



Engineering and  
Physical Sciences  
Research Council



Decentralised  
**Water**  
Technologies

# Decentralised Water Technologies

**LOCAL AUTHORITIES PRIVATE WATER SUPPLIES WORKSHOP**



# Local Authorities Private Water Supplies Workshop

**Workshop aim:** To further understand the challenges associated with existing decentralised technologies, primarily private water supplies, and consider opportunities for future governance.

## Workshop agenda:

- Welcome and introduction by Dr Jill Robbie
- Overview of technologies being developed on the EPSRC Decentralised Water Technologies project by Professor Bill Sloan
- Outline of work conducted by the policy and governance work package by Dr Elizabeth Lawson
- Group discussion on existing challenges with private water supplies led by Dr Jill Robbie
- Group discussion on how decentralised water technologies can be governed in a way that combats challenges including funding, maintenance, and community management, led by Dr Jill Robbie.

**Date:** Thursday 16th February 2023

**Time:** 10.00-13.00

**Location:** Online - Microsoft Teams

**Number of attendees:** 50

**Organisations in attendance:** Argyll and Bute Council, Dumfries and Galloway Council, Aberdeen City Council, South Lanarkshire Council, East Lothian Council, Midlothian Council, The City of Edinburgh Council, Comhairle nan Eilean Siar, Aberdeenshire Council, East Renfrewshire Council, Fife Council, North Lanarkshire Council, Orkney Islands Council, Scottish Borders Council, The Highland Council, South Norfolk Council, University of Glasgow, Newcastle University.

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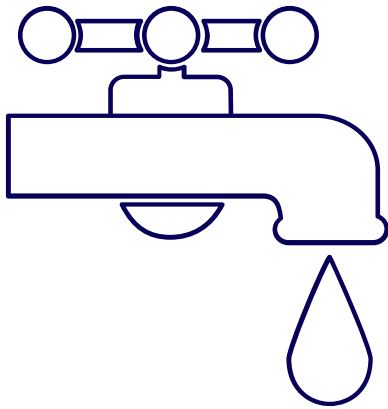
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# Table of Contents

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1. INTRODUCTION	4
2. WORKSHOP OVERVIEW	4
3. IDENTIFIED CHALLENGES	5
3.1 Education and Engagement	5
3.2 Responsibility and Management	6
3.3 Geography	7
3.4 Administrative processes	8
4. OPPORTUNITIES	8
5. CONCLUDING REMARKS	9

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The Decentralised Water Technologies project is a collaboration between:



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# 1. INTRODUCTION

In Scotland, private water supplies (PWS) refer to drinking water supplies that are not connected to the centralised water supply network, and are not the responsibility of Scottish Water. PWS are the responsibility of their owners and users, and local authorities also have certain obligations in relation to these supplies. In 2021, local authorities reported to the Drinking Water Quality Regulator for Scotland (DWQR) that there were 22,459 PWS in Scotland, supplying approximately 185,850 people. Of these supplies, 4,417 were categorised as Regulated (previously 'Type A'), and 18,042 Exempt (previously 'Type B')<sup>1</sup>. Regulated supplies consist of those used in a commercial or public activity irrespective of size, as well as large domestic supplies. Exempt, are smaller domestic supplies. Regulated supplies are governed by The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017, with Exempt supplies governed by The Private Water Supplies (Scotland) Regulations 2006. Local authorities in Scotland are responsible for maintaining a register of all PWS, conducting risk assessments and annual sampling of Regulated supplies, and providing advice to PWS owners and users.

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## 2. WORKSHOP OVERVIEW

The EPSRC Decentralised Water Technologies research project is led by the University of Glasgow, and funded by the UKRI Engineering and Physical Sciences Research Council (EPSRC)<sup>2</sup>. The workshop was held by researchers who are focused on the policy and governance aspects of decentralised water technologies. As PWS are decentralised technologies, this workshop provided researchers with an opportunity to directly discuss the challenges and opportunities of existing decentralised water technologies in Scotland with environmental health officers (EHOs) of local authorities. EHOs deal with PWS and their owners/users on a daily basis. The workshop was conducted online to ensure a high rate of attendance from local authorities across Scotland.

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<sup>1</sup> DWQR, "Private Water Supplies Drinking Water Quality in Scotland 2021," 2022. Accessed: April. 13, 2023. [Online]. Available: <https://dwqr.scot/media/tvafu2kt/pws-annual-report-2021.pdf>

<sup>2</sup> Decentralised Water Technologies, (EP/V030515/1), <https://www.offgridwater.org.uk/>

## 3. IDENTIFIED CHALLENGES

The challenges associated with existing decentralised technologies that were identified in the workshop can be categorised by four main themes, which are further discussed below:

- Education and Engagement
- Responsibility and management
- Geography
- Administrative processes

### 3.1 Education and Engagement

Many of the challenges identified with education and engagement during the workshop, were centred around an inherent lack of knowledge and understanding by multiple different stakeholders. With one participant repeatedly stating that ‘education is the biggest problem’. This is with regards to both the technology, physical operation and maintenance of PWS, as well as risks posed by untreated water.

