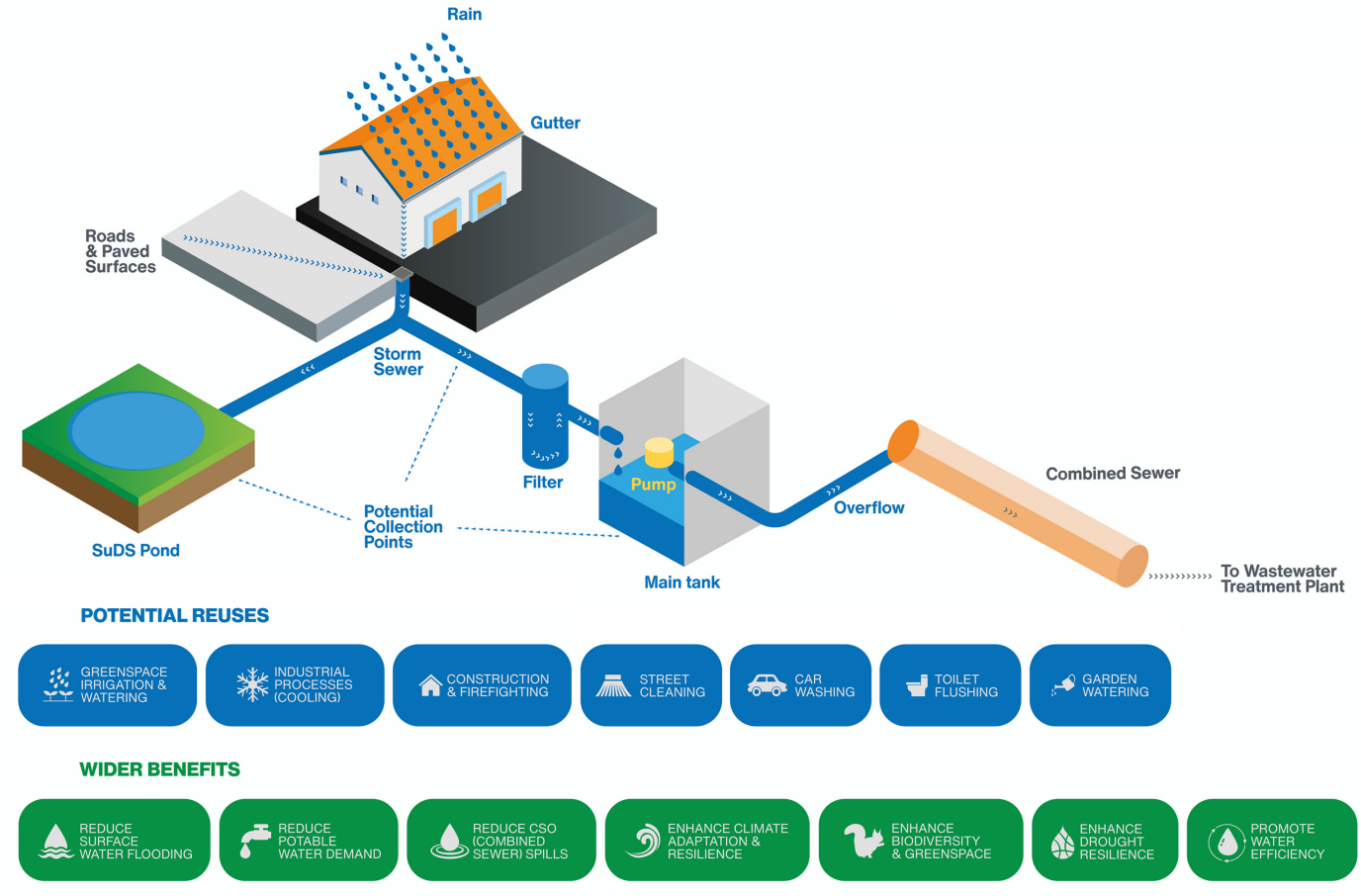
CREW CENTRE OF EXPERTISE FOR WATERS

Transitioning Surface Water Collection to Surface Water Reuse Systems

Annex B. Legislation and Policy Review

Cuthbertson A., Wade R., Black A., Duffy A., Hendry S., Leask F., Ralph E., Sezen E., Varghese A., Ward K.



University of Dundee
Abertay University
Scottish Government gov.scot

CREW CENTRE OF EXPERTISE FOR WATERS

Transitioning Surface Water Collection to Surface Water Reuse Systems

Annex B. Legislation and Policy Review

Cuthbertson A., Wade R., Black A., Duffy A., Hendry S., Leask F., Ralph E., Sezen E., Varghese A., Ward K.

University of Dundee
Abertay University
Scottish Government gov.scot

CREW CENTRE OF EXPERTISE FOR WATERS

Published by CREW – Scotland's Centre of Expertise for Waters. CREW connects research and policy, delivering objective and robust research and expert opinion to support the development and implementation of water policy in Scotland. CREW is a partnership between the James Hutton Institute and all Scottish Higher Education Institutes. The Centre is funded by the Scottish Government.

This document was produced by:
Alan Cuthbertson[1], Rebecca Wade[2], Andrew Black[1], Alison Duffy[2], Sarah Hendry[1], Fraser Leask[1], Eliza Ralph[2], Ege Sezen[2], Abby Varghese[1], Kate Ward[1].

[1]University of Dundee, Nethergate, Dundee, DD1 4HN
[2]Abertay University, Bell Street, Dundee, DD1 1HG

CREW Project Managers: Maureen Whalen, Nikki Dodd, Anishka Cameron

Please reference this report as follows:
Cuthbertson A., Wade R., Black A., Duffy A., Hendry S., Leask F., Ralph E., Sezen E., Varghese A., Ward K. (2026) *Transitioning Surface Water Collection to Surface Water Reuse Systems*. Annex B. CRW2024_06. Scotland's Centre of Expertise for Waters (CREW).

Available online at: https://www.crew.ac.uk/publications/transitioning-surface-water-collection-to-surface-water-reuse-systems

ISBN: 978-1-911706-47-2

Dissemination status: Unrestricted

Acknowledgements: We would like to sincerely thank Nikki Dodd, Maureen Whelan, Anishka Cameron and Amy Cooper at CREW for their support and guidance throughout the project. We also gratefully acknowledge the insightful comments and suggestions from the project steering group [Tamsyn Kennedy and Dayne Hart (both Scottish Water), and Shona Hamilton (Consumer Scotland)] on the project focus, priorities and draft outputs. We also pay a huge debt of gratitude to Dom McBennett, Emma Robson and Gordon Stenhouse at Scottish Water for their support in accessing many of the invaluable GIS resources and drainage model outputs that support our reuse scenarios, and for finding time to share their collective expertise on the Hatton wastewater catchment study area. Finally, we would like to thank all participants in the stakeholder workshop for sharing their sector knowledge and suggestions around transitioning to surface water reuse.

Cover infographic courtesy of: Abertay University.

Please contact enquiries@crew.ac.uk, to request report in an alternative format.

Contents

List of tables

B1. Introduction

This report analyses the applicable law and policy frameworks for surface water reuse, and should be read in conjunction with the literature review (Annex A). It is worth noting that in general and historically, surface water has been addressed in law (in many countries) primarily as a matter for municipal authorities, relevant to the built environment and road drainage. Only more recently has it been seen as part of the management of water resources.

This report provides an overview of the international context, along with policy and legislation from the EU, and a detailed review of relevant policy and law from Scotland and England. As with the broader literature review, terminology can be used differently by different authors but also in different jurisdictions. Some legislation may provide specific definitions for terms, but those same terms may be given different meanings elsewhere. This annex will use specific terms as defined in specific legal instruments.

B1.1 The International Context

There is little applicable international law. Globally, there is one global Convention on transboundary watercourses (United Nations 1997), which does address in general the need to avoid 'significant harm' but is applicable only to shared rivers. The Helsinki Convention (UNECE 1992), which was a regional convention subsequently opened globally, has more on wastewater, including the use of 'best available technology' and the requirement for permits for discharges, and also the expectation of 'stricter requirements' to protect the receiving water and its ecosystems, as well as prevention of diffuse pollution. Again it is intended for transboundary waters; the UK is a party as is the EU, and within the EU it is 'rolled into' the Water Framework Directive (WFD; EC 2000). It does not specifically address surface runoff.

UN-Water (a coordinating mechanism of UN entities and international partner organisations) has reported on Wastewater and on Nature-based Solutions (WWAP, 2018).

The report on wastewater (WWAP 2017) focuses on treating wastewater as a resource, within the context of the Sustainable Development Goals (SDGs, UNGA 2015) and the global failure to collect and treat wastewater, in the global South especially. It does discuss small, decentralised treatment systems, the use of ecosystems to filter wastewater, and the preventive principle. It promotes the use of reclaimed water as well as recycling of grey water within buildings. It recognises that urban runoff is usually a municipal function and often separated from water resources management and from water services; and notes the disadvantages of combined sewers and that urban runoff 'could be directly reused for certain purposes, but once combined with blackwater it would require additional treatment' (section 5.5). There is a section on using rainwater and surface runoff to create and improve green spaces (section 5.6) whilst also managing urban flooding.

