Consumer Scotland
Luchd-Cleachdaidh Alba

Consumer views on climate adaptation in the water sector – drainage and wastewater

This briefing provides evidence-based policy recommendations on drainage and wastewater services

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Executive Summary

In Scotland, climate change means we can expect to see more frequent and extreme storms. In addition to wetter winters, the intensity of rainfall is projected to increase throughout the year, so that when it does rain, the impacts of rainfall will be more severe, leading to higher levels of surface water flood risk.[1]

Scotland's existing drainage infrastructure is often overwhelmed by the increased intensity of rainfall and run-off. This can lead to water either backing up in streets, causing flooding, or being discharged, alongside sewage and sewage debris, from the combined sewer overflows (CSO) network and into the environment.

The risk of surface water flooding in Scotland in future is heightened due to urbanisation and an increase in 'hard surfaces' from new developments, roads and pavements, the paving over of gardens for driveways and patios, as well as the use of artificial grass. Although the amount of permeable land in Scotland lost to urbanisation is not easily quantifiable, one study found that the city of Edinburgh lost an average over 15 football pitches of vegetated land per year to urban creep, between 1990 and 2015.[2]

Scottish Water has set out its plan for addressing water quality issues associated with CSO spills in its 'Improving Urban Waters – Route Map'.[3] More broadly, there is growing recognition within Scotland that more innovative, nature-based approaches to managing rainwater are needed in order improve urban resilience and adapt to the challenges of climate change.[4] This includes the creation of Blue-Green Infrastructure (BGI) networks within towns and cities.[5] BGI networks help to reduce the risk of flooding by managing rainwater above ground, while enhancing the natural environment and the quality of our public spaces.

In this policy briefing, Consumer Scotland sets out its key recommendations and findings around adapting Scotland's drainage and wastewater services, based on research conducted in 2023-2024 that explored, through a deliberative methodology, research participants' views on climate change adaptation in the water sector. We also provide recommendations around the support required by consumers to change their water behaviours to be more sustainable which, in the context of reducing rainwater flooding and CSO spills, might involve better managing rainwater at a property level and avoiding the disposal of inappropriate household items down sinks or toilets.

As demonstrated by the research, when provided with relevant information and given time and space to reflect on the issues in detail, participants support an ambitious approach being taken by Scotland's water sector to adapt to climate change impacts. After learning about the issues, there was a clear appetite from participants to see behavioural change take place at scale, supported by wider, systemic action on the part of Scottish Government, Scottish Water, business and industry. For meaningful change to occur in consumer behaviour, legislation, community engagement and education are essential.

Our key findings and recommendations include:

Drainage – Key findings and recommendations

- **Participants in our research were positive about the potential for nature-based solutions, such as blue-green infrastructure (BGI), to help communities adapt to climate change while delivering environmental, social and health benefits**.

  Key recommendation: Scottish Government should take the lead, with the support of Scottish Water, the Scottish Environment Protection Agency (SEPA) and local authorities, in designing legislation to drive forward a shared vision for BGI networks in Scotland. Future legislation should aim to create a framework for increased investment in BGI, including by ensuring that larger players in the housing sector, such as developers and commercial landlords, are sufficiently proactive about sustainable drainage solutions, while giving stronger protection against blue-green spaces being removed or altered in future as a result of competing demands on land.

- **Participants in our research wanted to see local authorities and developers engage in a meaningful way with communities to create lasting solutions to climate risks, while tackling social disadvantage.**

  Key recommendation: A sense of community ownership is important for larger-scale BGI projects to be effective and resilient over a period of years. For local authorities, understanding how to enable participatory decision-making and inclusive design in the context of BGI planning is an important skillset and requires appropriately resourcing within the planning context.

  In line with the principles of a just transition, an equitable approach should be taken to improving blue and green networks, and adapting to climate change in general, that prioritises interventions for communities most in need.

