Private Water Supplies

A framework to deliver universal access to safe and affordable drinking water for all

Emma Ash

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Who we are

Citizens Advice Scotland (CAS), our 59-member Citizen Advice Bureaux (CAB) and the Extra Help Unit, form Scotland's largest independent advice network. Advice provided by our service is free, independent, confidential, impartial and available to everyone. Our self-help website Advice for Scotland provides information on rights and helps people solve their problems. During 2019-20, the entire Citizens Advice network provided advice and assistance to over 188,000 individuals; this equates to one in every 24 adults living in Scotland. The network put a little over £170 million back into people's pockets during this time, with every £1 invested in core advice funding returning £16 in gains for people. Our extensive footprint is important in helping us understand how issues impact locally and nationally across the country and the different impacts that policies can have in different areas.

1. Executive Summary

Citizens Advice Scotland is the consumer representative body for water in Scotland and between 2018 and 2021 has also advocated that the improved management of private water supplies should be a priority in relation to climate change resilience and water safety.

CAS has previously published three policy insight reports[1] that have sought to identify the challenges, barriers and the support required for people and communities reliant on private water supplies. During 2020-21, in partnership with the Drinking Water Quality Regulator (DWQR), CAS commissioned a further piece of research to support the development of more resilient and empowered private water communities that can respond to the challenges of meeting minimum water quality standards and adapt to climate change impacts[2].

This report provides a strategic overview of CAS's body of evidence, bringing together policy insights, alongside evidence from the most recently commissioned research. It presents an analysis of the challenges, barriers and opportunities faced by private water supply users and communities and offers a consolidated set of recommendations, that acknowledges the commonality of findings across CAS's evidence base. The seven Consumer Principles have also been applied; Access, Choice, Safety, Information, Fairness, Representation and Redress, to ensure our review contextualises the consumer experience of using a private supply.

This strategic overview will also consider the impact and opportunities presented by the EU recast Drinking Water Directive (rDWD). Scotland has committed to keep pace with EU law in devolved areas[3] and the transposition into Scots law of the rDWD provides an opportunity to re-assess private water supply regulations and develop an improved regulatory approach, that can deliver improved outcomes for private supplies.

The Scottish Government's Hydro Nation strategy has also acknowledged the need to improve private water supplies as it seeks to support a *'flourishing Scotland'*[4]. As part of this commitment the former Cabinet Secretary for Environment, Climate Change and Land Reform committed that:

> **"for those on private supplies we will continue to pursue suitable options for an alternative provision model.[5]"**

In addition, Scotland made an international commitment when it signed up to the United Nations Sustainable Development Goals (SDG), of which Goal 6 is particularly relevant:

> **"achieve universal and equitable access to safe and affordable drinking water for all[6]"**

The challenge for Scotland is that for a proportion of its population[7] and for many thousands of visitors, private water supplies pose a risk to it meeting its obligations. In this review we hope to distil the body of evidence we have gathered, as well as our findings and recommendations, to inform collaborative policy development and the identification of measures needed to create improved systems of support, advice and funding that builds resilient and effective private water supplies.

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[1] Testing the Waters (2018), Sustainable Support (March 2020), Finding the Right Solution (April 2020)
[2] Development and empowerment of communities using private water supplies (Ipsos Mori) 2021
[3] UK Withdrawal from the European Union (Continuity) (Scotland) Act
[4] Hydro Nation Strategy and Minister's statement 2017
[5] Hydro Nation, Ministers Statement Nov 2017. Roseanna Cunningham the cabinet secretary for Environment, Climate Change and Land Reform
[6] Sustainable Development Goal 6
[7] 3.3% of the population are on private water supplies (DWQR annual report 2019)

2. Background and context of private water supplies

There are 22,453 private water supplies in Scotland, serving 182,516[8] people. This number increases considerably when holiday makers and visitors are included.[9] Private water supplies are those water sources that are in private rather than public ownership, which emanate directly from rivers, streams, wells (shallow boreholes) and deep boreholes, and are not provided or treated by Scottish Water. At present, 3.3% of the population of Scotland are on private water supplies and bear the full burden of managing and covering the costs to serve water to their premises, something that the remaining 96.7% of Scotland's water consumers on the public supply never have to consider.

The reasons why properties have a private water supply can vary; for example, the location of the property may, in the past, have made connection to mains water logistically impractical or the supply too small to be adopted by a public body. The rural nature and topography of Scotland, alongside mixed historical mains connection programmes, have resulted in a proportion of the population managing their own drinking water, often with limited insight, and with mixed results.

Research shows that managing a private water supply can be viewed as a specialised task for only the most informed, most technically competent, and confident owner/operator.

The key question that needs to be addressed is whether and to what extent, asking a domestic household, or a community cooperative, to manage a supply to a competently technical and compliant level, is an achievable ask?

[8] DWQR annual report 2019
[9] *ibid*

3. Challenges facing private water supplies

3.1 Water safety risks

Research has found there to be a lack of awareness of harmful waterborne micro-organisms and chemicals among many users of private water supplies[10]. Perceptions of water quality show a belief that, for those using private supplies, the water quality is superior to that of mains water, often described as:

"clear, pure and wholesome[11]"

There is a tendency for private water supply users to assess risk in terms of having to spend money on treating the water, rather than to mitigate health related issues resulting from drinking poor quality water.

