Sustainable Drainage Systems (SuDS)

Policy Position Statement

CIWEM Chartered Institution of Water and Environmental Management

Purpose and Executive Summary

This Policy Position Statement (PPS) sets out the position of the Chartered Institution of Water and Environmental Management (CIWEM) on Sustainable Drainage Systems (SuDS).

We face increasing pressures from surface water flooding, road runoff pollution and sewage pollution of rivers from storm overflows (SO) that are exacerbated by climate change and population growth. Well-delivered Sustainable Drainage Systems (SuDS) can help respond to these challenges, build climate resilience, enhance urban beauty, improve air quality, human health and wellbeing and contribute to nature recovery.

There are two major drivers for improved levels of quality and quantity of SuDS delivery which have emerged since 2021. These are:

Firstly, Government's recommendation that Schedule 3 of the Flood and Water Management Act 2010 should be implemented in England from 2024, enabling improved SuDS delivery associated with new development.

Secondly, requirements set under the Environment Act 2021 and the Storm Overflows Discharge Reduction Plan for water companies to achieve significant and progressive reduction in discharges from storm overflows, part of which will be achieved through potentially large-scale SuDS retrofit programmes in combined sewer catchments.

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Note: CIWEM Policy Position Statements (PPS) represent the Institution's views on issues at a point in time. It is accepted that situations change as research provides new evidence. It should be understood, therefore, that CIWEM PPSs are under constant review and that previously held views may alter and lead to revised PPSs. PPSs are produced as a consensus report and do not represent the view of individual members of CIWEM.

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CIWEM's Position

Ten recommendations to improve SuDS implementation in England

1. **Cross-government, Ministerial recognition of SuDS as a key enabler of managing surface water flood risk, tackling sewage pollution from storm overflows, cleaning-up polluted road runoff, delivering nature recovery, place-making and Levelling-up.**

Government should recognise this in its headline policies on planning, climate adaptation, flood risk management, water management, biodiversity and transport.

2. **Commence Schedule 3 of the Flood and Water Management Act 2010.**

Make it the mechanism to consistently deliver high-quality, multiple-benefit SuDS in all new developments, in line with Government's January 2023 announcement[1].

3. **Make the right to connect to the sewer conditional on having delivered an appropriate drainage hierarchy, in line with mandatory standards.**

This allows surface water to be managed as a resource at, or close its source as far as possible, before discharging to a piped surface water drain as a last resort. This is an essential component of directing developers towards good surface water management practice and supporting the implementation of Schedule 3 and making the best use of rain.

4. **Ensure clear standards for SuDS design and delivery are mandated as part of Schedule 3.**

The 2021 Defra recommendations[2] to update the previous non-statutory standards set out a workable yet robust approach to ensuring SuDS achieve their multi-benefit potential in new developments. These recommendations should be taken forward by government and implemented.

5. **SuDS rules to apply to all new developments.**

The previous Ministerial Statement[3] on sustainable drainage stated that rules requiring the use of SuDS in new developments should only apply to developments of 10 homes or more. A majority of planning applications for development fall below this threshold but still contribute to surface water flood risk and sewer loading, alongside wider urbanisation impacts.

SuDS options are extensively available for smaller developments and could be implemented on minor developments. When Schedule 3 is implemented, it should apply to all new developments. If appropriate, a phased approach could be taken, applying to major

[1] Defra. Press release: New approach to sustainable drainage set to reduce flood risk and clean up rivers. January 2023
[2] Defra, 2021. Recommendations to Update Non-Statutory Technical Standards for Sustainable Drainage Systems (SuDS) - WT15122.
http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=20287
[3] House of Commons: Written Statement (HCWS161). Sustainable drainage systems. December 2014.
https://www.parliament.uk/globalassets/documents/commons-vote-office/December-2014/18-December/6.-DCLG-sustainable-drainage-systems.pdf

development initially and then all new development, including highways and other currently exempt infrastructure, after 18 months.

6. Develop a clear approach for adoption and provision for long-term maintenance.

In the absence of Schedule 3, there was no defined approach, route, or requirement to establish adoption and maintenance of SuDS. Schedule 3 has the potential to resolve the issue of allocating long-term maintenance and should build on lessons from its implementation in Wales, including effective approaches to calculating the costs for long-term maintenance.

7. Direct and enable extensive retrofit of SuDS as a means to manage local surface water flood risk, highway runoff pollution and storm overflow discharges.

