities may currently apply a strategic approach to prioritising resources, however this is not clear or transparent.

**Local authorities could publish their sampling strategies and practices.** The Regulations do not require LAs to implement such measures. However, doing so in combination with the development of a best-practice approach to sampling selection and strategy would equip local authorities with the information to evaluate their own practices against the industry standard. This could allow local authorities to ensure they implement proportionate sampling or to help improve the efficiency and efficacy of their site-selection practices. Any such transparency could be particularly valuable to DWQR in supporting its supervisory role. Increased transparency could improve local authorities’ incentives to match best practice.

International evidence shows that some countries formalise sampling practices into manuals. For example, in Ireland, the EPA recommends the use of a sampling manual for each local authority, setting out procedures and precautions. The EPA also recommends training around these procedures to ensure consistency across EHOs.

DWQR could follow a similar model even with its current supervisory role over local authorities. Within its current powers, DWQR could request that local authorities provide such information, and could report on this within its Annual Report. However, it currently has no power to formally require that local authorities implement any such recommendations.

### 4.2.3 Potential for substantive improvements to current regulations

The following substantive measures could potentially improve the operation of PWS regulation in Scotland. These measures are aimed at the same improvements as the procedural changes outlined above. Substantive changes should therefore only be considered if procedural improvements cannot be implemented effectively or do not improve regulatory practices and water quality compliance.

**Changes to the Regulations could be implemented to require local authorities to publish their policies on sampling practices and site selection.** The opportunity for procedural improvements to sampling practices is outlined above. Should procedural improvements not lead to improvements in the consistency and quality of sampling practices across local authorities, substantive changes to regulations could be considered.

**Consideration could be given to mandatory sampling of Type B premises.** However, a clear case would need to be made for this; one that compared the potential benefits for public health with the costs associated with implementing such a testing programme. Without changing the classification of Type A and Type B supplies, this would also have no impact on household premises with Type A supplies. In England, some 69% of known private supplies were risk

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49 Specifically, the sampling policy: “should detail the factors that will be taken into account in formulating the sampling programme, including any national or local consumer issues that will influence the level of sampling to be undertaken…food authorities should also prepare a sampling programme that details their intended food sampling priorities, taking account of the number, type and risk ratings of the food businesses. The sampling policy should not normally be published.” (Food Law Code of Practice (Scotland), 2009).
assessed and sampled in 2014 – with a substantial majority of known supplies serving individual properties\(^\text{50}\).

### 4.3 Site testing - selecting water quality parameters for testing

This section describes findings on the selection of water quality parameters for testing when samples are taken from premises supplied by private water supplies. These tests can include tests for microorganisms, chemical contaminants, microbiological contaminants and physical or chemical properties of the water.

**Current regulations and responsibilities**

Local Authorities are responsible for taking samples or ensuring they are taken. Water for human consumption must be determined to be wholesome according to requirements set out in the Regulations. This requires that water does not contain any micro-organism, parasite or substance at a concentration or value that would constitute danger to human health.

Schedule 1 Tables A, B and C provide microbiological, chemical and indicator parameters.

Regulations 19-21 provide for monitoring at ‘regular intervals’ of these parameters. Sch.2 determines which parameters are subject to ‘check monitoring’ and ‘audit monitoring’

Schedule 1 Table D, and Sch.2 Table C, provide a reduced set of microbiological and chemical parameters for Type B supplies.

Regulation 23 and Sch.2 provide for the numbers of samples to be taken from Type A supplies, depending on the size of the supply; and requires that samples be representative of the quality of water throughout the year. If the local authority considers that the quality of supply is unlikely to deteriorate, and the standard has been met for two successive years, the number of samples may be reduced as provided in Sch.2.

Under Reg.25, local authorities shall additionally sample any properties, elements, organisms, parasites or substances not listed in Sch.1 which it believes to be present and might affect the wholesomeness of the water; at an ‘appropriate frequency’ with regard to any risk to public health, and representative of the quality of water throughout the year.

Under Reg.26 and Sch.3, monitoring authorities may, on the basis of risk assessment, omit some of the parameters in situations where the authority, after the completion of an investigation, has found the parameter is not likely to be present in a supply in its area in concentrations which could lead to public health risks. Before making the decision, the monitoring authority must notify the relevant and responsible persons and the Health Board (and neighbouring authorities, if relevant) and review such decisions at least every five years.

Guidance is also available on parameter selection, provided by the Technical Manual and the standardised risk-assessment framework included within it. This recommends the development of a more comprehensive Water Safety Plan based on the multiple-barrier approach developed by the WHO. This has become a common requirement in the regulatory frameworks of other Member States but is not a formal requirement under the PWS Scotland (2006) Regulation.

Parameter selection requirements depend on whether supplies are used directly for human consumption (thus falling under the scope of the Drinking Water Directive) or for secondary purposes (e.g. relating to low-risk irrigation or farm activities). For the latter, lower quality

('clean' as opposed to 'potable') water supplies are viable and this has implications for the scale of parameters necessary for site testing.

4.3.1 Findings

Information provided in the Regulations and in the Technical Guidance is sufficient to allow local authorities to identify which parameters to test, according to stakeholders contributing to this study. All local authorities reporting on the adequacy of the guidance said it was clear and definitive with respect to samples to be taken and applicable parameter values for testing.

Interviews with local authorities and DWQR did identify that practices for testing non-mandatory parameters may vary. Local authorities variously reported altering parameters tested according to the season, following incidents, or requests from owners. For example, this can reflect known and seasonal local environmental factors that could affect water quality. Choices over which parameters to select may also be influenced by other factors. One local authority noted that it also includes results for certain parameters (in addition to mandatory parameters) where a lab does not charge for results on those parameters. Some local authorities use risk assessments to identify additional parameters that may need to be tested at individual supplies or premises, with a variety of approaches to selecting parameters reported.

Local authorities’ practices for parameter selection are not published, similarly to practices around site selection. Transparency is a key principle of good regulatory practice (see box below). Some local authorities did report documenting the rationale for these decisions, but none reported releasing any such policies and did not make any such policies available to this study. Nor do they make such policies available to DWQR. It has therefore not been possible to complete a review of documented practices across local authorities to verify their accounts.

4.3.2 Potential for procedural improvements within current regulations

For water quality parameters that are mandatory for inclusion in site testing, the Regulations and guidance are clear. There appeared to be little need or demand for further guidance on the Regulations in this regard. However selection of non-mandatory parameters allows room for LAs to interpret guidelines in different ways. This study identified the following potential procedural improvements that could be made within current private water supplies regulations.

Similarly to site selection, local authorities could improve transparency around their practices (see blue box below on transparency) by creating and publishing best practice information around selecting non-mandatory water quality parameters for testing. They could also make their practices more transparent by publishing existing policies around parameter selection, such that these could be compared with best practice standards.

Food safety regulation offers a potential model. The FSA has produced a guidance document outlining the application of different parameters under different usage scenarios (see Section 3.2). This addresses potential risks to food production that could occur at multiple points in the supply. The FSA guidance on water supplies notes that a food business can request a copy of the risk assessment where a private water supply serves a food business, but notes the limitations of these data in terms of indicating that the supply represents safe potable water.
Transparency in Regulation

Transparency is one of the key principles of better regulation. The Scottish Regulators’ Strategic Code of Practice\(^{51}\) states that regulators should “recognise, in their policies and practice, a commitment to the five principles of better regulation: regulation should be transparent, accountable, consistent, proportionate and targeted only where needed.”

The Regulators’ Code\(^{52}\), published by the UK Department of Business Innovation and Skills states the following.

“6. Regulators should ensure that their approach to their regulatory activities is transparent
6.1 Regulators should publish a set of clear service standards, setting out what those they regulate should expect from them.
6.2 Regulators’ published service standards should include clear information on:
   a) how they communicate with those they regulate and how they can be contacted;
   b) their approach to providing information, guidance and advice;
   c) their approach to checks on compliance, including details of the risk assessment framework used to target those checks as well as protocols for their conduct, clearly setting out what those they regulate should expect;
   d) their enforcement policy, explaining how they respond to non-compliance;
   e) their fees and charges, if any. This information should clearly explain the basis on which these are calculated, and should include an explanation of whether compliance will affect fees and charges; and
   f) how to comment or complain about the service provided and routes to appeal.

6.3 Information published to meet the provisions of this Code should be easily accessible, including being available at a single point on the regulator’s website that is clearly signposted, and it should be kept up to date.”

4.3.3 Potential for substantive improvements to current regulations

Parameter selection is an area of private water supply regulations in Scotland where the regulations and guidance are clear. There appears to be little appetite or need for additional changes to the Regulations on parameter selection. Guidance already exists on parameter selection, including those set out in the Regulations and the World Health Organisation (WHO)’s 2011 Guidelines on drinking water quality\(^{53}\).

Additionally, a new Drinking Water Directive (2015/1787/EU) gives additional flexibility to Member States to sample some parameters less frequently for Type A supplies, if there has been a risk assessment. The introductory text to this Directive also references the WHO guidelines, especially with reference to water safety planning. This Directive introduces more stringent criteria for reducing sampling frequency, or even omitting parameters, on the basis of risk assessments, compared with the current 2006 Regulations. It will also require legislative changes to be implemented.

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4.4 Site testing - the risk assessment

This section describes findings with respect to risk assessments.

Current regulations and responsibilities

The Regulations make provision for risk assessment. In relation to:

- **Type A supplies**: local authorities should carry out an assessment of the potential health risks where the supply is a new supply, or is used for the first time in 12 months, or when the local authority considers the supply is no longer wholesome (Reg. 16). The information obtained from this risk assessment should also inform any remedial action; and

- **Type B supplies**: local authorities should provide ‘advice and assistance’ to a relevant person to undertake a risk assessment. They may carry out a risk assessment themselves, taking into account potential health risks (Reg. 27).

Schedule 4 sets requirements for risk assessment. The Technical Manual also details the risk assessment for private water supplies which includes four separate sets of guidance (for wells, springs, bore holes and surface supplies). The risk assessment pro formas are required to be completed, with different sections of questions relating to the supply and the site where it is located. The answers to the questions are ‘yes’, ‘no’ or ‘don’t know’ and are then combined to give an overall risk grading and a set of hazard scores, which is derived from WHO guidelines.

The pro forma guides the assessor’s answer, where there is uncertainty (e.g. ‘don’t know’), these combine to give an overall high risk grading. It is recommended that a risk assessment be combined with some sampling so that the quality of water can be assessed in conjunction with the risk investigation.

The structure of the risk assessments:

- sections A to C are the same in all four risk assessments (i.e. for all different types of supply). These relate to very general questions.

- section D(i) is the General Site Survey and this is the same in all four, with the exception of two questions (Items 23 and 39). Section D(ii) is the Supply Survey. This varies slightly or markedly between all four types; and

- only springs and wells have section D(iii) on Soil Leaching, identical in both cases with boreholes having an additional section.

The final section is the Overall Risk Assessment describing how to assign the overall risk category (low, moderate or high) from the hazard scores in the individual sections.

The Technical Manual outlines a framework for standardised risk assessment and a similar hazard-confidence matrix on the basis of supply source (eg. borehole, surface water) that is closely aligned with risk assessment frameworks for food safety. However the risk assessment fails to recognise (i) the heterogeneity of environmental risks emerging at different stages in the supply cycle and (ii) the potential for contaminants to interact within supply cycle. Much of the scientific evidence regarding microbiological hazards exists without reference to the importance of such hazards in specific physical situations (Scottish Executive, 2006).

