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Guidance: Designing Scotland's Legislative and Policy Framework for Water & Wastewater

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Decentralised Water Technologies

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Introduction and purpose of this Guidance

Water and the management of wastewater will be amongst the defining agendas of the 2026-2031 Scottish Parliament session. Policy areas from economic development to land management and from energy to population health, depend on accessible, sufficient, affordable and clean water, and on our ability to manage wastewater effectively.

Scotland is often seen as a water-rich country, but pressures on its water and wastewater systems are impacting the environment as well as thousands of households, communities, and businesses. These pressures are intensified by factors including the climate emergency, demographic change and ageing infrastructure.

Addressing them requires **an integrated legislative and policy framework which brings together water resource management[1] with water services planning[2]** at national, regional and local levels, taking into account both mains networks, i.e. infrastructure and services owned and managed by Scottish Water, and decentralised 'private' systems, i.e. water and wastewater systems owned and managed by individual households, businesses and communities.

This guidance, produced by a working group of academics and community, public sector and industry experts, supports the design of an integrated legislative and policy framework. It includes five Sections:

- **Sections 1 and 2** cover the terminology of water and wastewater policy, and help identify the right partners in the design and delivery of policy.
- **Section 3** provides an overview of Scotland' water and wastewater systems, including the pressures and opportunities that face them.
- **Section 4** makes the case for, and sets out the components of, an integrated legislative and policy framework for Scotland's water and wastewater systems. It also offers a structured checklist, linked to the framework, designed to test whether proposed new legislation or policy supports integration, closes gaps and recognises how different parts of the system interact.
- **Section 5** offers examples of how to 'waterproof' different policy areas by identifying where water resource management and water services planning intersect with them.

The guidance comes with an offer of collaboration. If you would like an informal opportunity to discuss your policy interests further, please get in touch with Mia Lalanne: mia@sra.scot

[1] The strategic process of monitoring and protecting Scotland's natural water resources with a strong focus on positive environmental outcomes, and balancing these with economic and public needs.

[2] The strategic process of designing and delivering water services such as drinking water, wastewater treatment, drainage and flood prevention

Section 1: Glossary of water & wastewater terms

We are using the following terms throughout the guidance:

Water Resources

Water resources: Natural features such as rivers, lochs, reservoirs and groundwater.

Water catchment: An above-ground area where all surface water (from rain or melting snow) drains into a single body of surface water, like a river, loch, stream, or reservoir. Catchment scales can vary, from a whole river basin to a much smaller area at stream level.

Groundwater: Water stored in geological strata (for example in rocks and sediment) below the water table is called groundwater. Groundwater may rise to the surface through naturally occurring springs, or be abstracted using boreholes and wells. Groundwater may also naturally flow into rivers (called base flow) and support wetlands, forming part of local ecosystems.

Aquifer: A below-ground layer of water-bearing permeable rock, gravel, sand, or silt which acts as a filter and store of groundwater. An **aquifer recharge zone** is an area of land where water moves downward from the surface to refill an underground aquifer. It is the crucial "entry point" where surface water transforms into groundwater.

Policy Intersection

Water resource management: The strategic process of monitoring and protecting Scotland's natural water resources with a strong focus on positive environmental outcomes, and balancing these with economic and public needs.

Water services planning: The strategic process of designing and delivering water services such as drinking water, wastewater treatment, drainage and flood prevention.

Systems and infrastructure

Wastewater: Any water that has been used and changed by human activities, including dirty water and sewage water from homes and businesses, liquid industrial waste and stormwater that runs off streets and buildings.

Water and wastewater systems: The networks of natural and engineered features used in the collection, treatment, storage, and distribution of water and wastewater. Engineered features are frequently referred to as **water and wastewater infrastructure** and can be mains or privately owned.

Water sector (also called the water industry): The network of public and private bodies including private system owners, supply chain companies, and regulators that manage the collection,

treatment, storage, distribution, risk management and quality control of water and wastewater services.

Water services: Services provided by the industry including collection, treatment, supply, regulation, drainage and customer or public support.

Mains water: The public water supply system and services managed by the national utility company - Scottish Water - either directly, or via a licensed retail water supplier such as Business Stream.

Mains wastewater (mains sewage and drainage): The public sewage system and services managed by the national utility company, Scottish Water.

Private water supplies (PWS): Any water supply that is decentralised, i.e. not connected to the mains. The owner or operator of the property is responsible for the PWS' maintenance and safety and for registering it with the local authority. There are **two types** of PWS which are subject to different regulatory regimes:

a. Regulated supplies include those serving 50 or more people, or producing at least 10m^3 water per day, or forming part of commercial activity, such as community buildings, holiday lets, rentals, or distilleries. Property owners are required to register those supplies with their local authority and arrange water quality testing on an annual basis.

b. Exempt / Type B supplies are small domestic supplies which do not fall under the categories above. It is estimated 78% of private supplies are in this category, but the exact number is unknown, as property owners are not required to register those supplies with their local authority.

Private wastewater systems (PWWS): Any sewage treatment installation which is decentralised, i.e. not connected to a publicly owned wastewater treatment system. The property owner(s) are entirely responsible for the system's maintenance, safety, and performance. Septic tanks and other small private sewerage systems must be registered and authorised with SEPA. However, many are not authorised because they were installed before the licensing regime was introduced in 2006. Accurate data relies on voluntary registration by owners and due diligence during house sales.

Water services regulation: The legal oversight, including economic regulation, environmental regulation and customer protection associated with public and private water supply and wastewater treatment systems.

Water legislation: the range of Acts, regulations, directions and orders relating to Scotland's water system and water services.

Water Matters

Water security: Water security is defined by the United Nations as the reliable availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems, and production, coupled with an acceptable level of water-related risks to people, environments, and economies.

Water poverty: Water poverty is the lack of access to adequate, safe, and affordable water to meet

basic human needs such as drinking, cooking, and sanitation. According to the Scottish Government and Consumer Scotland, a household is generally considered to be in water poverty if it must spend more than 3% of its total disposable income on water and sewerage bills.

Water scarcity: Water scarcity is when the demand for fresh water is greater than the supply that is available. It means there is not enough clean water for daily human needs and the needs of farming, business and the environment.

Flooding: An overflow of water onto normally dry land, usually caused by heavy rain, rising rivers, or storm surges.

Water pollution: Water pollution is the contamination of water bodies such as lakes, rivers, oceans, and groundwater by harmful substances like chemicals, waste, or microorganisms. This makes the water unsafe for humans and/or damages nature.

Tolerable Standards: The legal minimum repair and condition level that every home in Scotland must meet to be fit for people to live in, regardless of whether it is rented or owner-occupied. A property falling below this benchmark is considered legally unfit for human habitation. A stipulation to meet tolerable standards is that a home must have an adequate piped supply of drinking water, a sink with hot and cold water, a private indoor toilet, and a fixed bath or shower plus a wash-hand basin with hot and cold water.

Section 2: Scotland's water sector bodies, institutions and networks

Public Sector

Scottish Government: The Scottish Government sets the overarching policy, legal, and strategic framework for managing Scotland's water resources and public water services.

Water Industry Commission for Scotland (WICS)**:** The economic regulator. It sets limits on what Scottish Water can charge customers and ensures the utility operates at the "lowest reasonable overall cost".

Drinking Water Quality Regulator (DWQR)**:** An independent body that monitors the safety and quality of public drinking water to protect public health.

Scottish Environmental Protection Agency (SEPA)**:** The environmental regulator that sets standards for water abstraction and wastewater discharge to protect Scotland's lochs and rivers.

Consumer Scotland**:** A statutory body that represents the interests of water consumers and campaigns for fair treatment.

Local Authorities: Local authorities have a range of decision-making and regulatory responsibilities for managing water and wastewater systems within their boundaries including through:

- Land use planning – approving changes in land use, implementing Scotland's National Planning Framework 4
- Building Standards – approving water supply, drainage and sewage/sanitation designs for developments
- Private water supplies – Enforcing regulatory standards under the Private Water Supplies (Scotland) Regulations and issuing improvement notices or grants to owners
- Environmental and public health – investigating local environmental complaints and coastal pollution (to note that SEPA has statutory responsibility for inland waterway pollution)
- Flooding and surface water management – local roads drainage, watercourse maintenance and flood risk planning

Scottish Forestry: The Scottish Government agency responsible for forestry policy, support and regulations.

Public Health Scotland: Scotland's agency for public health delivers various programmes relating to water health and safety, including coordinating hazard responses (such as lead or cyanobacteria contamination) and collaborating on national initiatives like Scotland's Wastewater Monitoring Programme for pandemic preparedness.

Environmental Standards Scotland: A public body set up to ensure the effectiveness of environmental law, and prevent enforcement gaps arising from the UK leaving the European Union.

Scottish Water**:** A public corporation that provides water and sewerage services to 2.62 million households and over 150,000 businesses. It operates as the "wholesaler" for the entire country.

Private Sector

Retailers ("Licensed Providers"): Private or independent companies that sell water and wastewater services to non-domestic customers. The Central Marketing Agency (CMA) supports the competitive arrangements in the Scottish water industry, operating the computer systems that run the Market.

Academic

Scotland's Centre of Expertise for Waters (CREW): An academic partnership which connects the Scottish research community with policymakers, environmental and water industry professionals to inform and steer water and climate policy.

Hydro Nation Scholars: An academic partnership which has supported PhD-level research into developing the economic, environmental and social value of Scotland's water resources.

Hydro Nation Chair (HNC)**:** Established in 2021 and hosted at the University of Stirling, this initiative focuses on industry-academia collaboration, and driving research and innovation to help Scottish Water achieve net-zero carbon emissions by 2040.

Many academic institutions have water centres including Dundee University's Centre for Water Law, Policy and Science and Strathclyde University's Centre for Water, Environment, Sustainability & Public Health.

Civil Society

Community Resilience Groups: Organised groups of local volunteers who prepare for, respond to, and help local recovery from emergencies such as public health emergencies or severe weather. They are frequently linked to local bodies such as Community Councils or Development Trusts, and supported by regional partnerships such as Highland Adapts or Climate Ready Tayside.

Scottish Flood Forum: A charity which provides advice on flooding and has established a network of community resilience groups in flood risk areas.

Coastal Communities Network: A community-led network comprising local groups committed to the preservation and safeguarding of Scotland's coastal and marine environments.

Scottish Rural Action: Scottish Rural Action administers an online information hub and network forum for owners of private water supply and wastewater systems across Scotland. The hub and network was developed as a partnership with Newcastle University.

Surfers Against Sewage Scotland: The Scottish branch of the UK-wide team of ocean activists taking collective action to restore the ocean.

Environmental Rights Centre for Scotland: A charity which increases the capacity and opportunity of individuals, community groups and organisations to promote environmental justice at neighbourhood, local authority and national levels.

Section 3: Overview of Scotland's water and wastewater systems

Section 3 describes the context of Scotland's water and wastewater systems, including the current legal and policy framework, and the place-based nature of these systems.