Multiple participants commented on a general lack of awareness of the requirements of domestic PWS (Exempt supplies), with regards to regular management and maintenance practices, by users themselves. Examples of this included lack of understanding of the associated risks of poor water quality and why even basic treatment of supply is required. Participants from local authorities across Scotland, reported a general feeling of a lack of need to engage with authorities over PWS from many users, as ‘they have always drunk the water, and they are fine’. Additionally, some users believe that local authorities only encourage engagement with the sampling and risk assessment process so that they can charge users, and make money for the local authority. Issues with engagement were found with both Regulated and Exempt supplies across Scotland.

Discussions on engagement with landlords with properties on PWS was mixed, with some reports of landlords being unwilling to engage in the regulatory process. However, some participants reported that, once landlords realised the implications associated with a lack of action, many wanted to ‘get it right’.

Additional challenges regarding levels of user understanding related to the source and supply of water itself. There was an agreement that a large number of users do not know the location of their water source or treatment infrastructure. Many users also do not know the source water of their supply, e.g., surface water or groundwater. It was suggested that this could have additional consequences, when companies then supply users with a form of treatment technology that is unsuitable for their source type, leaving users with a supply of poor quality.

Issues with regards to the education of contractors was also raised as a challenge. Participants relayed many examples of how users had gone to the effort of purchasing new treatment systems, only for contractors to install the systems incorrectly. One participant stated that for the last three sites they had visited, the UV treatment systems had been installed upside down. As many users do not have a working knowledge of treatment systems, any mistakes made by contractors may not be picked up on for extended periods of time. One participant commented that when treatment systems are fitted, users are not always given a copy of the user manual, with many companies not providing such information online. This creates additional barriers to the education and awareness of users on their treatment systems.

It was stated that the same issue with a lack of basic knowledge of treatment technologies had resulted in some users waiting months for a contractor to visit to change a UV bulb, which is something designed for users to be able to do themselves.

## **3.2 Responsibility and Management**

Challenges with regards to responsibility and management were closely related to a lack of education and understanding of systems and processes. It was reported that many users do not understand who is responsible for PWS. Multiple participants stated that one of the biggest challenges they face is to explain that users must take responsibility for their own supply and maintenance. Participants noted that one of the outcomes of the COVID-19 pandemic, and the increase in number of people moving to rural areas, was a larger number of PWS owners who expected the local authority to take ownership of the management of their supply. Additionally, users regularly contact local authorities with complex questions regarding specific technicalities of treatment systems, which EHOs are not in a position to answer. Again, EHOs are required to explain to users that they do not have technical knowledge of all available treatment systems, and that it is the responsibility of users to contact suppliers to provide them with the answers they require.

Participants repeatedly outlined issues with owners spending a lot of time and money initially implementing and upgrading treatment systems, but then not having any maintenance or management plan in place, which in turn negated any original efforts and intentions. In cases where users do try to actively maintain their systems, participants reported that people may use local trades people that they know, rather than those who are qualified or trained in managing PWS.

With regards to sources of supply, challenges outlined related to many users having a source of supply located on land owned or managed by someone else. This has the potential to greatly impact water quality and source management practices, with participants holding the view that users just have to 'hope' land managers are aware of water quality implications.

### **3.3 Geography**

Geography was often cited as a challenge by participants, with regards to both EHOs accessing sites for testing and carrying out risk assessments, and PWS owners and users being able to get contractors and suppliers to carry out maintenance or installation of systems. Such challenges were repeatedly raised with regards to rural communities on both the Scottish mainland and islands. Participants provided examples where it can take two months for a contractor to visit an island community only for them to get there and realise that they cannot fix the issue, or do not have the required part, which resulted in the whole process starting again.

Seasonal variations in weather and land use practices were outlined as significant challenges, with regards to both water quality and treatment options available to owners and users. Participants referred to the complexities of treatment requirements with examples provided of how users can have gone through the process of finding the appropriate form of treatment for their supply, with significant investment of time and money, only for this to suddenly change due to a change in land use or environmental conditions that has impacted the quality of source water. Participants also highlighted challenges with different treatment requirements by neighbours, and the resulting lack of consistency with advice given by EHOs. Here, participants emphasised the importance written records, to help users learn patterns of treatment requirements.

Local authorities close to the central belt noted issues with a lack of peer support for PWS owners/ users in their areas due to a small number of supplies. It was reported that users in these areas struggle to find contractors that are able to work with PWS due to a lack of business need.

### **3.4 Administrative processes**

Large parts of the discussion were attributed to challenges with planning applications, house sales, and new builds with PWS. Participants noted that an increasing number of properties in rural areas were now changing hands, including those that have only been viewed online. It was stated that in some cases, there is a good level of knowledge on the PWS held by the user or operator of the supply, which can disappear when the property ownership changes. In these cases, local knowledge of the supply is lost as well as a personal contact point for the local authority.