The report on nature-based solutions (WWAP 2018) focuses on different types of blue-green infrastructure, in both urban and rural settings. There is a recognition of the need to leverage finance and for an enabling regulatory and legal environment.

The World Health Organization has also produced policy guidance for states on the reuse of wastewater (WHO 2006, 2013). Volume 1 is on policy and regulation, recognising that this is the primary way to change behaviours. Volume 4 discusses greywater reuse, but the focus is on agricultural use, in the context of the global South, and especially, the potential health impacts for agricultural workers.

The World Bank has reported on water resilience and the circular economy (Delgado *et al* 2021), including the reuse of treated wastewater and use of green infrastructure, to maximise the value of the resource. There is specific mention of using green space to abate urban runoff and managing urban flooding.

B2. The European Union

Despite the UK having left the EU, much EU water (and environmental) law is generally still 'assimilated law', that is, in force throughout the UK via domestic implementing regulations. These are not usually UK-wide, but vary across the four jurisdictions. Environmental law is a devolved responsibility in Scotland, and some aspects, especially water law, have always been separate even prior to devolution.

In Scotland (but not in England) there is a statutory principle of continued alignment with EU law (under the *UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021* s 1). It is likely that there will be further divergence in future, although there is growing recognition in some areas of environmental policy of the benefits of some more alignment in England as well (see e.g. Independent Water Commission 2025 and section 4.2 below). EU water law will remain influential for the foreseeable future, both in terms of subsisting legislation and in terms of policy development.

B2.1 Water Resilience Strategy and Related Policy Contexts

Most recently, the EU has published its Water Resilience Strategy (European Commission 2025), in the context of sustainable development and business opportunities and risks, as well as long-term climate scenarios impacting on water security. Although the strategy is broad and high level, it does have some interesting material on 'sponge cities' to absorb urban runoff. There is also discussion of wastewater reuse, managing leakage and water efficiency, as well as housing and planning, and public awareness.

The European Environment Agency (EEA 2021a) has identified storm water as a contributor to poor water quality and suggests rainwater harvesting as an innovative measure for tackling scarcity and over-abstraction – identifying management of surface water runoff as a mechanism to tackle multiple problems.

The EEA has also reported on nature-based solutions (EEA 2021b) to achieve climate goals and for disaster risk reduction. The primary focus for water is flood management, but also managing water quality and water stress. They identify (in an urban context) 'targeted planting to catch precipitation, land use conversion to improve water quality; green roofs; urban rainwater harvesting; [and] sustainable urban drainage systems' (para 1.2.6).

B2.2 The Water Framework Directive and related EU water laws

The WFD (EC 2000) established two core sets of obligations for states; river basin planning, and the achievement of 'good ecological status' (or potential) for surface waters. This is not the place to review the depth or the breadth of the WFD, but there are a few relevant points. Amongst other things, the WFD does require states to manage diffuse pollution, into surface waters and groundwaters. It requires full cost recovery of water services, which are defined broadly, and also that 'water-pricing policies provide adequate incentives for users to use water resources efficiently' (Art 9.1). The only mention of run-off is in relation to groundwater, to manage land use including land sealing. The sealing of soil is a prevalent cause of surface water flooding all over the world, including in Scotland.

The *Priority Substances Directive* (EU 2013) sets quality standards for receiving waters for a set of listed chemicals, mainly pesticides and heavy metals, and with a 'watch list' of emerging contaminants. States can also add substances of concern at national level. Some of these substances, as well as other contaminants, might be present in urban runoff, from roads especially. A new EU Regulation (EU 2024a) has established stricter standards for, among other things, car tyres, for environmental protection including of the water environment.

The *Floods Directive* (EC 2007) recognises urban floods as a category, and the use of floodplains for retention, as well as the role of land use planning. It promotes the reduction of flood risk and retention by sustainable land uses.

B2.3 The Urban Wastewater Treatment Directives

The first *Urban Wastewater Treatment Directive* (UWWTD, EEC 1991) is currently in force through regulations in the UK jurisdictions (see below), and focuses on collection and treatment of domestic and industrial wastewater. It includes 'run-off rain water' within 'urban waste water' but makes no specific provisions. It does provide that 'treated waste water shall be reused wherever appropriate'

(Art 12). The first Bathing Waters Directive (EEC 1976) which like the UWWTD required Member States to invest in wastewater treatment plant (WWTP), had a derogation for failures caused by 'adverse weather conditions' (Art 8).

In 2024, a Recast Directive was agreed (EU 2024b). This is a much more ambitious instrument, mandating among other things quaternary treatment to strip out pharmaceuticals and other contaminants of emerging concern, extended producer responsibility to pay for this, and energy neutrality by 2040. This will drive the next generation of WWTP across the EU, just as the 1991 Directive did in the 1990s, and it is a matter of pressing concern as to whether the UK jurisdictions will align, either explicitly or in practice.

In terms of urban runoff, although not the main focus, there are relevant provisions. The Preamble notes (para 11) that storm water overflows and urban runoff are a 'sizeable remaining source of pollution', and that 'measures could include preventive temporary measures aimed at avoiding the entry of unpolluted rain waters into collecting systems or temporary storage, including natural water retention, and appropriate treatment of heavily loaded runoff or overflows resulting from first rains…. Member States are encouraged to increase green and blue spaces in urban areas' (para 12). There is a requirement to monitor storm water and runoff going into watercourses, for water quality purposes.

Article 5 and Annex V are especially relevant in the requirement for Integrated Urban Wastewater Management Plans for larger agglomerations (initially ≥100,000 people equivalent, and then between 10,000–100,000 p.e.). The plans should identify where polluted runoff from separate sewers is likely to be a risk to the environment or human health; and prioritise 'green and blue infrastructure'. In Annex V the latter are specified to include 'infrastructure such as vegetated ditches, treatment wetlands and storage ponds designed in order to support biodiversity'. Annex V also notes that authorities should take 'preventive measures aimed at avoiding the entry of unpolluted rain waters into collecting systems, including measures promoting natural water retention or rainwater harvesting, and measures aimed at increasing green and blue spaces in urban areas in order to reduce storm water overflows or limiting impermeable surfaces in the agglomerations'.

This sort of provision is indicative of strong and positive trends for management of surface water.

B2.4 Water Reuse

The *Water Reuse Regulation* (EU 2020) focuses on agricultural reuse from treated wastewater. This Regulation emphasises the potential impact on human health, including drinking water quality, so places responsibility on the operators of reclamation facilities to monitor the quality of the reclaimed water at the point of supply. Further obligations are placed on end-users.

The Annex sets the minimum requirements, with four quality classes differentiating between crop types and irrigation methods. Quality and monitoring requirements are set for *E.coli,* suspended solids, turbidity and biological oxygen demand, as well as legionella and helminth eggs. States can have additional standards in domestic law, including for different purposes beyond agriculture.

There is a presumption that the supplier (or the reclamation facility) will have a permit, and that national law may require this for the end-user as well. There is an expectation of a further level of treatment beyond that required under the UWWTD, therefore it does not provide for reuse of surface runoff that has not been collected and treated. However the emphasis on risk management planning, on end-user education and training, and on public awareness, would all be relevant to any large scale reuse of surface runoff, as might be permitting, and compliance duties at the point of supply.

B2.5 Circular Economy

The Circular Economy Action Plan (European Commission 2020) is subtitled 'For a cleaner and more competitive Europe', indicating a dual agenda and the potential for 'win-wins' from reducing waste and reusing resources. It includes sustainable products and circularity in production and in value chains. It references the Water Reuse Regulation as well as the reuse of water, and water efficiency generally, in industrial processes. 'Ecodesign' should be at the heart of initiatives.

B2.6 Water Efficiency and eco-labelling

In 2024 the EU replaced the previous *Ecodesign Directive* (2009/125/EC) with a Regulation (EU 2024c, 2024/1781). The Directive applied to energy-related products. The Regulation is broader in scope and for Member States, is directly applicable without implementing domestic law. It is made in

the context of the 'Green Deal' and the Circular Economy Action Plan. There are provisions affecting third countries (such as the UK) for products sold into the EU. Water use, anywhere in the lifecycle of a product, is a factor listed in Annex I (g) as a parameter for improving product design.

The EU has a well-established scheme for voluntary ecolabelling, established now by a Regulation (EC 2010, 66/2010) – the EU Ecolabel scheme. There is also a specific mandatory framework for energy labelling (EU 2017, 2017/1369), but as with design rules this did not extend to all water fittings or appliances. There are several Europe wide voluntary labelling schemes for water fittings and efforts in recent years to consolidate these under the 'Unified Water Label' (UWLA n.d.).