Retrofit SuDS, strategically distributed across drainage catchments, can have significant positive impacts on reducing surface water flood risk and contribute to climate resilience. In combined sewer catchments this has additional benefit in reducing storm overflows and potentially improving performance and compliance of existing wastewater treatment works.

These measures can also capture and treat extensive road runoff pollution if designed appropriately. Lead local flood authorities, water and sewerage companies, highway authorities and other relevant stakeholders should be required to consult each other when proposing to undertake works, to ensure that opportunities to maximise these outcomes are achieved.

8. Review the range of funding mechanisms available to deliver SuDS and their requirements to ensure that they are appropriately geared to enable extensive SuDS retrofit schemes.

Various risk management authorities can struggle to access funding including flood defence grant in aid for retrofit SuDS programmes because of rigid rules attached to such funds. This can become more complex where there are partnerships with different responsibilities seeking to deliver schemes collaboratively.

It should be possible to readily combine funding streams to deliver more ambitious programmes that achieve wider outcomes more efficiently. We urge government to ensure that funding approaches and requirements enable, rather than constrain the ability to deliver retrofit SuDS effectively in partnership.

9. A review of the effectiveness of partnership working in urban areas.

A fundamental benefit of SuDS is that they can deliver against water quantity and quality objectives, alongside placemaking (amenity) and biodiversity value.

To maximise such achievement, different parties with responsibility for these benefits need to be able to work effectively together. However, their planning and funding/budgeting approaches and timescales, and priorities, can severely curtail success. We urge Defra to complete its proposed review of flood risk planning to reduce bureaucracy, and to consider such partnership working in its developing thinking on Catchment Action Plans.

As our appreciation of the value of managing water in an integrated way to achieve multiple outcomes grows, government should review how empowered the different responsible parties are to collaborate effectively. This should include how their respective plans (such as Drainage and sewerage management plans, Local flood risk management strategies and Local nature recovery strategies) mesh and what might be needed to improve this.

10. A clear signal from government on its ambitions for SuDS delivery to mobilise development of SuDS skills and capacity amongst appropriate organisations and professions.

Whilst SuDS have been delivered for decades, they remain far from the mainstream approach to surface water management. To change this, skills and capacity will need to be expanded across a range of organisations.

This need will be greatest in lead local flood authorities associated with implementation of Schedule 3 and water companies to deliver their next round of asset management plans. There will also be a need to increase capacity and skills within highway authorities.

Professional bodies such as CIWEM can be instrumental in delivery of this but it will need to be in response to a clear signal from government that it wants to support a step-change in the extent, pace and quality of SuDS delivery.

Context

What are SuDS?