- **Participants in our research supported measures that would encourage individual homeowners to be more proactive about managing rainwater on their property.**

  Key recommendation: There is a need to increase public understanding so homeowners recognise rainwater as something they can and should play an active role in managing. We see value in water sector stakeholders working together to identify ways of engaging consumers, including by identifying sources of guidance, around how changes made to their property's outside space can impact local flood risk, in addition to grants and schemes to promote household uptake of water butts.

Wastewater – Key findings and recommendations

- **Participants in our research wanted to see greater transparency around the management and performance of the combined sewer overflows (CSOs) system in Scotland.**

  Key recommendation: While data around CSO spills is currently published on Scottish Water's website, we would welcome further collaboration between Scottish Water, SEPA, other environmental and consumer bodies on ways to make the data clearer and more accessible for consumers.

- **Participants in our research recognised that individuals have a responsibility to change their behaviours to reduce the strain on the sewerage system at source.**

  Key recommendation: There is evidence that wipes labelled as 'natural', 'flushable' and 'biodegradable' have been a historic source of confusion for consumers. We encourage policymakers, regulators, industry representatives and consumer bodies to work together to develop clearer, consistent product labels and universal standards on flushability that can help raise awareness and support consumer behaviour change in this area.

Who we are

1.1 Consumer Scotland is the statutory body for consumers in Scotland. Established by the Consumer Scotland Act 2020, we are accountable to the Scottish Parliament. Consumer Scotland's purpose is to improve outcomes for current and future consumers and our strategic objectives are:

- to enhance understanding and awareness of consumer issues by strengthening the evidence base
- to serve the needs and aspirations of current and future consumers by inspiring and influencing the public, private and third sectors
- to enable the active participation of consumers in a fairer economy by improving access to information and support

1.2 Consumer Scotland uses data, research and analysis to inform our work on the key issues facing consumers in Scotland. In conjunction with that evidence base we seek a consumer perspective through the application of the consumer principles of access, choice, safety, information, fairness, representation, sustainability and redress.

2. Research methodology

2.1 In 2023, Consumer Scotland commissioned the independent research agency Ipsos to deliver qualitative research on our behalf that would enable us to better understand consumer views on climate change adaptation in the water sector.

2.2 The aims and objectives of the research pointed towards a deliberative methodology being appropriate for the project due to the complex and multi-faceted nature of the topic. Deliberative engagement is about involving the public in decision making in a meaningful way. Through informed discussions with other people about key evidence that is presented to them as a collective, deliberation involves placing diverse perspectives and an understanding of lived experiences at the heart of decision making.

2.3 In this research 41 participants that were broadly reflective of Scotland's population were recruited to take part in a "public dialogue". They met over five three-hour online facilitated workshops to consider and answer the key question:

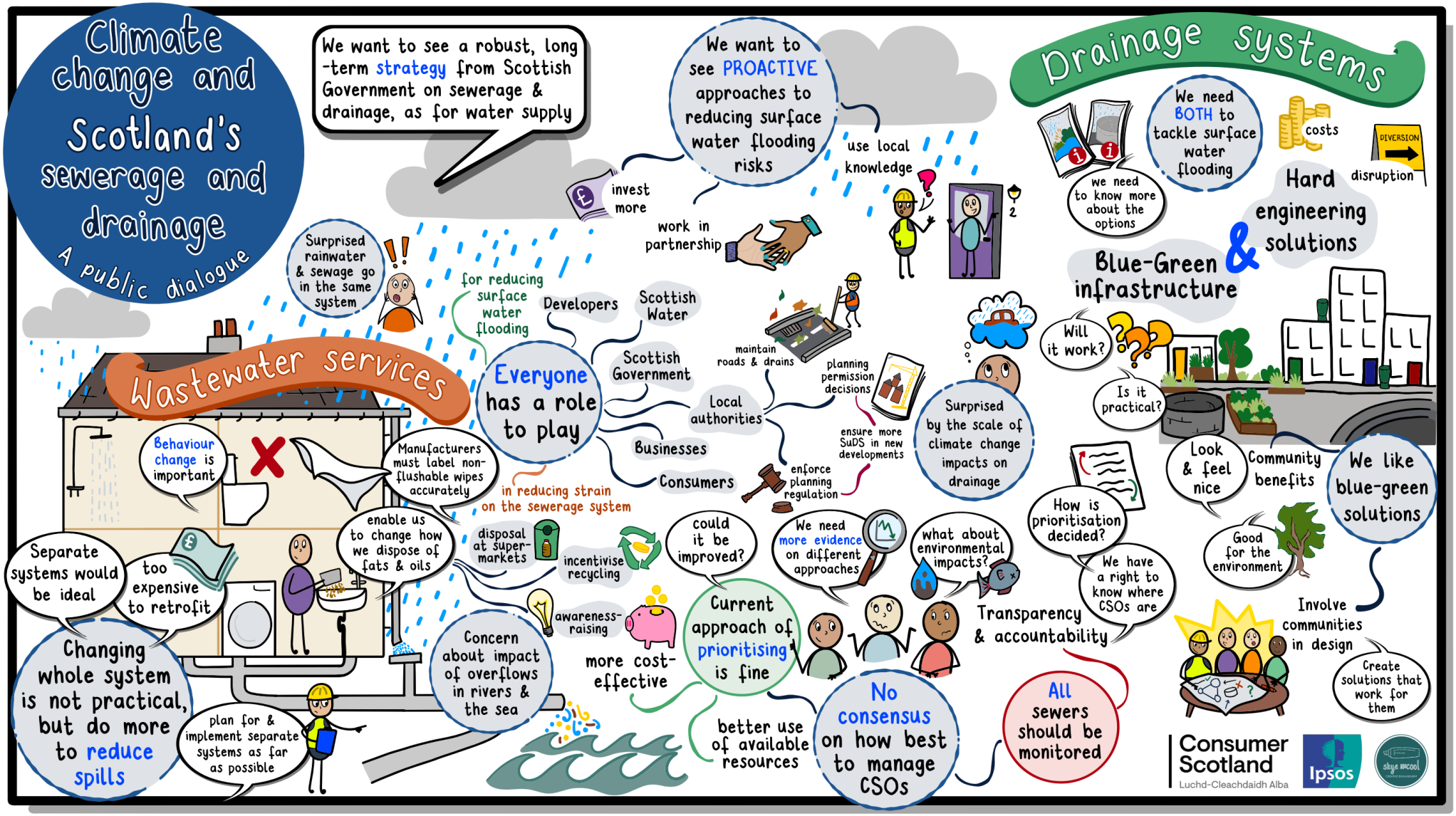
> "How should we deal with the impacts that climate change is having – and will have – on water in Scotland?"

2.4 Over the course of the public dialogue, participants listened to presentations from specialists from government and the water sector in Scotland to learn about key issues related to the impacts of climate change on water, wastewater and drainage. They also discussed possible strategies and solutions to help address these impacts, and collectively drew their conclusions together to answer the overarching research question.

2.5 Through this research, consumers' views on a range of policy options related to adaptation in the water sector were explored. In addition we sought to understand the support the research participants believe would be required by consumers if water behaviours are to be changed and become more sustainable overall.

2.6 The report draws primarily on findings from workshops three and four, in which participants learned about Scotland's drainage and sewerage system and how it is being impacted by climate change, as well as potential solutions, as well as workshop five, where participants discussed and formed their final conclusions. The findings from workshops one and two, which cover households' water use and the impacts of climate change on water resources, are addressed in a separate briefing. An artist illustration which captures some of the key discussion points that emerged in relation to the theme of drainage and sewerage is provided on the following page.

2.7 The full research report by Ipsos, which contains more detail around the methodology and findings, has been published on Consumer Scotland's website alongside the policy briefings.


