Department
for Environment
Food & Rural Affairs

Reviewing the Water Efficiency Standard in the Building Regulations 2010.

Building Regulations 2010 and Approved Document (Part G2).

23 September 2025

We are the Department for Environment, Food and Rural Affairs. We're responsible for improving and protecting the environment, growing the green economy, sustaining thriving rural communities and supporting our world-class food, farming, and fishing industries.

This is a joint consultation with the Ministry of Housing, Communities and Local Government (MHCLG), working with the Building Safety Regulator (BSR).

We work closely with our 33 agencies and arm's length bodies on our ambition to make our air purer, our water cleaner, our land greener and our food more sustainable. Our mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state than we found it.

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Section 1: Introduction

1. Climate change, population growth, the need to protect the environment and ageing infrastructure are increasing pressures on our water resources. We face increased extremes in weather, both drought and water scarcity. The latest regional Water Resource Management Plans state we will need around an additional 5,000 million litres of water per day by 2050, almost a third (28.5%) of current public water supplied in England. As outlined in the Environment Agency Review of England's emerging regional water resources plans[1], over half of this will need to come from reducing demand for water.

2. In 2023, the former Government published the Environmental Improvement Plan (EIP). The plan sets out how we will manage the increase in water demand, through the setting of a new legally binding target under the Environment Act 2021, to reduce the use of public water supply in England per head of the population by 20% by 2038. To achieve this, amongst other actions, we will reduce household water use to 122 litres per person per day l/p/d, as part of the trajectory to achieving 110 l/p/d household water use by 2050.

3. In 2024, the Government recommitted to the water demand target and launched the largest review of the water sector, since privatisation, chaired by Sir Jon Cunliffe. The Government's full response to the Commission's recommendations will be published through a White Paper published for consultation this autumn. These reforms will form the basis of a new water reform bill to be introduced early this Parliament.

4. Throughout the 2000's, attempts were made to make our homes more water efficient, to protect the environment and support growth. Since then, it has become increasingly clear that action is needed to make Building Regulations more water efficient to reduce water demand and support growth. This Government wants to and is ready take the long-awaited action required.

5. Now with population growth, new housing is required to be developed across England, and water is essential to this. The Government's ambition is to build 1.5 million homes this parliament[2]. To achieve this a step change is needed to maximise the water saving potential of our housing market and ensure climate resilience. Since the addition of water efficiency into the regulations, the water housing market has evolved. Water efficiency measures are now commonplace across Local Planning Authorities in England. As a result of water scarcity some LPAs, in Cambridge and North Sussex, are already building to tighter standards to manage development needs alongside protecting the water environment. This consultation supports the development of best practice water efficient homes across the whole country. This industry anticipated

[1] Review of England's emerging regional water resources plans - GOV.UK
[2] Chancellor chooses a Budget to rebuild Britain - GOV.UK

review of regulation offers homebuilders and developers increased environmental headroom, through low cost and readily available water efficient technology. It will increase water savings and lower consumers energy and water bills, to provide water sustainable housing to meet the growing populations needs. Development incentives can cover some of the costs associated with achieving tighter water efficiency standards. The call for evidence is informed by best international practice on utilising recycled water.

6. This consultation has been developed in collaboration with the Ministry of Housing, Communities and Local Government (MHCLG), and the Building Safety Regulator (BSR). We are seeking views on our proposals to amend the Building Regulations 2010 Part G2 and update Approved Document G (AD-G). This consultation asks questions about a set of proposals, and the costs and benefits to support our future impact assessment. This consultation will run for 12 weeks.

Section 2: Background

7. The Environmental Improvement Plan (EIP) 2023 launched the Roadmap to Water Efficiency in new developments and retrofits. The roadmap has 10 new actions to take forward and deliver over the next decade, this includes action 7), to: Review the Building Regulations 2010, and the water efficiency, water recycling and drainage standards (regulation 36 and Part G2, H1, H2, H3 of Schedule 1), considering industry competence and skills. The government has since concluded a rapid review of the EIP, which is informing the development of a revised EIP. Actions associated with water efficiency in the Building Regulations will remain. Later in 2025 we will publish a revised EIP 2025. This will be our long-term plan for improving the natural environment and enjoyment of it. It will include prioritised delivery actions to help meet the ambitious Environment Act targets.

8. Interim to the Roadmap the former Government wrote to all local authorities in September 2022 encouraging them to apply the optional tighter water efficiency standard of 110 l/p/d, set out in the Building Regulations 2010, in all new homes and to favour the fittings-based approach.