Participants were of the view that a greater emphasis on PWS in home reports may raise awareness of additional requirements amongst new buyers. There were examples of house sales being delayed due to failure to carry out required tests on water supply. The level of contact EHOs had with the planning department in their local authority ranged greatly between local authorities. Some participants reported being heavily involved in any planning applications that were submitted, with others outlining little knowledge of new properties until the owner had moved in and called them to ask where they get their water from.

Additional challenges raised relating to administration issues, included a lack of grant funding available for mains connections in areas where such connection is an option, and the lack of increases to the grant funding available for PWS. Multiple participants highlighted that the £800 available via the PWS grant system was no longer fit for purpose when rates of inflation are taken into account. Further issues raised with regard to cost to the user included concerns over the amount of money invested by owners/ users in a new treatment system, only for it to not make a difference, as well as recent changes to operating requirements due to the cost of living crisis. Participants provided examples of users switching off treatment systems altogether as they can no longer afford to pay for the electricity they require.

A lack of minimum standards in relation to treatment technologies and systems, as well as contractors who install and maintain systems, was also raised as an existing challenge. Participants suggested the introduction of required training for contractors working with PWS. Owners and users would then be aware of who was qualified to work on their system and who was not. It was suggested that if there was guidance available to users on the required specification of treatment technologies for a range of flow rates and source types, this could help ensure users buy the right treatment system for their supply.

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## 4. OPPORTUNITIES

Along with the challenges outlined, participants also highlighted opportunities for improvements to the governance of existing decentralised water supplies in Scotland.

Suggestions included the development and introduction of maintenance plans for users. These would be designed to help users track maintenance activities e.g., cleaning of screens and filters, and provide reminders for when new parts, such as UV light bulbs, should be purchased and replaced. The maintenance plans would also contain information on what actions owners/users are able to carry out themselves, and what would require the help of a trained contractor.

The introduction of a national minimum standard for treatment technologies was also suggested as an opportunity for improvement to private water supplies in Scotland. It was suggested that this would help users to understand the type and size of treatment system required for their supply. The introduction of required standards for contractors who install and maintain private water systems, was also suggested as an opportunity. Participants stated that a nationwide form of accreditation would help owners/users of PWS identify contractors who were qualified to work on PWS systems and technologies.

A further recommendation for opportunities was the suggestion for a greater emphasis to be placed on PWS and sources of water supply in home reports. Participants hoped that this would highlight the differences in owner/user requirements when buying property with a PWS in comparison to a public water supply.



### **Box 1: Community PWS example**

During the workshop, a community council led, managed and operated private water scheme, located on Papa Westray in the Orkney Isles, was provided as an example. The water supply system serves a total of 68 properties on the island, including the hostel, airport and school. The scheme was originally established in 2000, after the community was advised that Scottish Water had no plans for a linked system on the island. Since the projects inception, the system has undergone multiple stages of development, financed through community development funds, which has enabled more houses located across the island to join<sup>3</sup>.

The scheme is supplied by a number of linked wells, and has a central filter based treatment system and storage tank, with multiple smaller storage tanks across the island. As the system supplies more than a population of 50, it is considered a regulated supply. The Environmental Health team at Orkney Islands Council sample the supply four times a year. All water that is supplied is metered and charged at a price stated to be 'competitive with the public supply in other parts of Orkney'. The revenue raised allows for daily management of the system through the employment of a part-time water attendant who lives on the island.

The scheme provides an example of an alternative form of governance of private water supplies in Scotland, developed by and for the community and highlights opportunities with regards to the future management of supplies.

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## **5. CONCLUDING REMARKS**

Issues highlighted by participants throughout the workshop outlined the range of challenges that currently exist with regards to the operation and governance of PWS in Scotland. A lack of awareness and knowledge on PWS by owners, users and contractors, as well as confusion over where responsibility lies and with who, highlight how current governance arrangements for these systems are not functioning effectively. Physical location and access to supplies was again noted as a barrier to effective management of PWS, with a lack of administrative processes also outlined as an issue. The challenges outlined must be considered in future governance regimes for decentralised technologies.

Although participants repeatedly highlighted issues with education and knowledge of supplies and treatment by owners/users, it was emphasised that PWS and their users should not be demonised. Despite current challenges, participants stated that PWS are here to stay, and any changes to policy or governance practices cannot further impact users and the development of Scottish rural spaces. Instead, opportunities must be developed with PWS communities to help address the complexity of issues faced, whilst simultaneously reducing the burdens not felt by those on public water supply in Scotland.

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<sup>3</sup>Orkney Isles Council, ""Commendable" Papa Westray private water scheme to be upgraded thanks to Council grant". 2021. Accessed: April 17, 2023. [Online]. Available <https://www.orkney.gov.uk/OIC-News/Commendable-Papa-Westray-private-water-scheme-to-be-upgraded-thanks-to-Council-grant.htm>