It goes on to describe the pressures facing the current system and the opportunities presented through consolidating the current legal and policy framework.

The Section builds on the guest blogs written by Dr Elizabeth Lawson as part of the SPICe Academic Fellowship Scheme.

3.1 The current legislative and policy framework

Scotland has a complex legal and policy framework for water and wastewater which has been built up in layers. It is defined by primary legislation including the Sewerage (Scotland) Act 1968 (updated by the Water Environment and Water Services (Scotland) Act 2003), and the Water (Scotland) Act 1980; by European Union directives that are being revisited following the UK's exit; and by orders, regulations, and guidance notes issued by different water sector bodies and institutions, as well as by policy areas which intersect with water policy, such as public health and the environment.

In terms of water services, Scottish Water was established by The Water Industry (Scotland) Act 2002. Subsequently, the Water Services etc. (Scotland) Act 2005 amended the 2002 Act to establish the governance and regulatory framework of the water sector as we know it today. Over the years, Scotland's water sector has existed in many different forms, with duties and responsibilities moving between a range of public bodies and institutions.

Overall, the current framework focuses on the management of water and wastewater services such as drinking water supply, wastewater treatment and rainwater drainage, but leaves a gap in the management of water resources. The Water Environment and Water Services (Scotland) Act 2003 focuses specifically on river basin catchments, and the Water Resources (Scotland) Act 2013, which aims to underpin the protection and economic potential of Scotland's water resources, only places a general duty on Ministers to monitor water resources. No legislation exists which requires a national water resource plan, or which offers a framework for forecasting changing needs and demand, or for managing the continued availability of water across different regions and places.

Other gaps in the current framework include:

- As duties and responsibilities for various aspects of water and wastewater have moved between public bodies and institutions, this has given rise to a lack of clarity in the responsibility for delivery and management of infrastructure such as drainage and blue-green infrastructure.
- With respect to the management of water resources, groundwater, rainwater, and surface water runoff have been overlooked as strategic resources.
- With respect to the delivery of services, there are inadequate mechanisms to meet the needs of private water supplies and private wastewater systems owners.

A summary of the main legislation can be found in the table below:

Legislation	Summary
The Sewerage (Scotland) Act 1968	Defines powers and duties associated with sewerage, surface water and trade effluent in Scotland. Has been extensively amended since introduction.
The Water (Scotland) Act 1980	Defines most of the powers and duties associated with supplying drinking water in Scotland. Has been heavily amended since introduction.
The Urban Waste Water Treatment (Scotland) Regulations 1994	Provides requirements for how wastewater is collected and treated.
Water Industry (Scotland) Act 2002	Defines the structure of the Scottish water industry following the merging of the three previously existing authorities. Set up Scottish Water, the Drinking Water Quality Regulator (DWQR) and the Customer Consultation Panels.
Water Environment and Water Services (Scotland) Act 2003	Makes provision for protection of the water environment and amends the Sewerage (Scotland) Act 1968 and the Water (Scotland) Act 1980 in relation to the provision of water and sewerage services. Introduced the regulation of controlled activities to protect the water environment and amended the 1968 Act to include Sustainable Urban Drainage Systems.
The Water Services etc.(Scotland) Act 2005	Introduced the concept of the regulatory period, made modifications to the Water Industry Commission for Scotland (WICS) with the aim of improving economic regulation. Improved customer representation and retail competition for non-domestic customers.
The Private Water Supplies (Scotland) Regulations 2006	The main regulations for governing the quality of water supplied by private supplies. Specify the standards of drinking water quality to be met by private water supplies.
The Private Water Supplies (Grants) (Scotland) Regulations 2006	Provides powers and duties on Scottish Ministers and local authorities to provide grants to eligible persons to improve their private water supply or to provide themselves with a private water supply.
Water Environment (Controlled Activities) (Scotland) Regulations 2011	Provide a regulatory framework for controlling activities which could have an adverse effect on Scotland's water environment.
The Pollution Prevention and Control (Scotland) Regulations 2012	Apply an integrated environmental approach to the regulation of certain industrial activities to control pollution to air, water (including discharges to sewer) and land.
The Water Resources (Scotland) Act 2013	Makes it a statutory duty for Ministers to take reasonable steps as they consider appropriate for the purpose of ensuring the development of Scotland's water resources.

The Public Water Supplies (Scotland) Regulations 2014 (as amended)	Implement drinking water standards necessary to deliver the requirements of Council Directive 98/83/EC on the quality of water intended for human consumption ("the Drinking Water Directive") with the aim to protect human health from the adverse effects of any contamination of water supplied by Scottish Water for human consumption.
The Provision of Water and Sewerage Services (Reasonable Cost) (Scotland) Regulations 2015	Set out the maximum that Scottish Water will pay to developers for extensions to connect to public water and sewerage infrastructure network.
The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017	Govern the quality of water supplies to private water supplies which are subject to the provisions of European Council Directive 98/83/EC.
The Environmental Authorisations (Scotland) Regulations 2018	Bring together all the permissioning arrangements for Scottish Environment Protection Agency's (SEPA's) four main regulatory regimes (water, waste, radioactive substances and Pollution Prevention and Control) into an integrated structure and under a single standardised procedure.
The Water and Sewerage Services to Dwellings (Collection of Unmetered Charges by Local Authority) (Scotland) Order 2020	Makes each local authority responsible for the collection of unmetered charges payable for water and sewerage services which are provided by Scottish Water. Also provides for charges based on council tax bands.
The Public Water Supplies (Scotland) Amendment Regulations 2022	Amended the Public Water Supplies (Scotland) Regulations 2014 to take on the revised standards in the recast EU Drinking Water Directive.
The Environmental Authorisations (Scotland) Amendment Regulations 2025	Amends the Environmental Authorisations (Scotland) Regulations 2018 to extend the scope of regulatory regime for environmental authorisations from radioactive substances to the regulation of water, waste, industrial and other emissions activities. Replaces the existing separate regimes for the environmental regulation of those activities

3.2 Place-based systems and the rural-urban divide

Being able to forecast changing needs and to manage both water and wastewater in a place-sensitive way is critical. Scotland's diverse climate, geology and ecosystems, including peatland, farmland and forests; and its pattern of population distribution between rural and urban areas, give rise to place-based variations in the availability of water and the best ways to manage it.

The west coast sees substantially more rainfall than the east coast; and while the north mainland is characterised by large lochs, with Loch Ness alone containing more water than all the lakes in England and Wales combined, central and southern areas have Scotland's highest yielding aquifers – layers of porous rock and sediment that store groundwater across vast areas.

Water infrastructure and services also vary by place:

- Almost 100% of Scotland's urban households and businesses are on mains water, with services provided by the publicly owned corporation, Scottish Water.
- By contrast, according to the DWQR, over 190,000 people in rural Scotland rely on private water supplies drawing on boreholes, springs, rainwater harvesting and other sources. This amounts to 21% of the rural population (based on census estimates of 930,000). The figures do not count people who are using supplies that have not been registered with a local authority, nor do they count visitors and tourists.
- Around 5% of properties on Skye, and 6% of properties in Argyll & Bute are dependent on private water supplies.
- Many islands, like Lismore in Argyll & Bute, and rural communities like Knoydart in the Highlands, are entirely dependent on private water supplies.

The rural-urban divide is similarly apparent when considering wastewater infrastructure and services:

- Virtually all urban households and businesses in Scotland are on mains wastewater (sewage) networks serviced by Scottish Water. Local authorities and Scottish Water have specific roles to manage drainage and prevent floods in cities and urban centres.
- In rural areas, data from SEPA suggests that 169,000 households (circa 39% of the total 438,000 rural housing stock) as well as thousands of businesses rely on decentralised private wastewater systems such as septic tanks and small treatment plants.
- Older housing stock in coastal communities may have no wastewater systems, with domestic wastewater discharged untreated into the sea.

3.3 Pressures on Scotland's water and wastewater systems

Scotland's water systems are under acute and escalating pressures as a result of demographic changes, the climate emergency, changing uses of land, the cost of infrastructure and other factors. We list seven pressures below:

3.3.1 Extreme weather and water scarcity

3.3.2 Changing patterns of demand

3.3.3 Land use and development

3.3.4 Sewer flooding and pollution

3.3.5 Costs of mains water and wastewater services

3.3.6 Costs of private water supplies and wastewater systems

3.3.7 Governance gaps for private systems, blue-green infrastructure and drainage

3.3.1 Extreme weather and water scarcity

Extreme weather

Recent extreme climatic events such as water scarcity and flooding provide a reminder that the global climate emergency is impacting Scotland now. The Met Office's UK Climate predictions project increasingly warmer, rainier winters and drier summers.

Total rainfall from extremely wet days increased by around 17% for the UK overall in the decade (2008-2017), with the largest changes seen in Scotland. It is expected that Scotland will experience more intense storms.

A report by NatureScot forecasts that the number of extreme drought events in Scotland is likely to increase in the future, from an average of one event every 20 years (baseline period of 1981-2001), to one event every three years from 2021-2040.

Water scarcity

The Scottish Government has stated that more than half of Scotland's population will be at risk of water scarcity by 2050 during very dry periods.

During water scarcity incidents, households and businesses can be subject to Temporary Water Saving Measures, implemented by Scottish Water, or restrictions on abstraction imposed by SEPA under Scotland's National Water Scarcity Plan.

There is an ongoing policy debate around how we fairly share the water that is available, underpinned by recognition of the human rights to water and sanitation, balancing human need with the need of the water environment and ecosystems.

3.3.2 Changing patterns of demand

Both the climate crisis and emerging industries are resulting in an increase in water demand for a variety of uses such as:

- drinking water and services essential to public health
- agriculture
- low carbon alternatives to energy production e.g. hydrogen and biofuels
- tech industry infrastructure such as data centres

Additionally, the potential impact of Scotland's changing population on water resources and services is highlighted in Scottish Water's recent long-term strategy. As the overall population of Scotland continues to grow, there is a migratory shift from west to east. Changing demographics are also resulting in an increased number of households as more people live alone or in smaller family units.

By 2043 there are projected to be 2.7 million households in Scotland which is an average increase of 13,000-plus households a year. The increased demand will put additional pressure on Scotland's water resources, especially if the rate of water consumption remains at current levels. Scottish Water's Climate Change Adaptation Plan 2024 forecasts that demand could exceed supply by 240 million litres per day by 2050 unless demand falls or new supplies are developed.

Current water use in Scotland is higher than in other parts of the UK and Europe. A recent BBC article highlights a cultural assumption of abundant supply, and that only a small number of Scottish households have water meters, which contributes to a lack of awareness of water use.

In rural and island areas, pressures on private water supplies and wastewater systems can be exacerbated by the seasonal impact of high tourist numbers.