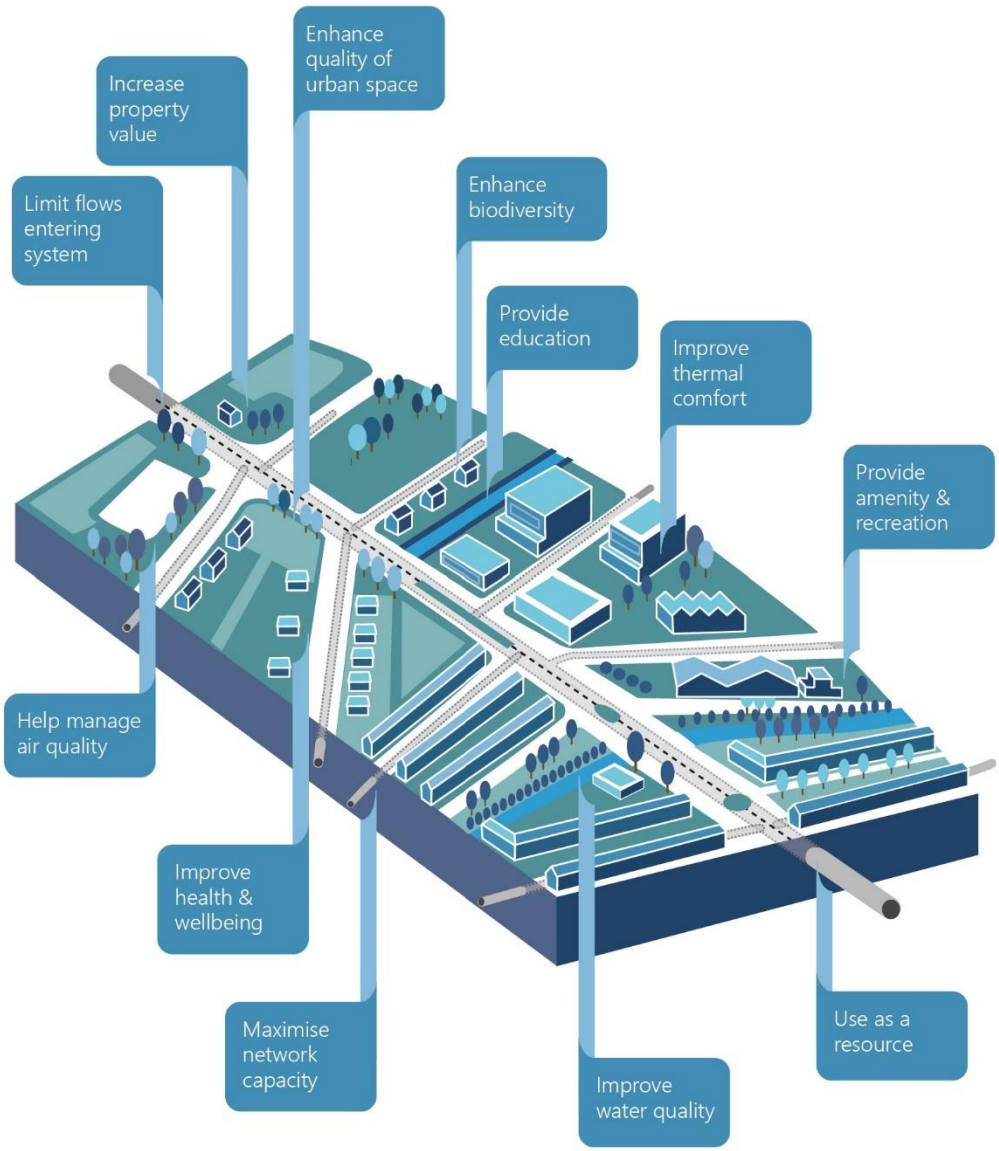
SuDS mimic natural processes and reduce flooding by managing rainfall close to its source and wherever possible at, or near the surface. By building in rain gardens, permeable paving, channels, green roofs, swales, soakaways or ponds, SuDS slow, store and treat water that could cause damage.

Well-designed SuDS should wherever possible incorporate the four elements of **water quantity**, **water quality**, **amenity** and **biodiversity**.

SuDS can be delivered in a variety of urban and rural contexts including housing, schools, community buildings, parks, public open spaces and highways. Incorporating natural processes help make communities greener, healthier and more attractive places to live.

If constructed incorporating natural planting including trees, SuDS can deliver extensive wider benefits. These can include enhanced nature incorporation into built environments for biodiversity, placemaking, human health and wellbeing, air quality, and urban heat island mitigation. They can also filter and provide a level of treatment to the water running into them.

SuDS in the Sheffield Grey to Green retrofit scheme (photo: George Warren)



SuDS features include rain gardens, pervious paving, trees, swales, green roofs, soakaways and ponds. They also include solutions such as attenuation storage tanks, oversized pipes and vortex flow devices, but these do not deliver all of the wider benefits denoted.

Current state of SuDS policy and implementation

Overview

A shift in public perceptions of the environment and the value of our rivers and green spaces has occurred since the Covid-19 pandemic[4]. This has translated into greater scrutiny from media and campaigners, regulators, Government and politicians concerning how we manage water and the environment.

Additionally, various issues have come to the fore in terms of policy, evidence and events, resulting in a renewed focus on what increased SuDS implementation can achieve.

[4] ONS. How has lockdown changed our relationship with nature?. 2021

There is growing appreciation of the extent and impact of climate change-exacerbated surface water flood risk[5,6]. Campaigner, media and public disquiet over sewage pollution from storm overflows is growing with multiple national press platforms launching river clean-up campaigns in early 2023.

Following assent of the Environment Act 2021, Government published its Storm Overflows Discharge Reduction Plan in summer 2022, informing planning guidance feeding into the water industry's investment and price review process. Government has ongoing housing and levelling-up agendas and challenges, including on biodiversity net gain (BNG) and nutrient neutrality. It has also expressed commitments on nature recovery[7].

Against this backdrop, SuDS offer multi-beneficial solutions across this spectrum of issues. In reflection of these factors, during 2022 Defra reviewed whether Schedule 3 of the Flood and Water Management Act 2010 – relating to SuDS delivery in new developments – should be implemented. In January 2023 it confirmed[8] that Schedule 3 would be implemented in 2024, subject to consultation which is anticipated in the spring.

CIWEM published 'A Place for SuDS' in 2018[9] to examine the effectiveness of SuDS delivery under the planning-led approach formalised in 2014. Since then, evidence and momentum has been growing for policy changes to better implement SuDS.