9. In December 2023 the former Government issued a written ministerial statement (WMS) to allow local planning authorities to introduce tighter water efficiency standards in new homes. As well as setting out that, in areas of serious water stress, where water scarcity is inhibiting the adoption of local plans or the granting of planning permission for homes, it is encouraged that local planning authorities work with the Environment Agency and delivery partners to agree standards tighter than the 110 l/p/d that is set out in current guidance[3]. This consultation ensures that both the minimum and optional standards evolve alongside water efficiency innovation and the growing need for new homes. There are 337 local planning authorities in the UK, and as of 2017 the Environment Agency stated 80 of these had utilised the optional requirement to build to 110 l/p/d. A number of these require all new builds to be built to this standard, including Basingstoke, Sevenoaks and Cambridge, with London requiring 105l/p/d and Horsham requiring 85 l/p/d[4].

10. This review of water efficiency standards has been well discussed extensively with industry and the proposed options are proportionate to the risk posed by water scarcity to development in future. Industry has called for and supported this review through their own research studies looking at tighter standards over a 10-year timeframe and reports on industry enabling reuse technology beyond the Building Regulations. Pilots are also being conducted collaboratively in Cambridge by South Staffs Water Authority, Developers and local government, to drive innovative approaches to

[3] https://questions-statements.parliament.uk/written-statements/detail/2023-12-19/hcws161

[4] RDE 503_70121614 Project Report FINAL.pdf

decrease demand pressure posed by both new housing and non-household developments. These pilots are aligned with the standards we are calling for evidence on in this document.

11. Water Efficiency is a policy area where responsibility is devolved. The Building Regulations 2010 apply to England. (AD-G) (section G2) Water Efficiency gives guidance for compliance with the Building Regulations for building work carried out in England. It also applies to building work carried out on excepted energy buildings in Wales as defined in the Welsh Ministers (Transfer of Functions (No2) Order 2009).

    What are the Building Regulations 2010?

12. Most building work carried out in England, whether on commercial or domestic buildings, must comply with the Building Regulations. The legal term 'building work' generally includes building new buildings, making buildings bigger, altering buildings and changing what they are used for. It also covers installing a 'controlled service' or a 'controlled fitting'. A replacement window is an example of a controlled fitting. A boiler is an example of a controlled service. 'Renovation of thermal elements' is also building work. This includes roofs or external walls. The purpose of the Building Regulations is to secure the health, safety, welfare and convenience of persons in and about buildings, further the conservation of fuel and power, prevent waste, undue consumption, misuse or contamination of water, further the protection or enhancement of the environment, and facilitate sustainable development. They cover specific topics including structural integrity, fire protection, accessibility, energy performance, protection against falls, electrical and gas safety and acoustic performance. They also set standards for drainage, ventilation, protection against the ingress of water and protection against contamination, including methane and radon gas. The Approved Documents provide statutory guidance on how to meet the requirements of the Building Regulations. It is the duty of anyone ordering, designing or carrying out building work to understand and meet their legal obligations.

Introduction of water efficiency into the Building Regulations 2010

Timeline	
2001	Building Regulations (1985) Approved Documents Part H were amended to set priority of public sewerage over private sewer, septic tanks & cesspools. This included additional requirements for paving to be adequately drained (into a soakaway where possible, or a watercourse, finally a sewer).

2007	The Code for Sustainable Homes became operational. *The water calculator was introduced into the Code for Sustainable Homes included a series of water efficiency levels, ranging from a maximum of 120 l/p/d to less than 80 l/p/d. More efficient water use unlocked more credits, which were then factored into the environmental rating and certification of the property. Local authorities were able to insist on the code being followed as part of the planning process, but it was withdrawn upon release of the updated Approved Document Part G.*
2008	The Code for Sustainable Homes became temporarily mandatory with the introduction of Home Information Packs. *Sellers were required to issue buyers of newly constructed homes a sustainability certificate (either a Code for Sustainable Homes certificate or a nil-rated certificate). In 2010 the requirement for Home Information Packs was suspended along with the requirement for a sustainability certificate.*
2009	July - The Government published a Planning Policy Statement which announced and provided the standards any 'Eco Town' had to adhere to. Four sites in Oxfordshire, Cornwall, Greater Norwich and East Hampshire, were approved to become Eco Towns. *Eco Towns were intended to demonstrate sustainable building practices and contribute to broader government goals of building 240,000 new homes per year by 2016 and reducing CO2 emissions by 80% below 1990 levels by 2050. These locations were also to receive government support, including a share of a £60 million growth fund to support local infrastructure.*
2010	Minimum water efficiency standards were introduced into the Building Regulations, Approved Document Part G. *New homes to be built to a standard of 125* l/p/d *(based on data from the now outdated Code for Sustainable Homes).*
2014	September – November consultation[5] on proposals to implement the Housing Standards Review (HSR) including technical standards. The consultation set out the proposed changes to Building Regulations, AD-G and accompanying guidance, to deliver a new