3.3.3 Land use and development

Rural and island land use

Land use changes in rural or island Scotland include developments associated with:

- Commercial forestry
- Energy infrastructure such as wind farms, solar farms and grid networks, and energy production facilities, e.g. for hydrogen production
- Industrial developments such as Park & Rides or data centres
- Housing and access roads
- Mineral extraction

While many of these developments can deliver positive economic outcomes and are important to address the climate crisis, they also impact on water and wastewater systems, including on water ecosystems and engineered infrastructure. Changes in land use, land management and water extraction can fundamentally alter the way that water moves through the catchment zone, affecting patterns of runoff, infiltration, drainage and water storage, and consequently influencing flood risk, water availability and water quality.

There are nuances in how these impacts play out. A forestry plantation, for example, can be an effective nature-based solution to protecting areas from flooding. Trees and forests can use more water than shorter types of vegetation due to the interception of rainwater by their aerodynamically rougher canopies. However, such plantations can also lead to disruption of the water resources that feed private water supplies. A key consideration is what type of trees are planted to achieve both flood protection and the protection of water supplies.

Scottish planning policy increasingly recognises the need for a catchment-wide approach to land use, flood risk and water services planning, while Scotland's National Planning Framework (NPF4) requires renewable-energy developments to consider their effects on hydrology, the water environment and flood risk. Scotland's 4th Land Use Strategy explicitly says Scotland needs to move away from considering land through individual sectors and towards understanding its integrated nature.

Land use change can also affect the quality of water resources. For example, studies of commercial forestry have identified changes in nutrient, dissolved organic carbon and metal concentrations in water draining afforested and clear-felled catchments.

Urban development and impermeable surfaces

Developments in urban centres can also put pressure on water systems, in particular developments that result in areas of impermeable surfaces through the construction of houses, roads, driveways and a shift to replacing grass with artificial alternatives.

A move to hard surfaces means that when it does rain, more rainwater runs off the surface quickly and into drains. Increased surface water in sewers is linked to sewer flooding, caused when a drain or sewer becomes full due to heavy rainfall and overflows either inside a property or outside in the garden, street or other public areas.

3.3.4 Sewer flooding and pollution

Sewer flooding, combined sewer overflows and monitoring gaps

Scottish Water's Climate Change adaptation plan states that 2,300 properties are currently at risk of sewer flooding across Scotland and that without adaptation measures, this is projected to increase by 60% by 2050.

Sewer flooding also has significant environmental impacts. The mains network managed by Scottish Water relies on over 4,000 Combined Sewer Overflows (CSOs). During heavy rains or flooding these emergency valves discharge a mix of rainwater and untreated sewage into rivers and the sea to prevent sewage backing up into people's homes.

In 2024, Scottish Water recorded 23,498 sewage discharges, spilling millions of cubic metres of waste into water bodies such as the sea. Environmental groups like Surfers Against Sewage (SAS) and the Environmental Rights Centre for Scotland, point out that only 34% of Scotland's 4,083 sewer overflows are monitored, which means there is no data on the full extent of discharges, and what is in them.

Private wastewater systems

Smaller scale sewer flooding can also be caused by blockages as a result of inappropriate items being flushed down the toilet or fat, oil and grease being put down the kitchen sink. In rural and island communities, inappropriate items being flushed, including cleaning chemicals, can lead to private wastewater systems failing and backing up. Studies show septic tanks can be hotspots for pollutants and emerging contaminants such as pharmaceuticals. Pollution is strongly influenced by maintenance and user behaviour.

Older properties with no wastewater treatment systems discharge raw sewage into the sea. A Scottish Parliament petition raised concerns about the impact on bathing waters and the natural environment. The petition was closed in recognition of SEPA's view – supported by the Scottish Government – that the time spent handling queries and investigations into untreated discharges is disproportionate to the low risk of harm that the issue presents to the water environment. SEPA is only required to monitor coastal water quality at locations that are designated bathing water sites.

Bathing water designation

Designation determines whether sewage pollution is monitored. Only at designated bathing waters does SEPA have a statutory duty to monitor sewage pollution during the swimming season, and elsewhere on the coast it is not required to monitor water quality.

Designation is difficult to obtain, and the application criteria have been criticised as being neither clear nor transparent. Many places where people swim, paddle and play therefore sit outside the monitoring regime, even when they are in constant use.

Even where a site is designated, monitoring is limited. Sampling during the bathing season captures only a snapshot, so it can miss the short-term pollution that follows heavy rain, when sewer overflows, septic tank failures and surface water discharges are most likely to occur.

Communities are increasingly filling this gap themselves. Community-led and citizen-science groups like the Loch Leven Sea Savers are collecting photographs, water test results and other evidence of unmonitored and unreported discharges from sewage mains and septic tanks. This evidence is frequently judged insufficient to trigger an investigation by SEPA. The result is a circular problem: without monitoring there is no data, and without data there is no basis for designation or enforcement. Local people who can see the problem are left without a route to get it formally recognised or resolved.

Emerging contaminants

Monitoring and managing pollution incidents extends beyond preventing sewage discharges and overflows. There are rising risks associated with emerging contaminants - 'forever' chemicals, pharmaceuticals, pesticides, microbial pathogens, nanomaterials, microplastics – that are becoming concentrated in our water systems.

3.3.5 Costs of mains water and wastewater services

Maintaining and upgrading Scotland's water and wastewater services, including protection against pollution, requires significant investment in infrastructure. Scottish Water's funding comes primarily from mains customers' water and wastewater charges, paid alongside Council Tax, with Consumer Scotland highlighting the risk of rising levels of water poverty. A recent Consumer Scotland report estimated that 10.1% of households in Scotland experience water poverty, with 4% in severe water poverty. These households spend more than 3% and 5% of their disposable income on water and sewerage services, respectively.

Scottish Water's Investment Plan in the period 2027-2033 proposes several core investment priorities including:

- £1,581 million for drinking water quality (including upgrading multiple water treatment works).
- £2,076 million for continuous supply and leakage reduction (targeting a 10% reduction in leakage).
- £2,524 million for river and sea environment improvements, wastewater, and flood protection.
- £593 million for population growth and new connections (around 120,000 new connections).

The Water Industry Commission for Scotland (WICS) scrutinises Scottish Water's Investment Plan and sets the maximum Scottish Water can charge for its water and wastewater services. In its Final Determination for Scottish Water's investment plan, WICS approved a £7.9bn investment programme for 2027-2033 (Scottish Water had proposed £8.1bn) and capped customer charges to a maximum of 2.5% above inflation, with a further 0.3% available from 2029 only if uncertain costs arise (Scottish Water had requested a 3.3% above inflation cap).

At the time of publication of this guidance (17/11/2026), Scottish Water is considering the implications of these decisions.

3.3.6 Costs of private water supplies and wastewater systems

Private water supplies

In relation to the thousands of existing properties that are not on the mains network, Scottish Water is under no obligation to connect them or provide them with a service (first time provision) as, in most cases, that would not be considered "practicable at a reasonable cost".

Private system owners are not liable for water charges but rely mainly on their own means to install, maintain and upgrade their systems. Scottish Government funding, distributed through small local authority grants of up to £800 per property, is available for improvements, though not for ongoing costs or connection to public mains. Inflation has eroded the grant's value: it would now be worth around £1,300 if it had increased in line with inflation (based on real terms 2024/25 prices).

A new borehole can cost between £10,000 - £25,000 with the pump component circa £4,500. New filter systems for *E. coli* can cost between £600 - £1,500 including installation.

During water scarcity or contamination incidents, local authorities can request Scottish Water to provide bottled water to private supply owners under the Emergency Bottled Water Scheme. In 2018, this cost the Scottish Government £500,000.

Private wastewater systems

The costs of registering and maintaining private wastewater systems will vary according to the type of system, and how many households or businesses it serves. Operational costs include standard registration fees, de-sludging and emptying services, electricity costs for small-scale sewage plants and new components. The repair or replacement of failed legacy tanks involves major capital costs.

Scottish Water has a duty to empty a septic tank when requested to do so and offers de-sludging services, with costs ranging from £245 to £492, depending on location and access. There have been reports of challenges on islands like Mull, where staffing shortages at treatment works led to waste being transported off-island, adding £724 per trip with costs often passed to customers.

There is no funding or support available for private wastewater system owners, or for the hundreds of households whose properties do not have a wastewater system and discharge into the sea.

3.3.7 Governance gaps for private systems, blue-green infrastructure and drainage

Private water supplies and wastewater systems

Rural and island communities on private water supplies and wastewater systems are often disproportionately affected by water scarcity, poor water quality and pollution incidents. Water governance and policy have largely been designed around the urban experience of mains services and pay little attention to other contexts. The result is a clear policy gap and a governance environment that is hard to navigate for those who run their own water services.

This tension is visible in Scottish Water's long-term strategy, which sets out how it will meet its 'Water Sector Vision' and commits to ensuring that **all of Scotland** (emphasis added) gets excellent quality drinking water that people can responsibly enjoy. Yet although Scottish Water is a public corporation, its statutory duty to supply applies only where that is "practicable at a reasonable cost".

Rural households and businesses on private water supplies and wastewater systems do not receive a comparable public service to mains customers and do not have a strong voice in policy. The governance gap can be traced to specific features of the current framework:

- Exempt/Type B private water supplies are not subject to any duty on local authorities to test them or carry out risk assessments. While the quality of most private supplies is simply unknown, compliance data from the Drinking Water Quality Regulator (DWQR) shows that in 2023, of the relatively small number of private supplies that were sampled, 17.9% of exempt private water supplies failed compliance tests for *E. coli*. In comparison, of the 26,969 tests for *E. coli* in 2023 in the mains water network, only one failed the test and this was thought to be due to contamination of the sample at the outdoor sample point.

- Similarly, information on the number and condition of septic tanks is limited, and a householder will often not know that a system is failing, for example because it has not been de-sludged.
- The risk assessments required for regulated private water supplies address vulnerability to pollution and public health risks, but not water availability or drought.
- When a private water or wastewater system fails, there is no obligation on any public body to provide advice, assistance, financial support or emergency provision. Local authorities can mandate improvements without obligation to offer assistance to implement these improvements. The costs and onus for compliance therefore fall on the owner. This also applies to owners of private wastewater systems.
- Users of private systems are not represented by a consumer group whereas Scottish Water customers can be represented by an Independent Customer Group that scrutinises Scottish Water's decisions on centralised services.

As a result of the governance deficit, owners of private water supplies and wastewater systems are less likely to register their systems or seek help when things go wrong.

The invisibility of PWS and PWWS owners has a knock-on effect in water resource planning. Water catchments for private supplies, even when those are registered, may not be properly considered within land use change decisions, leaving them vulnerable to incidents of water scarcity and pollution.

The invisibility also has a knock-on effect on how public communications are targeted. Campaigns that aim to promote water literacy, like the 2023 Nature Calls campaign for example, are designed for mains customers and lack relevance for private system owners and users.

Re-imagining water governance for PWS and PWWS can strengthen the resilience of Scotland's water and wastewater systems.