The CIWEM SuDS and Water Reuse Policy Leadership Group was established in 2019 with representatives from water companies, relevant professions, local and central government, regulators and academia to build cross-sector consensus on the need for an effective way forward. Members of the group supported parliamentarians as the Environment Act passed through parliament in 2021, government through its Storm Overflows Taskforce and subsequently in its review of Schedule 3. It continues to support Government in further considerations leading up to implementation.

Industry good practice continues to evolve and be shared. Initiatives like CIRIA's susdrain celebrates good practice. Although competition entries demonstrates inertia in new build SuDS examples that can only be unlocked with firmer regulation and policy. CIRA's SuDS Manual developed in 2015 has been developed around 100,000 times and demonstrates how SuDS is recognised as the best approach to manage rainfall and runoff.

[5] National Infrastructure Commission. Reducing the risk of surface water flooding. November 2022
[6] CIWEM. Surface water management: A review of the opportunities and challenges. May 2023
[7] HM Government. Environmental improvement plan 2023. January 2023
[8] Defra. Press release: New approach to sustainable drainage set to reduce flood risk and clean up rivers. January 2023
[9] CIWEM. A place for SuDS. 2018

Key Issues

Current drivers for changes to SuDS policy and implementation

Reasons for implementing SuDS more extensively, effectively and quickly have been more widely-recognised since the development of The Environment Act and media coverage of sewage pollution has become mainstream, around 2020/21, as well as further reviews of surface water flood risk. The main drivers may be summarised as:

Surface Water and Sewer Flooding: Over 3 million properties in England are reported to be at risk of surface water flooding and we saw the impacts of this in London impacting homes, transport and hospitals and other parts of the country in the summer of 2021.

Aggregate insured losses from this single flood event are expected to exceed £100m[10]. During 2020 performance by water companies on sewer flooding, both inside and outside the home, has declined, with incidents increasing over the last year by 14% and 15% respectively[11]. The National Infrastructure Commission[12] highlighted in autumn 2022 the benefits of SuDS for surface water management, recommended the implementation of Schedule 3 of the Flood and Water Management Act 2010 and advised government that it should direct Ofwat to enable water companies to invest in means to better manage surface water through SuDS.

The Climate Change Committee also recommended implementation of Schedule 3 in its last progress report[13] on adapting to climate change. Slowing, or managing the flow of runoff through the whole catchment also reduces the impact on downstream watercourses and helps manage river flooding.

Water Quality: There were more than 301,000 SO discharges in 2022 (compared with approx. 372,500 in 2021[14]) and increasing public pressure has resulted in a renewed focus on reducing these to improve the quality of river and coastal waters. Evidence developed for Defra suggested that if we do nothing new on storm overflows, up to 83 additional water bodies could fail to achieve good ecological status by 2050 because of their impact; an increase of 13% from the most recent baseline.

Complete separation of wastewater and stormwater could increase household bills between £569 and £999 annually[15], however an incremental approach supported by green infrastructure would cost less and provide wider benefits than a hard/ grey infrastructure solution alone. Combined with this, there is also growing concern about the impact of diffuse

[10] JBA. A retrospective look at London surface water flash floods. 2021
[11] CCWater. Water, water everywhere? 2020
[12] National Infrastructure Commission (2022) Reducing the risk of surface water flooding https://nic.org.uk/app/uploads/NIC-Reducing-the-Risk-of-Surface-Water-Flooding-Final-28-Nov-2022.pdf
[13] Climate Change Committee (2021) Progress in adapting to climate change: 2021 Report to Parliament https://www.theccc.org.uk/wp-content/uploads/2021/06/Progress-in-adapting-to-climate-change-2021-Report-to-Parliament.pdf
[14] Press release. Environment Agency publishes Event Duration Monitoring data for 2022. March 2023
[15] STANTEC. Storm Overflow Evidence Project. 2021

pollution (from highways and other hard surfaces) has on watercourses and the local environment.

Guidance to water companies to complete their programmes for the Water Industry National Environment Programme[16], part of the PR24 price review, as well as the guidance[17] set out to inform development of drainage and wastewater management plans (DWMPs) emphasised that green infrastructure and partnership working should form an increased part of these plans and programmes than previously.

It is understood that for PR24 most water company proposals do not include extensive SuDS programmes with the focus being on upgrades to larger sewage treatment works. However, SuDS do feature extensively in the longer-term within DWMPs and we urge government guidance, and water companies, to seek opportunities to deliver outcomes through SuDS and wider nature-based solutions before resorting to more conventional grey infrastructure solutions.