4.4.1 Findings

Risk assessments are used to identify risks to water quality of private supplies and then to liaise with the relevant person about mitigating these risks. The PWS Strategy reported that this risk-based approach is an effective means to ensure the safety of drinking water supplies. Support for a risk-based approach to monitoring private water supplies was universal among stakeholders contributing to this study.
Local authorities report that undertaking risk assessments is a resource-intensive exercise, but it enables work to be prioritised and users and owners to be made aware of potential risks. One private water supply user/owner reported that risk assessments carried out by their local authority added real value by identifying practical improvements that were required on the site. The risk assessments can be used as a tool to assess potential solutions and their relative costs. Existing research stated “low cost options can be included to encourage uptake of measures (e.g. running taps if there are lead pipes)”. A comprehensive and regularly updated risk assessment allows risks to water quality to be identified and monitored appropriately.

However, the current risk assessment template was reported by all stakeholders participating in this study not to be fit for purpose. Several reasons for this were cited.

- **The current scoring system is reported as not being fit for purpose.** Most private water supplies are identified as ‘high risk’ through the current process, which allows for little differentiation or prioritisation between supplies.

  According to the Technical Manual, the Risk Characterisation score has three values – high, moderate or low. This is based on the presence and absence of the indicator on the evidence available to the person undertaking the risk assessment. There is scope for the risk assessment to allow for greater differentiation between levels and types of risk.

- **Risk assessments are carried out on the source, not on the premises or control measures.** This contrasts with requirements to sample individual premises (or access points). Consequently risk assessments may not adequately identify or address risks associated with water quality at individual premises. Similarly, treatment measures are often taken with respect to premises rather than sources (including for all grant-funded improvements). This inconsistency can hinder the use of the risk assessment to track the effect of improvement measures taken at premises.

- **One local authority reported that cross-departmental collaboration within local authorities offered an untapped opportunity for identifying risks to public health.** For example, duplication of visits could be minimised by linking the food team and the public health team.

  One EHO reported that as part of its Water Safety Plan approach, their local authority was working with a food health officer to identify private water supply risks through food safety inspections.

Problems associated with low uptake of risk assessments for Type B supplies may pose a threat to public health among some household private water supply users and owners. Anecdotal evidence from local authorities suggests uptake remains relatively low, despite grant funding.

### 4.4.2 Potential for procedural improvements within current regulations

Steps could be taken to revise and improve the risk assessment framework, to address the deficiencies identified above.

A full review of the risk-assessment framework should consider the following:

- **potential for risk assessments to be made more transparent and consistent and brought into line with new technology and new systems.** DWI requires that risk assessments carried out on private water supplies in England are completed in excel (available online) and DWQR recognised the improvement in transparency that would result from accessing these tools in an online and accessible form. These tools are available to local authorities online in England, along with explanatory notes.

- **reviewing and updating the risk rating framework to allow for greater distinction in risk ratings, giving more discretion to EHOs to take public health risks into account;**

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whether an element of the risk-assessment should be premises-specific, so specific public health risks can be incorporated into the risk assessment rating;

whether the results of the risk assessment should be made publicly available, so that the risk assessment – or a part of it – can be used as a tool to communicate health risks to the public and make private water supplies users and owners more accountable. For example, this could be similar to the Food Hygiene Rating System used in England, Wales and Northern Ireland. That system provides information to the public about hygiene standards in restaurants, takeaways and food shops. These actions could also help to address poor owner and user engagement with risk assessments, as reported by one local authority as part of this study; and

whether technology could be improved to facilitate recording and sharing of risk-assessment outcomes and information. For example, this could examine how such a system is implemented in Spain and Finland to create databases that record key information about supplies and generate historical information about each supply.

Any such review should collect and incorporate practical considerations regarding the use of the risk assessment template, with input from EHOs or EHO representatives.

SOCOEHS advocates the development of a framework for the private water supplies regulation akin to the Animal Health and Welfare Framework developed by the Scottish Government. This could be developed through collaboration between the Scottish Government, DWQR and the relevant REHIS subgroups. It would entail development of a standardised performance matrix whereby local authorities could assess their performance against key regulatory activities, guided by the PWS Strategy. Any such framework could specify responsibilities of different stakeholders with respect to risk assessment and could provide a breakdown of activities to be performed by local authorities. This could, in turn, help to support local authorities’ case for adequate resources to carry out their regulatory duties.

4.4.3 Potential for substantive improvements to current regulations

This study did not find any clear need for substantive changes to be made to the Regulations themselves.

Nonetheless, risk assessment practices in Germany and the Netherlands suggest that it may be beneficial to formally involve health experts or authorities in the completion of risk assessments. This could facilitate input on the public health risks associated with private water supplies in different settings. In Germany and the Netherlands, there is a formalised role for regional or local health experts in the risk assessment and monitoring of private supplies, recognising the complexity of health risks associated with PWS. In Finland, results of risk assessments are also collected by the municipal health authorities. Plans are in place to make results available to the public on a national database.

4.5 Maintaining regulatory capabilities

This section describes findings related to local authorities’ ability to maintain the appropriate capabilities to effectively and efficiently fulfil their regulatory duties. The PWS Strategy identified training as a priority area for improvement.

Current regulations and responsibilities

There is no specific requirement on the part of local authorities with regard to training or professional development requirements for EHOs carrying out PWS regulatory duties.

4.5.1 Findings

Local authorities’ activities to maintain their regulatory capabilities vary. Some local authorities put considerable efforts into delivering training on private water supplies. Some local authorities with fewer private water supplies reported being constrained by the resources that could be allocated to private water supplies, which in turn limited their ability to provide specific training. While some EHOs deal with private water supplies on a daily basis, others do so rarely. One EHO stated their training needs were not significant as they have very few supplies to deal with.

Nonetheless, another local authority representative noted that EHOs do require water quality expertise to carry out their responsibilities with respect to private water supplies. Most EHOs are generalists, covering a number of areas, so it is therefore important that they received adequate training on water quality issues. Local authorities recognised that guidance issued by DWQR went some way in assisting EHOs in overcoming this, however there remain some gaps.

Other EHOs from local authorities with fewer private water supplies stated that training could be improved with a standard course, in line with best practice, developed in collaboration with DWQR. The PWS strategy indicated that training should cover information on water quality, water treatment, risk assessment and risk management of water supplies and PWS regulation.

A recent example of training coordinated by one local authority

In 2015, one local authority developed and delivered specific training on private water supplies for EHOs. This comprised a two-day course with a range of speakers including DWQR, Scottish Water and EHOs with significant experience of PWS. The training included presentations on the following issues:

- insights on sampling and the importance of consistency (delivered by a representative from Scottish Water);
- treatment systems and emerging technologies; and
- taking enforcement action (delivered by a local authority, after applying enforcement action recently).

More in-depth training was also provided, regarding:

- risk assessment techniques (half-day workshop); and
- sampling techniques (half-day workshop).

Reported feedback indicated that EHOs found the training helpful in supporting their day-to-day work on private water supplies.

REHIS played an important role in providing this training, by coordinating arrangements, arranging the venue, speakers and covering some expenses.

Some local authorities have worked together to good effect to provide training for the benefit of all local authorities. Some local authorities regularly meet via the REHIS PWS subgroup, generally those with more private water supplies. The subgroup is also attended on occasion by representatives of DWQR or Scottish Government and promoted by the Public Health and Housing Working Group (PHHWG) as a source of information should other local authorities wish to seek their opinions. The subgroup chair provides information on subgroup meetings to representatives of all local authorities with private water supplies.

Some local authorities reported informal ties with other local authorities, sharing information and advice on an ad hoc basis. Others reported regular engagement with neighbouring authorities who face similar challenges. It was suggested by one EHO that the formalisation of this way of working (for example, through local liaison groups) would help to maximise the benefit of such collaboration by including more individuals across more local authorities.
4.5.2 Potential for procedural improvements within current regulation

There is scope for continued provision of training such as that undertaken recently (see above). Training can be more efficiently provided when coordinated between local authorities and offered to all EHOs in Scotland. DWQR has supported this training and should continue to play a role, where such training provides an opportunity to educate EHOs regarding DWQR’s guidance and supervisory role.

Private water supplies could be incorporated into the existing EHO accreditation process (which currently does not address private water supplies in detail). This could form part of the competency framework that an EHO has to pass to become accredited. Currently food safety and food standards are skills, but private water supplies are included under ‘public safety’.

Local authorities could pool regulatory resources for private water supplies, for example for water quality testing. The Scottish Food Environment Liaison Committee reported that sharing testing resources could lower testing costs and help raise the standard of procedures\(^{56}\). Some local authority representatives recognised the challenges associated with maintaining the skills required for regulating private water supplies, particularly those with small numbers of supplies in their areas.

Pooling resources could offer particular benefit where local authorities carrying out activities individually would duplicate resource, or where individual authorities require particular capabilities infrequently. For example, in the development of best practice guidelines, development and delivery of training, delivery of case-specific specialised advice to EHOs, or enforcement actions.

4.5.3 Potential for substantive improvements to current regulations

Should the procedural improvements identified above fail to materialise, one way to achieve such pooling of resources may be to transfer responsibility for certain regulatory activities to a centralised function. This could be collectively arranged and coordinated by local authorities, or could be transferred to another body.

4.6 DWQR’s role

This section describes findings on DWQR’s role in relation to PWS Regulation, including stakeholders’ understanding of that role.

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**Current regulations and responsibilities**

DWQR was established under Part 2 of the Water Industry (Scotland) Act 2002. It has enforcement powers in relation to Scottish Water (i.e. public water supplies) and supervisory powers in relation to local authorities’ drinking water quality duties.

In terms of DWQR’s role, the legislation provides that:
- responsibility for the quality of PWS remains with the users and owners;
- Local Authorities are responsible for enforcing legislation; and,
- DWQR only has supervisory functions over private supply.

DWQR has a general power to require information from local authorities under s.16 of the Water Industry (Scotland) Act 2002.

Under the Regulations (Reg.35) local authorities are required to provide information to DWQR and the Scottish Government, when reasonably requested. They are also required to provide any register they keep to other public bodies including SEPA and Health Boards, and to make it available to the public.

DWQR is required to produce an annual report which includes the information provided by local authorities.

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**4.6.1 Findings**

Among stakeholders there is some uncertainty around the distinction between DWQR’s role and that of the Scottish Ministers. 13 per cent of local authority representatives surveyed for this study reported a lack of clarity on DWQR’s role. One local authority said: “DWQR are often approached and used for advice and guidance by [our local authority], but their overall responsibilities and roles with regard to local authorities as a whole could be better defined or explained.” This finding was also reflected at stakeholder workshops held during this study.

DWQR in its 2013 Charter described its supervisory responsibilities in relation to private water supplies, including:
- publishing information on local authorities’ performance of their responsibilities to regulate private water supplies (in its Private Water Supplies Annual Report);
- investigating complaints regarding local authorities’ implementation of private water supply regulations;
- advising Scottish Ministers and relevant departments of the Scottish Government on the formulation of policy relating to private water supplies;
- providing guidance to local authorities in relation to private water supplies regulations; and
- monitoring local authorities’ progress in evaluating and improving the quality of private water supplies.

DWQR is also now performing the following activities (some of which are additional to those outlined in its 2013 Charter):
- providing case advice to local authorities, including on advice for users or owners, improvement measures that should be taken, or whether local authorities should take enforcement action;

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■ providing support on practical interpretation of the Regulations and associated regulatory issues (for example, designation of supplies as Type A or Type B and identification of responsible and relevant Persons);

■ encouraging local authorities to collaborate on regulatory activities that would be carried out more efficiently by working together (such as in the case of capability building, materials for users and owners or engaging the public); and

■ promoting transparency in the regulatory action of local authorities with regard to private water supplies.

**DWQR information resources**

The operational remit and regulatory activities of DWQR are published on the organisation’s website. In relation to private water suppliers, these include:

■ reporting on the quality of Private Water Supplies;

■ checking that Local Authorities are regulating private water supplies in their area; and

■ providing guidance and clarification to Local Authorities.