"Some people just think, they've drunk the water for years, 'why would you have a disinfection system? It's never done me any harm' is something I hear on a daily basis." (Contractor, Private water supply specialist)[12]

The lack of awareness of water quality is, in part, likely to stem from the current regulatory set up, which exempts small domestic supplies[13] (83% of all private water supplies are classed as "Exempt" supplies) from monitoring the quality of their water[14]. In 2019, there were only 962 Exempt private water supplies tested across a base of 18,616 and E.coli was found in 18% of samples taken[15].

Larger private water supplies or those providing water to the public, such as cafes, hotels and self-catering, are regulated[16] (17% of all private water supplies are defined as "Regulated" supplies) and are required to have their water sampled by the local authority on an annual basis. In 2019 water safety compliance rates were the lowest since 2010[17] with 12.9% of samples containing E. coli and 10% failing water compliance standards.

The compliance figures for Regulated and Exempt supplies, when held up against Scottish Water's water sampling figure of 99.92% compliance in the same period[18], show that those people and communities drinking water from private water supplies are more at risk of drinking unsafe water.

Local authorities are legally required to carry out annual sampling of all Regulated supplies. However, the ability of local authorities to do so has been steadily reducing. In 2019 only 68% of Regulated supplies were sampled and local authorities have noted this is in part due to *"resource and capacity limitations"*[19].

Lack of data on the condition of private water supplies inhibits public bodies from identifying those supplies at risk and in need of support measures. Furthermore, communities and users of private water supplies are not sufficiently enabled and empowered to understand their water quality and how to treat it effectively, in order to provide safe drinking water.

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[10] A consistent finding in our body of evidence
[11] CAS Finding the Right Solution April 2020
[12] CAS Finding the Right Solution April 2020
[13] "Exempt" Private Water supplies, The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017
[14] It can be a requirement of grant funding but otherwise it is optional.
[15] DWQR Annual report 2019. Sampling for Exempt supplies is usually made at the owners' request or as part of a funding requirement.
[16] The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017
[17] Compliance has sat within the range of 90-95% between 2010-2019 DWQR Annual report 2019.
[18] DWQR Public supplies Annual report
[19] 94% compliance in 2015, 87% in 2017, 75% in 2018. DWQR 2019 annual report for PWS.

3. Challenges facing Private water supplies

3.2 Climate change impacts

The summer of 2018 was the second hottest on record in Scotland and saw 500 private water supplies dry up and require emergency assistance from the Scottish Government, in the form of bottled water. Our research has found that:

"climate change is expected to have a significant impact on the reliability and sustainability of private water supplies in Scotland in the future."

This was evidenced by a Scottish Government and DWQR project investigating the likely impacts of climate change on private water supplies[20]. It concluded that private water supplies are:

"highly vulnerable to the impacts of water scarcity arising from climate change with those in the North East of Scotland being at greatest risk."

Our research has found that communities typically react rather than plan for climate change impacts such as drought or heavy rainfall. Often the impacts of these events can cause issues such as heavy rain which can wash contaminants into systems and overwhelm them.

"We get discoloration after heavy rain... the sediment clogs the UV filters and [they] don't work... so we have to provide people with bottled water." (Domestic and estate community)

During the very wet summer of 2019, E. coli rates in Regulated supplies were reported to have risen[21].

While the impact of water scarcity events can mean that private water supply users do not have access to drinking water, or water for washing and cleaning, which can have serious health consequences. Covid-19 has highlighted the risks associated with lack of an adequate water supply for basics such as hand washing.

The issues around water quality often occur more regularly and can be of more immediate concern to users than the risk of water scarcity from climate change impacts. Therefore, without additional funding and support, private water supply users and communities are often left to cope with the impacts of extreme weather but are unable to meaningfully prepare for climate change in a way that would increase their resilience.

[20] Crew – Private water supplies and climate change
[21] DWQR Annual report 2019

3. Challenges facing Private water supplies

3.3 Rural nature of private water supplies

Private water supplies are more prevalent in rural locations, with some local authorities having as much as 31%[22] of the population reliant on private water supplies, compared to 0.1% of the population in some urban areas[23].

Research has highlighted the risks associated with the rural nature of private water supplies, in that they have:

> **"... consequences for rural repopulation. It is difficult to implement rural regeneration if a reliable and safe water supply cannot be guaranteed."[24]**

The Scottish Government has recognised the need to support rural communities and stem rural depopulation, and has referenced support for rural communities throughout its 2021 manifesto:

> **"Our absolute priority will be to keep people on the land sustainably".[25]**

The ability of a rural community and economy to thrive is fundamentally based on the ability to access safe drinking water, even in the face of climate change impacts such as lower rainfall during summer months causing supplies to run dry. Yet, the rural nature of private water supplies risks an inequality of access to safe drinking water across Scotland, with the capacity to disadvantage rural communities and the rural economy.

[22] Argyll and Bute, DWQR annual report 2019
[23] Aberdeen City, DWQR 2019 Annual report
[24] The Sustainable Management of Scotland's Water Resources: Current Issues in Water Law and Policy - Jill Robbie April 2020
[25] SNP 2021 manifesto

3. Challenges facing Private water supplies

3.4 Vulnerability of private water supply users and communities

A regular supply of safe drinking water is a basic human requirement, yet private water supply users have had to confront supplies drying up and at times an inability to protect the source from pollution or disruption from other landowners.