Blue-green infrastructure and drainage

Similar governance tensions arise with the deployment of blue-green infrastructure, where planning, funding and long-term maintenance responsibilities are spread across national, regional and local bodies. Scotland's National Planning Framework (NPF4) promotes nature-based solutions, but delivery depends on the capacity of local authorities, partnerships and communities to coordinate across institutional boundaries. Competing land-use interests and fragmented responsibilities make it harder to align strategic ambitions with local priorities.

In relation to SuDS, while the Flood Risk Management (Scotland) Act 2009 encourages a collaborative approach, practical execution often suffers from a lack of alignment between local authority planning departments and Scottish Water regarding the "vesting" (formal adoption) and long-term sharing of maintenance duties.

3.4 Opportunities for Scotland's water and wastewater systems

The pressures outlined in Section 3.3 can be addressed by consolidating and redefining the legal framework drawing on the review of current policy and legislation initiated by the Scottish Government's 2023 Water, wastewater and drainage policy: consultation. Doing so will unlock opportunities to develop a more integrated and strategic approach to water resource management, ensuring that Scotland's water and wastewater systems are resilient, sustainable and equipped to respond to future environmental, social and economic pressures. These opportunities, mapped against the pressures, are outlined below:

Opportunities	Will help address
3.4.1 Accurate forecasting and fair distribution of water resources	All pressures (extreme weather and water scarcity; changing patterns of demand; land use and development; sewer flooding and pollution; costs of delivering services; governance gaps).
3.4.2. Joined-up assessments and groundtruthing in planning	Pressures arising from land use and development, and from governance gaps.
3.4.3 Supporting decentralised systems and fostering innovation	Pressures arising from changing patterns of demand, sewer flooding and pollution; costs of delivering services, governance gaps.
3.4.4 Recognising groundwater and rainwater as strategic resources	Pressures arising from extreme weather and water scarcity, changing patterns of demand, sewer flooding and pollution, and costs of delivering services.
3.4.5 Scaling up blue-green infrastructure	Pressures arising from extreme weather and water scarcity and sewer flooding and pollution, and governance gaps.
3.4.6 Tackling water pollution	Pressures arising from sewer flooding and pollution.
3.4.7 Creating a circular economy for wastewater	Pressures arising from extreme weather and water scarcity, sewer flooding and pollution, and costs of delivering services.
3.4.8 Preparing for emergencies	Pressures arising from extreme weather and water scarcity, sewer overflows and pollution, and governance gaps.
3.4.9 Improving water literacy and behaviour change	Pressures arising from changing patterns of demand.

3.4.1 Accurate forecasting and fair distribution of water resources

An integrated legislative and policy framework would clarify tensions in the current layers of legislation, regulation and policy. In particular, it would address the disconnect between water services planning and water resource management at national, regional and local levels, and it would align water policy with promoting human rights, protecting nature and achieving climate goals.

A Water, Wastewater and Drainage Bill, linked to secondary legislation and policy, could provide the basis for this framework.

Statutory planning and forecasting

The WWD Bill may be modelled on existing integrated policy approaches such as Scotland's statutory development plan. This comprises the National Planning Framework, Local Development Plans, Local Place Plans and relates to Regional Spatial Strategies and provides an example of how a legislative and policy framework can be used to implement an effective planning regime at national, regional and local scales.

An enabling framework for water and wastewater should focus on supporting regional and catchment-level water resource forecasting, planning and coordination by bringing together Scotland's water sector bodies, institutions and networks in shared governance models involving the range of actors, including the public sector and community groups that lead on resilience and adaptation.

New cooperatives or community-led bodies may be established to give structure to local networks of private water and wastewater systems which currently struggle to be heard.

Existing models to learn from

There are relevant examples of integrated catchment-level water services and resource management models across the UK. England's Water Resource Management Plans (WRMPs) provide an example of long-term regional water resource management planning. These are statutory plans which cover a forecast period of 25 years, updated every five years.

In Scotland, river basin management plans (RBMPs) produced by SEPA on behalf of the Scottish Government provide a valuable template. However, RBMPs are fundamentally an environmental framework and the legislation underpinning RBMPs focuses on protecting and improving water quality and ecological status, rather than on managing water quantity and scarcity or regulating water services provision or infrastructure capacity.

Examples of shared governance models are being explored through the FORTH$_2$O Partnership delivered across the Forth Water Basin.

Applying a human rights lens

A Human Rights Bill for Scotland is anticipated in 2027/28 and water and wastewater legislation or policy should be designed to work with it.

In the meantime, until a Human Rights Bill for Scotland passes, the UK has committed to comply with the human rights to water and sanitation (UNGA Res 64/292) through several international treaties. These include, the International Covenant on Economic, Social, and Cultural Rights; the Convention on the Elimination of All Forms of Discrimination against Women; the Convention on the Rights of Persons with Disabilities; and the Convention on the Rights of the Child.

There is a range of legal obligations attached to the human rights to water and sanitation which countries need to comply with at all times and in all circumstances. These obligations – called minimum core obligations – include:

1. Ensuring access to at least a minimum amount of water that can be sufficient for safe personal use;
2. Ensuring that access to water facilities and services is provided in a non-discriminatory way;
3. Ensuring physical access to water facilities or services that can provide sufficient, safe, and regular water.

Although the UK is bound by these obligations in international law, the rights are not directly enforceable in the Scottish courts. The Scottish Government's 2023 consultation on a Human Rights Bill proposed a right to safe and sufficient water as part of the right to a healthy environment and of the right to an adequate standard of living, with sanitation mentioned as an aspect of the right to an adequate standard of living.

Scotland's human rights-based approach is commonly framed through the PANEL principles - Participation (people should be involved in the decisions that affect their rights); Accountability (duty bearers should be responsible and accountable for their obligations); Non-discrimination and equality; Empowerment (everyone should understand their rights and be supported to influence policies affecting their lives); and Legality (approaches should be grounded in legal rights in domestic and international law).

3.4.2 Joined-up assessments and groundtruthing in planning

Rural and island areas

Translating a framework into action in rural and island areas will require embedding mechanisms to align water resource planning with land use planning at regional and local levels to prevent unintended negative impacts on water supplies, and on the water environment. These mechanisms include:

- Detailed mapping of water service catchment areas including catchment zones, abstraction points, tanks, supply lines, infrastructure and the properties being supplied.
- Joined-up assessment strategies between relevant partners and mandatory groundtruthing through site visits and proactive community engagement.
- Catchment-scale monitoring of land use impacts on private water supplies.
- Alignment with Whole Farm Plans, Community Action Plans/Local Place Plans and Local Resilience Plans.

- Assessment of the cumulative impacts of land-use change (including forestry expansion, peatland restoration and renewable energy development) on private water supplies, with meaningful consultation of the communities that rely on them.

Urban areas

For urban areas, opportunities arise through updating the Urban Wastewater Treatment (Scotland) Regulations 1994 in line with the recast EU directive (2024/3019) and, leading from this, resourcing Scottish Water, local authorities and other relevant bodies to produce integrated urban water resource management plans covering the range of issues including sewage, surface water and street flooding.

The Integrated Water Management Plan from the Greater Manchester Combined Authority offers an example of how development planning can be used to combine multiple dispersed budgets to achieve agreed water objectives whilst supporting regional resilience. The Metropolitan Glasgow Strategic Drainage Partnership offers a Scottish example of delivering a programme of drainage schemes targeting areas of the city where rainfall adversely impacts communities.

3.4.3 Supporting decentralised systems and fostering innovation

Why decentralised systems matter

Where a mains connection is impracticable because of cost or geography, private systems are an effective solution. Research shows that decentralised systems are typically small-scale, locally sourced and governed by multiple stakeholders. They offer flexibility and a lower carbon footprint, but they need stronger support and clearer governance than Scotland currently provides.

Rural and island communities should be supported to adopt decentralised technologies, with these systems recognised as critical infrastructure on a par with the mains network. Moving towards community-led management model offers a compelling model for futureproofing Scotland's water and wastewater services.

Papa Westray in Orkney shows how community-led models can work in practice. The community council manages the island's water supply, metered usage ensures fair billing, and the revenue funds maintenance. The extension of the scheme to the north of the island in 2009–10 was delivered through a 40:60 funding arrangement negotiated between the Community Council and the local authority after attempts to secure other public funding failed. The £800 private water supply improvement grant of each household transferred into the community's contribution and the local authority providing technical support. The Community Council owns the land on which the wells sit and manages the infrastructure, while the local authority retains its regulatory responsibilities and provides administrative and technical support. The scheme also enabled broadband delivery through fibre cables housed in the water network, a UK first.

Recommendations for decentralised systems – private water supplies and wastewater systems

Research by Prof Sarah Hendry and Dr Ioanna Akoumianaki on the governance and management of small rural water supplies sets out 20 recommendations to create more enabling infrastructure for decentralised private water supplies (PWS). Examples include:

- A trusted intermediary organisation, similar to the Irish National Federation of Group Water Schemes, to improve data collection and support PWS owners.
- Better, consumer-friendly advice and training for both relevant persons and users of supplies. Consumer Scotland has already recommended an online PWS Information Repository for Scotland.
- Clearer regulations, guidance and advice on the need for all private water supplies to be registered, and on the identification and responsibilities of relevant persons, responsible persons and users.
- Better guidance and support for communities wishing to form a legal body, such as a cooperative or a company limited by guarantee, to upgrade or manage an existing private supply.

Similar recommendations would apply for decentralised private wastewater systems.

Supporting innovation and skills

Implementing these recommendations will require funding and regulatory change, however support to strengthen the Scottish market of decentralised systems owners, will give rise to tangible economic benefits in the context of a just transition for the water industry. Indeed, the market for decentralised water and decentralised wastewater systems in the UK, and globally, is expanding rapidly. This growth is driven by the same pressures facing Scotland: tightening environmental regulation, constraints on housing growth, and the push for net-zero infrastructure. Investing in decentralised systems, including design innovation from water filtration to compost toilets, makes sound business sense.

Alongside support for the owners of decentralised systems, innovation in decentralised technologies should be supported by:

- Expanding financial support and reviewing fiscal measures, such as reducing or removing VAT on pumps and pump installation.
- Ensuring decentralised systems are explicitly recognised within building standards regulations.
- Supporting skills development and accreditation programmes for local installers.

3.4.4 Recognising groundwater and rainwater as strategic resources

Groundwater

Groundwater is already recognised within Scotland's water environment legislation, including through statutory requirements concerning its chemical and quantitative status. However, its role as a strategic water resource is less explicitly recognised. The Scottish Government's 2023 Water, wastewater and drainage policy: consultation notes that current statutory architectures view groundwater largely as a static "environmental component" (pollution control) rather than an actively managed buffer against drought or a secure secondary supplier for mains and private water systems.

Strengthening its statutory status within a WWD Bill would provide a clearer basis for managing groundwater not only as an environmental component of the water environment, but also as a finite resource that contributes to mains and private water supplies, supports varied ecosystems and provides resilience to climate-driven changes in water availability.