The first of these is addressed through the published annual reports on drinking water quality in Scotland. These reports detail the current state of private water supplies in Scotland, as derived from the annual data return from local authorities. This includes:

■ information on the number, location and type of private water supplies in Scotland;

■ information on local authority sampling compliance and risk assessment rates;

■ sample quality compliance for all/key parameters by supply type;

■ regulatory and research activities relating to emerging issues (eg. lead); and

■ level of PWS Improvement Grant uptake. The annual data return also requests detailed information on the types of treatment applied – such information could be useful for Local Authorities in understanding what works in this regard. Similarly, grid reference data is obtained for individual supplies but not disseminated publically – making this information available to other LAs could ease understanding of where water quality problems typically occur.

DWQR’s regulatory oversight activities are briefly outlined in the PWS Strategy. This provides a broad overview of regulatory issues with regard to PWS and the various authorities, including specific actions and timescales for these authorities. However, there is little detail available on progress against these actions or the ongoing measures being taken by DWQR to assist the implementation of the PWS Strategy.

Guidance and clarification to local authorities is generally provided in the form of short information letters – these are published on the website, detailing to local authorities about how they regulate private water supplies in Scotland. This includes approved methodologies on specific regulatory issues as well as operational issues.

DWQR also provides a series of technical and regulatory guidance and information documents. This includes an abbreviated document outlining regulatory responsibilities under the 2010 Regulations, guidance on sampling for key parameters and some limited guidance on treatment processes and technologies. Additional general factsheets on potential health risks from PWS and processes for identifying relevant persons have also been made available to download.

Much of the detail from these guidance materials is adapted from the PWS Technical Manual (and where necessary, adapted to the PWS Scotland Regulations specifically). DWQR reported receiving many information and guidance from local authorities – indicating that these existing materials are either insufficient or not being fully utilised by local authorities.

Some accessible record of these requests (either in the form of a formal log or anonymised ‘frequently asked questions’ or case studies could be beneficial for gaining a better
The additional support that DWQR provides to local authorities, in particular relating to queries with individual cases, goes beyond the scope of DWQR’s formal role, but makes up a significant part of its work in relation to private water supplies. The advisory support that DWQR provides is reported by local authorities to be a valuable service and noted by DWQR to improve private water supply outcomes. Furthermore, DWQR’s maintenance of this regulatory capability (despite its supervisory role) is an effective way to mitigate the challenges associated with regulatory capabilities being dispersed across local authorities. This places additional resource requirements on DWQR that are not recognised within its formal role.

Local authorities would benefit from DWQR’s role being clarified in terms of when within the regulatory process local authorities can seek such advice and also in relation to which matters. DWQR noted that this advice should not be seen as a substitute for the guidance documents that it also produces in relation to PWS regulation. DWQR may also benefit from this clarification, as it could provide additional evidence to support its resource planning.

DWQR’s limited powers in relation to private water supplies restrict its influence on water quality outcomes in private water supplies in Scotland. For example, DWQR’s limited powers restrict its ability to influence the effectiveness of enforcement. DWQR identified in its 2014 annual report that the number of cases enforced by local authorities appeared low at 13 (although it did recognise that this represented improvement as compared with previous years). DWQR undertook a series of audits in 2013 and 2014 of Scottish Borders Council (SBC) regulatory activities in relation to private water supply. This followed an outbreak of Campylobacter in 2012.

After inviting DWQR to carry out the audit, SBC implemented a number of improvements to its regulatory practices. Among others, this included creating a register of samples and risk assessments, policy changes on identifying and notifying relevant persons and improved training. A subsequent internal audit demonstrated improved compliance with SBC’s regulatory requirements since the first audit. Since, DWQR has informally encouraged other local authorities to undergo similar audits but none have done so. SBC has put forward an alternative ‘peer review’ model of local authority auditing by their counterparts using the DWQR Vertical Audit Template.

4.6.2 Potential for procedural improvements within current regulations

DWQR continues to provide advice to local authorities on appropriate regulatory actions in individual cases, but this advice is informally provided. DWQR could provide additional information to clarify its role with respect to providing expertise and advice for local authorities with regard to private water supplies cases. This could include specific guidance or case studies on the advice that it can and cannot give, or the provision of case studies that illustrate these activities.

Doing so could support DWQR’s case for resources for this valuable service and could improve clarity around the advice that DWQR can give to all local authorities (not just those that currently obtain such advice from DWQR). In England and Wales, DWI provides case studies that illustrate the appropriate application of private water supplies regulations and publish these online58. This could be a good example for DWQR to follow.

DWQR could provide a framework for assessment of local authorities’ regulatory capabilities. The SOCOEHO has advocated the development of a framework for the private water supplies

58 http://dwi.defra.gov.uk/private-water-supply/Case-studies/index.html
regulation akin to the Animal Health and Welfare Framework\textsuperscript{59} developed by the Scottish Government. Such a framework would entail development of a standardised performance matrix whereby local authorities could assess their performance against key regulatory activities – to some degree, a more formal tool for implementation of the PWS Strategy. This could help to improve the value of data that is already reported. Another model that could be followed is that implemented for food safety regulation in Scotland, between local authorities and FSS (see Section 3.2).

In England and Wales, audits are conducted by the DWI and its Code of Practice includes guidance for local authorities on audits\textsuperscript{60}. This is despite DWI having no formal powers to require audits, similarly to DWQR. One industry association representative noted that a framework has also been implemented to help local authorities to implement best practice. That representative also drew comparisons with audits implemented in food safety and reported that these had improved regulatory processes and local authorities’ enforcement practices. There is currently no agreed framework for DWQR to carry out audits of LAs activities. Its audit of Scottish Borders Council, which it invited DWQR to carry out, is a possible template for audits of other councils.

4.6.3 Potential for substantive improvements to current regulations

Some stakeholders advocated expanding DWQR’s powers to include the ability to require local authorities to be audited, for example using the same framework that was applied when SBC was audited (as described above).

Another area where it may be appropriate for DWQR to gain new powers is in relation to local authorities’ enforcement practices. Currently DWQR has no power to require local authorities to take enforcement action, only to make recommendations that they do so. It has done so on multiple occasions, but the lack of further potential consequences for local authorities that do not take this advice limits the effect that any such advice has. In Ireland, the EPA may assess local authority results and has been able to implement a strategic plan to improve private water supplies prioritising those of poorest qualities. The EPA also directs LAs on enforcement measures through binding official guidance, which LAs are required to take into account ‘fully’ when undertaking their regulatory duties (see 3.1.2).

4.7 Engagement with private water supply users and owners

This section discusses findings on engagement with users and owners to help them understand their responsibilities and how to meet them. Since users and owners are responsible for the management of private water supplies, compliance with regulation relies on users’ and owners’ awareness of their responsibilities, the associated health risks and the personal consequences of failing to comply.

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Current regulations and responsibilities (for users and owners)

Each supply has a ‘relevant person’ responsible for supply. In addition, the domestic distribution system will have a ‘responsible person’.

For type A supplies, in the event of a failed sample (and problems with the wholesomeness of the private water supply), the ‘relevant person’ must:

- notify all other consumers of that supply, and take all other steps the monitoring local authority reasonably requires to inform consumers of the failure (Regs. 17, 18); and,
- maintain the supply and make any necessary improvements required by the authority to ensure water quality standards are met (Water (Scotland) Act 1980 s.76G). Notices under the Act should specify the steps to be taken and a time period for this.

Where the failure relates to the distribution system, the ‘responsible person’ (who owns or is responsible for the system) must:

- take any steps required by the authority; notify consumers; and prominently display a notice on the premises (Regs.17, 18).
- where the system serves the public, there are additional enforcement powers under the 1980 Act to require remedial work by the responsible persons.

Local authorities have few specific responsibilities with respect to supporting users and owners.

Regulation 17 requires that the local authority advises the responsible person to modify or replace pipes and associated fittings where a copper or lead parameter is found to be above acceptable levels.

For Type B supplies, Reg.27 requires the authority to provide advice and assistance to relevant persons to undertake a risk assessment.

4.7.1 Findings

Despite any lack of formal responsibility for doing so, all local authorities and DWQR have recognised the potential benefit of improving user and owner awareness of their responsibilities and the health risks associated with private water supplies. To this end all local authorities reported contacting relevant persons prior to carrying out site visits, reminding them of their maintenance responsibilities.

Local authorities and DWQR have also collaborated to engage users and owners. They have produced a leaflet that local authorities can send to users and owners, encouraging them to find out more about their responsibilities. Views on the effectiveness of this measure were mixed. Some local authorities reported little impact, while one EHO reported that the distribution of leaflets led to a significant increase in the number of enquiries from users and owners.

Low engagement among users and owners may contribute to the failure of some private water supplies to meet required water quality standards. Many measures implemented to improve water quality must be maintained at least annually. The PWS strategy recognised a lack of engagement from PWS users and owners, also identified in earlier research commissioned by the Scottish Government. Stakeholders contributing to this study supported this view.

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62 This found that owners’ and users’ reluctance to make improvements was the main cause for non-compliance regarding E-coli for Type A Supplies (85 per cent compliance in 2014, with year-on-year failures identified).

Recent research also highlighted the widespread lack of awareness and understanding of responsibilities and best practices with regard to sampling and maintenance of supplies. It also found that a lack of maintenance was partly responsible for ongoing water quality failures after grant funding was received, particularly in the case of Type B supplies\(^\text{64}\). Multiple local authority representatives also reported that this would increasingly be the case, as improvement measures supported by the grant scheme age and so require more maintenance.

In response, some local authorities have sent letters to advise Type A supplies of their upcoming compliance monitoring to encourage users and owners to complete required maintenance before tests are done.

**Financial considerations may prevent some users and owners from improving or maintaining private water supplies.** Engagement is not the only challenge with respect to improvement. Stakeholders reported that many owners nonetheless consider the financial cost of implementing and maintaining appropriate measures as a deterrent to compliance with water quality standards. Even those aware of risks may not always have the financial means to implement appropriate improvement measures or conduct sufficient maintenance. Around a third of respondents to this study’s survey of owners and users indicated that they would have been unable to implement improvement measures in the absence of the grant.

**Low awareness of health risks may also contribute to some users and owners failing to improve or maintain private water supplies.** This may reflect the nature of health risks from private water supplies. One EHO reported that attitudes generally changed when illness was associated with private water supplies. However, another local authority representative reported the opposite view. They indicated that even in some cases where illness is likely caused by poor water quality at private supplies, this often cannot be identified to specific contamination, which may undermine users and owners’ understanding of the link between water quality and health risks.

One EHO and the Society of Chief Officers of Environmental Health Scotland suggested that this problem may be more acute for Type B users and owners. Two responses highlighted particular scope for more extensive action to engage Type B users and owners with respect to the risks associated with private water supplies.

**A combination of these factors leads users and owners to use cheaper solutions such as UV filters rather than more expensive but longer-term options.** One study pointed out that the amount of financial support available through the grant (ordinarily up to £800) may encourage users and owners to choose UV treatment, even where it is not the most effective or appropriate measure\(^\text{65}\). One EHO also reported observing this in practice and indicated that the grant scheme may discourage users and owners from implementing longer-term but more costly improvements.

### PWS owners’ and users’ perspectives

Users and owners reported their views in an online survey carried out for this study, supported by one interview with an estate manager familiar with users and owners’ perspectives on private water supplies\(^\text{66}\).

Most (over 75 per cent) users and owners engaging with this study reported that they do not find monitoring requirements burdensome. Findings from the PWS owner / user survey also indicate benefits from local authorities’ site visits. Over 70 per cent of respondents said they felt site visits helped identify problems with the water quality and management system.

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\(^{64}\) Blackstock et al. (2015) Ibid


\(^{66}\) Of which ICF received 25 responses.
4.7.2 Potential for procedural improvements within current regulations

Local authorities could improve engagement with users and owners and use innovative methods and tools to support this engagement. International evidence suggests some methods that local authorities could use.

- In Germany, the federal working group on private water supplies has produced an advisory booklet addressed to private well owners. This is set out in easy to understand language and explains householders’ duties, highlights the benefits of the regular controls they should carry out and describes the surveillance duties of the authorities. Typical hazards are described, along with a template for identifying these through sanitary inspections. It also sets out options for repair, control and monitoring.