Climate change and Scotland's sewerage and drainage
A public dialogue
We want to see a robust, long-term strategy from Scottish Government on sewerage & drainage, as for water supply
We want to see PROACTIVE approaches to reducing surface water flooding risks
invest more
work in partnership
use local knowledge
Drainage systems
We need BOTH to tackle surface water flooding
costs
DIVERSION
disruption
we need to know more about the options
Hard engineering solutions
&
Blue-Green infrastructure
Will it work?
Is it practical?
Look & feel nice
Community benefits
We like blue-green solutions
Good for the environment
Involve communities in design
Create solutions that work for them
Surprised by the scale of climate change impacts on drainage
Surprised rainwater & sewage go in the same system
Wastewater services
for reducing surface water flooding
Developers
Scottish Water
Scottish Government
Local authorities
Businesses
Consumers
Everyone has a role to play
maintain roads & drains
planning permission decisions
ensure more SuDS in new developments
enforce planning regulation
in reducing strain on the sewerage system
Behaviour change is important
Manufacturers must label non-flushable wipes accurately
enable us to change how we dispose of fats & oils
disposal at super-markets
incentivise recycling
awareness-raising
more cost-effective
could it be improved?
We need more evidence on different approaches
what about environmental impacts?
How is prioritisation decided?
We have a right to know where CSOs are
Transparency & accountability
Separate systems would be ideal
too expensive to retrofit
Changing whole system is not practical, but do more to reduce spills
plan for & implement separate systems as far as possible
Concern about impact of overflows in rivers & the sea
Current approach of prioritising is fine
better use of available resources
No consensus on how best to manage CSOs
All sewers should be monitored
Consumer Scotland
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Ipsos

3. Key Findings: Drainage

Participants in our research had a preference for nature-based solutions to rainwater management that are designed and built in partnership with communities

3.1 Our deliberative research interrogated participants' preferences with regard to rainwater management solutions. Participants in the research generally showed a preference for nature-based solutions where available as a solution to surface water flooding, over traditional 'hard engineered' solutions, despite the latter being seen as practical and necessary in some instances. One participant proposed a 'BGI-first' approach as follows:

"*Instead of going straight to hard concrete solutions, focus first on the soft, less invasive, more natural solutions first and only if they don't fit then go to the [engineering solutions*]."

3.2 Participants were particularly supportive of blue-green solutions that would lead to increased biodiversity and would make local areas more attractive, and that could also boost community health and wellbeing.

3.3 Notably, the enthusiasm for nature-based solutions was strengthened whenever participants felt that the local community had also been involved in planning the project. Participants valued transparency and want to see local authorities and developers engage in a meaningful way with communities to create lasting solutions to climate risks. In turn, trust is built when participants feel that their voices are considered and acted upon. A strong view was also expressed in our research that there was value in harnessing local knowledge and expertise in terms of flood risk planning. In particular, it was felt that communities often know which areas tend to flood and thus which areas are most in would benefit the most from infrastructure investment.

3.4 Once in place, it is important for BGI to be supported for the long-term and to be maintained, so that the site continues to function as intended and does not fall into disrepair. While participants in our research noted that maintenance could add to the overall cost of the project, maintenance duties were also viewed positively as an opportunity for local job creation. As previous Consumer Scotland research found, community engagement is also key to supporting longer-term BGI maintenance. When communities feel a shared ownership of the space, they are more likely to engage with it positively, including through active use of the space or engaging in positive behaviours like litter-picking. [6] Overall, taking a place-based approach to the design and delivery of blue-green places can support a more streamlined planning process, as it allows the needs of the community and any concerns they may have – such as around disruption to travel routes or children's safety - to be understood and addressed early on.

3.5 We recommend that the Scottish Government establishes frameworks and partnership working arrangements in legislation and policy to create an enabling environment for stakeholders involved in flood risk management and BGI planning – including local authorities (across different functions) and Scottish Water - to collaborate on the delivery of place-based, community-informed BGI projects.