Rainwater and surface-water runoff

A WWD Bill could be equally transformative for Scotland's rainwater, including surface-water runoff from buildings and paved areas. Recent research on transitioning surface water collection to surface water reuse systems argued that changes to existing policy and legislation could underpin recognition of rainwater as a resource to be managed and utilised for irrigation, household and industrial use, rather than as waste to be discharged.

Rainwater harvesting (RWH) is already used in Scotland (see this example from the Isle of Coll) and Europe to reduce water demand, support land-based industries such as agriculture and protect sewage systems from overload. Germany leads with 75,000 systems installed annually, driven by laws requiring rainwater retention and pricing based on impermeable surfaces.
Households benefit from lower bills and financial support for installation.

3.4.5 Scaling up blue-green infrastructure

Current policy ambition and challenges

Blue-green infrastructure encompasses a broad range of natural and semi-natural approaches to managing water and wastewater, preventing flooding or sewage overflows, and delivering wider environmental benefits. Blue-green infrastructure can include built environment designs such as SuDS (Sustainable Drainage Systems), swales, rain gardens, ponds and parks, or landscape-scale natural systems such as restored wetlands and floodplains.

The Scottish Government has already identified a transition towards "blue-green" towns and cities as an important component of creating water-resilient places, including a policy ambition that new development should, wherever practicable, manage surface water through blue-green infrastructure rather than connecting it to sewers. Scotland's National Adaptation Plan similarly envisages rainwater drainage networks that combine conventional infrastructure with blue-green infrastructure to retain water close to where it falls, while delivering wider benefits for biodiversity, amenity and urban climate resilience.

The current difficulty is turning existing policy ambitions into enforceable, funded and coordinated delivery. Blue-green infrastructure crosses institutional boundaries including those of local authorities, Scottish Water, SEPA, landowners, communities and developers, who may all have different responsibilities. The benefits of the infrastructure may be hard to measure or, conversely, they may be seen to accrue to parties, such as individual households, other than those who can fund it.

What an integrated framework would unlock

An integrated legislative and policy framework for both water services and water resource planning could be a powerful enabler for blue-green infrastructure which by definition delivers on both these functions. A wetland or rain garden, for example, is both drainage and flood-management infrastructure, as well as a groundwater-recharge mechanism and an important habitat supporting biodiversity.

In particular, a Water, Wastewater & Drainage (WWD) Bill that gives blue-green infrastructure a clearer status, similar to grey infrastructure (built structures traditionally made from materials like concrete, steel, and rock) and facilitates catchment-level planning could unlock both partnership potential and investment.

3.4.6 Tackling water pollution

Pressures relating to the maintenance and monitoring of combined sewer overflows, to emerging contaminants and to bathing water designations were covered in Section 3.3.4.

The Environmental Rights Centre for Scotland (ERCS), as a member of the Cleaning Up Scotland's Sewage Coalition together with the Coastal Communities Network, the Loch Leven Sea Savers and others, has highlighted several gaps in regulations and weaknesses in enforcement in their Pollution From Sewer Overflows Briefing. Some of these could be addressed through a Water, Wastewater & Drainage Bill, while others could be addressed through existing legislation. They include:

- Reforming Scottish legislation to keep pace with the EU Directive (2026/805), specifically amending the Water Framework Directive, the Groundwater Directive and the Environmental Quality Standards Directive to strengthen protection and monitoring of surface water and groundwater.
- Establishing a watchlist for contaminants of emerging concern as already implemented by the EU which would also align with recommendations by the Centre of Expertise for Waters (CREW) for addressing these contaminants in policy, regulation and monitoring programmes.
- Amending the bathing water application criteria so that they are clear and transparent, and permit all recreational water users to be counted in applications.
- Issuing guidance on the exceptional circumstances in which sewer overflows can be permitted to discharge as well as up-to-date information on the requirement to use best technical knowledge not entailing excessive costs.

- Reviewing SEPA's regulatory guidance and Scottish Water's Environmental Authorisations (Scotland) Regulations 2018 (EASR) permits for sewer overflows.

The Loch Leven Sea Savers have added to the Coalition recommendations the need to extend bathing water status to cover the whole year, and have highlighted that a 'poor' score should trigger urgent remedial action, not just result in the automatic removal of the status.

3.4.7 Creating a circular economy for wastewater

The Kyles Coastal Community highlights that better management of wastewater does not just address pollution levels, but also enables us to harness its potential within a circular economy, including within the energy sector and in the production of fertiliser. A refresh of regulation would support this aim.

For example, under current Scottish Government Waste Hierarchy guidance, food waste treated via anaerobic digestion or composting is only officially counted as recycled if the final output strictly achieves BSI PAS110 (for digestate) or BSI PAS100 (for compost) certification. If it fails to meet these standards, even if it produces renewable energy, the output remains classified as 'waste' under SEPA rules and is considered as recovery, not recycling.

Strict PAS compliance requires large, highly segregated volumes of organic waste to justify the infrastructure costs. In remote or rural parts of Scotland, these volumes do not exist. Scottish Water wants to co-treat small amounts of rural food waste alongside wastewater bioresources, but because the combined output cannot get PAS certification, local authorities gain no credit toward their statutory recycling targets by doing so.

3.4.8 Preparing for emergencies

National risk management

An integrated legislative and policy framework coupled with robust forecasting will enable the Scottish Government, in partnership with the water industry, to set and revise acceptable levels of water risks and coordinate action to mitigate or respond to emergencies, defined by the Civil Contingencies Act 2004 as an event or situation that causes or threatens:

- Serious damage to human welfare in the UK
- Serious damage to the environment in the UK
- War or terrorism threatening UK security

Where water bodies transcend borders, such as with the River Tweed, coordination will require cross-border collaboration.

Examples of risk and disaster management strategies exist, such as Scotland's National Water Scarcity Plan and the National Flood Resilience Strategy, the latter linked to regional Flood Risk Management Plans and coordinated responses under the Civil Contingencies Act 2004. Early warning systems around flooding are well established in Scotland, led by SEPA.

Water risks and emergencies, however, are interlinked in a way these strategies do not address. Flooding, for example, frequently leads to major water pollution or contamination incidents and degradation of ecosystems. Policies and financial mechanisms to reduce vulnerability to flooding, mitigate its impacts or compensate those affected, must also address other water-related emergencies and their compounded impacts.

Gaps for private supplies

Decentralised systems need to be included in national and community-level climate adaptation strategies, since flooding can compromise the functioning of septic tanks as well as water sources. A significant present gap is that there is no system to identify vulnerable people on private supplies when scarcity or pollution events occur, or to plan how they will obtain sufficient clean water. A risk register for private supplies, prioritising emergency response, could be modelled on the Priority Services Register, the free service that gives extra support to energy customers when their supply is interrupted, and should draw on World Health Organization guidance on water safety plans for small-scale supplies.

Community-level resilience

Working at community level to develop local early warning systems, as well as emergency response plans, presents specific opportunities. There is a growing role for citizen science models such as the Anglers' Riverfly Monitoring Initiative (ARMI), which tracks riverfly populations as an indicator of water quality. According to ARMI, this active monitoring also acts as a deterrent to incidental polluters.

Community Resilience Groups, frequently linked to existing bodies such as Community Councils or Development Trusts, are being formed across Scotland. Community Resilience Groups prepare local emergency plans and are supported through regional partnerships such as Highland Adapts and Climate Ready Tayside, and by national partnerships such as the National Centre for Resilience.

3.4.9 Improving water literacy and behaviour change

Evidence suggests that while public awareness of climate change is high, the Scottish public generally continues to underestimate personal water use and maintains a deep-seated belief that water is plentiful.

While new legislation is unlikely to be required, progressive policy could offer an opportunity to strengthen and replicate successful mechanisms in promoting water literacy and encouraging behaviour change including:

- Supporting arts and heritage around water and wastewater
- Whole-community approaches, rather than just targeting individuals
- Public education campaigns
- Information hubs
- Citizen science initiatives

- Communities of practice
- Academic programmes and scholarships
- Technologies such as metering

Section 4: Designing Scotland's Legislative and Policy Framework for Water & Wastewater

4.1 The benefits of an integrated legislative and policy framework

As noted in Section 3.1, Scotland has a complex legal and policy framework for water and wastewater. Its foundations include the Sewerage (Scotland) Act 1968 and the Water (Scotland) Act 1980, which remain central to the provision of public sewerage and water supply. Since devolution, the Scottish Parliament has added further layers including the Water Industry (Scotland) Act 2002, which created Scottish Water; the Water Environment and Water Services (Scotland) Act 2003; the Water Services etc. (Scotland) Act 2005; the Flood Risk Management (Scotland) Act 2009; and the Water Resources (Scotland) Act 2013. These sit alongside European Union-derived directives that are now being revisited following the UK's exit, and a body of secondary legislation, regulations and guidance issued by different water industry bodies.

Together, they have developed piecemeal rather than by design, and focus largely on water and wastewater services, leaving gaps in the management of water resources. The problem is therefore not an absence of legislation. It is the fragmentation of existing legislation, the focus on delivering services as opposed to managing resources, the lack of clarity with respect to statutory duties placed on public bodies, insufficient coordination between institutions, and a failure to recognise the different needs of rural, island and urban communities.

Developing a new framework, such as a Water, Wastewater & Drainage (WWD) Bill, would offer an opportunity to redefine Scotland's legislation and policy drawing on the Scottish Government's 2023 Water, wastewater and drainage policy: consultation and integrating water resource management[3] with water services planning[4] at national, regional and local levels. It would also unlock the opportunities identified in Section 3.4, from supporting private decentralised systems and tackling pollution to improving water literacy and behaviour change.

The benefits of this new, integrated approach would include:

- Accurately forecasting water availability, demand, infrastructure capacity, leakage, wastewater flows and environmental pressures across both regions and specific catchments.
- Ensuring policies have the desired impact in different places, from urban centres dependent on the mains network to islands that are dependent on private water supplies.
- Recognising private water supplies and wastewater systems as critical infrastructure within Scotland's overall water-services network, while accounting for differences in ownership, scale, capacity and risk.
- Connecting land-use planning and economic development with the availability, quality and long-term resilience of water resources and wastewater infrastructure.

[3] The strategic process of monitoring and protecting Scotland's natural water resources with a strong focus on positive environmental outcomes, and balancing these with economic and public needs.

[4] The strategic process of designing and delivering water services such as drinking water, wastewater treatment, drainage and flood prevention

- Establishing how water should be managed when demand from households, businesses, agriculture and nature comes into conflict, particularly during periods of scarcity.
- Coordinating action where catchments and water bodies cross administrative boundaries. Scotland has two river basin districts, the Scotland district and the cross-border Solway Tweed district, for which SEPA and the Environment Agency prepare a joint plan.
- Underpinning more stringent regulation to tackle pollution while providing appropriate support to households, communities and businesses to upgrade inadequate infrastructure.