- In Ireland a quality assurance scheme for users and owners helps them to engage in taking responsibility for private water supplies (described in Section 3.1.3). This includes a guide to implementing quality assurance designed to help users and owners to engage with the scheme.

- Also in Ireland, exempted supplies are guided in their risk assessment by the ‘Protect Your Well’ app, designed by the EPA. Well owners are able to assess whether their wells are at risk within 10 minutes of using the app, which provides tailored advice on how owners can reduce the risk of contamination.

- Food safety regulation demonstrates the value of simple tools such as checklists that the public can use on a regular basis to support ongoing risk management, rather than being triggered only be risk assessment or testing. Albeit in private water supplies regulation there are fewer clear triggers that such checks could be tied to, compared with food where checks can be tied to food supply chains.

The current approach to providing information on local suppliers for improvement services could be expanded. Currently only some local authorities provide such lists. Local authorities could work together to expand these to cover all local authority areas. Doing so may be resource intensive, because these lists would need to be regularly maintained to remain relevant and useful for users and owners.

Group improvement schemes could be supported and promoted by local authorities, the Scottish Government or DWQR, to encourage water quality problems to be dealt with at source. There are also some examples of group improvement schemes in Scotland, with a Trust developed to facilitate ongoing maintenance. Despite initial scepticism and legal concerns, all users on the supply are responsible for meeting the costs and have shown willingness to continue with ongoing management. This can allow centralised chlorination and maintenance of supply, with shared costs. However, such group improvements schemes will not be suitable for smaller private water supplies that supply fewer premises.

Some local authorities in Scotland encourage treatment at source (which can be more costly than treatment at supply, but also more effective). They also have good knowledge of which supplies are clustered together. Local authorities could therefore work to promote the development of group schemes, where appropriate. These could be backed by a Water Safety Plan by playing a more active coordinating role, similar to the role played by Irish local authorities in promoting the growth of group schemes in recent decades. The Scottish Government has recently commissioned work on community engagement around private...
water supply issues that could be supportive to local authorities looking to promote such schemes in the future.

4.7.3 Potential substantive improvements to current regulations

Users and owners could be made responsible for complying with a compulsory maintenance scheme. This could act as a preventative measure to improve water quality at supplies where otherwise poor maintenance would have caused water quality failures. As a less stringent measure, any grant funding given to users and owners could be made dependent on participating in such a scheme.

However, procedural improvements may have greater positive effect on water quality of private supplies, particularly as users and owners are already responsible for maintaining water quality. Such a scheme may do little to encourage compliance in cases where users and owners refuse to take remedial action to improve water quality, for which they are already responsible in any case. Alternatively participation on any future grant scheme could be made contingent upon joining a maintenance programme.

4.8 Engagement with the general public

This section discusses findings on public engagement with private water supplies.

**Current regulations and responsibilities**

Local authorities have little responsibility for engaging with the general public on private water supplies.

Reg.36 requires that at any premises where a private water supply is supplied or used as part of a commercial or public activity, there shall be prominently displayed in a location to which the public reasonably have access, an information notice which has been provided by the monitoring local authority for that purpose. However, this requirement is general, and the only specific requirement on the local authority in this regard is to provide that notice (Reg.36)\(^67\).

If a notice is served that the supply has failed to meet the required standard either relevant persons or responsible persons are required to notify consumers of that supply by prominently displaying a copy of the notice (Regs.17, 18).

Under Reg.28, if notified of any failure, the relevant person must notify every consumer of that supply in writing that is likely to be affected by the failure.

In comparison with other sectors, the occupational health and safety domain, for example, there is no requirement for the Health and Safety Executive to undertake public awareness activities but the Partnership on Health and Safety in Scotland (chaired by HSE) aims to encourage communications between PHASS members and their wider constituencies in local areas\(^68\).

4.8.1 Findings

Low public knowledge and understanding of health risks associated with private water supplies may itself contribute to those risks. DWQR has made an information poster available for

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\(^67\) By contrast, Food Standards Scotland’s powers and remit relating to publishing information, disclosing information and sharing and advice are established within the Food (Scotland) Act 2015.

\(^68\) Jones, S. (2010) Partnership on Health and Safety in Scotland – how are we doing?
display on premises, but this does not specifically report the water quality at individual premises. Furthermore, local authorities reported that these are displayed at few premises.

This finding is based only on anecdotal views reported by stakeholders interviewed for this study. In comparison to food regulation, there are fewer measures requiring that relevant or responsible persons communicate the quality of water provided to the public when sourced from private water supplies. In turn, a lack of public awareness may lead to less public demand for information on the quality of supplies, reducing the potential for public pressure to encourage higher water quality.

### 4.8.2 Potential for procedural improvements within current regulations

Public engagement could be improved through a number of measures that current regulatory stakeholders (Local Authorities, DWQR or Scottish Ministers) could implement. These include:

- **Improved information sources available to the public.** Clear, informative materials for users and owners detailing their responsibilities, sources of information about how to improve supplies and enforcement measures that will be taken against them should they not meet their responsibilities. Users and owners reported that such information should be repeated and regular to have a significant effect. To achieve this, it could be incorporated into current regulatory processes, such as risk assessments and testing for Type A supplies, and through separate regular information provision for Type B supplies.

  There is additional scope for local authorities or DWQR to provide further advice to users and owners on how and where to source improvement measures where they are deemed necessary. One stakeholder noted that some basic information, such as how to clear a UV filter, could go a long way to assisting users and owners.

- **Other regulatory authorities in Scotland could also provide information about private water supplies regulation.** This could, for example, include health and safety professionals that have contact with users and owners. Health Protection Scotland does engage with local authorities, but reported that local health boards could give more detailed feedback on lessons learned and experiences from engagement with supply owners, so as to ensure that relevant information is relayed. The PWS strategy also highlighted that private water supply samples and audits should be better incorporated with food hygiene inspections, to allow these higher risk sites to be dealt with urgently.

  This could help to raise awareness among users and owners and could also be extended to non-regulatory agencies in Scotland. This could include the National Farmers Union for Scotland (NFUS), the Federation of Small Businesses Scotland (FSBS), the Scottish Rural Property and Business Association (SRPBA) or the Scottish Crofting Foundation (SCF).

  A comparative multi-agency approach to raising awareness (particularly targeting type B supplies) was suggested within the VTEC E.coli Action Plan. This is now emerging through a range of dissemination events and awareness raising measures in some local authorities. Health Protection Scotland suggested that messaging could be targeted particularly at vulnerable users.

### 4.8.3 Potential substantive improvements to current regulations

Responsibilities could be created for notifying the public about the quality of private water supplies (for larger supplies and commercial properties in particular). Current regulation does places no specific responsibility on any party to promote public engagement. There are a

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number of areas where no responsibility is assigned within current regulations (although this is not unusual in a regulatory context):

- no party or organisation has overall responsibility for promoting awareness of health risks associated with private water supplies (among users and owners or among the general public). Reg. 36 requires a notice to be displayed but does not place a duty on any party. Reg.35 includes general information provisions as part of local authorities’ monitoring requirements, so any new requirements for information provision could be incorporated into a new Reg.35A.

- no party (either the relevant person for a private water supply, or the local authority) has responsibility for notifying tourists that premises or businesses are supplied by private water supplies, nor the associated health risks or any history of compliance with required water quality standards. Any such requirement could potentially be incorporated into a new Reg.36.

Local authorities and DWQR have both taken action beyond their direct responsibilities to promote private water supplies engagement. However, it is clear that, in the current environment local authorities may not have the resources to devote to such actions. This may particularly be the case for local authorities with fewer supplies and less resource for regulating those supplies. Similarly, DWQR has many competing functions and is limited in scope to devote resources to such measures that go beyond those specific functions. Consequently low engagement remains a factor that appears to harm water quality at private supplies.

4.9 Case escalation

This section outlines findings on how cases are escalated by local authorities. Since local authorities differ in their enforcement approaches, escalation processes and willingness to issue enforcement notices differ too. Only 13 enforcement notices were issued in Scotland in 2014 and the PWS Strategy identified this as a potential problem with current regulation of private water supplies.71

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Current regulations and responsibilities

Local authorities’ powers to issue notices derive from Water (Scotland) Act 1980. The Technical Manual states that each local authority should develop its own policy and procedures regarding enforcement[1]. It also advises that “unless circumstances dictate otherwise (such as specific enforcement provisions within the Act), it is recommended that an informal approach be adopted initially but should this not be effective, formal action should be contemplated. The initial steps should be carried out in such a manner that they do not prejudice the success of any subsequent enforcement action.”

Section 76G provides general powers of enforcement against ‘relevant persons’, to take such steps as the authority may require to ensure a wholesome and sufficient supply. For Type A supplies, local authorities must serve a notice, and for Type B supplies they may serve a notice. Failure to comply with a notice is an offence. Notices must contain details of the issue identified, steps to be taken, and time periods.

Under Section 76FA and 76FB of the 1980 Act, there are specific powers to serve notices against responsible persons regarding distribution systems where there is supply to the public.

4.9.1 Findings

Local authorities take a risk-based approach to prioritising cases of failing water supplies, based on the public health risk they pose. Enforcement practices vary across local authorities. Some take a more formal approach and have taken enforcement action where private water supplies are non-compliant. Others favour informal measures to enforcement and are reluctant to use their formal powers to issue notice. Many local authorities reported that enforcement is widely viewed by local authorities as the last resort: “instead, EHOs try to encourage, convince and communicate benefits of compliance.”

EHOs’ attitudes towards enforcement of Type B supplies also appear to vary. One reported that they considered enforcement against domestic premises on Type B supply was not an appropriate role for local authorities. They felt their responsibilities were discharged when they had engaged with the users and owners, made them aware of the risks and provided sampling. Another indicated that enforcement may not differ much between Type A and Type B supplies, while recognising that prior to enforcement, Water Safety Plans and education measures would be a priority for Type B supplies.

Some local authorities reported that their local authority’s general enforcement policy dictated their approach to enforcing private water supply cases. One noted that the expense of serving notice and the potential length of the process was a deterrent against doing so. This reflected a common view among local authorities that serving a Notice would begin a lengthy and resource-intensive process that some prefer to avoid. DWQR reported being aware of supplies that had failed for E-coli year-on-year (for 3-4 years), creating a potential risk to public health, without a formal notice being issued.

Local authorities’ procedures regarding enforcement and monitoring are not publicly available or transparent. This means that it is not possible to assess whether the risk-based approach that local authorities take is appropriate, or to accurately compare different approaches taken across local authorities.

Knowledge sharing through existing engagement among local authorities goes some way to improve consistency, but this does nothing to promote transparency to users and owners. A credible threat of enforcement action can be as important a regulatory tool as enforcement itself. The lack of clarify and transparency around enforcement procedures and policies may

itself be a missed opportunity for local authorities to encourage greater compliance with drinking water quality standards.

This may result in a lack of clarity for users and owners. Of 25 users and owners surveyed as part of this study, 58 per cent said they were unclear or very unclear on the enforcement process, although greater clarity existed around the monitoring process (with 75 per cent indicating it was clear what was required from them).

Some local authorities and one user / owner cite problems identifying the ‘relevant person’ as one factor that can delay the issue of a notice. The Regulations define the relevant person as persons who provide the supply, occupy the land from which supply is obtained, or exercise powers of management or control of the supply. This person is usually identified during the risk assessment and has responsibility for the water quality of the supply (e.g. they are responsible for notifying other users of the supply in cases of a failing sample and take remedial steps to improve the supply)\(^72\). One PWS user / owner reported that “there needs to be clarity as to who is responsible for the supply […] we take the view that those who benefit from the supply should pay for its upkeep and management.”