3.6 Moreover, understanding how to enable participatory decision-making and inclusive design in the context of BGI planning is an important skillset, requiring strong interdisciplinary thinking and an understanding of conducting outreach for groups that are under-represented.[7] As such, planning teams within local authorities must be appropriately resourced to enable them to undertake meaningful community engagement to achieve shared outcomes.

Participants in our research wanted to see an equitable approach taken to sustainable, blue-green rainwater management

3.7 Participants in our deliberative research held the view, based on their lived experience, that those living in more deprived communities in Scotland are disproportionately more likely to be vulnerable to climate change. This inequality is felt not only through direct exposure to flood risk, but also the secondary impacts of flooding such as disruption to travel networks, and from lack of equal access to green space.

"*I know why street water is a problem in my area. I live in a really poor area. Ten minutes' walk away, in a much wealthier area, the potholes have vanished, and they don't have so much street flooding*."

3.8 In the 2021 Scottish Household Survey, while most adults (70%) reported living within a five-minute walk of their nearest area of green or blue space, this proportion was lower for adults in the 20% most deprived areas (62%) compared to other areas of Scotland areas (all 70% or above). In addition, while half (51%) of Scottish adults reported visiting their nearest area of green or blue space every day or several times a week, the frequency of visits amongst disabled people (40%) or those with poorer general health (30%) was lower.[8] Evidence from England also indicates that those living in areas that are classed as more deprived disproportionately face more flood risk than those in less deprived areas.[9]

3.9 In line with the principles of a just transition, which include the fair distribution of costs and benefits of climate action, an equitable approach should be taken to improving blue and green networks that tackles inequality and delivers benefits for communities most in need.[10] This would see the prioritisation of interventions for the most deprived and at-risk places and communities. To develop an understanding of the relationship between social need and green-blue opportunity, preliminary questions that those involved in local planning may wish to ask themselves, with respect to their local area, include[11]:

- What do just and equitable nature-based, blue-green solutions look like?
- Which communities and people currently lack access to green and blue space?
- What measures can be taken to ensure equitable access to the benefits of blue and green space?
- What lessons can be learned from domestic and international case studies around the just and equitable delivery of BGI?

Participants in our research supported measures that would incentivise better rainwater management at a household level

3.10 Concern around development that fails to consider surface water flood risk also emerged as a key theme of our deliberative research. In particular, participants expressed concern at the large amounts of green space being lost in urban areas of Scotland over each year. To combat the rise of urban creep, communities and individuals can be encouraged to undertake local interventions to manage rainwater in their own homes, gardens or community areas.

3.11 Our research suggests that there may be low public awareness of, for example, water-resilient approaches to creating driveways or the impact that paving over gardens can have on surface water drainage. To address this, there is a need for clearer information to be provided to consumers around the use of permeable materials how changes made to their outside space, such as paving over driveways and use of artificial grass, can have a negative impact on local flood risk. Action to address the uncontrolled increase in impermeable surfaces should come with additional support for broader sustainable rainwater management solutions, such as grants and schemes to promote household uptake of water butts.

3.12 At the same time, in line with participants' desire to see the Scottish Government take a more proactive approach to the management of surface water flood risk, the government may wish to review and evaluate planning policies for their effectiveness in managing increases in impermeable surfaces. This may involve increasing management and oversight over drainage within planned and new developments and ensuring that larger players in the housing sector, including developers and commercial landlords, are sufficiently proactive about sustainable drainage solutions.

4. Key Findings: Wastewater

There was a desire amongst research participants for greater transparency around the management and performance of the combined sewer overflows (CSOs) system in Scotland

4.1 Our deliberative research explored consumer views on the management of Combined Sewer Overflows (CSOs) in Scotland. Views on the subject were strongly divided during and following deliberation, with the existence of CSOs causing alarm for some participants who had not been aware of them. Concerns initially focussed on the potential negative environmental impacts of CSOs, and there was discussion around the feasibility of creating a separated sewer system or widening pipes. However, following deliberation and when more information was presented on how CSOs perform as part of wastewater infrastructure, participants were more likely to reflect a more considered view of the role of CSOs. There was appreciation of the scale of the problem, given the length and complexity of the underground pipe network and the prevalence of ageing infrastructure. Whilst views on solutions were often still divided, the function of CSOs was better understood and instead there was a shift in focus towards methods to reduce spills from CSOs.