B3. Scotland

B3.1 Legislative overview

In Scotland, water resources and water services, including wastewater, are devolved under the *Scotland Act 1998*. These were always separately controlled, but the re-establishment of the Scottish Parliament enabled more time and attention to be given to the Scottish law. The early 2000s saw a series of important Acts in both water resources and wastewater. Environmental law generally is also devolved, including implementation of relevant EU law before Brexit. Under the *Withdrawal from the European Union (Continuity) (Scotland) Act 2021* (s 1) the Scottish Government is committed to a principle of alignment with developing EU environmental law, although if there are 'market' implications this may be challenged by the UK Government under the *UK Internal Market Act 2020*. Different approaches are likely to mean increasing divergence across the UK jurisdictions in environmental policy and law.

This section provides an overview of key legislation and specific rules will be considered in later sections.

B3.1.1 Water Resources

The *Water Environment and Water Services (Scotland) Act 2003* (WEWS Act) implemented the Water Framework Directive in a holistic way, bringing in river basin planning and enabling regulations and Ministerial Directions. These included the Water Environment (Controlled Activities) (Scotland) Regulations (CAR, Scottish Government 2011, SSI 2011/209). The CAR created an integrated and proportionate regime for authorising all water uses (abstractions, discharges, impoundments and river works), with tiers of control including General Binding Rules, registrations and full licences.

The WEWS Act also defined sustainable urban drainage systems (SUDS, s 33 and 3.6 below). Some less potentially harmful water uses, including some SUDS, are authorised under General Binding Rules (CAR Sch 3 paras 10A, 10B, 11) which are automatically authorised under CAR.

The WEWS Act (s 2(4)(c) and the *Flood Risk Management (Scotland) Act 2009* (s 1(2)(d)) both contain a duty on the Ministers, SEPA and all responsible authorities to 'so far as practicable, adopt an integrated approach by co-operating with each other with a view to co-ordinating the exercise of their respective functions'. At the stakeholder workshop it was suggested that a similar duty could apply to management of surface water. That would require legislative change, whether by clarifying that the activity was within the scope of the functions in one of these Acts or in another instrument. If a Scottish Water Bill were to be introduced, the opportunity to include such a provision could be explored.

In November 2025 the CAR was replaced by the Environmental Authorisation (Scotland) Regulations (EASR, Scottish Government 2018, 2025, SSI 2018/219, SSI 2025/165). The EASR will also replace current rules on industrial pollution, and much of the law on air pollution and waste. There will be extensive transitional arrangements but many features of the CAR will be retained, including the General Binding Rules.

In both sets of regulations SEPA is able to apply a higher level of control (e.g. registration or licence under the CAR or notification, registration or permit under the EASR) if the impact on the water environment so requires.

The *Water Resources (Scotland) Act 2013* made important provision for the Ministers to 'take such reasonable steps… for … ensuring the development of the value of Scotland's water resources' (s 1(1)) and to 'do so in ways designed to promote the sustainable use of the resources' (s 1(2)). 'Value' is defined to include 'monetary or non-monetary value' and includes economic, social, environmental or other benefit' (s1(3)).

B3.1.2 Water Services

The principal legislation for drinking water is the *Water (Scotland) Act 1980*, and for wastewater the *Sewerage (Scotland) Act 1968*. These have both been much amended and the Scottish Government has suggested that reform and rationalisation would be helpful (Scottish Government 2023 and below).

The *Water Industry (Scotland) Act 2002* created Scottish Water and the *Water Services (Scotland) Act 2005* created the current regime for economic regulation through the Water Industry Commission for Scotland.

There are numerous detailed regulations especially around drinking water quality and wastewater, implementing EU directives.

B3.1.3 Other Relevant Legal Regimes

The *Flood Risk Management (Scotland) Act 2009* implemented the Floods Directive (EC 2007).

Planning law is complex and the *Town and Country Planning (Scotland) Act 1997* has been much amended, including by the *Planning (Scotland) Acts 2006 and 2019*. Most relevant for this project is the Town and Country Planning (General Permitted Development) (Scotland) Order 1992 (Scottish Government 1992, SI 1992/223), also as much amended.

The *Roads (Scotland) Act 1984* provides, among other things, for drainage of roads and gives powers and duties to local authorities and the Scottish Government.

Building Standards are made under the Building (Scotland) Regulations 2004 (Scottish Government 2004 SSI 2004/406 as amended) and enabled under the *Building (Scotland) Act 2003*.

The *Circular Economy (Scotland) Act 2024* creates a framework, requiring a strategy and targets to reduce waste and increase reuse. Ministers have since published the Circular Economy and Waste Route Map (Scottish Government 2024a). This strategy document does not address water or wastewater directly but does reference water stress and water scarcity as driving factors and in the context of farming and food waste. Nonetheless the overarching concept is highly relevant to capture and reuse of surface runoff.

B3.2 Policy and Strategy for Water – Scottish Government

B3.2.1 Water Resilient Places

In 2021, the Scottish Government published a policy framework for surface water management and blue-green infrastructure (Scottish Government 2021). This was jointly produced by the Water Industry and Flood Risk Management teams. This notes the pressure on drainage systems and the win-wins of tackling climate mitigation and adaptation, improving the urban environment and addressing surface water flooding. It notes the need for coordination as well as competing priorities within the responsible authorities, and recognises the difficulties with retrofitting both buildings and wider urban infrastructure.

There are a series of recommendations, which are policy-focused. Recommendation 14 specifies that '[t]he drainage of surface water from all new sites wherever practicable should be by blue-green infrastructure. Land for blue-green infrastructure should be a site pre-requisite and all designs should presume no rainwater connection to sewer.' Recommendation 15 states '[i]t should be a priority for existing developed areas to remove as much surface water from sewers as possible through disconnection, retrofitting and diversion to blue green infrastructure. (Incentives and guidance should be put in place to support this)'. There is mention of legislative barriers, though the only one specified is about ownership and ongoing maintenance.

B3.2.2 The water and drainage consultation and the charging regime

In 2023, the Scottish Government consulted on possible reforms to the law and policy for water, wastewater and drainage (Scottish Government 2023). The consultation placed the need for reform as driven by water scarcity, climate change and also flood management. It also recognised that some of the applicable law is very old and that rationalisation and updating would be beneficial.

An analysis of consultation responses was published in 2024 (Scottish Government 2024b) but in the Programme for Government 2024/25 the Government said this would not be taken forward in the current Parliamentary session, although the Parliament is developing some position papers to support this in future.

The consultation recognised that there are costs to changing the management of surface water and asked several questions around charges for drainage (from both household and business premises). Currently, householders pay separate water and wastewater charges, collected along with council tax and banded at national level. Drainage is included in wastewater charges, but the consultation suggested it should become a 'visible' and explicit third service, presumably by separating it out in the charging notices. The consultation suggested various mechanisms by which householders could improve surface water collection on properties, such as grey water systems, water butts or raingardens, and invited comment on how these could be incentivised. This is challenging, as for owner-occupiers the charges are relatively low and pay-back periods for any investment would be lengthy. There are wider difficulties with rented property and with tenements and other flatted dwellings.

Business premises pay for drainage based on rateable values and this has been contentious for some time, with calls for this to be changed to surface area. As with any such change there would be winners and losers; the Scottish Government's current Principles of Charging 2021-27 (Scottish Government 2020, made under the Water Industry (Scotland) Act 2002 s 29D) note that drainage is included in wastewater charges for householders. The Principles specify a review by 2025, to inform the next round of Scottish Water's business planning, as to whether a charge by surface area would be more appropriate and noted this should include the costs and benefits of 'innovative drainage approaches' (para 11).

Given the general concern in Scotland, and reflected in the consultation, that there are no incentives to encourage water efficiency through the domestic charging regime, it is worth noting that for business customers, incentives do exist. As well as (normally) a metered supply, if a business customer either increases or (of more interest) reduces costs for SW, there can be a departure from the charging scheme to reflect this (*Water Industry (Scotland) Act 2002*, s 29E). Licensed suppliers often work with their larger customers to achieve efficiency gains, and this might include greywater reuse, reuse of production water, or other mechanisms.

The methodology for the strategic review of charges 2027-2033 (Water Industry Commission for Scotland 2024) refers throughout to 'water, wastewater and drainage services'. It notes the need to 'consider the drainage of towns and cities to address flooding and reduce the knock-on economic impacts' in relation to climate adaptation (p 34); providing essential services in a changing climate was also required in the Scottish Government's commissioning letter (Box 5). The methodology also notes the need for 'more widespread adoption of sustainable drainage solutions' (p 102-103). This section refers to blue-green infrastructure and the possibility of paying, e.g., local authorities to implement 'above ground solutions'. All of this indicates a positive and solution-driven approach to managing surface runoff.

B3.2.3 National Water Scarcity Plan

The Scottish Environment Protection Agency (SEPA, the environmental regulator) has a water scarcity plan (SEPA 2020). This sets criteria for determining 'significant water scarcity' and SEPA reports regularly on current water scarcity levels (SEPA n.d.) Where there is significant scarcity, SEPA can adjust abstraction licences issued under CAR.

B3.3 Scottish Water Strategic Planning

Scottish Water's Vision (Scottish Water, n.d.) states that 'waste water will be collected, treated and recycled in ways that generate value and protect people and the environment'.