Two EHOs reported that the burden of implementing prohibition orders could prevent such measures being taken even cases where there was an imminent health risk at Type A supplies. In such cases they sought to use prohibition powers associated with other areas, such as food safety. One reported that as a result they had to rely on other departments in these urgent cases. In these instances, local authorities tend to collaborate with food authorities to ensure that urgent action can be taken under food safety regulation, to stop businesses using the supply.

As noted above, DWQR lacks formal enforcement powers, either against users and owners or against local authorities that do not enforce regulations, so has little power to improve enforcement. DWQR does take steps to encourage compliance through informal engagement with authorities and public communications to local authorities. However, in cases where local authorities should be taking enforcement action its only options are to publicise the case or report it to Scottish Ministers. DWQR has urged local authorities to make full use of their enforcement powers in its most recent annual report\(^73\).

4.9.2 Potential for procedural improvements within current regulations

Local authorities could clarify their enforcement policies and communicate these clearly and consistently to private water supply users and owners. Local authorities report that they have enforcement policies for private water supplies, but it is not clear how these are applied or communicated to users and owners. Making these policies public would also allow local authorities themselves to compare their approach with others’ approach. This would also allow DWQR to observe in its supervisory role whether local authorities were following their policies effectively, rather than observing only the number of notices issued.

Local authorities could introduce clearer stages to their enforcement policies. For example, they could introduce formal ‘pre-notice’ letters of intent to issues notices. In the Netherlands, informal ‘pre-order’ notices are a part of the enforcement process. In practice this has often led to appropriate measures being taken. One local authority in Scotland reported taking a similar approach. Formalising such actions would bring transparency to the escalation of enforcement cases, which could improve the deterrent effect of enforcement.


4.9.3 **Potential for substantive improvements to current regulations**

Further to the above procedural changes, local authorities could be given the powers to issue fixed-penalty charges to users and owners that repeatedly breach regulations. The PWS Strategy also noted that this could be considered.

A more significant substantive change could be to transfer enforcement powers to a central authority (for example, this could be DWQR). In Ireland, local authorities monitor private water supplies and must comply with a binding framework for audit of supply performance. The national regulator for private water supplies, the EPA, may direct local authorities to make changes to their monitoring programmes and local authorities must do so if directed. Local authorities must also inform the EPA of water quality failures and the EPA can then direct local authorities to ensure that necessary corrective action is taken, including legal action where remedial measures are not implemented\(^74\).

In Scotland, a central authority could develop and direct local authorities to implement a consistent monitoring and enforcement. This could improve regulation of private water supplies while promoting consistent application of regulations by local authorities and potentially helping to mitigate their resourcing challenges. A central authority could also prioritise its enforcement resource across Scotland. This would allow it to develop a more strategic approach that targeted enforcement efforts where public health risks are greatest. Centralised enforcement could also facilitate the development of a business case for more resource to be assigned to enforcing such cases. A targeted business case could determine the appropriate level of enforcement supported by evidence and analysis of the overall public health benefits of providing greater resource to enforcement. This could also apply to other regulatory activities relating to private water supplies, such as communication to users and owners, if they too were centralised.

4.10 **Reporting by local authorities**

This section describes findings on the transparency of local authorities’ regulatory activities, including their policies and regulatory monitoring. To avoid duplication, findings already discussed that are relevant to transparency are not repeated in this section.

Current regulations and responsibilities

Local Authorities are required to conform to the monitoring requirements of the Regulations (see Section 4.4 of this report). Over and above the information requests and the annual returns to be completed and submitted to DWQR, there is no requirement in the Regulations for local authorities to make public their monitoring or sampling policies or activities.

Data required by DWQR from LAs include basic information on each supply in their area:

- location and grid references for individual supplies;
- classification as Type A or Type B and justification of this decision;
- primary uses of the supply and the population served;
- volume of water supplied;
- details on treatment processes;
- details on previous investigations;
- details on any applications for temporary departure from standards;
- details on previous enforcement notices;
- indication if a risk assessment had been undertaken;
- details of any exemptions relating to radioactive isotopes; and
- details of any grants awarded (application date, amount, breakdown).

In addition to this, the Annual Data Return requires detailed information on samples:

- site references for each sample;
- sample results against each parameter;
- date and time of sampling;
- details of whether the sample was taken to fulfil sample frequency requirements of the 2006 Regulations;
- details of any sample failures against quality parameters; and
- details of sample failures caused by customer fittings (e.g. the domestic distribution system).

4.10.1 Findings

There is scope for local authorities to provide more data to DWQR as part of their annual return. Recent action from DWQR have improved the coverage and completeness of this data year-on-year. The PWS Strategy indicated that the agreement of a set of performance measures for local authorities was a priority for the Scottish Government. As noted above, it also identified potential to create a compulsory (electronic) registration scheme for premises supply by a private water supply. Some local authorities reported already recording more data than is currently reported to DWQR, such as data on historical decision making relating to risk assessments.

The value of data reported by local authorities also depends on their other regulatory activities. In particular, local authorities report to DWQR their compliance with requirements to carry out risk assessments and water quality sampling on Type A and Type B premises. As noted above, local authorities carry out testing and risk assessments in different ways, but these difference practices are not reflected in the data reported by DWQR.

Data on Type B supplies is not comprehensive. One EHO reported having worked with other departments to improve this data. For example, house sales are a typical point for the council to register the presence of a Type B supply. A trial in several local authorities began in 2014 to coordinate the use of water charges for the Council Tax Register to provide an accurate list of domestic properties on private supplies (as these properties do not pay water charges).

4.10.2 Potential for procedural improvements within current regulation

Local authorities and DWQR could work together to develop further improved data reporting. This approach was advocated in the PWS Strategy. This would continue recent actions in
collaboration with DWQR to improve data reporting on private water supplies and explore additional data that local authorities hold, or should hold, that could be productively reported by DWQR.

Some of the measures identified above would therefore create opportunities for local authorities to report richer data to DWQR. For example, they may develop additional metrics to demonstrate the quality of risk assessments carried out, which could be compared to a best practice model which they could develop. Alternatively, one-off actions such as voluntary audits might be used to verify the validity of data that local authorities are reporting, thus adding value to the data without adding to the resource needed for reporting to DWQR.

4.10.3 Potential substantive improvements

This study has not identified substantive changes specific to data reporting by local authorities. DWQR already has the power to request information from local authorities where it is reasonable to do so. It should be noted that potential substantive improvements identified in other areas could further create potential for improved data reporting by local authorities.

4.11 Regulatory collaboration

The current model of de-centralised regulatory capability reflects the localised and site-specific needs of private water supplies regulation. Nonetheless, this Section (4) has highlighted many areas where centralisation of regulatory activities could potentially lead to more effective provision, given challenges currently faced by local authorities. Table 4.1 summarises where there may be most scope for further collaboration across the regulation of private water supplies.

Table 4.1 Distributed or centralised regulatory activities?

<table>
<thead>
<tr>
<th>Regulatory activity</th>
<th>Current responsibility</th>
<th>Potential scope for improved provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration of private supplies and of relevant persons.</td>
<td>Local authorities</td>
<td>Could be centralised to record information efficiently and act as a tool for all parties in the regulatory process. Barriers to implementation by local authorities</td>
</tr>
<tr>
<td>Recording of historical and current data in relation to private water supplies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring: site selection</td>
<td></td>
<td>None: application of site-specific observation and evidence essential</td>
</tr>
<tr>
<td>Monitoring: parameter selection</td>
<td></td>
<td>Risk assessment framework already provided centrally (though does need updating)</td>
</tr>
<tr>
<td>Monitoring: risk assessments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case support for EHOs</td>
<td>DWQR on occasions</td>
<td>DWQR to clarify its role, processes for providing support and examples of support given</td>
</tr>
<tr>
<td>Supervision (reporting)</td>
<td>DWQR</td>
<td>Scope for more meaningful reporting, principally through local authority audits</td>
</tr>
<tr>
<td>Public engagement / communication</td>
<td>No party has responsibility</td>
<td>Potential for centrally provided materials and support for users and owners and the public</td>
</tr>
<tr>
<td>Strategic allocation of PWS resources and targeting of health risks across Scotland</td>
<td>Not within current framework</td>
<td>Potential for collaboration to prioritise resources within DWQR – but difficult to do so across local authorities – so full implementation would require substantive change to regulation</td>
</tr>
</tbody>
</table>

In practice, further centralisation of regulatory activities could be implemented in a number of different ways. It could simply mean greater collaboration between local authorities, so that
collective resourcing and responsibility can be agreed informal for some activities. Any such collaboration could also involve DWQR or the Scottish Government.

At the other end of the scale, centralisation could mean transferring regulatory responsibilities to a central body. For example, the model applied in food regulation involves central provision of guidance, tools and frameworks for regulation. The formal allocation of responsibility allows those activities to be fully and formally resourced. Local responsibility is retained for sampling, inspection and enforcement; activities that likely benefit from the local knowledge and dispersed workforce that local authorities can provide.

In regulation of private water supplies in Scotland, DWQR has the specialist expertise necessary and a national approach to some aspects of information provision, training and enforcement. DWQR is also well-placed to liaise with other parts of Government and with the environmental regulator, for example where farming practice is potentially impacting on supply.

If procedural changes to improve collaboration prove unsuccessful, there remains potential to alter roles and responsibilities for private water supplies regulation in Scotland.

Consideration could be given to whether some activities would be more efficiently delivered if provided centrally, for example the provision of a national database for registration of supplies and sampling results. Some local authorities' duties could also be strengthened in areas where de-centralised provision of regulatory activities is more appropriate. For example, more formal duties to request and hold information could be placed on local authorities, as outlined above. Alternatively, some regulatory oversight could be provided centrally, without changing local authorities’ role, as has been done in Ireland.

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75 Improved requirements to provide information and advice to the users and consumers of private water supplies could be placed in the Regulations, by amending Reg.36 or inserting a new regulation.
5 Conclusions

Regulation of private water supplies is complex. Supplies are situated in diverse locations and come from various types of source, each with its own particular challenges associated with maintaining water quality. Public health risks also vary by source, according to local environmental conditions, the type of source and its uses. These factors each create challenges for parties responsible for maintaining water quality and for regulators monitoring and testing that quality.

This study has identified considerable scope for private water supply regulators and stakeholders in Scotland to improve their practices, without changing regulations.

Data and information on local authorities’ regulation of private water supplies is improving through collaborative measures taken by DWQR and SOCOEHS. However, local authorities may still find it difficult to demonstrate the effectiveness or efficiency with which they carry out their regulatory duties, to DWQR or to the public. The Regulations allow scope for local authorities to interpret the regulations in different ways, taking into account local factors. Local authorities’ regulatory practices therefore differ, but the lack of published information documenting these practices means that the scale or effect of these differences is currently unclear.

This also hinders local authorities from learning from others’ best practice in regulating private water supplies. Some local authorities benefit in this regard from regular engagement with each other, particularly through the REHIS private water supplies subgroup. However, other, generally smaller, local authorities benefit less from this engagement because they have less resource assigned to private water supplies regulation.

Local authorities could therefore improve their provision of information about their regulatory practices; in respect of their regulatory policies and practices on site selection for testing, parameter selection, risk assessments and their approach to enforcing regulations where supplies do not comply with water quality standards. Strengthening enforcement procedures could have particular benefit, given that a transparent and credible enforcement policy can provide significant deterrent effect as a regulatory tool in itself. Local authorities should also continue with recent efforts to collaborate with each other to provide training that helps them to maintain their regulatory capabilities.

DWQR and the Scottish Government could improve the support that they provide to local authorities and to the public. For local authorities, DWQR could improve its communication of its role. It could publicise its role through use of existing materials such as its Charter, but also by reporting on its own supervisory activities within its annual report and by clearly communicating the level of support that it can provide to local authorities. DWQR could also provide better tools to support local authorities in carrying out their regulatory duties and to help users and owners to meet theirs. A key area is the risk assessment tool used by local authorities which is in need of updating.