Nutrient Neutrality: Water quantity has been the primary driver of SuDS in England to date. Water quality issues and the need to protect designated sites have led to Nutrient Neutrality approaches, which are drivers in other countries (e.g., USA and Australia). Natural England is taking this approach in some areas of England, however more support is required to enable SuDS to play a key role and use this as a regulatory driver for better implementation.

Originally, requirements set out within the Levelling-up and Regeneration Bill raised concerns about additional nutrient release to sensitive receiving waters, which could block new housing developments from going forward . It was proposed these must be tackled through the use of 'technically achievable limits' being deployed at sewage treatment works receiving and treating sewage from such development.

Campaign groups, Water UK and CIWEM supported amendments tabled in the House of Lords in March proposing that a wider suite of catchment measures – potentially including SuDS – should be available to water companies to tackle nutrient neutrality. These were not taken forward but we maintain that a more catchment-focused approach to achieving nutrient neutrality remains the most sustainable one.

Government proposals to amend the Bill were overturned by the House of Lords and there are ongoing tensions between government and campaign groups[18] over government mechanisms to get around the restrictions.

Climate change: Net Zero and Adaptation: Traditional approaches relying on grey infrastructure only for addressing flooding and water quality have the potential to significantly increase carbon emissions. For example, it is estimated that getting to zero storm overflow spills nationally would emit 33 times the amount of carbon compared with Thames Tideway. Nature based approaches can provide wider benefits, including reducing the carbon intensity of options[19].

[16] Defra. Water industry national environment programme (WINEP) methodology. 2022
[17] Defra. Guiding principles for drainage and wastewater management plans. 2022
[18] Wild Justice. Nutrient Neutrality – we challenge Defra. February 2024
[19] STANTEC. Storm Overflow Evidence Project. 2021

There is also a need to ensure adaptation and mitigation are considered jointly in policy, as recognised by the third Climate Change Risk Assessment for the UK[20]. Sustainable drainage is an approach that can help integrate this, including through water reuse, and improving thermal comfort in towns and cities.

The value of SuDS for water capture and reuse, infiltration and thermal comfort was brought into starker focus in summer 2022 when widespread areas of England and Wales experienced drought and record high temperatures.

Nature Recovery: The State of Natural Capital 2020 report said no significant progress has been made towards most of the Government's 25 Year Environment Plan ten goals since 2011, with many areas in decline[21]. The National Infrastructure Commission supports an environmental net gain approach across all infrastructure projects, including major infrastructure projects. SuDS can be a key part of urban rewilding, Nature Recovery Networks and delivering biodiversity net gain[22].

Enabling growth and levelling up: there is a need for up to 345,000 new homes per year in England[23]. However, new development only comprises 1% of land use change within urban areas each year[24]. Retrofitting SuDS can reduce rainwater entering sewers and help free up sewer capacity to enable this growth, whilst effective implementation of SuDS on new development can reduce the impacts of this growth overall.

Water Neutrality and integrated water management: Water resources are under increasing pressure across the country. An approach to address this is water neutrality: For every new development, water demand should first be minimised then any remaining water demand offset, so that the total demand on the public water supply in a defined region is the same after development as it was before.

Retrofit SuDS, rainwater harvesting and water reuse can help reduce water demand but also increase sewer capacity to enable housing growth. Similarly, SuDS can also play a vital part in managing the water cycle, and contributing to integrated water management where we can manage and treat rainwater and surface water as a valuable resource and reduce the demand for potable water.

Place-making and health and wellbeing: The benefit of green space to public health and wellbeing was brought into focus over the course of lockdowns imposed during the Covid-19 pandemic. The benefits associated with the ability to see, access and interact with nature in the places they live and work, including on productivity and prosperity are well-understood though currently not well-considered in the Levelling-up and Regeneration Bill. Additional health and wellbeing measures which may be furthered by SuDS with planted components include local air quality and management of thermal comfort during heatwaves.

Innovation: SuDS fit strongly with Ofwat's five key themes for their innovation competition and the Environment Agency's Resilience Innovation Challenge. Both programmes have

[20] CCC. Independent Assessment of UK Climate Risk. 2021
[21] NCC. State of Natural Capital Report. 2020
[22] NIC. Natural capital and environmental net gain. 2021
[23] House of Commons Library. Tackling the under-supply of housing in England. 2021
[24] CCC. Climate change – is the UK preparing for flooding and water scarcity? (Adaptation Sub-Committee progress report 2021)

supported a range of innovative technologies and approaches that can drive better implementation of SuDS.