In 2025 they published a Long-Term Strategy (Scottish Water 2025), referencing nature-based solutions over 25 years. This includes rainwater capture at household level, and raingardens and blue green spaces at community level. Key drivers are climate change, population change and ageing infrastructure.

Scottish Water is a key stakeholder for River Basin Management Plans under the WEWS and carries out Water Resource Planning, but this is acknowledged (Scottish Government 2023) to be insufficient in terms of overall national water planning, as it does not include other abstractors or abstractions.

Dundee is a case study (p 17) for water-resilient cities and strategic catchment planning, with a variety of infrastructure improvements to reduce the volume of surface water going into the sewers. Management of rainwater through 'blue-green solutions' is discussed further (pp 64-65) as is 'drainage as a service'.

Their Climate Change Adaptation Plan is also relevant (Scottish Water 2024a), predicting increased risks from both drought and flood and the need for catchment scale planning, asset capacity, reducing demand and increasing resilience. It recognises

the impact of surface water on sewer flooding and CSOs, and that their stormwater strategy aims to remove rainwater from combined sewers, including through blue-green infrastructure. Again Dundee is noted as a partnership project. There is mention of what individual householders can do, but that more impact is possible by working with businesses and public bodies. Surface water is also recognised as a risk for flooded assets.

The Urban Water Route Map (Scottish Water 2021 and annual updates) is produced in conjunction with SEPA and is primarily focused on sewer spills. It recognises the need to reduce the volume of surface water entering sewers.

B3.3.1 Surface Water Policy

The Surface Water Policy (Scottish Water 2017) provides guidance for developers and planners. It expects that for new developments there will be Sustainable Urban Drainage Systems (SUDS) and also identifies multiple benefits from this approach. It suggests that multiple SUDS across a site are preferable to a single 'end of pipe' feature. It also notes that since the implementation of the WEWS Act 2003 and the CAR, Scottish Water is implementing statutory agreements with roads authorities regarding the drainage and treatment of water entering their systems from road drains. Sewers for Scotland v4 (Scottish Water 2018) includes technical specifications for surface water drainage systems (see also section 3.6 below).

Their preferred option hierarchy for surface water is that it is stored on site and then reused; secondly, that it soaks to soil; and thirdly, that it drains to a watercourse; fourthly, to a surface water sewer; and the last option, where nothing else is feasible, to a combined sewer. The policy notes the need to reduce surface runoff if an extension means an additional paved area, but this does not sit well with general permitted developments in the planning framework (3.5 below).

B3.3.2 Water Byelaws and Water Fittings Regulations

Scottish Water have the power to make the Water Byelaws under the Water (Scotland) Act 1980 s 70 (Scottish Water 2014). These make reference to approved water fittings and to approved contractors under the Water Supply (Water Fittings) Regulations (which apply in England and Wales, HMSO 1999, SI 1999/1148). The Byelaws also make reference to British Standards or their equivalent (for example a European Technical Assessment).

Under Byelaw 5, Scottish Water must give consent to grey water or rainwater harvesting systems. If a householder wanted to install such a system, especially if a specified drainage charge is to be levied in future, a reduction could be provided for householders who put in such systems. However the cost of the installation would need to be reasonable, or support provided, relative to the relatively small amounts that might be saved under such a scheme.

B3.4 Flood management

The principal legislation, the *Flood Risk Management (Scotland) Act 2009*, implemented the Floods Directive (EC 2007). SEPA is the responsible authority for Flood Risk Management Plans (ss 27–33) and local authorities prepare Local Plans at catchment level (ss 34–39). Scottish Water must assess flood risk from sewerage (s 16). SEPA provides extensive guidance on flood risk for planning authorities and developers (SEPA n.d.).

Local authorities are expected to prepare Surface Water Management Plans for their areas, including mapping SUDS (s 17). The Scottish Government has published guidance on these plans (Scottish Government 2018b), focused on areas most at risk and recognising, among other things, the impact or urbanisation on drainage processes.

This guidance gives a broad definition of surface water flooding, including pluvial flooding, flooding from sewers, from small urban watercourses and groundwater flooding. Again it notes the need for coordination and the potential for multiple benefits.

The National Flood Resilience Strategy (Scottish Government 2024c) reflects the reality that funding to support individuals and communities is limited, especially from local authorities. The 'guiding principles' shift the emphasis from 'fixing problems' to creating flood resilient places, in the context of climate change and the Just Transition. The strategy refers to nature-based solutions, including SUDS, and strategic drainage networks. 'Water Resilient Dundee' and the Eddleston are both referenced.

Audit Scotland has reported this summer on 'Flooding in Communities' (Audit Scotland 2025). They note the increased emphasis on communities and individuals in the Strategy and that communities need to be better prepared,

and the risk of inequalities. They identify a need for improved coordination between central and local government and relevant agencies, as well as Scottish Water. They note issues around data and have a focus on funding major flood schemes, where they say the allocation of funding is not fit for purpose. They do note urban flooding and the use of SUDS; the impact of land use and planning policy on absorption through soil; and the potential biodiversity gains and other co-benefits from some flood prevention approaches, particularly for disadvantaged communities. They note divergent approaches by different local authorities, which may be especially relevant to the local problems and solutions assessed in this project. The Eddleston is referenced, as is a project in Cardonald using a community park to absorb water.

NatureScot are supportive of nature-based solutions as contributing to climate change adaptation and to ecosystem services. In an urban context they discuss blue-green infrastructure as a vehicle for urban resilience with multiple co-benefits.

SEPA provides extensive guidance on flood risk for planning authorities and developers (SEPA n.d.).

B3.5 Land Use Planning

The National Planning Framework 4 (NPF4, Scottish Government 2023b) is a national spatial strategy, including high level planning policies. Policy 20 addresses blue and green infrastructure (BGI) to deliver multiple benefits including flood prevention and water management. Developments incorporating new or enhanced BGI should be supported, and these should provide 'effective management and maintenance plans' (20.c., p 70). Policy 22 addresses Flood Risk and Water Management and seeks to manage developments in flood risk areas. It specifies that new developments should not increase flood risk or permit surface water into combined sewers; that natural flood management should be supported; and that rain and surface water should be managed through SUDS, which in turn should 'form part of and be integrated with' blue-green infrastructure (22.c.ii, p 75).

Audit Scotland (2025) noted that increased risk from new hard surfaces is an issue raised by stakeholders. Currently, amendments to the General Permitted Development Order (Scottish Government 1992, Sch 1.1, Class 3C), permit hard standings within the curtilage of dwelling houses except in conservation areas or listed buildings. If the hard standing is between the house and the road, this must be of porous material, or the runoff must run to a permeable or porous surface within the curtilage of the dwelling house. A similar requirement could be made for any new paved areas, but that would not assist with existing driveways, patios etc. Nor would it extend to encouraging e.g. replacement of currently paved areas with greenspace, which might be a more desirable outcome for garden ground. Currently the incentives are operating in the wrong direction.

Again SEPA provides 'standing advice' to planning authorities and only particularly complex developments will require specific consultation (SEPA n.d.).

B3.6 Sustainable Urban Drainage Systems

In Scotland these have a statutory definition under the WEWS Act 2003 (s 33):

'… a drainage system which —

(a) facilitates attenuation, settlement or treatment of surface water from 2 or more premises (whether or not together with road water), and

(b) includes one or more of the following: inlet structures, outlet structures, swales, constructed wetlands, ponds, filter trenches, attenuation tanks and detention basins (together with any associated pipes and equipment);'

Note that whilst most literature uses the abbreviation SuDS for 'sustainable drainage systems', in Scotland the statutory term includes 'urban' with a different abbreviation.

Scottish Water (2017, above 3.3) establishes a policy framework for surface water and Scottish Water (2018) provides technical specifications for SUDS covered by the WEWS Act. Developers wishing Scottish Water to adopt their SUDS must meet these standards. SEPA also provide guidance (SEPA 2019), as does the SUDS Working Party (SUDSWP 2016). 'Private' SUDS, e.g. serving one property or not adopted, must be privately maintained.

There is an expectation that new commercial or industrial developments will make use of SUDS (SEPA 2019 para 3.3), and these should be designed to enable adoption. SEPA promoted SUDS through the planning system from the 1990s and in the early years this did cause some issues, in that there was no specific legislative provision and also no technical standards. When legislation was put in place, there was a concern that SuDS in place prior to technical guidance might not meet design standards to be adoptable (Duffy and McKay 2015).

There are lessons here for any innovation that the law as well as the policy should be thought out in advance, including consideration of ownership and liability for maintenance as well as up front financing by developers. In general, SUDS are well-established and the costs and benefits better understood than for many other forms of blue-green infrastructure.

B3.7 Roads

Local authorities have duties under the *Roads (Scotland) Act 1984* to drain roads, whilst Scottish Government is responsible for trunk roads. Roads will be adopted by the roads authority if they meet appropriate construction standards (*Roads (Scotland) Act 1984* s 21). Again SUDS are the usual approach for drainage from new roads (SUDSWP 2016). Non-adopted roads will remain private but any drainage systems will still require maintenance.