DWQR could be resourced to initiate and lead on provision of more user-friendly information for users, for example through the development of online tools to support water safety planning as happens in many European countries. This would be helpful for both Type A and Type B supplies. This could also help it to provide clearer information about its role to local authorities. For the public and for users and owners of private water supplies, local authorities, DWQR or the Scottish Government could provide comprehensive and centralised information about suppliers of improvement measures, technical advice or information about any quality assurance schemes that could be implemented.

The procedural improvements outlined above could lead to improvement in compliance with water quality standards. However, the decentralisation of regulatory responsibilities to local authorities may hinder some of these developments. Local authorities (and environmental health officers themselves) face competing demands on their time. Resource constraints at a local authority level can therefore have a significant impact on resources available for private
water supply regulation. This also appears to limit local authorities’ appetite for enforcement in cases of non-compliance, undermining the deterrent effect of enforcement.

Furthermore, DWQR’s supervisory role is limited, which affects local authorities’ accountability to DWQR, as they face little threat of sanction if they do not take action to improve their regulatory practices. Some of the recommendations in this report would require deep collaboration between local authorities, such as to centralise data recording and create tools for regulatory officers to perform their regulatory responsibilities. One significant template for such collaboration is the Assessment Framework that has been implemented in food safety, through significant collaboration between local authorities and the FSS. DWQR could help to coordinate such collaboration, but likely would need to be appropriately resourced through formal recognition of this role if it were to do so effectively.

In some key areas substantive changes to regulation may be required in order to deliver improvement in regulatory performance. Local authorities are also unlikely to have the resources to collaborate sufficiently to produce common tools for communication with the public, improved information on owners’ and users’ responsibilities or on ways to improve water quality at private supplies. In those areas, changes may only be achieved if led or carried out by DWQR, which may require substantive changes to private water supplies regulation.

DWQR or local authorities could be given powers to implement a quality assurance scheme for users and owners, or to require local authorities’ regulatory practices to be audited. This would allow it to report accurately on local authorities’ regulatory performance. Any DWQR role in centralising information on water quality at private supplies could also be supported by changes to its formal role, so that associated resources could be justified. The existing grant scheme could be revisited, to encourage the use of ‘group’ schemes by communities putting together grant aid to improve supplies.

This study also identified that the current regulatory model precludes any strategic management or mitigation of public health risks associated with private water supplies. Local authorities individually apply a risk-based approach to many aspects of their regulatory activities (including site selection, parameter testing and risk assessment). Conversely, there is no national mechanism within which resources for private water supplies regulation can be prioritised to target the greatest public health risk for Scotland – across all local authorities. This study found little evidence that the overall level of resource put towards private water supplies regulation is assessed against the scale, likelihood and severity of public health risks posed by private water supplies. Recognising the resource constraints on local authorities, a more centralised approach could help to address this.

Many of the procedural changes identified above could be implemented with little additional resource. However, many of the potential actions identified above would require additional resource to implement. Identifying the cost of associated public health risks was not within the scope of this study. However, further work is needed to identify the level of resources required to implement any substantive changes and to estimate the scale of impact such changes could have on the quality of private water supplies.
ANNEXES
Annex 1  Summary of findings

Table A1.1  Summary of potential improvements

<table>
<thead>
<tr>
<th>Area</th>
<th>Findings</th>
<th>Potential procedural improvements</th>
<th>Potential substantive improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration</td>
<td>- LAs take different approaches to identifying relevant persons. Some do so as a matter of course, others only when necessary for enforcement purposes</td>
<td>- LAs could together implement a central online register of supplies and relevant persons, which could be used as a tool for regulatory stakeholders and also for the public</td>
<td>- Mandatory registration of relevant persons for all private water supplies, which could be applied above a size threshold (e.g. Type A supplies only)</td>
</tr>
</tbody>
</table>
| Sampling – selecting sites for testing | - LAs use risk-based approach to choosing sites for sampling  
- Implementation practice varies across authorities  
- Type B premises are sampled less frequently and usually only when requested or with certain triggers (e.g. requests)  
- LAs’ charging practices also vary | - Establish best practices in sampling, improving upon current Technical Manual  
- Improved transparency around sampling practices  
- DWQR could recommend that local authorities develop best practice guidance for sampling strategies and practices | - No substantive improvements needed                                                                 |
| Site testing – selecting parameters | - Information provided in the Technical Guidance is sufficient to allow local authorities to identify which parameters to test  
- Nonetheless, practices for selecting parameters and recording rationale vary between local authorities, including how records are kept  
- There is a lack of transparency around records of these decisions and how they were made | - Improved transparency around parameter selection  
- Supported by comparison with best practice across local authorities  
- Increased use of WHO guidelines and adaptation of practices to new Drinking Water Directive that will allow more parameters to be removed from testing where this can be justified | - No substantive improvements needed                                                                 |
| Risk assessments   | - Risk assessment scoring is inadequate  
- Risk assessments carried out at source, not on premises  
- Risk assessments could be made more transparent and accessible  
- Lower take-up of Type B risk assessments creates health risks for households on Type B supplies | - A full review of risk-assessments should be carried out, to address deficiencies in the process and to identify opportunities for improvements  
- Publishing risk assessments / outcomes in an appropriate format / by an appropriate medium | - Potential to explore a more formal role for health authorities, though this need not necessarily require substantive change to private water supplies regulations. |
## Area: Maintaining regulatory capabilities

- The effort and resource put into maintaining regulatory capabilities varies across local authorities.
  - Local authorities have worked together to good effect, supported by groups such as REHIS.
  - However, only some local authorities have the resources to support such training, and there is no clear framework for ensuring that such initiatives continue.

### Potential procedural improvements:
- Further centralised provision of training
- Centralised provision of relevant information for LAs / EHOs
- Incorporate PWS training into the current EHO accreditation process

### Potential substantive improvements:
- No substantive improvements required

## Area: DWQR’s role

- Some stakeholders remain unsure about what DWQR’s role is.
  - DWQR currently performs regulatory activities that go beyond its remit, but are valuable to local authorities and represent an efficient concentration of knowledge and resources that can be used by all local authorities.
  - DWQR’s limited powers in relation to private water supplies restrict its ability to influence water quality outcomes in private water supplies in Scotland.

### Potential procedural improvements:
- DWQR could take steps to improve its communication of its Charter and role, as well as how it can help local authorities in discharging their duties.
- DWQR could provide case studies giving illustrative examples for local authorities, helping them to understand how DWQR can help and how it cannot.

### Potential substantive improvements:
- Potential expansion of DWQR’s powers to:
  - enable it to require local authorities to be audited and results made public to act as an incentive for improving practices
  - enable it to enforce against local authorities that do not fulfil their regulatory responsibilities

## Area: Engagement with users and owners

- Low engagement among users and owners contributes to health risks from private water supplies.
  - Some users and owners are put off improving water supplies by the cost of the necessary measures.
  - Low awareness of health risks may contribute to poor water quality at private supplies.
  - Individual responsibility for water quality (of the ‘relevant person’) can exacerbate these tendencies.

### Potential procedural improvements:
- There is scope for local authorities to use new and improved tools to private water supplies health risks to the public and to users and owners of supplies.
- Greater provision of supplier lists for users and owners could help improvement measures to be implemented where they are necessary, potentially lessening the need for more severe enforcement action.
- Group improvement schemes could be supported, to help lower some of the barriers to individual users and owners implementing appropriate measures to maintain water quality.

### Potential substantive improvements:
- Create responsibility on users and owners for mandatory maintenance requirement.
## Findings

<table>
<thead>
<tr>
<th>Area</th>
<th>Findings</th>
<th>Potential procedural improvements</th>
<th>Potential substantive improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement with the general public</td>
<td>Low public engagement with the health risks associated with private water supplies may serve to increase health risks</td>
<td>Improved information available to the public, on the presence of private water supply and the quality of water from those supplies</td>
<td>Create responsibilities for notifying the public about the quality of private water supplies</td>
</tr>
<tr>
<td>Case escalation.</td>
<td>Local authorities take a risk-based approach to escalating cases</td>
<td>Local authorities could make their escalation and enforcement procedures more transparent, which could improve the deterrent effects of enforcement</td>
<td>Introduction of powers to issue a fixed penalty notice, as a way to increase incentives to comply without full-scale notice</td>
</tr>
<tr>
<td></td>
<td>Local authorities issue formal notices only in small numbers, in part because some are deterred by the cost of formal proceedings</td>
<td>This could include publishing enforcement policies and monitoring and reporting against those policies</td>
<td>A central body could take over regulatory responsibility for enforcement, facilitating a strategic approach to target cases of greatest health risk, allowing prioritisation across Scotland</td>
</tr>
<tr>
<td></td>
<td>Identification of the relevant person can hinder enforcement</td>
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<tr>
<td></td>
<td>Enforcement procedures are not transparent, which may hinder their effectiveness</td>
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<tr>
<td></td>
<td>DWQR’s lack of formal role in relation to enforcement gives it little</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data reported by LAs</td>
<td>Data reported to DWQR has improved considerably in recent years</td>
<td>Formal implementation of a performance framework for Local Authorities’ PWS practices</td>
<td>As noted above, audits could be made mandatory</td>
</tr>
<tr>
<td></td>
<td>Some data provided to DWQR may not provide an accurate representation of performance, particularly in relation to risk assessments and advice on remedial actions</td>
<td>Local authorities could volunteer to be audited to test and show the quality of their practices and representativeness of their reported performance</td>
<td></td>
</tr>
</tbody>
</table>
Annex 2 Private water supplies regulation in other EU Member States

A2.1 Private water supply regulation in Germany

In Germany, around 20 per cent of the population (approximately 16 million people) receive water from more than 3,300 small public supplies serving fewer than 5,000 people each. Approximately 700,000 use water from some 185,000 private or hamlet wells. The drinking water supply in most states originates from groundwater resources. In the federal states of Bavaria and Baden-Württemberg, for example, more than one third of the population are served by small public supplies.

Drinking water quality management is the exclusive competence of the federal states. As a result, there are often wide variations in regulatory systems and compliance levels. Direct supervision and enforcement responsibilities are assigned to the Local Medical Officer associated with the local health authority, although certain matters (e.g., concerning derogations) are referred to the State Health Department of each Federal State, mirroring German approaches to food safety.

A range of approaches are taken for compliance monitoring, including:

- monitoring through laboratories owned by the Health Authorities;
- use of certified laboratories appointed by the authorities; and
- some self-monitoring by water suppliers.

In Germany a joint working group of all sixteen federal states and authorities meets annually and is mandated to review all current surveillance evidence with regard to the quality and safety of small supplies. The working group has produced an advisory booklet addressed to private well owners. This is set out in easy to understand language and explains householders’ duties, highlights the benefits of the regular controls they should carry out and describes the surveillance duties of the authorities. Typical hazards are described, along with a template for identifying these through sanitary inspections. It also sets out options for repair, control and monitoring.

Results of compliance monitoring have to be reported to the Local Medical Officer, the water supplier (where appropriate) and the State Health Department in cases of derogation.

National reports on water management include a small amount of general information on the state of water supply in each of the federal states. Some health authorities in individual states publish annual reports, with summarised compliance data.

The Local Medical Officer is responsible for direct supervision of compliance and for enforcement if standards are breached, although the highest authority of each individual federal state, usually the State Health Department, may be involved if derogations are issued.

Authorisations for temporary breaches and remedial actions are prescribed and monitored by the Local Medical Officer. In the case of a breach of a microbiological standard, action must be taken immediately by the water supplier on receipt of the result from the laboratory charged with compliance monitoring. In this case, the Local Medical Officer is informed, disinfection measures are implemented directly and a boiling notice may be issued, though supplies are rarely cut off.

There is a common perception that breaches of limits for chemical parameters do not present an immediate risk to the population. As a result, considerable use is made of derogations and legal recommendations issued by Federal authorities, concerning authorisation of temporary breaches of standards. In practice, short-term measures such as additional treatment are often

ordered. Other measures specific to small private supplies include closure of wells and mandated connection to larger supplies.