Barriers and policy gaps on implementing SuDS

The variability in the quality of SuDS implementation (and thus benefits achieved) suggests that many of the policy requirements can work given the right conditions. However, there are barriers and gaps that need to be addressed either directly or through larger-scale changes to enable consistent and widespread implementation of well-designed, multi-beneficial SuDS.

Schedule 3 of The Flood and Water Management Act 2010 (FWMA) sets out an approach which would establish clear technical standards for (multifunctional) SuDS delivery within developments. Under Schedule 3, these will be scrutinised by SuDS Approving Bodies (SABs) within Lead Local Flood Authorities, enabling that local authority to then adopt and maintain those SuDS.

This process was supported by an end to the automatic right of developments to connect to the sewer (Section 106 of the Water Industry Act 1991), ensuring that there was a strong driver for developers to comply with the standards. This represented an integrated approach to managing surface water within local government; arguably the most joined-up solution to dealing with surface water associated with new developments.

With the decision in 2014 not to commence Schedule 3, came a range of barriers to effective implementation which SuDS professionals have attempted to work around, but which still limit what can be achieved considerably.

With water management being a devolved issue, Wales took the decision to commence Schedule 3 from 2019. This means that there are mandatory standards defining how SuDS should be incorporated into developments, to optimise their multiple benefits of quantity, quality, amenity and biodiversity. SABs within LLFAs approve and adopt the SuDS schemes.

There has been a period of adjustment as developers, water companies and the local authorities have become familiar with the new approach, but experience is showing that SuDS are commonly being delivered more cheaply than conventional drainage and planning permissions may be granted more quickly through a streamlined drainage approvals process.

The decision to now implement Schedule 3 should make significant progress in addressing a number of these previous barriers and there will be extensive lessons to learn from the Welsh experience[25]. For implementation to be a success there will be considerable work needed to consider the needs of a variety of stakeholders to ensure implementation is a success.

Skills and resources: Regardless of approach, there is a clear need to support the skills and staff resources across a range of organisations to deliver SuDS. This was recognised by the Jenkins Review 2020 and Defra's response, however despite some actions in this area the barrier remains.

Research[26] undertaken by CIWEM in 2023 suggests the skills gap still exists across local government and other Risk Management Authorities. This is mirrored in other sectors and at

[25] Welsh Government. Sustainable Drainage Systems (SuDS) Schedule 3 Post Implementation Review. July 2023
[26] CIWEM. Surface Water Management: A review of the opportunities and challenges. 2023

every step, from design and approval to hard build, soft landscaping and long-term maintenance.

Organisations which will be actively involved with delivering SuDS more widely and thus are highly likely to have a need for capacity-building and upskilling include water and sewerage companies and local authorities. This also applies to practitioners working elsewhere, including flood risk managers, drainage and highways engineers and landscape architects. CIWEM contributed to a project to assess skills and capacity needs for Defra[27] in advance of implementation of Schedule 3 of the FWMA.

Raising awareness of changes in SuDS policy and resultant procedures needs to be supported by capacity building for local government, developers and consultants on delivering and evaluating SuDS in accordance with any proposed SuDS standards as this is likely to represent a significant change in practice for many stakeholders.

Some limited provision for capacity building was made during the runup to implementation of Schedule 3 in Wales. The updated standards for SuDS were available for a period a time before SuDS were mandated. Welsh Government's SuDS Schedule 3 Post Implementation Review has highlighted the need for further capacity building, particularly for SuDS Approval Bodies.

Data consistency: Poor evidence on the scale and the number of surface water assets helps contribute to the lack of evidence on the flood risk management benefit they provide alongside wider benefits. It also exacerbates the challenge faced in securing sufficient funding to deliver schemes and maintain them.

Consistent data on surface water through the implementation of Schedule 3 must be mandated to be collected by all appropriate risk management authorities to support appropriate maintenance and adoption.

Right to connect to the sewer: Under Section 106 of the Water Industry Act 1991, the owner or occupier of any premises has a right for their drains or sewer to "communicate with" the public sewer. This is subject to some limited standards relating to construction but is otherwise considered effectively to be an automatic right.

Schedule 3 of the FWMA proposed to make this right conditional on meeting the standards of drainage it also prescribed by way of technical standards for multi-beneficial SuDS against which SABs would grant approval. This would be a powerful lever to ensure that developers not only followed a sustainable drainage hierarchy, but that multiple benefits were optimised within it. With the decision to implement Schedule 3, this lever should now be at the disposal of SABs and water companies.