Scottish Water have agreements in place with roads authorities to share roads drainage infrastructure under the *Sewerage (Scotland) Act 1968* (s 7).

B3.8 Building standards

The Scottish Government produces Building Standards Technical Handbooks for domestic and non-domestic properties (Scottish Government 2025a). Section 3 of each Handbook discusses the need to prevent flooding; the use of water conservation measures; recycling water; rainwater harvesting; and green roofs. There is a mandatory requirement for surface drainage, including SUDS. The Standards also provide for water efficient fittings, and technical requirements are referenced to British, International and where relevant, European Standards.

The Scottish Government (2025b) is currently consulting on revisions to Section 3 for flood risk. This is principally concerned with the design and construction of the buildings, but does note the increased complexity of drainage in flood risk areas. Impermeable surfaces should be minimised, SUDS should be used for surface water and integrated with other blue-green infrastructure, and drainage assessments should accompany planning applications.

B3.9 Water efficiency and eco-labelling

In 2022 the UK Government consulted on mandatory water efficiency labelling for products using water. Product standards are reserved under the *Scotland Act 1998*, and DEFRA ran this consultation in cooperation with the Scottish and Welsh Governments. (UK Government 2022, Scottish Government 2022). The UK Government at the time said this would be taken forward by DEFRA in discussion with stakeholders.

B4. England

This section will provide a brief comparison with key legislation and policy in England.

B4.1 Legislative Overview

The legislative and institutional frameworks in England are complex across all related areas of activity. The principal legislation for water is the *Water Resources Act 1991* and the *Water Industry Act 1991* (WIA) and both have been extensively amended. Withdrawal from the EU has had significant implications and although many EU environmental laws remain in force as assimilated law under the *Retained EU Law (Revocation and Reform) Act 2023*, unlike Scotland there is no policy or legislative goal of continued alignment.

The *Flood and Water Management Act 2010* enacted new provisions for sustainable drainage (Sch 3 and also s 106A WIA). This Act also provides a framework for flood management in England. Both aspects are considered further below (4.2.2, 4.2.3).

The *Environment Act 2021* provides for statutory targets including for water, (ss 1–7) and Environmental Improvement Plans (EIPs) (ss 8-15). It established drainage and sewerage management plans (s 79, now WIA ss 94A-94E), to be prepared by sewerage undertakers; and extensive new provisions for storm overflows (ss 80-84), including a reduction plan prepared by the Secretary of State and annual reporting by sewerage undertakers and by the Environment Agency. It amended the rules on Biodiversity Net Gain (ss 98–101) and requires local nature recovery strategies (ss 104–108). The UK Government has released an updated EIP (see 4.2 below).

Environmental targets for water have been set under this Act (the Environmental Targets (Water) England) Regulations, HMSO 2023 SI 2023/93). These include reducing pollution from nitrates and phosphate but also (Reg 19) a 'water demand target' of 122 LPD by 2038 and 110 LPD by 2050. The UK Government is consulting on tighter water efficiency standards for buildings (DEFRA 2025a) to meet this target. Nothing similar applies in Scotland.

The Water Fittings Regulations have been noted above (section 3.3.1 and HMSO 1999), as has the recent UK-wide consultation on efficient appliances (section 3.9).

The Building Regulations (HMSO (2010) SI 2010/2214, as amended) apply in England and as in Scotland are supplemented by guidance (and see section 4.2.2.1 below re the guidance on drainage).

There is extensive legislation on planning, and it is not feasible or useful to attempt to summarise this. The principal Act is the *Town and Country Planning Act 1990*, which has been extensively amended. Planning law in England makes provision for Biodiversity Net Gain (BNG; Sch 7A, inserted by the Environment Act 2021, and see 4.2 below). The *Planning and Infrastructure Act 2025* creates a new Nature Restoration Levy, payable by developers, and it is not clear how this will interact with BNG (ss 72-81).

There are general permitted development rights for householders paving over gardens in the Town and Country Planning (General Permitted Development) (England) Order (HMSO (2015) SI 2015/596, Sch 2 Class F). If the paved area is to the front of the house, and the area is greater than 5m2, permeable surfacing should be used.

The *Highways Act 1980* gives powers to highways authorities and others to establish roads drainage (s 100) and permits the infilling of adjoining ditches where these do not provide a drainage purpose.

B4.1.1 Relevant provisions from the Water Industry Act 1991.

Under the *Water Industry Act 1991* there is a general right to connect into sewers (s 106) which can be problematic and contribute to sewer flooding. Section 106A enables sustainable drainage under Sch 3 of the *Flood and Water Management Act 2010*. This is not yet in force, but see further 4.2 below.

There is a power for sewerage undertakers to construct drainage systems to reduce surface water volumes into sewer (s 114A, added by the *Water Act 2014*).

There are provisions (s 115) regulating the relationship between sewers and highways drains, and this includes drainage systems approved under Sch 3 of the 2010 Act. Charges may be levied for this (s 146).

There is a complex regime for adoption of sewers and drains (s 102-105), and this is regulated by OFWAT (OFWAT 2022, and see 4.2.2.).

B4.2 Key Policy Frameworks

The Independent Water Commission (2025) reported in June on reform of water law in England and Wales. The Report supports nature-based solutions and the use of sustainable drainage. It notes the role of sustainable drainage in flood management and as part of a rationalised system of water resource planning, and to reduce sewer flooding and surface water flooding. It identifies 'inconsistent approaches' to sustainable drainage as one of four main issues in the regulation of wastewater and drainage (para 204–207). It looks at a case study in Sheffield, and it links sustainable drainage to reform of the Urban Wastewater Treatment Regulations in England (HMSO 1994, SI 1994/2841), where the report is supportive of increased alignment with the Recast Directive (EU 2024a). By contrast there is a steer towards divergence from the WFD in England in future.

The UK Government has now published a White Paper (2026) to take forward the recommendations, which notes *inter alia* the pressure on combined sewers. It recognises the multiple benefits from SuDS, and that a 'full system' approach should be taken to urban runoff, especially from roads.

B4.2.1 Green Infrastructure and Nature Based Solutions.

The first EIP (DEFRA 2023) noted that NBS can be used to reduce pollution of the water environment including by sustainable drainage and wetlands; and committed to the implementation of sustainable drainage for new-build. This has been restated in the revised EIP (DEFRA 2025b).

The National Planning Policy Framework (Ministry of Housing, Communities and Local Government 2024) notes the use of sustainable drainage and of green infrastructure in planning for climate change (para 164); addressing flood risk (para 172, 182); and conserving the natural environment (para 188).

Natural England provides guidance on green infrastructure (Natural England n.d.). It includes parks and woodland, allotments, private gardens and SUDS as well as green roofs and walls and urban trees, and also includes blue infrastructure. It identifies green infrastructure as 'natural capital asset[s]' providing 'multiple benefits, at a range of scales'. It cross-references these benefits as ecosystem services.

The guidance identifies a number of planning goals that green infrastructure can achieve ranging from a strong economy to safe and healthy communities, mitigating climate change and flooding, and conserving the natural environment, including facilitating biodiversity net gain. It suggests a strategic approach within local planning and consideration at an early stage of development. It recognises that green infrastructure will need sustainable management and maintenance for long term benefits.

Natural England has also developed a Green Infrastructure Framework (Natural England 2023) including a set of principles and design standards, and guidance for planning authorities and developers.

The Environment Agency (2025) also has a position statement on NBS which links to natural capital and references wetlands, natural flood management and environmental land management but is less focused on urban environments.

B4.2.1.1 Biodiversity Net Gain

Developers have a duty to deliver 10% 'biodiversity gain' under the Environment Act 2021, amending the Planning Acts. Options to achieve this are (in order of priority): improvements on site; off site; by purchasing biodiversity units (as a market mechanism); or purchasing biodiversity credits (from the Government). The BNG is very much a market-oriented approach designed to bring in private capital and has not been adopted in Scotland. There are contested proposals to limit its scope for smaller developments in the *Planning and Infrastructure Bill 2025*, and the Government has rejected proposals to compile a register of BNG improvements.

The Environmental Audit Committee (2025) has reported at a high level on natural capital and the green economy, including on BNG, and considered there was too little evidence as yet, but it was likely to be more effective as a financial mechanism than to achieve biodiversity targets. Many types of blue-green infrastructure could be used by developers to meet their BNG targets.

B4.2.1.2 Habitats and nutrient neutrality

There has been an ongoing policy debate around this in England (see for an overview, House of Commons Library 2023). The Habitats Directive (EEC 1992) is implemented across the UK jurisdictions, in different legislation. In England, without attempting an exhaustive analysis of the relevant law (both nature conservation and planning law), housing developments have been affected by a requirement

to ensure 'nutrient neutrality'. This relates to nitrates and phosphates into watercourses from new wastewater discharges.