A report by CREW defined vulnerability in relation to users of private supplies as:

'the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard".[26]

We reported in 2020[27] that many private water communities have no contingency in place when their supply runs out or faces disruption. Disruption to a water supply can lead to a change of circumstance caused by factors out with their control, such as low rainfall causing private water supplies to dry up or heavy rainfall that washes contaminants into a supply and overwhelms the treatment processes.

Such events can lead to vulnerability where there was none before and create dependency on support which may not always be available and, at times, for costs to be incurred that were not expected. The Scottish Government, in partnership with Local Authorities, have rolled out emergency bottled water schemes during water scarcity events however, there is no guarantee that these will always be available:

"We have had no water for a while. I'm with kids, what am I going to do without water? I'm going up to [town] to get bottled water, and there's no help for that."
(Domestic user, unregulated supply)[28]

Our body of evidence shows that the extent to which private water communities and users have the capacity to anticipate, cope with, resist and recover from natural hazards, such as drought, is limited within the current regulatory, support and funding structure. CAS's evidence suggests that lack of information and training, complex water treatment choices on the market, technically demanding maintenance, and issues of affordability and resilience planning, combine to mean that water quantity and quality as well as health and wellbeing are never guaranteed. If the creation of 'resilient communities' or 'keeping people on the land sustainably' are to be achieved, these issues must be addressed.

A safe and secure supply of water can avoid long-term vulnerabilities created by insecure access to safe drinking water alongside supporting local economic growth, empowerment of communities and help to prevent potential rural de-population.

[26] Crew – Private water supplies and climate change
[27] Sustainable Support: Measures that support private water supplies to meet minimum water quality requirements March 2020.
[28] Sustainable Support: Measures that support private water supplies to meet minimum water quality requirements March 2020.

4. Barriers to effective and resilient private water supplies

4.1 Current regulatory requirements

Private water supplies comprise of 'Regulated' and 'Exempt' supplies. Regulated supplies[29] (17% of all private water supplies) include holiday lets, private tenancies, those supplying to the public and those with commercial purposes, as well as larger supplies. While smaller domestic supplies are classified as Exempt supplies[30] and are exempted from much of the Regulations. Most private water supplies (83%) are Exempt.

The current processes for assessing risk and testing private water supplies differ between Regulated and Exempt supplies. Local authorities are required to annually test the quality and safety of the water for Regulated supplies[31]. However, since 2015 the rates of testing by local authorities have steadily fallen from 94% in 2015 to 68% in 2019[32]. The absence of testing means that, despite it being deemed necessary, those using Regulated supplies will be unaware of their water quality and unsighted on issues which may be seriously affecting their drinking water.

There are no requirements for Exempt supplies to be tested by the Local Authority and as such the testing rate is around 5%. This means that the majority of those using a private supply in Scotland have no understanding of the quality of their water and subsequently, any potential health risks posed by it.

"I was ill; very ill, actually, to the point where I was reduced to a wheelchair, and eventually the [doctor] suspected the possibility of organophosphate poisoning." (Domestic user, Exempt supply)

Our research has found that many of those using a private supply are often wary of involving the local authority due to their enforcement role:

"Consultants suggested that to me that [I] would be better not to involve the council because they may force you to do things that are not actually necessary." (Domestic user, Exempt supply)[33]

When testing is carried out, the approach undertaken by local authorities can reinforce perceptions of fear and can actively discourage supply users to seek access to information. This can limit knowledge in relation to the quality of the water supply and ultimately the understanding that is required to make changes and improvements to the supply:

"The Council occasionally come and test the supply, but they don't tell us they are coming or the results – we don't have all the records."

Our research identified that a key factor for the success of community private water supplies is to develop partnership-based relationships between communities and the relevant public bodies. If done well, it can educate, provide access to information, and empower private water supply users and communities with what they need to better self-manage the supply.

[29] The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017 - Regulated supplies are defined as those which supply 50 or more people or use more than 10m3 per day, or where the supply is for a commercial or public activity, there are 3,837 Regulated supplies.
[30] Those supplying to private properties with less than 50 people and less than 10m3 in volume per day. There are 18,616 Exempt supplies.
[31] The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017
[32] DWQR Annual report 2019
[33] Sustainable Support: Measures that support private water supplies to meet minimum water quality requirements March 2020.

4. Barriers to effective and resilient private water supplies

4.2 Lack of information and advice

Online advice for private water supplies exists in several places,[34] each providing generalist information. However, our recently commissioned research has found no change to previous research findings, which indicated low levels of awareness of available advice and poor signposting to online information sites:

> "I didn't know [the hub] existed. How was I to know it existed? How was anyone to know? ...If they put in one or two days a year to... get them promoting their information for people, [it] would then spread the word." (Contractor, Non-private water supply specialist)[35]

Gaps in support can lead to supply owners turning to their own strategies, in the belief that their interventions to improve water quality are sufficient:

> "One year we did find a whole dead sheep in one of [the streams] ...[so] we've got filtration [and] a lot of stockings as well." (Domestic owner, Exempt)[36]

Much of the information and guidance available is not designed for untrained and unskilled domestic private water supply owners, which make up 83% of all private supplies. Information can be overly technical and scientific and there are no easy to understand, off the shelf solutions with links to approved products that consumers can buy; safe in the knowledge these can effectively treat their water supply.