A2.2 Private water supply regulation in Finland

In Finland, about 10% of the population uses small-scale water supplies. Most of these are community-managed water-works in rural areas serving 50 to 500 inhabitants through cooperatives, although some small supplies are managed by the municipality77. Municipal health authorities create registers of all the supplies in their area and make them available on a national electronic database. All suppliers (except those serving just one dwelling) must be accepted by the relevant municipal health authority before they start operating. Each time a change in water source or treatment is made, suppliers must seek new acceptance.

Each water supplier must provide the authority with information about their supply, including:

- their name and contact details;
- the location and source of the supply;
- the annual volume of water used and the number of consumers served;
- a description of raw water, water treatment and operational monitoring;
- a description of the quality of treated water and the chemicals used; and
- a description of the emergency plan and alternate supply arrangements.

Water suppliers must be prepared for exceptional situations and it is the duty of the national supervisory authority to provide guidance. For small-scale water supplies, it is regarded as disproportionate to provide a comprehensive preparedness plan77. However, the Finnish Environment Institute SYKE (Suomen ympäristökkeskus) publishes a checklist to help them identify the weak points of the waterworks.

The results of these risk assessments are collected by the municipal authorities. They then make sure the water suppliers comply with the EU Directives. Plans are in place to make results available on a national database.

A2.3 Private water supply regulation in Ireland

In Ireland, 0.8% of the population uses small private water supplies and an additional 10.6% uses supplies exempted from regulation. The water industry as a whole is highly fragmented and there were over 1,052 Group Water Schemes in existence in 2013 (614 public, 438 private schemes)78.

According to Irish laws, local authorities must maintain a register of all supplies in their area and transfer the information to the national authority.

The water suppliers must provide:

- their name and address;
- the source and the zone code of the supply;
- the annual volume of water used and the number of consumers served; and
- the type of water treatment.

Box 1 Group Water Schemes (Ireland)

Piped water supplies to many parts of rural Ireland are provided through some 614 community-owned private water supply systems known as Group Water Schemes. Water is abstracted from surface and ground waters and supplied to populations of between 50 and 4000 persons. Many of these sources are subject to organic pollution from agriculture and domestic wastewater systems – so schemes typically engage with private service providers under 20-year operation and maintenance contracts, facilitated under official procurement rules for water services in Ireland. A standardised Performance Management System ensures minimum standards are observed under very different supply and treatment systems.

Each participating scheme has its own 20-year operating and maintenance contract that ensures buy-in by the local community and assists in efforts to protect the source and conserve supply. The local authority acts as employer during the design and construction phase of the project while private companies then take over as ‘design, build and operate’ contractors during the operation and maintenance phase. This helps minimise capital and operational costs – grouped contracts are thought to offer cost efficiencies in the region of 25% over traditional procurement routes for private water supplies.

It is estimated that around 500 individual connections are required for each grouped contract to provide effective, stand-alone water treatment and disinfection facilities; critical mass is achieved by grouping a number of smaller projects under a single capital contract. As part of a capacity-building exercise, a training and development programme was introduced for small community groups to develop skills and expertise in managing a modern water supply business, awareness of water quality issues, the legislative framework for water and customer service.


Local Authorities are the supervisory authorities for private water supplies in Ireland. Monitoring collected by the EPA in 2013 suggest that there are compliance challenges in the sector. In particular, improvements need to be made in small private supplies. E. coli was detected in 63 small private supplies in comparison to 33 group schemes, and overall water quality is poor in comparison to mains supplies.

There is a legal duty for all supervisory authorities to send monitoring information for public and private water supplies to the Environmental Protection Agency. Local authorities are the regulatory authorities for private water supplies but must inform the EPA of failures to meet the required standards to which the EPA can direct the necessary corrective action. The EPA’s enforcement powers are thus limited to taking action against a local authority that fails to heed an EPA Direction, rather than individual supply owners.

The EPA assesses the results and publishes an annual report on the quality of drinking water supplies. On the basis of this reporting, the national regulator has been able to implement a strategic plan to improve private water supplies prioritising those of poorest qualities. Each local authority is also required to make drinking water quality information available to the public on the internet.

The National Federation of Group Water Schemes (NFGWS) recently published a guide to the implementation of Quality Assurance for the water sector79. This guide is designed to help manage and monitor small water supplies. The sign-up to the Quality Assurance System is mandatory for any water supplier who wants to receive funding for improving his supply. The guide is based on a simplified Hazard Analysis & Critical Control Point methods (HACCP), which was originally a food safety management system, and is similar to the Water Safety Plan approach.

The specific aim of the QA scheme is to closely monitor critical points of the water supply and carry out remedial measures where quality is seen not to be up to required standards. Each participating Group Water Scheme is required to complete a survey sheet to allow the Quality Assurance Manager (typically a representative of the NFGWS) to develop a reference document summarising the QA scheme and standard operating procedures for the supply.

Because water quality can be affected at multiple points in a supply, QA schemes include standard operating procedures to be followed in the maintenance and improvement of supplies to prevent problems arising. Different courses of corrective actions are outlined, depending on the event that has taken place. Any actions carried out are then recorded on a checklist for future reference.

For a QA scheme to be successful, it is imperative that there is an independent verification process by NFGWS auditors to check SOPs and management checklists are being documented. This includes:

- A recording and checking system with standardised reporting documents;
- Identifying hazards and applying control points;
- Record keeping procedures for monitoring of control points;
- Regular updating of tasks and duties relating to the operation of the QA process.

Beyond Group Water Schemes, the Environmental Protection Agency’s ‘Protect your Well’ web app has been developed to support users and owners to take steps to maintain and properly manage their supply outside of the formal sampling and risk assessment regime.

The EPA publishes annual reports that provide an overview of the quality of water supplies. Information on the quality of water is also made available to the public on the internet. Notably, Ireland has the highest incidence of VTEC in Europe. The EPA has a target of ensuring that 100% of monitoring work undertaken for private supplies is performed by accredited individuals or organisations.

A2.4 Private water supply regulation in Spain

In Spain, water supplies that serve more than 50 people and those that provide water as part of a public or commercial activity must register on a national information system: the Sistema de Información Nacional de Agua de Consumo (SINAC). Small supplies (less than 50 people) are invited to register as well, but their participation is not compulsory.

The design of the system is based on the WHO Water Safety Plan approach, albeit with information and regulatory requirements designed so as to be proportional to perceived risks. There is a central national administrator and two types of access: one for professionals (water suppliers, laboratories, regional and local authorities) and one for the public. Users are authorised to have access to different levels of information (local, regional, national). All information about the supplies is geo-referenced. It is mandatory to provide the system with updated data on samples collected as part of regulatory responsibilities. The following data is also required from the water suppliers who register in the SINAC:

- the name of supplier;
- the zone of the supply;
- the infrastructure (i.e. catchment, treatment, storage, distribution network and tankers);
- the official laboratories;
- the results (analytical and non-compliant); and
- the sanitary inspections.

To demonstrate that each private water supply is compliant with the law (and the Drinking Water Directive), supply owners must prepare a Self-Control and Supply Management
Protocol (Protocolo autocontrol y gestión de abastecimientos de agua de consumo público). However, these protocols are not as comprehensive as the WHO’s WSP approach.

The Spanish ministry of health publishes an annual report on water quality, while regional authorities publish periodical reports. However, these reports are not comprehensive: they are based on the SINAC, and thus do not take into account some of the small water supplies.

The Regional Health Administration is responsible for supervision of compliance and enforcement. In practice it seems that the water supplier takes the initial decision concerning necessary remedial action or repeat sampling and analysis. If the water supplier perceives a risk, the authorities are notified and the water supplier, municipal and regional authorities work together to decide and implement and necessary steps. The Regional Health Authority provides advice and monitors progress.

There appears to be no set procedure for further enforcement action – improvement plans are largely informal agreements and there is no evidence of any legal actions to enforce standards, although health authorities have powers to order necessary actions to suspend a supply in case of a health risk.

Private water supply owners in Spain are required by regional authorities to prepare a Self Control and Supply Management Protocol. These protocols are intended to set out in detail how national law is applied. This requirement has been supported by a national review and recommendations for action following the investigation of 24 incidents affecting the quality of drinking water. The recommendations identify the cause of each incident, how it was identified and controlled and the information that was provided to consumers. It is recognised that this is not as comprehensive as the WHO water safety plan approach but it has proved useful and valuable as a first step towards sharing knowledge about risk.

A2.5 **Private water supply regulation in Belgium**

Only two of the three regional authorities in Belgium contain small-scale water supplies. In Wallonia, the registration of small-scale water supplies is voluntary. In Flanders, all water suppliers (large and small-scale) must register to the authority but compliance issues exist and the register is incomplete.

According to the legislation, water suppliers should provide authorities with the following information:

- the location and source of the supply;
- the annual volume of water used and the number of consumers served;
- the type of the source and its treatment;
- the monitoring program;
- an emergency plan; and
- analytical results and evidence that samples are representatives.

All private supply owners have a legal obligation to send their compliance monitoring results each year to the regional authorities who then check the quality and publish regional reports. For public suppliers there is a strictly defined national reporting protocol with a regionally defined worksheet and electronic transfer system in place. However, there is little data available nationally about private small supplies because the requirement to report using the worksheet system is voluntary, not mandatory.

Some private supply owners have adopted the worksheet and electronic transfer system but for most of these supplies, the results are sent on paper reports from laboratories. The competent authorities have recently initiated enforcement action in order to get private suppliers who provide water for public or commercial purposes to report on their compliance monitoring.
A2.6 Private water supply regulation in the Netherlands

Regulation in the Netherlands delivers high levels of compliance, underpinned by a flexible regulatory framework based on a cascade of information between local, regional and national authorities and high levels of public engagement and trust.

Regional Public Inspectors are the primary authorities for PWS in the Netherlands and provide an important link between local and national authorities. Relationships between Regional Public Health Inspectors and supply owners is in practice largely informal and educational. As in Germany and Ireland, there are a high number of private supplies in rural areas serving multiple premises or municipalities.

In general, dialogue is the preferred option in the Netherlands and this policy appears to be effective. If progress is considered inadequate by the inspector, he may give an informal warning or ‘pre-order’, threatening to issue a formal order; in practice this has usually proved sufficient to obtain a satisfactory reaction on the part of the water supplier. Another, relatively powerful option for inspectors is to publicise the non-co-operation of a water supplier; this would be likely to elicit a rapid response (action) on the part of a water supplier.

Local authorities are required to report to the Inspector any cases of non-compliance as well as other issues giving rise to risks to public health. In the case of microbiological problems, the water supplier usually deals with remedial measures and, if necessary, informs the public (e.g. a boiling notice), all in close liaison with the Inspector. Improvement measures are usually agreed through discussions, meetings and exchange of correspondence between inspectors and the suppliers, whereby the formal records comprise letters and minutes of meetings. The inspector can also demand (and has done so in practice) improvement measures even if no standards are breached, if he considers that there are unacceptable risks to public health.
Annex 3  Study evidence gathering

The study used the following methods to gather evidence on regulation of private water supplies in Scotland.

A3.1  Desk research

The research team undertook more detailed desk research of literature relating to private water supplies. The study team reviewed 30 publications, studies and documents, including:

- key Scottish Government (and related documents) with relevance to the PWS Regulation;
- other UK studies relating to the regulation of private supplies; and,
- examples of EU best practice relating to regulating small and private supplies.

These studies were reviewed in line with the assessment criteria described within the Inception Report. Particular emphasis was given to the review of EU best practice for the regulation of private supplies under the Drinking Water Directive, on the basis that this could support the evaluation of alternative regulatory approaches.

A3.2  Stakeholder survey

A stakeholder survey was designed following the desk research, which highlighted a number of issues surrounding regulation of PWS. The questionnaire was designed and conducted using online survey software. The survey was targeted at two key stakeholder groups (and tailored accordingly):

- regulatory stakeholders; and
- users and owners of private water supplies.