The previous UK Government attempted to remove the relevant requirements in the *Levelling Up and Regeneration Act 2023*, but this was not successful. However this Act did enable the Secretary of State to create nutrient pollution standards (s 96F *Water Industry Act 1991*).

The current UK Government is also considering removing these requirements in future, but for the purposes of this project and this report it is perhaps sufficient to note that the implementation of sustainable drainage solutions could assist with achieving nutrient neutrality.

B4.2.2 Flood Management

Flood management in England involves a wide set of authorities and agencies. The Environmental Audit Committee has been inquiring into flood resilience (UK Parliament 2025) and the Parliament published a research briefing in 2024 (House of Commons Library 2024).

The *Flood and Water Management Act 2010* (Part I) provides for national flood and coastal erosion strategies and regional committees, and local flood risk strategies. DEFRA and the Ministry of Housing, Communities and Local Government both have powers, as do local authorities and internal drainage boards. The previous regulations implementing the floods Directive (EC 2007) are no longer in effect as such.

Water and sewerage companies manage flood risk from sewer systems and highways authorities. The House of Commons (2024) research briefing notes that there are overlapping remits and that the relevant bodies have powers but not duties, although the 2010 Act does mandate the national and local strategies at different levels and as noted the *Environment Act 2021* has now established sewerage and drainage plans (by water and sewerage providers) and planning and reporting on storm overflows.

B4.2.3 Sustainable Drainage Systems

As noted above, the *Flood and Water Management Act 2010* provides for sustainable drainage (s 32 and Sch 3); the UK Government has recently restated its commitment to do so, by 2029 (DEFRA 2025b).

A 'drainage system' is defined as a 'structure designed to receive rainwater except (a) a public sewer, or (b) a natural watercourse' (Sch 3 1(1)). 'Sustainable drainage is further defined as managing rainwater to achieve certain objectives, including reducing flood risk, improving water quality and protecting the environment.

Schedule 3 also makes provision for permitting drainage systems; and amendments to the Water Industry Act 1991 (new s 106A and s 115 (5A)) provide for connections into sewers. Sch 3 (17) creates a duty to adopt approved drainage systems and there are exceptions for single dwellings and for public roads, having similar effect therefore to the WEWS Act provisions in Scotland. Adoption entails a duty to maintain, again similar to the position in Scotland.

Schedule 3 (5) requires the Minister to publish national standards and this has now been done (DEFRA 2025c), with the status of guidance, at least until Sch 3 is in force.

B4.2.3.1 National Standards for SuDS

The new standards are applicable to brownfield and greenfield sites and apply to new development, but not to retrofit; CIRIA guidance is referenced here. They include local road drainage but do not apply to national trunk roads, where the Design Manual for Roads and Bridges is referenced. Developers are advised that in some situations it may still be necessary to have either an environmental permit or an exemption from the Environment Agency (under the Environmental Permitting (England & Wales) Regulations, SI 2016/1154, HMSO 2016).

The broad approach of the standards is similar to that in Scotland, with a hierarchy of priorities for discharge and a series of design standards. There are a series of Principles including mimicking natural features and using a variety of features. These recognise multiple benefits including managing flooding, pollution control, creating healthy and resilient spaces, adapting to a changing climate and biodiversity and amenity benefit. Planning applications should show how the standards will be met from the earliest stage.

The priorities are broadly the same as in Scotland (above 3.3 and Scottish Water 2017), i.e. collection for non-potable use; infiltration; discharge to a surface water body; discharge to a surface water sewer; discharge to a combined sewer. It is

suggested that remediation for some contaminated sites is possible and also that local authorities may be able to obtain a discharge right under the 2010 Act if that is not otherwise available.

Non-potable use is of most interest to this project and the standards state that rainwater harvesting should be considered if there is a demand; there is a need for landscape irrigation; or the area is in a water-stressed area. There is reference to British Standards for rainfall harvesting for large rainfall events and also to the Environment Agency's Rainwater Harvesting regulatory position statement (paras 1.11 – 1.13).

On the design standards, Standard 2 requires that the first 5mm of rain should not result in runoff. Permeable surfaces are assumed to comply. Standard 3 applies to extreme rainfall and flooding. Standard 4 applies to water quality, Standard 5 to amenity; Standard 6 to Biodiversity; and Standard 7 to construction, operation and maintenance, and decommissioning.

There is cross-referencing to numerous legal and policy frameworks. As well as the Permitting Regulations, and land use planning, there is encouragement to engage with Local Flood Authorities; SuDs may be placed on their register of relevant structures.

Under the Building Regulations (HMSO 2010), Approved Document H (Ministry of Housing, Community and Local Government 2015, Section H3) applies to rainwater drainage and includes soakaways, swales and detention ponds; permeable paving; and rainwater recovery systems, for reuse within the building. It is suggested that 'surface water drainage should discharge to a soakaway or other infiltration system where practicable' (para 3.2).

SuDS may be adopted by sewerage companies if they comply with guidance under the OFWAT Code (2022). Currently however, these must come within the meaning of either a sewer or a lateral drain. They are defined in Part C of the Design and Construction Guidance (Water UK 2023) as having *inter alia* a channel and a discharge point. Some green infrastructure is expressly excluded, including green roofs and permeable paving. When Sch 3 is in force, there will be a duty to adopt other than for single dwellings or highway drainage.

B5. Examples from Other Jurisdictions

It is unusual to have specific legislative provision for collection or reuse of storm water. It is much more common for this to be managed at a policy level, and within similar related legal frameworks to the UK. Technical standards may provide for road drainage, and be made within building standards. The literature review (Annex A) identified examples of legislation enacted to permit non-potable uses, and/or set standards for use of recycled or other alternative water sources. In San Francisco, an Ordinance permits non-potable systems at district level (i.e. shared between buildings) and this is mandated for new developments, including reuse of grey water, above a certain size and scale (Kehohoe and Nokhoudian, 2022). Building regulations here could make similar provision.

The Federal Government of Australia produced guidelines for the management of urban storm water in 2000, within their wider water quality guidelines. These are still available but noted as historical (Water Quality Australia n.d.). At the time they were notable for recognising the relative costs of abstracting clean water directly, or collecting and treating urban runoff. They were related to the National Water Initiative, which expected states to develop pricing strategies for water including recycled water and storm water. The pricing strategies developed at the time indicated that the cost of recycled or treated water would be significantly more than that of raw water.

These guidelines have been used by states to develop their own policy and practice, but again not in the form of binding law. Australian states continue to provide extensive guidance for communities as well as for business and industry (see, e.g., SydneyWater n.d., Government of Victoria 2021, Environment South Australia n.d.).

In several EU countries, following the introduction of the Water Reuse Regulation (above 2.4), further domestic regulations have been introduced in Spain, Portugal, France and Italy going beyond the EU requirements and setting parameters for different uses of reclaimed wastewater (Cousin, 2025). Similar regulations could also be developed here to specify treatment requirements and quality standards for the reuse of surface waters.

B6. Conclusions

'Nature-based solutions' and 'blue-green infrastructure' are often used synonymously and there is extensive policy around these at all levels of government, and around the globe, as well as within professional and social organisations. These are recognised as meeting both climate change and biodiversity imperatives as well as sustainable development, whilst also addressing both water scarcity and flooding. They also sit within more specific relevant policy contexts, including water resilience and the circular economy.

In general there is considerable support for these approaches, but there is also recognition that legal, financial, and institutional structures need to be in place before initiatives begin, or at least before they are rolled out at scale. However there is also an imperative to make progress.

There is a well-established historical reluctance (in many countries) to fully embed surface water runoff into water resource management, as it is often managed separately within the 'built environment' and especially through roads departments.

It is useful to recognise the widest possible conception of the value of water at a high level, as the law in Scotland does, but it is harder to ensure firstly, that this is reflected in assessing the costs and benefits of green infrastructure at planning stage, and secondly, that there is appropriate liability for ongoing ownership and maintenance. This is linked to, but separate from, issues around charging for drainage as distinct from sewerage, as is being explored in Scotland, but the latter is also important.

In general, there is more detail on reuse of (treated) wastewater than on reuse of surface water. There is an important policy space here in terms of matching up potential users and uses to available surface water, which in turn depends on the way that water is captured and what (if any) treatment is provided by the blue-green infrastructure.

At national level, other developed countries will have a similar matrix of complex legislation as the UK jurisdictions, including land use planning, building standards, and roads, as well as water resources and water services law, flood management, and detailed rules on pollution control. There will be extensive policy and guidance, but may not be detailed legal rules, for blue-green infrastructure in general. EU states will be implementing the Recast UWWTD which will require drainage plans; and the Water Reuse Regulation is already in force, for treated wastewater and agricultural use. There is less specific policy or law for surface water reuse in particular.

There is huge scope for water savings from water efficiency measures in terms of buildings (and appliances). This is most essential for new build and should be part of building standards as well as relevant planning frameworks. There is both supportive policy and detailed rules on greywater capture and reuse in buildings, as well as management of surface water from roofs and hard surfaces, but even where there is attention to new build, there is very little provision for retrofit.