4.2 Components of an integrated framework for Scotland's water and wastewater

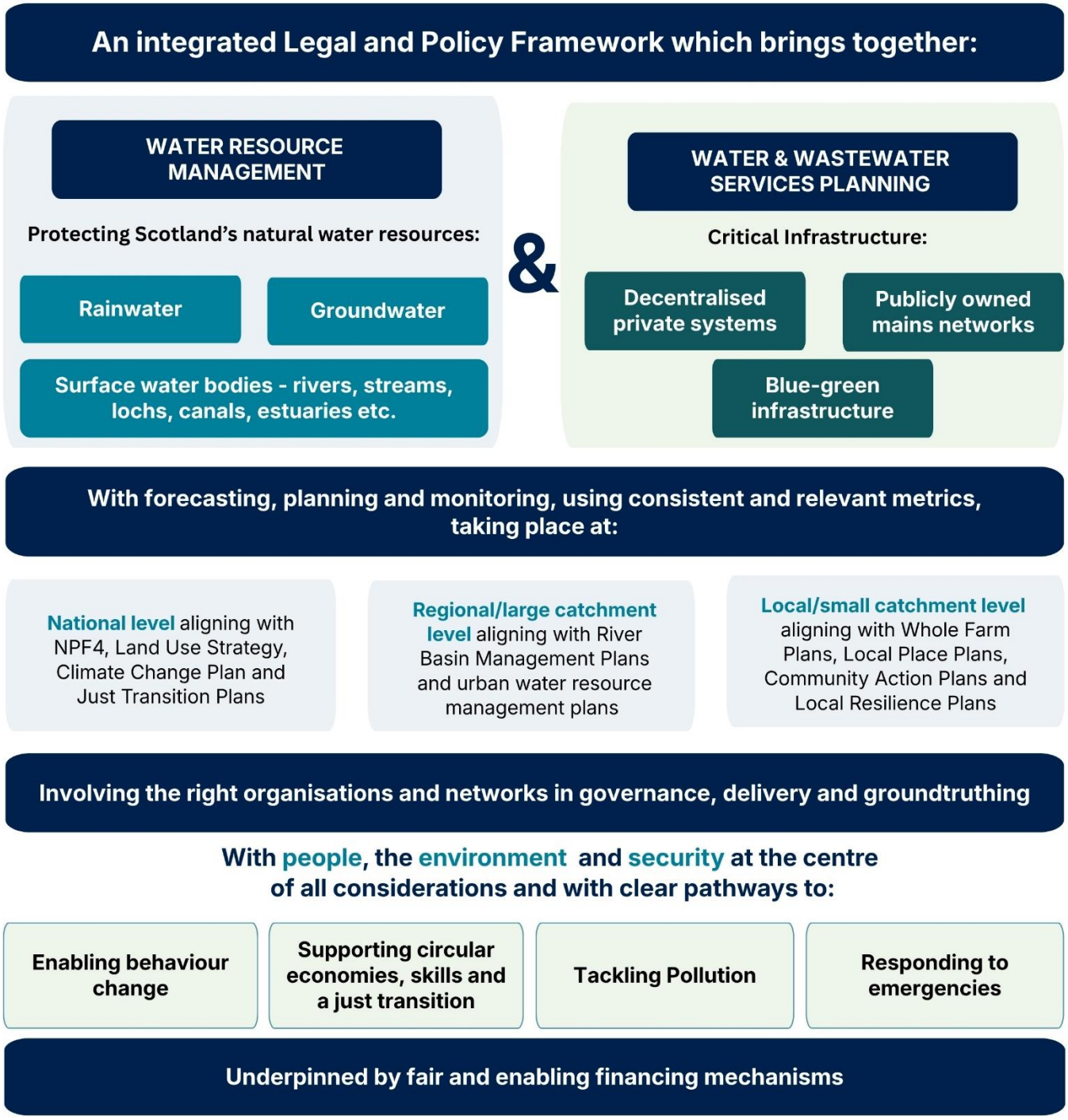
It is outside the scope of this guidance to state precisely what should be included in a new WWD Bill as opposed to what could be covered by secondary legislation or policy. These matters require assessment based on the final scope of the proposed framework. The following list offers a preliminary view on whether unlocking each of the opportunities listed in 3.4 would likely require:

- Mainly legislation: There are areas where statutory duties, powers, standards, rights or enforcement mechanisms are missing or inadequate.
- Mainly policy: There are areas where strategies, funding arrangements, institutional coordination and practical delivery mechanisms are insufficient.
- Combined legislative and policy: There are areas where policy ambitions need statutory backing, or where new legislation would be ineffective without accompanying funding, guidance, institutional capacity and implementation arrangements.

Opportunities	Requires
3.4.1 Accurate forecasting and fair distribution of water resources	Mainly legislation
3.4.2. Joined-up assessments and groundtruthing in planning	Combined legislation and policy
3.4.3 Supporting decentralised systems and fostering innovation	Combined legislation and policy
3.4.4 Recognising groundwater and rainwater as strategic resources	Combined legislation and policy
3.4.5 Scaling up blue-green infrastructure	Combined legislation and policy
3.4.6 Tackling water pollution	Combined legislation and policy
3.4.7 Creating a circular economy for wastewater	Combined legislation and policy
3.4.8 Preparing for emergencies	Combined legislation and policy
3.4.9 Improving water literacy and behaviour change	Mainly policy

The diagram (Diagram 1) on the following page offers a narrative structure for an integrated legislative and policy framework, identifying the opportunities that should be covered.

Diagram 1: Components of an integrated legislative and policy framework for Scotland's water and wastewater



4.3 Developing an integrated framework – a checklist

While the Scottish Government's 2023 Water, wastewater and drainage policy: consultation evidenced the need for a new legislative and policy framework for Scotland's water and wastewater in the form of a WWD Bill, the 2026-2031 Programme for Government did not commit to such an ambition.

It is likely that in the short term Scotland's approach to developing water and wastewater legislation or policy will continue to be layered. This does not mean the process will not achieve positive change. It does, however, create an urgency to ensure that new legal, regulatory or policy instruments, including the proposed merger of SEPA with NatureScot and Zero Waste Scotland, will contribute to lifting barriers to the opportunities listed in Section 3.4.

The table below aims to support policy advocates and policymakers during the development stages of legislation or of policy that affects water and wastewater (their "proposal"). It translates the framework in Diagram 1 into **a structured checklist** that helps policy advocates and policymakers to consider how their proposal aligns with existing instruments, supports integration, closes gaps and recognises how different parts of the system interact.

1. Does the proposal bring together water resource management and water & wastewater services planning?
In covering **water resource management**, does the proposal: ● Align with and build on existing **River Basin Management Plan legislation**. ● Include provisions which clarify how **groundwater**, which is already part of the regulated water environment, is protected and used, and address any gaps for example around cumulative abstraction or protection of the catchments of groundwater-fed private supplies ● Include recognition of **rainwater, including surface-water runoff from buildings and paved areas**, as a resource to be managed and, where safe, reused (for example for irrigation, toilet flushing and some industrial uses), rather than treated as waste to be discharged to sewers or watercourses.
In covering **water & wastewater services planning**, does the proposal include: **a. Decentralised, private water supplies and wastewater systems:** ● Does the proposal recognise private water supplies and wastewater systems as "**critical infrastructure**"? ● Does it offer **protections for the catchment zones** of private water supplies when there is a proposed change in land use? ● Does it ensure there is adequate support, and an effective compliance regime, for private water supply owners and private wastewater system owners, including through **advice and financing mechanisms**? ● Does it consider different models of delivering the above support and compliance mechanisms, including taking into account the roles (or potential roles) of Scottish Water, local authorities, the Drinking Water Quality Regulator and of new bodies?

- Does it seek to use support and compliance mechanisms as a positive way of engaging with owners, and developing a **database of private systems** across Scotland?

b. Publicly owned mains networks:

- Does the proposal give **Scottish Water** a clear purpose and direction, consistent with the existing Ministerial objectives and Principles of Charging process, wherever the proposal adds to or changes Scottish Water's duties? For example, where the proposal seeks to tackle sewer flooding, storm overflow spills or the renewal of ageing wastewater assets, are expectations clearly articulated, and is funding identified through the Strategic Review of Charges (next period 2027–33) or other sources?
- Does it give clarity on ownership and maintenance responsibilities between Scottish Water, local authorities, roads authorities, developers and property owners on **shared drainage systems**, including both conventional sewers and surface-water drains and blue-green infrastructure such as SuDS?

c. Blue-green infrastructure:

- Does the proposal help **strengthen the deliverability** of blue-green infrastructure by clarifying how such infrastructure is assessed, funded and assured?
- Does it enable **integrated catchment-level planning** by the various partners involved in the delivery of blue-green infrastructure and drainage interventions, covering land use, drainage, flood risk, water quality and supply, and clarifying how organisations can decide matters around ownership, insurance and maintenance of shared assets?

2. Does the proposal provide mechanisms for forecasting, planning and monitoring to take place at national, regional and local levels using consistent and relevant metrics?	
National level	• Does the proposal introduce a statutory requirement to **forecast Scotland's changing water needs** and assess future supply and demand in response to a changing population and climate, including through a **national water resource plan**? • Does it provide guidance on undertaking **Strategic Environmental Assessments** which adequately capture the potential impacts of a policy on Scotland's water resources and water services? • Does it provide clear direction for a comprehensive **analytical plan** outlining the data sets and evidence that need to be collected or consolidated in support of the new framework? • Does it introduce specific controls and reporting requirements for **high water-demand industries**, including AI data centres and hydrogen production, and other large users such as whisky distilling and agriculture, scaled to each sector's projected demand?
Regional/large catchment level	• Does the proposal require **detailed mapping of private and mains water service catchment areas**, including catchment zones, abstraction points, tanks, supply lines, infrastructure and the properties being supplied, and of wastewater systems, including sewer networks, treatment works, overflow points and outfalls, private systems such as septic tanks, and the receiving waters?

	• Does it give clear guidance to Scottish Water, SEPA, local authorities, community bodies and others to produce **integrated regional and catchment-level water plans** that build on, and are aligned with, River Basin Management Plans, local flood risk management plans and Scottish Water's urban catchment planning that use the shared evidence base set out above, and that draw where helpful on the statutory model of England's Water Resource Management Plans?
Local/small catchment level	• Does the proposal support **water security assessments** as a mandatory part of the planning process, enabling planners to require that water security be demonstrated before approving land use change? Do the assessments cover *cumulative pressures on private and mains supplies*, evaluating the impact of changes in the context of existing developments, as well as those in the pipeline? • Does it establish **joined-up groundtruthing approaches to planning applications involving land use change** underpinned by site visits and proactive community engagement? • Does it enable **alignment of water resource management and service planning with local plans**, including peatland restoration and woodland creation strategies, Whole Farm Plans, Local Place Plans and Community Action Plans, and with existing local catchment management plans and partnerships (such as those of the Tweed Forum and the Dee Catchment Partnership) to deliver shared outcomes for water resources and services?