The image below is taken from the first page on chlorination on the DWQR online advice pages for suggested treatment processes. There is no clear explanation about why or when this process should be used:[37]

6.9.3.1 Chemistry

Chlorine, whether in the form of pure chlorine gas from a cylinder, sodium hypochlorite or calcium hypochlorite, dissolves in water to form hypochlorous acid (HOCl) and hypochlorite ion (OCl^-). For example, chlorine gas dissolves rapidly in water, initially forming hypochlorous and hydrochloric acids:

$$Cl_2 + H_2O \leftrightarrows HOCl + HCl$$

Hypochlorous acid is a weak acid which undergoes partial dissociation to produce a hydrogen ion (H^+) and a hypochlorite ion (OCl^-):

$$HOCl \leftrightarrows H^+ + OCl^-$$

The total concentration of chlorine, hypochlorous acid and hypochlorite ions is referred to as the 'free available chlorine'. If ammonia is present in the raw water, the hypochlorous acid can react to produce chloramines. The total concentration of the chloramines and any organic nitrogen chlorine-containing compounds is referred to as the 'combined available chlorine'. Combined available chlorine is a less powerful disinfectant than free available chlorine but gives a more persistent residual.

[34] DWQR and ScotGov and Citizens Advice Scotland
[35] CAS Finding the Right Solution April 2020
[36] CAS Finding the Right Solution April 2020
[37] DWQR guidance https://dwqr.scot/private-supply/technical-information/pws-technical-manual/water-treatment-processes/

4. Barriers to effective and resilient private water supplies

This offer of advice and information, while technically accurate, is complex and may not present information in the way that those managing a supply need it. There is the potential for private water supply users to mis-apply the information and get processes wrong, potentially causing themselves and others harm. Alternatively, it may simply be ignored because it is difficult for lay-people to understand and implement it.

Our recent research has highlighted that the most important factor for a safe and resilient private water supply is the knowledge and skills of the users. Yet perceptions of water quality and risks are still found to be based on "inaccurate beliefs and social norms" due to the lack of access to clear evidence of water quality, as well as information and training about how to manage a private water supply. While local authorities are also responsible for offering support, the level and type of support offered is not consistent across Scotland and can leave private water supply users unsure of where to access the information and guidance that they need..

"I think the hardest thing is to know is where to go for definitive answers, information... on issues like testing, how to manage the supply more effectively and just a clearer understanding of where responsibilities lie..." (Domestic and estate supply, Aberdeenshire)

Without sufficient knowledge, information and skills, many supply owners may not feel inclined or be sufficiently encouraged to treat, monitor, and maintain their supplies, or even undertake a basic risk assessment for both water quality and resilience to weather events, appropriately and adequately.

4. Barriers to effective and resilient private water supplies

4.3 Access to funding

Regulations[38] in 2006 made provision for a private water supply grant to off-set the capital costs for private water supply owners, to bring their supplies up to the standard at the time. It was not intended to support connection to the mains water supply, nor ongoing private water supply maintenance costs. Furthermore, once a grant has been claimed, there is no option for another claim within a five year period, even if more work is required to improve poor water quality[39].

Our research has consistently found that the cost of a suitable treatment system or total cost to maintain a safe water supply is often beyond the value of the one-off grant.

"To be honest the Grant didn't even cover the VAT." (Domestic user, Exempt supply)

"It's going to cost thousands of pounds to put in an alternate supply that would make us feel totally secure for the future, so the best thing that could happen was if there was more money to help us do that."(Domestic owner, Exempt)

Local authorities have discretion to offer access to funds over and above the grant[40], provided the *"eligible person could not, without undue hardship, finance the expense of the approved works without such a grant"*. DWQR reported in 2019/20, that 1.6% of all private water supplies[41] were awarded extra funds for the exceptional circumstances faced by them, in order to bring their supplies within compliance; this averaged £1,250 per supply.

However, our research found that awareness of this discretionary fund is low and without knowledge of its existence, owners are unlikely to make financial decisions based on it or put in a request to their local authority to apply for it.

Furthermore, many private water supply owners do not engage with local authorities, due to the fear that they will identify costly repairs and upgrades or issue enforcement notices if the repairs are not carried out. Low-income private water owners are more likely to fear unexpected costs they cannot meet and therefore are the least likely to engage with their local authority for support and advice.

"I've never even investigated any grants for it or any payments for it because then the Council have to come up and inspect it and check it don't they? This is what puts me off it. If they start interfering ...and it ends up costing you more than what you actually get for the grant." (Domestic user, Exempt supply)

Notably, while the current grant system has been available since 2006, it has had very limited impact on private water quality compliance figures, which have not improved within the last ten years[42].

[38] The Private Water Supplies (Grants) (Scotland) Regulations 2006
[39] The Private Water Supplies (Grants) (Scotland) Regulations 2006 s9
[40] This is discretionary and is determined by local authorities on a case-by-case basis.
[41] 373 private water supplies, information supplied by DWQR
[42] DWQR annual reports

4. Barriers to effective and resilient private water supplies

4.4 Accessibility and process of connecting to mains water

Connection to the mains may be, for some, the only way of guaranteeing access to safe drinking water, yet often the financial burden or the topography and proximity of the property to the mains water, can make this option unfeasible.

CAS has identified that for most private water supply users, Scottish Water's process for first time connection for single householders and communities is complex, technical, and exclusive[43]. Additionally, householders have felt they were treated like construction and trade bodies rather than unqualified members of the public. Scottish Water has recognised the need to simplify the connections process and a working group is in place to progress this.