In terms of retrofit, payback periods will always be long for both major infrastructure and for small site-specific developments. There are specific issues in rented property and flatted dwellings. There are more mechanisms to drive change for large scale commercial, industrial and public sector developers and operators than at household level.

In general SUDS are a well-recognised form of blue-green infrastructure, and perhaps the most developed in terms of detailed policy and indeed legislative provision. The early SUDS initiative in Scotland demonstrated the need to ensure that policy, law, and technical standards, are in place and clearly understood, before rolling out initiatives. In that way schemes will be reliable for owners and users, and enable multiple benefits for all stakeholders.

Almost all the practical examples given in Annex A7 are feasible for use in Scotland. However in most cases some treatment would be required (see also the Table below) and this was also the view of the stakeholders at the workshop. The only clear exception would seem to be capture and reuse via water butts in domestic properties, for external use such as garden watering or car washing.

Any reuse indoors, even for toilet flushing, in domestic or commercial properties, would have potential health impacts and require at least minimal disinfection as expected by Building Standards. Such systems require approval under Scottish Water's Byelaws.

Reuse of captured water at scale, outwith a single building, e.g. from a SuDS or a surface sewer, would require infrastructure for storage and delivery to the end user. The cost of piped water is unlikely to make that viable. Some uses, such as cooling water,

might be better served by treated wastewater from a WWTP, which would have a more consistent flow and quality.

Development of specific water reuse regulations, clarifying the treatment needs/water quality requirements for different uses and sources, would be very beneficial.

Table B.1 below summarises the findings from the practical examples (Annex A.7) along with the findings in Annex B, to show which techniques could be used in Scotland and some of the regulatory and policy implications.

Table B.1 Application of Practical Water Reuse Examples in Scotland.

Reuse source/type	Examples currently in UK/Scotland	Treatment needed	Regulator/regime	Other requirements/ comments
Domestic				
Rainwater capture for (manual) domestic external use e.g. gardens, car washing.	Y	N	N/A	Minimal technology and support; Requires householders to engage.
Rainwater capture for domestic internal use, e.g. toilet flushing; air conditioning.	Y	Y	Scottish Water. Building control.	Public health concerns but could be made more accessible to householders. Most appropriate for new build.
Commercial/Industrial				
Rainwater capture for external use within commercial/industrial properties, e.g. vehicle washing, watering green space.	Y	Y, depending on specific use.	Scottish Water. Planning for any infrastructure.	Possible H&S concerns for employees.
Rainwater capture for internal use within the curtilage commercial / industrial properties, e.g. toilet flushing, air conditioning.	Y	Y	Scottish Water; Building control	Possible public health concerns but there are many examples. Most appropriate for new build.
Capture and reuse from public SuDS systems or from surface water sewers. Potential urban uses could include vehicle washing; watering of greenspace; water for firefighting.	No. examples of this were clearly identified.	Y; may depend on source water/ specific use.	Scottish Water; SEPA.Planning and building control.	Would require infrastructure.
Cooling water	Y	Y	Scottish Water; SEPA. Planning and building control.	Most appropriate for new developments. May be more appropriate to site near WWTP.
Measures to alleviate flooding/improve drainage without capture/reuse				
Replacement of paved surfaces with permeable surfaces. Use of greenspace as raingardens, etc.	Y	N/A	Planning; possibly, SEPA	For new developments this is likely to be part of planning permission; but there could be incentives to retrofit.

B7. References

Audit Scotland (2025) 'Flooding in Communities' available from https://audit.scot/publications/flooding-in-communities-moving-towards-flood-resilience last accessed 08/09/2025.

Building (Scotland) Act 2003.

Building Regulations (HMSO (2010) SI 2010/2214.

Circular Economy (Scotland) Act 2024.

Cousin, Hubert. (2025). Personal Communication; Hydro nation PhD project on Wastewater Reuse.

DEFRA (2025a) 'Review of Water Efficiency Standards in the Building Regulations 2010 available at https://consult.defra.gov.uk/water-efficiency-demand/review-of-water-efficiency-standards/ last accessed 25/09/2025.

DEFRA (2025b) 'Environmental Improvement Plan 2025' available at https://www.gov.uk/government/publications/environmental-improvement-plan-2025/environmental-improvement-plan-eip-2025#our-plan-for-improving-the-natural-environment last accessed 10/02/2026.

DEFRA (2025c) 'National Standards for Sustainable Drainage Systems (SuDS)' available at https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds last accessed 21/09/2025.

Delgado, Anna, Diego J. Rodriguez, Carlo A. Amadei and Midori Makino. (2021) 'Water in Circular Economy and Resilience (WICER)' World Bank, Washington, DC https://openknowledge.worldbank.org/entities/publication/a8667d17-74d3-5914-8bfd-7d1fad3db79d last accessed 08/01/2026.

EC (2000) DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy OJ L 327.

EC (2007) DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on the assessment and management of flood risks OJ L 288.

EC (2010) REGULATION (EC) No 66/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 November 2009 on the EU Ecolabel.

EEA (2021a) 'Drivers of and pressures arising from selected key water management challenges: A European overview' EEA Report 09/2021.

EEA (2021b) 'Nature-based solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction' EEA Report 01/2021.

EEC (1976) COUNCIL DIRECTIVE of 8 December 1975 concerning the quality of bathing water (76/160/EEC) OJ L 31/1.

EEC (1991) COUNCIL DIRECTIVE of 21 May 1991 concerning urban waste water treatment (91/271/EEC) OJ L 135/40.

EEC (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora OJ L 206.

Environment Act 2021

Environment Agency (2025) https://www.gov.uk/government/publications/nature-based-solutions-environment-agency-position-statement/nature-based-solutions-environment-agency-position-statement last accessed 18/09/2025.

Environment South Australia (n.d.) https://www.environment.sa.gov.au/topics/water-and-river-murray/water-information-and-data/water-resources-and-environments/stormwater last accessed 08/01/2026.

Environmental Audit Committee 'The Role of Natural Capital in the UK's Green Economy' First Report of Session 2024-25 HC 501.

EU (2013) DIRECTIVE 2013/39/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy OJ L 226.

EU (2017) REGULATION (EU) 2017/1369 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2017 setting a framework for energy labelling.

EU (2020) REGULATION (EU) 2020/741 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 May 2020 on minimum requirements for water reuse.

EU (2024a) REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on type-approval of motor vehicles and engines and of systems, components and separate technical units intended for such vehicles, with respect to their emissions and battery durability (Euro 7).

EU (2024b) DIRECTIVE (EU) 2024/3019 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 November 2024 concerning urban wastewater treatment (recast) OJ L.

EU (2024c) REGULATION (EU) 2024/1781 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products.

European Commission (2020) COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A new Circular Economy Action Plan For a cleaner and more competitive Europe COM (2020) 98 final.

European Commission (2025) COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS European Water Resilience Strategy COM (2025) 280 final.

Flood and Water Management Act 2010

Flood Risk Management (Scotland) Act 2009

Government of Victoria (2021) https://www.epa.vic.gov.au/urban-stormwater-management-guidance last accessed 08/01/2026.

HMSO (1994) Urban Wastewater Treatment Regulations SI 1994/2841.

HMSO (1999) Water Supply (Water Fittings) Regulations SI 1999/1148.

HMSO (2015) Town and Country Planning (General Permitted Development) (England) Order SI 2015/596.

HMSO (2016) Environmental Permitting (England & Wales) Regulations, SI 2016/1154.

HMSO (2023) Environmental Targets (Water) England) Regulations, SI 2023/93.

House of Commons Library (2023) 'Nutrient neutrality and housing development' CPB 9850 available at https://commonslibrary.parliament.uk/research-briefings/cbp-9850/ last accessed 23/09/2025.

House of Commons Library (2024) 'Flood risk management and funding' CBP 7514 available at Flood risk management and funding - House of Commons Library last accessed 21/09/2025.

Independent Water Commission (2025) 'Final Report' (DEFRA) available at https://www.gov.uk/government/publications/independent-water-commission-review-of-the-water-sector last accessed 28/8/25.

Kehoe P. and Nokhoudian T. (2022) 'ONSITE WATER RECYCLING An Innovative Approach to Solving an Old Problem' SFPUC available at Onsite_Water_Recycling_Ebook_2022.pdf last accessed 08/01/2026.

Levelling Up and Regeneration Act 2023.

McKay, G., & Duffy, A. (2015). A review of 20 years of SUDS in Scotland. Paper presented at World Water Congress XV, Edinburgh, United Kingdom. http://iwra.org/member/congress/resource/3027667.pdf.

Ministry of Housing, Communities and Local Government (2024) 'National Planning Policy Framework' available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 last accessed 18/09/2025.

Ministry of Housing, Community and Local Government (2015) Approved Document H available at https://www.gov.uk/guidance/building-regulations-and-approved-documents-index#approved-documents last accessed 23/09/2025.

Natural England (2023) https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Home.aspx last accessed 18/09/2025.