Standards for SuDS: Another fundamental part of the Schedule 3 jigsaw was the introduction of mandatory standards which would set the bar for how SuDS would work and perform, and against which SuDS Approving Bodies would make their approvals.

[27] Defra. Review of skills gap and training requirements for the implementation of Sustainable Drainage Systems (SuDS) and Schedule 3 to the Flood and Water Management Act (FWMA) (2010) - AE2202. 2023

When originally drafted, these prioritised SuDS that delivered multiple benefits across water quantity, quality, amenity and biodiversity. However, when the planning-led approach was preferred, these standards were made non-statutory and their multi-beneficial scope reduced to only considering flows and volumes (water quantity). Consequently, it became possible to comply with these standards using very basic approaches which barely constituted sustainable drainage.

Whilst the National Planning Policy Framework does now require multi-functional SuDS this is not judged against any standards. The non-statutory technical standards were reviewed in 2021 by Defra and recommendations made for their update to achieve multi-functionality[28]. The detail of these standards will now be consulted upon and confirmed prior to implementation of Schedule 3.

Adoption and Maintenance: Without a formal route to adoption, which Schedule 3 established, there has been a litany of so-called 'zombie SuDS' where built-out developments approved without an agreed SuDS adoption solution, or where a management company was chosen and which has since ceased to exist.

This issue is linked to questionable standards of design and delivery and a lack of long-term financial provision or mechanism to ensure ongoing maintenance, which the recent relaxed requirements perpetuate. This has risked functional SuDS falling into disrepair over time and ceasing to function as required.

Schedule 3 sets an adoption route but the exact mechanisms for funding ongoing maintenance will need to be confirmed following consultation, prior to implementation.

Consistency in planning: The headline planning policies in the National Planning Policy Framework (NPPF) have been improved to more clearly mandate multifunctional SuDS. Nevertheless, there remain constraints to this mandate, e.g., the NPPF requires SuDS to be delivered in areas of flood risk, or in 'major' developments (which is defined as 10 homes or more).

Both factors limit the extent of SuDS delivery. Firstly, because SuDS deliver most benefit in relation to surface water flooding, which can take place anywhere especially during intense convective rainfall increasingly seen in summer under climate change. And secondly, because a large proportion of new housing development takes place in schemes of less than 10 homes.

Some local planning authorities have strong supplementary planning documents (SPDs) clearly setting their expectations on SuDS but the picture varies authority to authority, with the quality of delivery often reliant on whether there is a well-informed SuDS 'champion' within the Local Planning Authority.

The Association of SuDS Authorities are working on template planning conditions promoting well-designed SuDS. In addition, the Town and Country Planning Association are working to build understanding and engagement between the planning profession and flood risk management.

[28] Defra (2021) Recommendations to Update Non-Statutory Technical Standards for Sustainable Drainage Systems (SuDS) - WT15122.

Whilst implementation of Schedule 3 of the FWMA should support establishing nationally consistent standards of SuDS implementation in new development, it will not remove the need for high-level, pre-application stage negotiation on SuDS. Additionally, planning will need to consider and drive retrofit SuDS where there are ambitions around placemaking and regeneration, as well as supporting programmes by water companies to reduce surface water in combined sewer networks.

Partnership working and culture in organisations: Collaborative SuDS projects and partnership funding can deliver more 'bang for buck'. The challenge remains that this is a new way of working for water companies and local authorities, who traditionally have a culture of being risk averse or regulated in a manner that prevents this type of joint working.

The Ofwat business planning methodology requires an assessment of costs and benefits for water company customers and aims to ensure they are not subsidising wider benefits. There is uncertainty, as the approach that will be taken in assessing this isn't clear and could limit future partnership working.

The most recent guidance on WINEP and DWMPs encourages both partnership working and delivery and nature-based solutions (NBS). However, concerns have been expressed by water companies and other observers that the economic mechanisms embedded within WINEP and the PR24 methodology do not yet actively encourage a fundamental shift away from traditional approaches and towards partnership working and NBS.

Partnerships underpin the financing and delivery of NBS. These can be complicated by the different investment priorities and cycles of the organisations involved. The uncertainty of water company business planning approaches and the likelihood that investment will span several planning periods increases the challenge of collaboration and obtaining blended financing.