It should also be noted that Scottish Water's Reasonable Cost Contribution (RCC),[44] a regulatory process which provides for Scottish Water to contribute to the costs of mains water connection, has two main deficiencies:

1. It only applies to multiple connections and not to single household connections. As such it creates further financial challenges for those seeking to connect to the mains on their own.
2. Where multiple properties do seek a joint connection, they often face the following difficulties:
   - The RCC process is complex and not designed for householders
   - It requires property owners to effectively organise themselves and work together to meet Scottish Water requirements. Including the need to collectively arrange payment of significant financial outlays
   - Private water supply communities are reluctant to commit to upfront costs when they have no guarantee the connection will ultimately happen, or how and when the RCC reimbursement will take place

Aside from the direct costs due to Scottish Water for connecting to the mains, there are other costs that are incurred as part of the connection process. These can include consultant's costs, legal costs, necessary pipe and infrastructure upgrades, among other speculative costs. Collectively, these factors create uncertainty around the total cost of connection and can make the possibility of connection prohibitive for many private supply communities.

[43] Finding the Right Solution April 2020
[44] Scottish Water's Reasonable Cost Contribution Regulations covers the maximum amount Scottish Water will contribute to a mains connection. The provision of Water and Sewerage Services (Reasonable Cost) (Sc) Regs 2011

5 Best practice examples for effective management of private water supplies

Our recently commissioned research explored how private water communities develop, cope with challenges and can best be supported in meeting the impacts of climate change.

5.1 Community private water supply schemes

Our research has shown that well-run private water communities can create opportunities to empower residents, improve financial resilience, and ensure a water supply is sustainable in the face of climate change impacts.

A community private water supply is, at its most basic, the sharing of a water supply between multiple users. The research explored different types of community schemes including formalised group schemes in Ireland and Spain and some less formalised communities in Scotland.

The National Federation of Group Water Schemes in Ireland and the association for community water schemes in Spain, COXAPO, were contacted directly due to their relevance to this research. They provided valuable insights into how other countries have grappled with water quality and quantity issues related to private water supplies.

Both the Irish and Spanish schemes have created structures and support mechanisms that include financial support, in order to help communities to tackle the complexities of water management. The benefits of these approaches included:

- Regular testing and maintenance programmes
- Costs are shared
- Knowledge and expertise is shared
- Resilience strategies are developed
- The community feels empowered

The factors which are key to the success of community private water schemes were identified in our research as:

- Engaging with the community to understand their needs
- Establishing collaborative working relationships with communities that enable the co-production of solutions
- Supporting the development and improvement of knowledge and skills
- Providing access to public funding, to remove or lessen the issue of cost as a reason for poor water quality or resilience

5 Best practice examples for effective management of private water supplies

- Standardising regulations and guidance on water treatment, testing and sustainability measures, to remove uncertainty around appropriate regimes
- Supporting the creation of formalised, community management structures, helping communities understand their roles and responsibilities
- Improving communication opportunities within communities as part of formal management processes
- Developing private water supply support that can offer expert advice and guidance to communities, on a range of issues including technical, financial, and managerial issues

Scotland does not offer any type of formalised support and guidance on how a private water supply community can be set up and run. However, interviews were carried out with nine private water supply communities from five local authorities across Scotland. The interviews sought to explore how the communities understand, operate, and adapt to the challenges of managing their private supply. While the communities noted positive experiences, these were outweighed by negative issues.

"I just keep an eye on [the supply] myself... but I'm not actually sure about some of the technical aspects... and I'm not sure what rights I have if something goes wrong. Some sort of contract, agreement of costs would help. And more of a chain of command, with responsibilities in black and white. (Domestic and estate supply, Perth and Kinross)

The research found that, on balance, community schemes can improve private water supply management and resilience. However, this needs to be accompanied by access to clear and accessible information, guidance, and support, that enables the creation of formalised community structures, roles, and responsibilities, alongside access to training and technical expertise.

It was also found that agencies and public bodies (e.g. local authorities and Scottish Water) that work in partnership with a community to co-produce solutions, can empower the community to be more self-dependent and better able to manage the supply.

5 Best practice examples for effective management of private water supplies

5.2 Energy efficiency examples and opportunities

Our recent research also explored existing energy efficiency and community energy schemes in Scotland, to assess whether features, such as advice provision and access and signposting to funding, would also work to support private water supplies.

Private water communities who took part in the research were presented with some of the energy-related concepts identified, to get their views on whether there were aspects they felt could work for them.

It was felt that a website, alongside information and support over the phone and in person (similar to Home Energy Scotland), combined with local support from a development officer (similar to Local Energy Scotland), would help to address some of the perceived gaps in knowledge and support for private water supplies.

Community energy projects are delivered using various forms of support including financial assistance, technical advice, and identifying communities most likely to benefit. The structures that have been developed in community energy projects are likely to be relevant to private water communities, as many will need to develop strategies for resilience.

Energy efficiency schemes also offer a more flexible approach to financial support by offering funding that can target a particular group of people or a particular geographical area or a type of house tenure.

6 Drivers for strategic change to private water supplies

6.1 The EU recast Drinking Water Directive

The EU has recently passed the recast Drinking Water Directive (rDWD), partly in response to a successful European Citizens' Right2Water Initiative[45]. The Initiative brought the issue of ensuring access to water for all to the European political agenda, by gathering over 1.8 million signatures from across European member states.