Natural England (n.d.) https://www.gov.uk/guidance/natural-environment#green-infrastructure last accessed 18/09/2025.

NatureScot (n.d.) 'Nature-based Solutions: Urban' available at https://www.nature.scot/climate-change/nature-based-solutions/nature-based-solutions-practice/nature-based-solutions-urban last accessed 08/09/2025.

OFWAT (2022) Code for Adoption Agreements available at https://www.ofwat.gov.uk/regulated-companies/markets/connections-market/code-adoption-agreements/ last accessed 23/09/2025.

Planning (Scotland) Acts 2006 and 2019.

Retained EU Law (Revocation and Reform) Act 2023

Roads (Scotland) Act 1984.

Scottish Government (1992) Town and Country Planning (General Permitted Development) (Scotland) Order 1992 SI 1992/223.

Scottish Government (2004) Building (Scotland) Regulations SSI 2004/406.

Scottish Government (2011) Town and Country Planning (General Permitted Development) (Scotland) Order SSI 2011/357.

Scottish Government (2011) Water Environment (Controlled Activities) (Scotland) Regulations SSI 2011/209.

Scottish Government (2018a) Environmental Authorisation (Scotland) Regulations SSI 2018/219, Environmental Authorisation (Amendment) (Scotland) Regulations (SSI 2025/165).

Scottish Government (2018b) 'Surface Water Management Planning: Guidance' available at https://www.gov.scot/publications/flood-risk-management-scotland-act-2009-surface-water-management-planning/ last accessed 04/09/2025.

Scottish Government (2020) 'Principles of Charging 2021-27' available at https://www.gov.scot/publications/principles-of-charging-2021-2027/ last accessed 01/09/2025.

Scottish Government (2021) 'Water-Resilient Places: A Policy Framework for Surface Water Management and Blue-Green Infrastructure' available at https://www.gov.scot/publications/water-resilient-places-policy-framework-surface-water-management-blue-green-infrastructure/ last accessed 4/9/25.

Scottish Government (2022) https://www.gov.scot/news/action-on-water-efficiency/ last accessed 05/09/2025.

Scottish Government (2023a) 'Water, Wastewater and Drainage Policy Consultation' available at https://www.gov.scot/publications/water-wastewater-drainage-policy-consultation/ last accessed 01/09/2025.

Scottish Government (2023b) 'National Planning Framework 4' available at https://www.gov.scot/publications/national-planning-framework-4/ last accessed 08/09/2025.

Scottish Government (2024a) 'Circular Economy and Waste Route Map to 2030' available at https://www.gov.scot/publications/scotlands-circular-economy-waste-route-map-2030/documents/ last accessed 07/09/2025.

Scottish Government (2024b) 'Water, Wastewater and Drainage Policy: Analysis of Consultation Responses' available at https://www.gov.scot/publications/water-wastewater-drainage-consultation-analysis-report/ last accessed 01/09/2025.

Scottish Government (2024c) 'National Flood Resilience Strategy' available at https://www.gov.scot/publications/national-flood-resilience-strategy-3/ last accessed 04/09/2025.

Scottish Government (2025a) 'Building Standards' available at https://www.gov.scot/collections/building-standards/ last accessed 25/09/2025.

Scottish Government (2025b) 'Building standards guidance - Section 3.3 Flooding and Groundwater: consultation on proposed updates' available at https://consult.gov.scot/housing-and-social-justice/flooding-and-groundwater-guidance-update/ last accessed 25/09/2025.

Scottish Water (2014) Water Supply (Water Fittings) (Scotland) Byelaws 2014 available at https://www.scottishwater.co.uk/business-and-developers/byelaws-and-trade-effluent/water-byelaws last accessed 08/09/2025.

Scottish Water (2017) 'Surface Water Policy' available at https://www.scottishwater.co.uk/Help-and-Resources/Document-Hub/Business-and-Developers/Connecting-to-Our-Network last accessed 04/09/2025.

Scottish Water (2018) 'Sewers for Scotland v4.0' available at https://www.scottishwater.co.uk/Business-and-Developers/NEW-Connecting-to-Our-Network/Developing-housing-and-commercial-properties/Applying/Waste-Water-Connection-Technical-Standards last accessed 08/09/2025.

Scottish Water (2021) 'Improving Urban Waters Route Map Annual Update 2024' available with annual updates at https://www.scottishwater.co.uk/Help-and-Resources/Document-Hub/Key-Publications/Urban-Waters-Improvements last accessed 04/09/2025.

Scottish Water (2024) 'Scottish Water Climate Change Adaptation Plan 2024' available at https://www.scottishwater.co.uk/Help-and-Resources/Document-Hub/Key-Publications/Climate-Change last accessed 04/09/2025.

Scottish Water (2025) 'Our Sustainable Future Together: Long Term Strategy' available at https://www.scottishwater.co.uk/Help-and-Resources/Document-Hub/Key-Publications/Strategic-Plan last accessed 01/09/2025.

Scottish Water (n.d.) 'Water Sector Vision' available at https://www.scottishwater.co.uk/About-Us/What-We-Do/Water-Sector-Vision last accessed 01/09/2025 .

SEPA (2019) 'Regulatory Method WAT-RM-08 (SUDS or SUD Systems)' available at https://www.sepa.org.uk/regulations/water/diffuse-pollution/diffuse-pollution-in-the-urban-environment/ last accessed 08/09/2025.

SEPA (2020) 'Scotland's National Water Scarcity Plan' available at https://beta.sepa.scot/water-scarcity/what-is-water-scarcity/ last accessed 05/09/2025.

SEPA (n.d.) 'Guidance and advice notes' available at https://www.sepa.org.uk/environment/land/planning/guidance-and-advice-notes/ last accessed 08/09/2025.

SEPA (n.d.) 'Water scarcity' https://beta.sepa.scot/water-scarcity/ last accessed 05/09/2025.

Sewerage (Scotland) Act 1968.

Sydney Water (n.d.) https://www.sydneywater.com.au/education/water-management/stormwater.html last accessed 08/01/2026.

SUDSWP (2016) From the Water Assessment and Drainage Assessment Guide, available from https://www.sepa.org.uk/regulations/water/diffuse-pollution/diffuse-pollution-in-the-urban-environment/ last accessed 08/09/2025.

Town and Country Planning (Scotland) Act 1997

UK Government (2022) https://www.gov.uk/government/consultations/uk-mandatory-water-efficiency-labelling last accessed 05/09/2025.

UK Government (2026) 'A New Vision for Water' CP1490.

UK Internal Market Act 2020.

UK Parliament (2025) https://committees.parliament.uk/work/8736/flood-resilience-in-england/ last accessed 21/09/2025.

UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021.

UNECE (United Nations Economic Commission for Europe) (1992) Convention on the Protection and Use of Transboundary Watercourses and International Lakes UNTS Vol 1936 p 269.

UNGA (2015) *Transforming Our World: The 2030 Agenda for Sustainable Development* General Assembly Resolution A/70/L.

United Nations (1997) Convention on the Law of the Non-navigational Uses of International Watercourses UN 36 ILM (1997) 700.

UWLA (n.d.) 'Unified Water Label' https://uwla.eu/ last accessed 07/09/2025.

Water Quality Australia (n.d.) https://www.waterquality.gov.au/guidelines/urban-stormwater last accessed 08/01/2026.

Water (Scotland) Act 1980.

Water Environment and Water Services (Scotland) Act 2003.

Water Industry (Scotland) Act 2002.

Water Industry Act 1991.

Water Resources (Scotland) Act 2013.

Water Industry Commission for Scotland 2024 'Strategic Review of Charges 2027-2033: Final Methodology' available at https://wics.scot/publications/price-setting/strategic-review-charges-2027-33/approach/2027-33-final-methodology last accessed 01/09/2025.

Water Resources Act 1991

Water UK (2023) 'Sewage Sector Guidance - Design and Construction Guidance' available at https://www.water.org.uk/sewerage-sector-guidance-approved-documents last accessed 23/09/2025.

WHO (2006, updated 2013) 'Guidelines for the Safe Use of Wastewater, Excreta and Greywater' WHO Geneva.

Withdrawal from the European Union (Continuity) (Scotland) Act 2021

WWAP (United Nations World Water Assessment Programme). 2017. *The United Nations World Water Development Report 2017. Wastewater: The Untapped Resource*. Paris, UNESCO.

WWAP (United Nations World Water Assessment Programme)/UN-Water. 2018. *The United Nations World Water Development Report 2018: Nature-Based Solutions for Water*. Paris, UNESCO.

CREW CENTRE OF EXPERTISE FOR WATERS

Centre of Expertise for Waters

James Hutton Institute
Craigiebuckler
Aberdeen AB15 8QH
Scotland UK

www.crew.ac.uk

CREW publications can be accessed here:
www.crew.ac.uk/publications

CREW-scotland

Bluesky
@crew-waters

CREW is a partnership between the James Hutton Institute
and all Scottish Higher Education Institutes and Research Institutes.
The Centre is funded by the Scottish Government.

Scottish Government
Riaghaltas na h-Alba
gov.scot