A listing of Scottish Local Authorities and relevant Environmental Health Officers was provided by DWQR and an electronic survey was emailed to 90 EHOs. Responses were received from 25 EHOs.

A postal version of the owner and user survey was produced and mailed to 100 addresses across Scotland. The letter contained both a paper version of the survey as well as an option to complete online and a further 25 responses were obtained for this survey. Detailed results will be incorporated into the analysis phase of the study.

A3.3  Stakeholder workshops

Following the stakeholder survey, a special meeting of the Royal Environmental Health Institute for Scotland PWS Sub-group was held in Edinburgh. Participants included representatives from the Scottish Government, DWQR, as well as environmental health officers from the Local Authorities represented on the PWS Sub-group.

The workshop provided an opportunity for the study team to summarise the work to date, and to provide a detailed breakdown of the analysis of responses to the regulator and owner/user survey. As such, it provided an opportunity to qualify and validate data emerging from the surveys.

A3.4  Stakeholder interviews

Following the stakeholder workshop, the study team organised a series of interviews with stakeholders working across the regulatory supply chain. This included interviews with:

- the members of DWQR / Scottish Government;
- local authority Environmental Health Officers; and,
other stakeholders able to provide an overview of the regulatory space for PWS\textsuperscript{80}. Each interview lasted for approximately 1 hour and followed a semi-structured format, with questioning linked to the previously-defined assessment criteria. These were also based on key topics emerging from the stakeholder survey.

A3.5 Initial results workshop

An additional workshop was held to discuss conclusions around the evaluation criteria and the impact of our findings on the range of stakeholders involved. The main objective of the workshop was to test initial results and build in further stakeholder views to the study findings. Attendance at this workshop included similar stakeholders to the first, as outlined above.

\textsuperscript{80} This in part reflected some of the findings from the stakeholder survey around the need for enhanced engagement around Type B supplies and associated needs for capacity-building around risk assessment and risk communication measures.
Annex 4  Study evaluation criteria

Table A4.1  Summary of broad approach for specifying and gathering the evidence required to meet the study aims and objectives

<table>
<thead>
<tr>
<th>Study objective</th>
<th>Assessment criteria</th>
<th>Study questions to answer</th>
<th>Summary of evidence</th>
<th>Data sources</th>
<th>Key findings areas</th>
</tr>
</thead>
</table>
| INSTITUTIONAL DESIGN / GOVERNANCE | Clarity of roles and responsibilities | What are the current PWS regulations in Scotland seeking to achieve? How clear are the respective roles and responsibilities of local authority Environmental Health Officers, DWQR and the Scottish Government with respect to current regulations? Do these responsibilities overlap? Where are they described and how are they communicated? Do the relevant regulatory authorities operate under primary legislation which sets out key duties and powers and establishes financial security? | Stated policy objectives of the current regulations Stakeholder views on objectives of current regulations Details of statutory duties, powers and functions of each relevant organisation Stakeholder views on roles and responsibilities | Desk research:  
- Private Water Supplies (Scotland) Regulations 2006  
- Public Water Supplies (Scotland) Regulations 2014  
- Water Industry (Scotland) Act 2002  
- Other relevant documentation and publications (eg. PWS Strategy)  
Consultation:  
- Scottish Government  
- DWQR  
- Local authority EHOs / SoCOEH / REHIS  
PWS online survey | Local authority support for users and owners for implementing improvement measures Local authority regulatory capabilities Sampling Data (linked to monitoring) Role of DWQR Risk assessments |
| Accountability | | Can the relevant regulatory authorities’ decisions be challenged via an impartial process? | Details of appeals mechanisms and routes for redress Research on accountability mechanisms and transparency of regulatory processes and findings on private water supply quality | Desk research:  
- Private Water Supplies (Scotland) Regulations 2006  
- Local Government Ombudsman publications  
- Other relevant documentation and publications  
- DWQR annual data returns  
Consultation:  
- Scottish Government  
- DWQR  
- Health Protection Scotland | Sampling Data (linked to monitoring) Public engagement |
## REGULATORY PROCESSES AND PRACTICES

### Developing and maintaining capabilities

**Study objective**
To what extent is regular training and related activities provided to enforcement officers regarding enforcement of the relevant regulations?
What measures are in place to monitor / measure regulatory enforcement performance?

**Assessment criteria**
Details of internal policies (e.g. training, etc.) used to develop capabilities in local authority Environmental Health Officers
Details of performance monitoring activity (e.g. auditing against DWQR Vertical Audit process)
Data on compliance levels over time and by user type

**Study questions to answer**
Details of internal policies (e.g. training, etc.) used to develop capabilities in local authority Environmental Health Officers
Details of performance monitoring activity (e.g. auditing against DWQR Vertical Audit process)
Data on compliance levels over time and by user type

**Summary of evidence**
- Local authority EHOs / SoCOEHS / REHIS
- Local Government Ombudsman
  - PWS online survey

**Data sources**
- Desk research:
  - Local authority performance monitoring data/statistics
  - DWQR Annual Reports
  - DWQR annual data returns
  - Other relevant documentation and publications
- Consultation:
  - Local authority EHOs / SoCOEHS / REHIS
  - DWQR
  - PWS online survey

**Key findings areas**
- Sampling
- Data (linked to monitoring)
- Risk assessments
- Local authority skills and knowledge base
- Local authority support for users and owners for implementing improvement measures

### Engagement and participation

**Study objective**
To what extent are regulated parties involved/engaged in the regulatory process?
What capacity / appetite do they have to participate?

**Assessment criteria**
Evidence of public consultations on regulatory matters
Evidence of active engagement by regulated parties
Stakeholder engagement processes and views on participation

**Study questions to answer**
Evidence of public consultations on regulatory matters
Evidence of active engagement by regulated parties
Stakeholder engagement processes and views on participation

**Summary of evidence**
- Details of consultations regarding PWS regulations
- Other relevant documentation and publications
- Private Water Supplies (Scotland) Regulations 2006: Understanding Engagement of Users and owners Consultation:
  - Scottish Government
  - Health Protection Scotland
  - Local authority EHOs / SoCOEHS / REHIS
  - Selected owners of PWS
  - Scottish Land and Estates

**Data sources**
- Desk research:
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  - Other relevant documentation and publications
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  - Scottish Government
  - Health Protection Scotland
  - Local authority EHOs / SoCOEHS / REHIS
  - Selected owners of PWS
  - Scottish Land and Estates

**Key findings areas**
- Public engagement
- Local authority support for users and owners for implementing improvement measures
### Study objective

#### Transparency

**How do regulatory authorities communicate and explain their decisions to regulated parties? How clear and transparent are they?**

- **Published enforcement policies and decisions**
- **Evidence of information communicated to PWS owners on enforcement decisions**
- **Stakeholder views on clarity of communications**

#### Predictability

**How consistent are the decisions of regulatory authorities over time?**

- **Consistency of published enforcement decisions**
- **Complaints upheld by LGO**
- **Stakeholder views on consistency of decisions**
- **Stakeholder views on transparency of communication between regulatory authorities and users and owners of PWS**

#### Regulatory burdens

**How are the regulatory processes designed to minimise burdens on participating parties? Do they follow best practice? To what extent do regulatory authorities ensure that their officers**

- **Actions taken by regulatory authorities to lower / minimise regulatory burden**
- **Stakeholders’ views on consistency of**

### Data sources

- **Desk research:**
  - Published details of local authority enforcement policies
  - Published details of local authority enforcement decisions

- **Consultation:**
  - Local authority EHOs / SoCOEHS / REHIS
  - Selected owners of PWS
  - Scottish Land and Estates

- **PWS online survey**

### Key findings areas

- Local authority support for users and owners for implementing improvement measures
- Local authority regulatory capabilities
- Role of DWQR
An evaluation of private water supply regulation in Scotland

<table>
<thead>
<tr>
<th>Study objective</th>
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</tr>
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<tbody>
<tr>
<td>Information provision</td>
<td></td>
<td>understand the statutory principles of good regulation and seek to minimise the costs of compliance while encouraging and promoting compliance?</td>
<td>findings on private water supply policy, including from online questionnaire</td>
<td>Local authority EHOs / SoCOEHS / REHIS, DWQR, PWS online survey</td>
<td>Data (linked to monitoring), Local authority regulatory capabilities, DWQR’s role, Local authority support for users and owners for implementing improvement measures</td>
</tr>
<tr>
<td>Risk-based approach</td>
<td></td>
<td>Does the regulatory authority publish guidance, and information in a clear, accessible, concise format, using media appropriate to the target audience and written in plain language for the audience? Does the regulatory authority provide bespoke advice for individual responsible parties?</td>
<td>Evidence of published guidance on PWS regulations Stakeholders' views</td>
<td>Desk research: Published details of PWS regulatory guidance for owners, PWS Strategy, PWS Technical Manual, Selected owners of PWS, PWS online survey</td>
<td>Sampling, Parameter selection, Data (linked to monitoring), Risk assessment, Local authority regulatory capabilities</td>
</tr>
<tr>
<td>USER EXPERIENCE / BEHAVIOURAL FACTORS</td>
<td>Clarity of requirements and processes</td>
<td>Does the regulatory authority have a risk assessment framework and actively target the highest risk areas/entities? What information is available to regulatory authorities on which this assessment can be made? Could more, or more accurate / better targeted information support a more risk-based approach?</td>
<td>Published enforcement policies and decisions Evidence on the approach / rationale for non-compliance, evidence of a risk-based approach to regulation of compliance Stakeholders' views</td>
<td>Desk research: Published details of local authority enforcement policies, Published details of local authority enforcement decisions, Consultation: Local authority EHOs / SoCOEHS / REHIS, Selected owners of PWS, PWS online survey</td>
<td>Risk assessment, Local authority regulatory capabilities</td>
</tr>
</tbody>
</table>

Final Report, 25 January 2015
## Study objective

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Study questions to answer</th>
<th>Summary of evidence</th>
<th>Data sources</th>
<th>Key findings areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Costs of compliance</strong></td>
<td>for remedial measures; and (c) demonstrate compliance?</td>
<td>Nature of local authority enforcement decisions</td>
<td>Consultation:  - Selected owners of PWS  - Scottish Land and Estates  - Local authority EHOs / SoCOEHS / REHIS  - PWS online survey</td>
<td>Sampling  Parameter selection  Data (linked to monitoring)  Risk assessment  Improvement and maintenance</td>
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<td></td>
<td>What are the administrative burdens associated with regulatory compliance?  What measures are taken to ensure these burdens are proportionate?</td>
<td>Evidence on the time and/or financial costs of complying with the PWS regulations</td>
<td>Consultation:  - Selected owners of PWS  - Scottish Land and Estates  - Local authority EHOs / SoCOEHS / REHIS  - PWS online survey</td>
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<td><strong>Enforcement consequences</strong></td>
<td>To what extent is the enforcement regime – and the consequences of non-compliance – communicated clearly?  How is the enforcement regime designed to influence responsible parties’ behaviour?</td>
<td>Published enforcement policies and decisions  Complaints lodged with LGO</td>
<td>Desk research:  - Published details of local authority enforcement policies  - Published details of local authority enforcement decisions  - Data/evidence of complaints lodged with LGO  - Consultation:  - Local authority EHOs / SoCOEHS / REHIS  - Selected owners of PWS  - PWS online survey</td>
<td>Consistency and formality of enforcement processes  Case escalation</td>
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<tr>
<td><strong>Remedial measures</strong></td>
<td>What advice is provided during the compliance / performance process?  Does this address the perspectives and priorities of responsible parties?</td>
<td>Evidence of advice and guidance provided to PWS users on remedial measures</td>
<td>Consultation:  - Local authority EHOs / SoCOEHS / REHIS  - Selected owners of PWS  - PWS online survey</td>
<td>Local authority support for users and owners for implementing improvement measures</td>
</tr>
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