Alongside the 'Right2Water' initiative, the EU, the UK and Scotland have committed to the UN Sustainable Development Goals (SDG)[46]. Goal 6 relates specifically to drinking water and the commitment to:

> **"achieve universal and equitable access to safe and affordable drinking water for all'."**

The 1998 Drinking Water Directive was primarily designed to protect people from the adverse effects of drinking contaminated water, whereas the new Directive includes ensuring access to drinking water as one of its core principles. In Article 1 it lays out the objectives of the rDWD and includes::

> **"...to improve access to water intended for human consumption."**

The EU Commission has shown its commitment to the principle of access to water in its response to the original public petition:

> **'Water and sanitation are a human right! Water is a public good, not a commodity!'**[47]

The Scottish Government has committed to keep pace with EU law in devolved areas[48] and is therefore transposing the rDWD into new Scottish Regulations and policy. This presents Scotland with the opportunity to re-assess the current private water supply regulations and to take account of climate change impacts and seek to mitigate these for private water supplies.

Although the rDWD does not require member states to regulate for small private water supplies[49], it does call for efforts to be made by member states to identify and work towards ensuring access to water for all.

For that reason, CAS has reviewed the rDWD against our key recommendations and assessed the following Articles to be of significant relevance to private water supplies.

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[45] European Citizens Initiative was developed by the EU as a tool for participatory democracy. It involves citizens collecting one million signatures from at least seven different EU Member States.
[46] https://sdgs.un.org/goals
[47] https://ec.europa.eu/transparency/documents-register/detail?ref=COM(2014)177&lang=en
[48] UK Withdrawal from the European Union (Continuity) (Scotland) Act https://www.legislation.gov.uk/asp/2021/4/contents/enacted
[49] rDWD Article 3(3)(b) allows member states to choose to exempt PWS providing less than 10m3 of water per day or serving less than 50 people provided it is not part of a commercial or public activity.

6 Drivers for strategic change to private water supplies

Article 16

Of particular importance is Article 16 which requires Member States to

> **"assess the possibilities for improving access" and to "take measures that they consider necessary and appropriate to ensure that there is access to water intended for human consumption for vulnerable and marginalised groups."**

Private water supplies are expected to run out of drinking water more regularly[50]. Therefore, the objectives of the rDWD and Article 16 will, at the very least, require Scotland to assess possibilities to improve access to safe drinking water for all, and to take necessary measures to ensure access is available for vulnerable and marginalised people.

The rDWD allows for small private water supplies to be exempted from regulations,[51] this has the effect of maintaining the status quo, where private supplies remain largely unaware of the quality of their water and of any risks to their supply from climate change.

However, were Scotland to bring all private water supplies into a form of proportionate regulation, to prevent or reduce the likelihood of supplies running out of water, there would be less need for emergency assistance measures under Article 16. This approach would require regulations that enable increased awareness of water quality through testing and improved resilience planning, through climate risk assessments, alongside financial support and access to information and guidance.

Articles 7 to 10

The rDWD directs that a risk-based approach to water safety should be adopted and applied to the whole supply chain, from the catchment area, abstraction point, treatment, storage, distribution, and the domestic system. Where private water supplies have been brought within a form of regulatory control, the approach of Articles 7-10 would help to raise awareness of a local water source and any specific issues that may impact it, as well as any issues along the supply and distribution process. Using Articles 7 to 10 in relation to private water supplies, sets out:

1. to raise awareness of risks to quality and quantity of water supplies, by mapping out the whole water supply and identifying hazards
2. to apply risk management approaches that implement preventative or mitigating measures in response to identified risks, such as pollutants and water levels
3. to ensure risk assessments are regularly carried out. The rDWD calls for risk assessments at least every 6 years. The current private water supply regulations require Regulated supplies to be risk assessed every 5 years or earlier if deemed necessary. The impacts of climate change in Scotland and the emergence of risks from this, would make maintaining five yearly assessments wise

[50] Crew private water supplies and climate change
[51] Article 3 rDWD

6 Drivers for strategic change to private water supplies

Article 13

Water quality can vary throughout the year with weather and other external factors impacting the supply. Article 13 seeks to ensure that water sampling represents the varying nature of water quality and provides a more representative state of its quality.

> "Member States shall take all measures necessary to ensure that regular monitoring of the quality of water intended for human consumption is carried out... Samples of water intended for human consumption shall be taken so that they are representative of its quality throughout the year."

Creating opportunities for private water supply users and communities to access affordable sampling can raise awareness of the varying nature of some private water supplies. If coupled with independent and impartial advice and support, users and communities can be provided with the tools they need to manage their supply more effectively.

Article 17 and Annex IV

Under current Scottish regulations, Regulated private water supply owners[52] are required to provide some information to members of the public who use the private water supply. However, often visitors do not receive satisfactory information about the quality of drinking water nor suitable advance warning and opportunity to make alternative arrangements if required.

Figure 2 – from a visitor to a rural self-catering property

> "...given that we were miles from anywhere it was a bit late to make any kind of informed decision and we had no choice but to drink it."