Water companies are at the centre of catchments and there are many opportunities to leverage wider funding and benefits for nature-based solutions. There have been limitations with the rigid approach to partnership funding and the use of Grant-in-Aid taken by the Environment Agency/ Defra with funding rules focused on wider flood risk projects. This current landscape is ripe for review so that lessons may be learnt from present limitations, and more recognition may be given to maximising ecosystem services delivered and valuing these contributions through multi-capitals accounting methods.

Within local government the interaction between Local Planning Authorities, Lead Local Flood Authorities and Highway Authorities is essential in planning, approving and delivering high quality SuDS. These relationships are context-specific and not necessarily enabled or prescribed within the regulatory framework for flood risk management and planning.

Joining-up a range of plans to effectively drive SuDS retrofit at scale: Delivering SuDS effectively in new development is vitally important to ensure it is climate resilient, mitigates its impact on the environment, and does not exacerbate pollution or downstream flood risk. However, the vast majority of development which has these impacts is that which already exists. To tackle the range of challenges described in this statement, retrofitting of SuDS at scale is essential.

DWMPs, now mandated under the Environment Act 2021, are a step forward for planning linked to wastewater. However, there is a need for a joined-up approach with Water Resources Management Plans and others at a catchment-scale.

Local Nature Recovery Strategies risk focusing on wildlife and habitats without addressing the root causes of habitat degradation. Highways plans also need to have greater cognisance of the need to manage both surface water flood risk and water quality, making best use of highway corridors and verges to manage and treat water sustainably at the surface. Local Flood Risk Management Strategies should engage effectively with these various plans.

Although the current focus on addressing storm overflows can help drive changes, there is a risk that water industry solutions could focus largely on grey infrastructure when addressing storm overflows due to its scale, perceived reliability and ease of financing and maintaining.

Experience from other countries and exemplars in UK cities suggests that a combined approach will be needed and should be developed by government, its regulators and advisors including the National Infrastructure Commission. We would advocate a hierarchical approach which prioritises distributed and / or whole-catchment measures first, followed by drainage and sewerage network optimisation using smart network technology, and finally, hard-engineered solutions.

Financing SuDS: There is a reliance on water companies to fund improvements in catchments, however partnership and nature-based approaches linked to SuDS haven't always been supported in past price reviews by Ofwat.

The most recent guidance on the WINEP and on DWMPs did place importance on water companies prioritising nature-based solutions although this does not appear to have materialised in terms of programmes put forward to the regulators.

The ability to package up a wide range of smaller SuDS projects into something suitable for green finance is likely to require greater collaboration between partners, as is being piloted in the Manchester IGNITION project[29].

Barriers to funding are not limited to just the creation of new SuDS, but also in the long-term adoption and maintenance of those SuDS as part of an asset management approach. Prioritisation of operational expenditure by water companies and local authorities is challenging even for traditional sewer infrastructure.

Alternative approaches to charging for wastewater and stormwater have been drivers for funding new and long-term maintenance of SuDS measures internationally but barriers to implementation of area-based charging in England exist, including limitations from Ofwat. Ofwat may need to explicitly introduce a mechanism for funding the long-term maintenance of retrofitted SuDS.

Lack of clear responsibility for water quality: Roughly 50% of water in a typical combined drainage network originates from highways and footpaths, which account for a large amount of the hard surface in our urban environments.

[29] https://www.greatermanchester-ca.gov.uk/what-we-do/environment/natural-environment/ignition/

Water companies are responsible for dealing with this water and charge all water customers through the highway drainage charge, on the basis that everyone benefits from the utility delivered by highways. More could be done to enable and encourage the highways sector to play a role in retrofitting highways with SuDS and helping to manage runoff water quality.

Lack of a combined voice and focus for SuDS: Although many different organisations are supporting SuDS implementation, with the welcome input from the Association of SuDS Authority and the Water UK Surface Water Management Network there is no voice coordinating all stakeholders to call for high quality SuDS and the required supporting mechanisms.

The CIWEM SuDS and water reuse policy leadership group has provided a focus-point for collaboration across sectors and discussion around SuDS policy but isn't as well-resourced and supported as some of the examples in other countries. In Australia a range of enabling organisations have developed in each state, funded by water companies and governments, to implement water sensitive urban design (SuDS). In the US, third sector organisations and NGOs lead in this space alongside municipalities.

There is a need for policy coordination and engagement to push forward on SuDS in England, which is something beyond the existing knowledge sharing networks and bodies can provide. The work of the CIWEM leadership group provides a basis for this and the experience of Waterwise in making progress on the water efficiency agenda (or the Energy Saving Trust on energy) could be the basis for this.