3. Does the proposal involve the right organisations in governance, delivery and groundtruthing?

- Does the proposal offer clarity around the intersections between **consumer rights, human and environmental rights** and the specific roles of bodies such as Consumer Scotland, the Water Industry Commission for Scotland, Environmental Standards Scotland, the Scottish Environment Protection Agency (SEPA), the Drinking Water Quality Regulator Scotland, the Scottish Human Rights Commission and local authorities, so that responsibilities for monitoring and reporting are clear, gaps and duplication are avoided, and the evidence these bodies hold can feed national forecasting and planning?
- Does the proposal bring together Scotland's water sector bodies, institutions and networks in **shared governance models** with community groups, drawing learning from initiatives like FORTH$_2$O, and from long-established catchment partnerships such as the Tweed Forum and the Dee Catchment Partnership?
- Does it enable **cross-border collaboration** where water bodies transcend national boundaries, building on the existing SEPA and Environment Agency arrangements for the Solway Tweed river basin district?
- Does it support new **cooperative or community-led bodies** to give structure to local networks of private water and wastewater systems?

4. Are people, the environment and security at the centre of all considerations?	
People	● Does the proposal embed the **human rights to water and sanitation**, and does it offer clear, statutory mechanisms for raising complaints and seeking redress where these rights are breached, or at risk of being breached? ● Does it ensure **accessible, sufficient, affordable and clean water** for households, communities and businesses, regardless of whether they are served by the mains network or a private water supply? ● Does it take into account, and mitigate for, the **high connection costs** to mains water, or the high cost of new or improved small-scale private water supplies, as barriers to house building, business development, food production and tackling depopulation? ● Does it establish a statutory definition of **water poverty**, identify targets to address it, and put in place support measures for those identified as being at risk? ● Does it align water and wastewater policy with the **Population Health Framework (2025-2035)** to ensure that water quality and access, including the impacts of pollution incidents, droughts and flooding on mental and physical wellbeing, are considered in the context of the Scottish Government's and COSLA's prevention-focused approach to improving Scotland's health?
Environment	● Does the proposal strengthen **statutory protections for water resources** including groundwater, rivers and lochs, wetlands, and transitional and coastal waters, and the land and habitats (such as peatland) that sustain them? ● Does the proposal take measures to **protect and restore water-related ecosystems**, and halt/reverse degradation and biodiversity loss, in line with the Scottish Biodiversity Strategy to 2045 and going beyond water-body status targets under the Water Framework Directive to cover freshwater species and habitats (for example Atlantic salmon and freshwater pearl mussel)?
Security	● Does the proposal recognise the **interlinked nature of water risks**, for example where flooding leads to pollution, contamination or degradation of ecosystems and of food and agriculture systems? ● Does it draw on **citizen science monitoring**, such as the Anglers' Riverfly Monitoring Initiative (ARMI), which tracks water quality and acts as a deterrent to incidental pollution? ● Does it provide a lawful and proportionate basis for **a database of private water supplies and private wastewater systems**, building on the registers local authorities already keep, to enable SEPA and local councils to notify owners promptly during pollution incidents, drought warnings or when relevant planning applications are likely to impact, with clear limits on who can access owner and location details, how long data is held, and a data protection impact assessment before it is built? ● Does it create a **risk register** of vulnerable households on private water supplies modelled on the Priority Services Register for energy customers, so that emergency response can prioritise them, drawing on WHO guidance on water safety plans for small-scale supplies?

5. Are there clear pathways to:	
Enabling behaviour change	● Does the proposal support **behavioural change campaigns and programmes** tailored for different populations, for example rural and island residents who depend on private water supplies and private wastewater systems; or communities for whom English is not a first language? ● Does it offer **regulatory and financial mechanisms to better enable households and businesses to manage demand** beyond relying on smart metering? ● As part of the above, does the proposal enable **the installation of water-saving and water-reuse measures** (such as greywater recycling, rainwater harvesting and household-scale blue-green infrastructure) within building standards and design guidance, particularly in urban and other mains-connected areas where most water is used, as well as composting toilets and similar solutions in rural and island properties not connected to public sewers?
Supporting circular economies, skills and a just transition	**a. Does the proposal support the decarbonisation of water services?** ● Does it support and strengthen the delivery of Scottish Water's Net Zero Emissions Routemap, and does it enable the production of a Net Zero Delivery Plan for privately owned systems? **b. Does the proposal support innovation and skills development in the water industry that give rise to new technologies, and that create jobs and community wealth?** ● Does it **target incentive schemes to Scottish enterprises** involved in decarbonising water supply chains, in designing or installing decentralised water technologies and in developing processes which assist with removing contaminants from water systems? ● Do the incentive schemes offered link to **apprenticeships and employability programmes** to address skills shortages and sustain local employment? ● Does the proposal support **accreditation / competency standards** for contractors and suppliers working in the water industry, tailored in particular to rural and island needs? ● Does it look at the positives of processing sewage, supporting mechanisms to underpin **circular economies** involving domestic, business and industrial waste, including in rural and island areas where lower volumes of waste may require an adapted regulatory regime?
Tackling pollution	● Does the proposal establish a **watchlist for contaminants of emerging concern**, informed by recommendations from the Centre of Expertise for Waters (CREW) and taking account of the EU's recast Drinking Water Directive and recast Urban Wastewater Treatment Directive (the latter introducing producer-pays funding for removing micropollutants)? ● Does it implement the r**ecommendations of the Sewage Coalition and of the Loch Leven Sea Savers** noted in this guidance, and the recommendations that will emerge from the Coastal Communities Network?

	• Does it introduce legal **penalties and statutory offences** for wastewater mismanagement to combat polluting events, while also recognising where individuals and businesses may need **compliance support**? • Does it ensure there is **adequate resourcing** of bodies, such as SEPA and local authority Environmental Health Teams, that investigate concerns and complaints and enforce compliance around water-related issues?
Responding to emergencies	• Does the proposal support **Community Resilience Groups** in developing local emergency plans, with access to funding and to regional and national partnerships? • Does it provide a clear framework for **fair allocation of water resources** among domestic, industrial, agricultural and other uses during periods of scarcity? • Does it provide for **adequate compensation mechanisms** for those affected by flooding and other water-related emergencies, looking across the compounded impacts of interlinked risks?

6. Is the proposal underpinned by fair and enabling financing mechanisms?

- Does the proposal enable **fair pricing mechanisms** for services received by households and businesses on private water and wastewater systems, and those on mains networks?
- Does it assess, in consultation with private water supply and wastewater system owners, different **models of financing support**, including government grants and incentives, ring-fenced local levies, the redirection of part of the council tax discount for unconnected households, or the creation of cooperative financing? Are these models designed to be affordable, to protect low-income households and to give communities a say in how revenue is spent?
- Does it propose **working with the UK Government** where necessary, e.g. to remove VAT on pumps and pump installations?
- Does it enable **development planning to combine multiple dispersed budgets** to achieve agreed water objectives, following the example of the Greater Manchester Combined Authority's Integrated Water Management Plan?

Section 5: 'Waterproofing' policy areas

'Waterproofing' policy areas means ensuring that water is considered systematically in the design, implementation and evaluation of policy initiatives.

The case studies below provide examples of how water resource management and water services planning intersect with specific policy areas, and the considerations (mitigations, enabling action etc.) which should shape their design.

5.1 Case study: Mental Wellbeing

Water bodies are an enabler of mental wellbeing, but only for those who can access them:

- Blue spaces including rivers, lochs, canals, beaches and coasts in the Forth region are used by an estimated 1.1 million adults (83.7%) each year and deliver substantial, measurable health value.
- Their benefits are felt most strongly in mental health and wellbeing: lifting mood (93.0%), de-stressing (89.7%) and improving mental health (86.0%).
- The spaces offer substantial health value: exposure to nature £105.2m (5,892 QALYs); physical activity £123.3m (6,912 QALYs); aquatic activities £39.6m (2,219 QALYs).
- These benefits are unequally distributed: people on lower incomes, without a car, and in poorer health visit least.
- Some of the main barriers are practical and addressable and include site facilities, transport and access, and (for non-users) awareness and distance.

Relevant publication:

Loria-Rebolledo, L.E., Antunes, M., Vicari, E., Tulloch, L., Oldcorn, E. and Chalmers, N. (2026) The Worth of Water: Valuing the Health and Wellbeing Benefits of Blue Spaces in the Forth Region. Greenspace Scotland. https://doi.org/10.57064/2164/27688

Water-related emergencies such as flooding can have devastating impacts on mental wellbeing:

Beyond physical damage, flooding has long-lasting impacts on mental health and wellbeing, affecting individuals, communities, and local services. These impacts can persist well beyond the immediate event, exacerbating existing inequalities and placing additional pressure on health and social care systems. A report by the Centre of Expertise for Waters lists a number of recommendations for those responding to water emergencies:

1. Embed mental health within flood preparedness and planning
2. Strengthen trauma informed response capacity
3. Invest in equitable long-term community resilience
4. Reduce post-flood secondary stressors
5. Strengthen evidence and monitoring

Relevant publication:

Rhian Thomas, Claire Niedzwiedz, Chiara Hill-Harding, Mhairi Campbell, Thomas Rochow, Hannah Salamon, Fiona Henderson (2026) Reducing mental health and wellbeing impacts of flooding in Scotland. Crew: Centre of Expertise for Waters
https://www.crew.ac.uk/sites/www.crew.ac.uk/files/publication/CRW2025_02%20Flooding%20and%20Mental%20Health_Policy%20Brief_FINAL.pdf

Interruption or disruption to water services or wastewater services can also have devastating impacts on mental wellbeing, in particular for households and businesses on private water supplies or wastewater systems who need to find ways of addressing the problems with little or no support.

Mental ill health can arise due to:

- Water quality concerns, including chemical or microbial contamination
- Environmental concerns, including when septic tanks are not working properly
- Financial concerns, having to pay for repairs or upgrades
- Coping with overwhelm, as a result of chronic failures and the need to incorporate activities, such as purchasing bottled water, to mitigate these

Consumer Scotland and others have suggested a range of actions to improve support for owners of private water supplies, with learning also applicable to owners of private wastewater systems.

Relevant publications:

Emma Ash (2023) Advice, support and funding needs of private water supply users. Consumer Scotland. https://consumer.scot/media/v43cues4/advice-support-and-funding-needs-of-private-water-supply-users.pdf

Sarah Hendry and Ioanna Akoumianaki (2016). Governance and management of small rural water supplies: a comparative study**. CRW2015/05.**

Water poverty, in the context of the cost-of-living crisis, can also contribute to mental ill health.

- Water poverty occurs when households struggle to afford water bills.
- Age and household income are significant predictors of water poverty in Scotland.
- Younger people are more likely than older people to experience water poverty.
- Policy design and interventions must involve people with lived experience.
- Government utilities support may be needed to alleviate water poverty in Scotland.