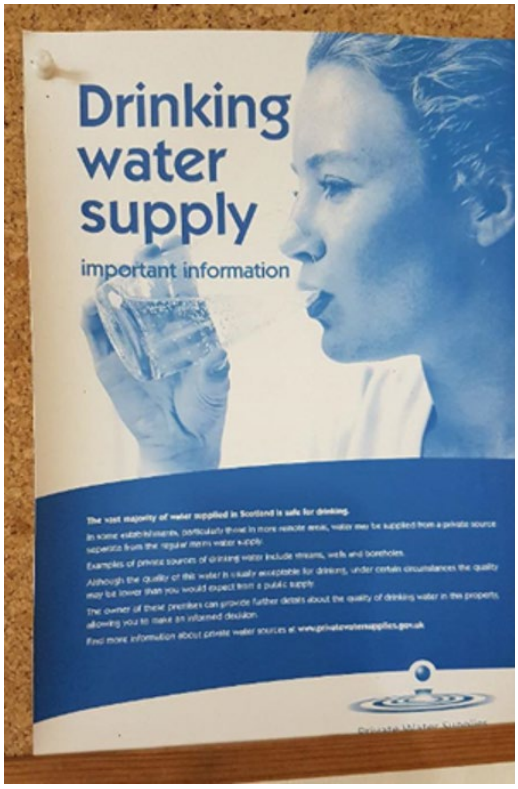

Figure 2

The rDWD also requires regulated water suppliers to make certain information available to the public. This includes information about the quality of water[53], the method of water production, the treatment and disinfection processes used, and monitoring results, including any potential dangers and advice about using water responsibly according to local conditions[54].

Extending the requirements of Article 17 to Regulated private supplies and ensuring that information is made available in a timely way allows consumers to make informed choices. The type of information to be made available should include relevant information specific to the private supply as well as encouraging responsible water use according to the local conditions.

[52] Such as holiday lets, businesses providing drinking water to the public such as a cafe and private residential tenancies.
[53] Article 17 rDWD
[53] Article 17 rDWD

6.2 Scotland's commitment to the UN's Sustainable Development Goals

Scotland has committed to the UN Sustainable Development Goals (SDG)[55], Goal 6 relates specifically to drinking water and the commitment to:

"achieve universal and equitable access to safe and affordable drinking water for all'."

Scotland recently reviewed its progress towards the Sustainable Development Goals[56] and noted that, in relation to private water supplies, further work is needed to support the resilience of many rural supplies. CAS welcomes the Scottish Government's review, however, suggests that the body of evidence and recommendations in this report also be considered within the review process. CAS research shows that for many on private water supplies, the quality as well as the availability of water are never guaranteed and the cost of funding essential improvements, treatment processes and resilience strategies can be prohibitive.

6.3 Scotland's Hydro Nation goals/commitments

The Scottish Hydro Nation strategy aims to show Scotland as a world leader in the management of water resources:

"We are committed to making Scotland a 'Hydro Nation' where water resources are developed so as to bring the maximum benefit to the Scottish economy."

Scotland's Hydro Nation strategy[57] seeks, in part, to promote internationally the knowledge and expertise in water management and governance in Scotland.

Private water supplies are a longstanding part of Scotland's water resource. Through supporting communities' access to safe drinking water, Scotland can showcase examples of good practice in relation to the effectiveness and resilience of private water supplies.

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[55] https://sdgs.un.org/goals
[56] https://www.gov.scot/publications/scotland-sustainable-development-goals-national-review-drive-action/pages/9/
[57] https://www.gov.scot/policies/water/hydro-nation/

7. Key recommendations

The six high-level recommendations below are distilled from CAS's body of evidence. CAS' evidence highlights the need for a change to the current landscape of support and regulation of private water supplies, to improve water quality and resilience in the face of climate change and for the Scottish Government to deliver against its own targets and commitments.

Recommendation 1
Collaborative, partnership-based approaches

Current methods of engagement between those on a private supply and local authorities is not necessarily improving drinking water compliance.

The support and expertise of professionals and public agencies, such as local authorities and Scottish Water, is needed to help people to improve the management of their private supply. The co-production of solutions for individual supplies, between those using them and those providing support, would lead to greater empowerment for individuals and communities to support them to successfully self-manage suitable treatment processes and actively prepare for climate change impacts.

Recommendation 2
A coordinated structure of support and advice provision

Consideration should be given by the Scottish Government to establish an independent support and advisory function for private water supply users, to deliver:

- Online advice and information, similar to the service provided by Home Energy Scotland, to homeowners and through which next level dedicated support is available (e.g. telephone and in-person advice and signposting)
- Dedicated support and advice for private water users, including provision of training and education, alongside advice and guidance on water testing, suitable treatment products, and access to funding
- Face-to-face, support for private water supply users. A review of current support by local authorities should be considered to assess their capacity to offer the required level of expert support identified, and whether an alternative solution could be more effectively delivered by an independent function, similar to Local Energy Scotland through Local Development Officers

The provision of clear messaging and signposting to support and advice sites, such as the Scottish Government's information hub, is essential to help raise awareness of their existence among the private water community. Access to services, such as online, phone and face-to-face advice, will help to improve local capacity to implement effective and resilient supply management strategies.

7. Key recommendations

Recommendation 3
Support the development and management of private water communities.

Community private water schemes can provide benefits to those that are dependent upon them, such as improved management, financial resilience, and more sustainable and safe water supplies. The Group Water Schemes in Ireland provide an example of this type of support, as well as Community Energy projects in Scotland, managed by Local Energy Scotland.