4.2 No consensus emerged amongst research participants on the best way to manage CSOs going forward, with some advocating for more comprehensive modelling, and others preferring an approach that prioritised problematic CSOs. However, there was a clear desire from participants for greater transparency in terms of how the prioritisation of sewers for monitoring is currently decided and where investment is likely to be prioritised. Participants expressed the view that citizens have a "right to know" about problematic CSOs.

4.3 We note that, with the announcement of rising water and wastewater charges for 2024-2025, consumers will likely expect to see evidence that Scottish Water is appropriately investing in measures to improve its environmental performance.[12] In its 'Improving Urban Waters Routemap',[13] Scottish Water has committed to publishing real-time spill data for all monitored CSOs by December 2024. It has also agreed to work with SEPA to provide direct alerts to bathing water users during sewer spill events. Scottish Water currently publishes and regularly updates discharge data on its website.[14] We welcome the publication of this data as part of Scottish Water's commitment to transparency and would welcome further collaboration between Scottish Water, SEPA, and other environmental and consumer bodies on ways to make the data clearer and more accessible for consumers.

Participants in our research were able to recognise that individuals have a responsibility to change their behaviours to reduce the burden on the sewerage system at source

4.4 After learning about the high cost of fixing sewer blockages each year, and about the number of blockages caused by inappropriate household items being put down the sink or toilet,[15] participants in our research were supportive of more action to tackle the problem of sewer spills and pollution at source. Consumer behaviour and a general lack of awareness was recognised as a significant contributor towards an overloaded wastewater system. As one participant reflected:

"*I am that person 20 years ago, we blocked our sewer, it was less about misinformation but we didn't know. We were brand new parents, wet wipes were fantastic. We only found out [that flushing them was an issue] when we blocked the sewer. It's a lack of information*."

4.5 Our research participants indicated that there is a need to raise awareness of the damage caused to sewer systems by putting inappropriate items down the toilet or sink. On the whole, the disposal of fats, oil and grease (FOG) and of other 'unflushables' tends to happen in private, which can make incentivising good behaviour more challenging. There was support for creative solutions that would help make the issue of inappropriate disposals more visible, such as through the creation of public FOG disposal points, like bottle banks in supermarkets, or doorstep FOG collection.

4.6 Wipes misleadingly labelled as 'natural', 'flushable' and 'biodegradable' have historically contributed to confusion. For example, research by Yorkshire Water found that 1 in 4 individuals under 35 believed that 'biodegradable' meant the same as 'Fine to Flush'.[16] Clearer, consistent product labels are key to improving consumer literacy in this area.

4.7 To achieve the outcome of less wipes in our rivers and fewer blockages, there needs to be further action to support consumer behaviour change, including campaigns such as Scottish Water's "Nature Calls". The UK government has recently announced its intention to legislate for a ban on wet wipes containing plastic,[17] following calls from the water industry and the wider public. In light of this positive development, we encourage policymakers, regulators, industry representatives and consumer bodies to work together to explore options for improving the market further for consumers and the wider environment, including by developing consistent product labelling and universal standards on flushability, as well as finding ways to promote eco-friendly and reusable alternatives to single-use wet wipes.