Relevant publication:

Heather K. Anderson, A. Bradley Duthie, Craig W. McDougall, Richard S. Quilliam, Heather Price (2025) The impact of the cost-of-living crisis on water poverty in Scotland: A lived-experience analysis. Utilities Policy.
https://www.sciencedirect.com/science/article/pii/S0957178725000980

Considerations for policy design

1. Make access to water bodies equitable. Benefits are unevenly shared, with people on lower incomes, without a car or in poorer health visiting least. Address practical barriers such as site facilities, transport and access, and awareness and distance for non-users.
2. Build mental health into flood and emergency planning. Embed it in flood preparedness, strengthen trauma-informed response capacity, invest in equitable long-term community resilience, reduce post-flood secondary stressors, and strengthen evidence and monitoring (CREW recommendations).
3. Support private water supply and wastewater owners. Households and businesses on private systems face water quality, environmental, financial and overwhelm-related stress with little or no support. Act on the advice, support and funding recommendations from Consumer Scotland and CREW, applying the learning to private wastewater systems too.
4. Address water poverty directly. Age and household income predict who struggles with bills, and younger people are more likely to be affected. Consider government utilities support, and design interventions with people who have lived experience.
5. Treat water services as a wellbeing issue. Include the mental health impacts of service disruption, contamination and failing septic tanks in how water policy is designed and evaluated, alongside the physical and financial impacts.

5.2 Case study: Tourism

Scotland's tourism offer depends on clean, well-managed water, but pressure on drainage and wastewater systems can undermine it:

- Scotland's rivers, lochs and seas are central to its visitor economy, which recorded 109 million tourism visits in 2023.
- SEPA monitors 89 designated bathing waters. For 2026, 47 are rated Excellent, 26 Good and 13 Sufficient, and three remain Poor (Kinghorn Harbour and Lower Largo in Fife, and Fisherrow Sands in East Lothian); 97% meet the required standard.
- Short-term pollution after heavy rain, from sewer overflows, agricultural run-off and surface water discharges, is the most common cause of bathing water quality problems.
- Scottish Water operates more than 4,000 combined sewer overflows, but only 34% are monitored. SEPA has asked for spill monitors on all overflows that discharge to designated bathing waters.
- SEPA expects changing weather patterns to increase pressure on drainage and wastewater systems, so keeping bathing waters and popular water-based recreation sites in good condition will require sustained investment.

Relevant publications:

Scottish Environment Protection Agency (2025) Bathing waters continue to perform well across Scotland for 2026. https://beta.sepa.scot/news/2025/bathing-waters-continue-to-perform-well-across-scotland-for-2026/

Surfers Against Sewage (2023) Water Quality Report 2023: Nation Focus Scotland. https://waterquality.sas.org.uk/wp-content/uploads/2023/11/SAS-WaterQualityReport2023-NationFocus-Scotland.pdf

Seasonal visitor peaks put pressure on small rural and island water supplies:

- Scottish Water identifies tourism as the biggest challenge to water supplies in small communities. Popular islands can see summer populations rise four to five times, and a small music festival can lift a population of 500 to 5,000 overnight.
- Small treatment works and local sources such as small reservoirs, boreholes and springs serve residents for much of the year, and levels can rise and fall quickly. Long, dry summers add further pressure.
- When supplies reach low or critical levels, responses include over-pumping from alternative sources and tankering water by ferry.
- Research on the Isle of Barra highlights the combined effect of reliance on a single reservoir, a small resident population and large numbers of seasonal visitors, and recommends water resource management plans specific to place and context.

Relevant publications:

Scottish Water. Supporting Small Communities. https://appgateway-west.scottishwater.co.uk/Your-Home/Save-Water/Supporting-Small-Communities

Kirsty Hunter, Laura Major, Jennifer Roberts (2023) Research brief: Climate resilience of water supply on the Isle of Barra. University of Strathclyde. https://strathprints.strath.ac.uk/86462/1/Hunter_etal_2023_Research_brief_Climate_resilience_of_water_supply.pdf

Many tourism businesses rely on private water supplies and wastewater systems, with limited support:

- 16% of rural households and businesses are on decentralised private water supplies drawing on boreholes, springs, rainwater harvesting and other sources. Many non-domestic properties are micro and small businesses that serve visitors and tourists, particularly in remote rural areas.
- Supplies serving businesses such as hotels, bed and breakfasts and holiday lets are 'regulated' and tested by local authorities, but they meet microbiological standards less consistently than mains supplies: in 2023, 78.8% of regulated private supplies met the coliform standard, compared with 99.75% at Scottish Water customer taps.
- Private wastewater systems face the same seasonal peaks. The sizing and siting of systems, and their proximity to watercourses, affect pollution risk, yet owners receive little oversight or support.
- Growth in campervan and motorhome tourism has increased demand for waste disposal and water facilities in rural areas. Communities and businesses have used funding such as the Scottish Government's Rural Tourism Infrastructure Fund to provide new facilities.

Relevant publications:

Centre of Expertise for Waters (2020) Private Water Supplies and the local economic impacts in Scotland. CREW. https://www.crew.ac.uk/node/320

Centre of Expertise for Waters (project CRW2020_09) Overcoming barriers to engaging with private sewerage users in support of sustainable rural water services: Policy Brief. CREW. https://www.crew.ac.uk/sites/www.crew.ac.uk/files/publication/CRW2020_09_Policy_Brief_Final.pdf

Elizabeth Lawson and Damon Davies. (2025) Scotland's water industry: overview of regulation and key challenges. SPICe briefing SB 25-52. Scottish Parliament. https://www.parliament.scot/chamber-and-committees/research-prepared-for-parliament/research-briefings/2025/10/28/sb-2552

SEPA and partners (2020) Guide to campervan waste disposal facilities. https://www.sepa.org.uk/media/594591/021220campervanwastedisposalguidance.pdf

Considerations for policy design:

1. Assess water supply and wastewater capacity, including seasonal peaks and drought risk, before promoting or funding new visitor accommodation and infrastructure in small communities and on islands.

2. Include private water supplies and private wastewater systems that serve tourism businesses in advice, monitoring and funding programmes, including tourism infrastructure funding.

3. Plan drainage and wastewater investment around bathing waters and popular water-based recreation sites, with transparent monitoring of sewer overflows.

4. Target water-efficiency messaging and visitor information at seasonal hotspots, working with community groups and businesses.

5. Use place-specific water resource plans to balance visitor demand with the needs of resident households.

5.3 Case study: Housing

Delivering more homes depends on water and wastewater capacity, which often constrains where and how quickly homes can be built:

- The Scottish Government declared a national housing emergency on 15 May 2024. Its target is 110,000 affordable homes by 2032, at least 70% for social rent and 10% in rural and island communities.
- Sites can be constrained by insufficient capacity at water or wastewater treatment works, or by sewer flooding. Planning Advice Note 79 sets out that early discussion between developer and Scottish Water establishes whether capacity exists, with no guarantee that identified capacity will remain available.
- Scottish Water works with local authorities, SEPA and housebuilders to steer housing allocations to areas where network and treatment capacity already exist. This approach can disadvantage rural areas which rely on private water supplies and wastewater systems.
- Connection costs can be disproportionate for small schemes: a rural SME builder reported that Scottish Water required a water main upgrade costing an extra £200,000 for a 12-home development.

Relevant publications:

Scottish Government (2006) Planning Advice Note 79: Water and drainage. https://www.gov.scot/Publications/2006/09/26152857/5

Scottish Water (2020) Consultation response: Housing 2040. https://appgateway-north.scottishwater.co.uk/-/media/ScottishWater/Document-Hub/Key-Publications/Scottish-Water-Responses-to-External-Consultations/2019-2020-Responses/160620Housing2040ResponseScottishGovernmentFebruary2020.pdf

Scottish Land Commission (2024) Land supply for housing in rural Scotland. https://www.landcommission.gov.scot/downloads/67aa23fd8803c_Land%20supply%20for%20housing%20in%20rural%20Scotland.pdf

Scottish Government (2025) Tackling Scotland's Housing Emergency. https://www.gov.scot/publications/tackling-scotlands-housing-emergency/pages/1/

How new homes manage rainwater determines drainage capacity, flood risk and water quality:

- Keeping surface water out of combined sewers in new development, and removing it where areas are redeveloped, frees up wastewater treatment capacity, helps remove development constraints and reduces the frequency of emergency overflows. Scottish Water's current policy is to accept no new surface water connections to combined sewers except in exceptional circumstances.
- National Planning Framework 4 (NPF4) Policy 22 requires new development to avoid flood risk and to manage rain and surface water through sustainable drainage systems (SuDS), alongside Policy 18 (infrastructure first) and Policy 20 (blue and green infrastructure).
- Responsibility for planning, funding and long-term maintenance of SuDS and other blue-green infrastructure is spread across several bodies, which is a recognised barrier to adoption.
- Flooding, including sewer flooding, also damages homes and mental wellbeing (see 5.1).

Relevant publications:

Scott Macphail. If we want the most from brownfield sites, we must provide the infrastructure to make it possible. Scottish Housing News. https://www.scottishhousingnews.com/articles/scott-macphail-if-we-want-the-most-from-brownfield-sites-we-must-provide-the-infrastructure-to-make-it-possible

Consumer Scotland. Barriers to the adoption of blue-green infrastructure: literature review. https://consumer.scot/publications/barriers-to-the-adoption-of-blue-green-infrastructure-literature-review/

In rural and island Scotland, homes often depend on private supplies and wastewater systems that can be costly and fragile:

- Installing a new supply can cost tens of thousands of pounds. One island community development officer reported that the most recent borehole in their area cost £16,000, a significant barrier to an affordable housing scheme.
- Scottish Water may be unable to supply new developments even where funding is available, because of limited source capacity or the difficulty of extending networks across remote terrain.
- New housing can strain existing private supplies through increased demand and risks to catchments, while customary water-use arrangements may not fit regulatory definitions of protected supplies.
- Water problems and depopulation reinforce each other: fewer skilled residents are available to manage supplies, and difficulties with water deter people from settling or returning.

Relevant publication:

Laura Major, Jennifer Roberts and Elizabeth Lawson (2025) Homes need more than land: remembering water in rural and island development planning. SISC blog, University of Strathclyde. https://www.strath.ac.uk/business/huntercentreforentrepreneurship/sisc/newsandblogs/04-09-blogpost

Considerations for policy design:

1. Treat water and wastewater capacity as part of the 'infrastructure first' test in site allocation and housing programmes, engaging Scottish Water early and identifying funding for capacity upgrades alongside housing funding.

2. Build rainwater and surface water management from the outset, avoiding new connections to combined sewers, and settle long-term ownership, insurance and maintenance of SuDS before development is adopted.

3. Include the feasibility, cost and support needs of private water supplies and wastewater systems in rural and island affordable housing plans, including delivery of the 10% rural and island target.

4. Protect the catchments of existing private supplies when assessing planning applications for new housing, recognising customary arrangements.

5. Enable water-efficient and water-reuse design in new homes, such as rainwater harvesting and greywater recycling and composting toilets.

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