However, effective community run private water supplies require support and guidance that offers a standardised and structured approach to their creation and management.

The Scottish Government should consider providing online handbooks and toolkits containing information and guidance on creating and running a community private supply, as part of a wider package of information and advice. Further support measures could be provided by Local Authorities, if they receive the required capacity and funding to do so, or alternatively, dedicated support could be provided by an independent community body similar to Local Energy Scotland.

Recommendation 4
Provide simpler, accessible and affordable connection to the mains.

For some private water supply users, connection to the mains is the only option they have available if their supply is running out and life is becoming less sustainable on a private supply. Complex connection processes and expensive and unpredictable costs can make mains connection impossible for many on a private supply.

The Scottish Government Private Water Supplies Working Group, of which CAS is a member, has been tasked to map out and review the first-time connection process for private water supply communities and to look at how it can be simplified and made more accessible. However, beyond engaging with Scottish Water, this needs to be simplified to ensure that the start to end process is simple and easy to follow to support successful outcomes for private water communities.

Consideration should be given to providing improved financial support to help private supply users meet the costs of mains connection, particularly when it is their only option, including:

- Financial assistance to assess the feasibility of mains connection
- Affordable access to specialised on-the-ground support and technical advice, to assess and facilitate a mains connection project. This should include consultants, legal costs, and other project management overheads
- Financial support in the form of grants and schemes available to those most in need, such as low-income households, vulnerable households, supplies at risk of drought and supplies where the cost of treating the water is too high or even untreatable

7. Key recommendations

Recommendation 5
Increase the scope of regulatory requirements for testing, monitoring and risk assessments

The principles of the rDWD require countries to take actions that ensure access to safe drinking water for all. The transposition of the rDWD by Scotland provides an opportunity for the DWQR to review the current risk assessment, monitoring and testing requirements, due to their ability to support awareness of water quality and quantity issues in the face of climate change.

Risk assessments and water testing can be made more accessible and comprehensible by providing self-risk assessment toolkits and follow up advice and guidance, as well as through universal service provision of affordable risk assessment and testing services.

However, further consideration by the Scottish Government is required as to the role of local authorities in the support and regulation of private water supplies to ensure the process remains fit for the future. Thought should be given as to which other bodies could fulfil aspects of the role more consistently and successfully. The support role, for example, could be more effectively delivered by Scottish Water, as the specialists in water management and monitoring, alongside an independent and impartial advice body, similar to Home Energy Scotland and Local Energy Scotland.

Recommendation 6
Improve access to suitable funding, such as grants, loans and schemes to support the testing, maintenance and management of private water supplies.

The costs of maintaining a private water supply, installing new treatment processes, or connecting to the public mains, have been found to be prohibitively high for many. The current grant system does not always adequately contribute to the cost of managing a private supply to a compliant standard, nor does it support preparing for climate change impacts, such as supplies running dry.

The Scottish Government should consider undertaking a full review of the current grant system to ensure additional financial support is available that reflects the capacity of users to manage a supply, including:

- Low-income household's capacity to manage the ongoing costs or installation of a suitable treatment process
- Whether disability or vulnerability is impacting ability to manage the treatment processes required
- Climate change impacts out of the control of private supply users, such as supplies running dry and suitable alternatives being complex and expensive

Consideration should also be given to providing affordable access to skilled professionals and financial support for connection to mains water.

CAS welcomes consideration of the suitability of energy efficiency and community energy schemes for private water supply users, in order to maximise opportunities to improve financial support.

8. Concluding remarks

Current regulation and levels of support for private water supplies has led to poor water safety compliance and many supplies unprepared for climate change impacts that risk their supplies running dry. This situation should no longer be considered acceptable in 2021, as Scotland commits to ensuring everyone has access to safe drinking water[58].

Without significant change to the current landscape, the low water quality compliance rates and climate change vulnerabilities of private water supplies are unlikely to improve, and the disparity between public and private water supplies, in terms of reliability and quality, will remain.

CAS and other water sector bodies have worked collaboratively and sought to identify and address some of the issues impacting private water supplies. Many of the issues identified align with CAS's research findings: that non-compliance to water quality standards is related to the complexity of managing a private supply, the lack of understanding about risks, the unaffordability of many solutions, and that advice and support is not meeting the needs of users.

CAS recommends that the current regulations, grant funding system and information and support mechanisms are reviewed and updated to meet the current challenges faced by private water supplies across Scotland. This will more effectively ensure all consumers have access to safe drinking water and additionally, will build resilience strategies to better protect communities from the impacts of climate change.

[58] A principle of the EU recast Drinking Water Directive and the UN Sustainable Development Goals

Appendix

Appendix 1a: High level consumer principles viewed in the context of private water supplies

Consumer Principles

CAS Principles

Access: Access to a secure, resilient and wholesome water supply as well as affordable treatment solutions that can treat water to a compliant standard.

Choice: The right to have the permanent choice of a properly managed water supply or to choose to retain the existing supply.

Safety: A water supply that is not a risk to health.

Information: Appropriate user accessible information about how to effectively treat and manage a water supply, as well as access to water test results.

Fairness: A safe and adequate supply of drinking water aligned with that provided to customers on the public supply

Representation: Bring into existence / confirm a consumer body responsible for representing the interests of private water consumers, until that is no longer necessary.

Redress: Access to consumer redress when treatment products or professional services go wrong.

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