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[1] Scottish Water (2024) "Climate Change Adaptation Plan". Accessed at: https://indd.adobe.com/view/d63df175-559e-4ec7-a2b5-8227596a710e

[2] Centre of Expertise for Waters (CREW) (2019) "Quantifying rates of urban creep in Scotland: results for Edinburgh between 1990, 2005 and 2015". Accessed at: https://www.crew.ac.uk/sites/www.crew.ac.uk/files/publication/CRW2016_16_Urban_Creep_Main_Report%2Blink.pdf

[3] Scottish Water (no date) Improving urban waters route map". Accessed at: https://www.scottishwater.co.uk/-/media/ScottishWater/Document-Hub/Key-Publications/Improving-Urban-Waters/SW-Urban-Waters-Route-Map.pdf

[4] Scottish Government (2021) "Water-resilient places: A policy framework for surface water management and blue-green infrastructure". Accessed at: https://www.gov.scot/publications/water-resilientplaces-policy-framework-surface-water-management-blue-green-infrastructure/documents/

[5] BGI networks are defined as: the natural and semi-natural landscape elements within our urban and rural spaces that when connected, deliver ecological, economic and environmental benefits for communities and for nature. Examples of BGI include rain gardens, ponds, green roofs, and porous paving, which reduce flood risk by giving water a place to collect and be absorbed slowly and naturally.

[6] Consumer Scotland (2023) "Overcoming barriers to the adoption of blue-green infrastructure". Accessed at: https://consumer.scot/media/k0ufweph/overcoming-barriers-to-the-adoption-of-blue-green-infrastructure.pdf

[7] Citizens Advice Scotland (2022) "Building back blue - A study of community engagement practices within the design and delivery of blue-green solution". Accessed at: https://www.cas.org.uk/system/files/publications/building_back_blue_report_31.01.22_1.pdf

[8] Scottish Government (2023) Scottish Household Survey 2021 Telephone Survey Key Findings". Accessed at: https://www.gov.scot/publications/scottish-household-survey-2021-telephone-survey-key-findings/pages/9/

[9] Environment Agency (2021) "Social deprivation and the likelihood of flooding". Accessed at: https://assets.publishing.service.gov.uk/media/6270fe448fa8f57a3cdbbeb9/Social_deprivation_and_the_likelihood_of_flooding_-_report_2.1.pdf

[10] Scottish Government (2021) "Just Transition – A fairer, greener Scotland: Government Response". Accessed at: https://www.gov.scot/publications/transition-fairer-greener-scotland/pages/5/

[11] Adapted from a briefing by the Stockholm Environment Institute, *Principles for just and equitable nature-based solutions* (2022). Accessed at: https://www.sei.org/wp-content/uploads/2022/05/principles-for-just-and-equitable-nature-based-solutions.pdf

[12] Scottish Water (2024) "Water and Waste Water Charges 2024 to 2025". Accessed at: https://www.scottishwater.co.uk/About-Us/News-and-Views/2024/02/Water-and-Waste-Water-Charges-2024-and-2025#:~:text=Investment%20to%20protect%20vital%20water%20and%20waste%20water,%E2%80%93%20will%20take%20effect%20from%201%20April%202024.

[13] Scottish Water (no date) Improving urban waters route map". Accessed at: https://www.scottishwater.co.uk/-/media/ScottishWater/Document-Hub/Key-Publications/Improving-Urban-Waters/SW-Urban-Waters-Route-Map.pdf

[14] Scottish Water (no date) “Improving urban waters”. Accessed at: https://www.scottishwater.co.uk/Help-and-Resources/Document-Hub/Key-Publications/Urban-Waters-Improvements

[15] As reflected in the Appendices of Ipsos’ report, participants were informed that, in 2021, there were around 36,000 blockages within the public wastewater network, over 80% of which were due to inappropriate flushing of items down the toilet.

[16] Water Magazine (2022) “Yorkshire Water calls for ‘do not flush’ labelling on wet wipes after research reveals consumer confusion”. Accessed at: https://www.watermagazine.co.uk/2022/06/16/yorkshire-water-calls-for-do-not-flush-labelling-on-wet-wipes-after-research-reveals-consumer-confusion/

[17] HM Government (2024) “UK-wide ban on wet wipes containing plastic to be put into law”. Accessed at: https://www.gov.uk/government/news/uk-wide-ban-on-wet-wipes-containing-plastic-to-be-put-into-law