[5] Housing standards review: technical consultation - GOV.UK (www.gov.uk)

	water efficiency optional requirement. *Where adopted by a local planning authority, the new optional requirement would require new homes to be built so that their estimated water use is no more than 110 l/p/d.*
2015	The Government response[6] to the HSR highlighted key findings. Including that 96% of respondents agreed that there should continue to be a water efficiency standard in the Building Regulations, with overwhelming support for a whole house fittings-based approach. *An additional and optional tighter water efficiency standard of 110 l/p/d is introduced into the Building Regulations. It is applied through a plan policy, the need for which must be fully justified and subject to a viability assessment.* *The government decided to wind down the Code for Sustainable Homes, with many of its requirements being consolidated into a national framework centred on the Building Regulations.* *A Written Ministerial Statement required that through changes to the Climate Change Act (2008) local authorities in England could no longer require code level 3, 4, 5 or 6 as part of the conditions imposed on planning permissions.*
2021	A summary of responses to the 2019 consultation on reducing personal was use was published[7]. The majority of respondents thought that the current minimum standard of 125 l/p/d and the optional requirement of 110 l/p/d should be changed. Respondents called for a more ambitious standard of 110 l/p/d, and an optional standard of 100 litres. This was supported by both the Home Builders Federation (HBF) and the Consumer Council for Water (CCW).
2023	Environmental Improvement Plan (EIP)[8] set out Action 7, to review the Building Regulations 2010, and the water efficiency, water recycling and drainage standards (regulation 36 and Part G2, H1, H2, H3 of Schedule 1), considering industry competence and skills.

[6] English Nationally Described Housing Standards (publishing.service.gov.uk)
[7] https://questions-statements.parliament.uk/written-statements/detail/2021-07-01/hcws0
[8] Environmental Improvement Plan 2023 - GOV.UK (www.gov.uk)

2024	*Secretary of State for Defra announces the introduction of the Water (Special Measures) Bill, recommitting to the statutory water demand target and emphasising the importance of resilient water supplies to building new homes and the economy.* *Autumn budget - The Chancellor commits to building £1.5 million homes over the course of this parliament.* Future Homes Hub, a representative for the home building sector, published a report entitled 'Water Ready: A report to inform HM Government's roadmap for water efficient new homes' calling for tighter water efficiency standards in new build homes and a 10-year roadmap to water efficiency.
2025	The Water (Special Measures) Act was introduced into Parliament received Royal Assent on 24 February 2025. The act significantly strengthens the power of the water industry regulators and delivers on the government's commitment to put failing water companies under special measures[9]. Enabling Water Smart Communities (EWSC) published a summary report entitled 'Re-using water for non-potable purposes: a review of opportunities' which set out mechanisms to enable tighter water efficiency standards and a water re-use hierarchy.

Part G: Water Efficiency

13. AD-G includes sanitation, hot water safety, cold water supply and water efficiency.

14. Minimum water efficiency standards were introduced by the Government into the Building Regulations in 2010. The provisions require that all new homes are built so that their calculated water use is no more than 125 l/p/d (Regulation 36 Building Regulations 2010 and Part G of Schedule 1). Water use is calculated, and compliance is demonstrated by using the methodology set out in the Water Efficiency Calculator for New Dwellings ("the Water Calculator, Part G2 Approved Documents"), as well as the fittings-based approach.

15. An optional requirement (optional technical standard) also exists, of 110 l/p/d, in areas of water stress. This enables local planning authorities, where there is water stress, to impose a tighter standard for new development through a condition on the granting of planning permission, effectively requiring additional water efficiency (for example, more efficient taps and showers). Local planning authorities set this tighter

[9] Water (Special Measures) Act: policy statement - GOV.UK

requirement through their local plan policies (Housing: optional technical standards - GOV.UK[10]), following consultation with the local water supplier(s), developers, the EA and local communities. In July 2021, the EA and DEFRA published an updated list of water stressed areas in England[11] and stated that "local authorities" can use the water stress determination to inform whether they can require the tighter standard of 110 l/p/d in new developments; while in 2023, as set out above, the Secretary of State, in a WMS, encouraged local planning authorities to work with the EA and delivery partners to agree standards tighter than the 110 l/p/d.

16. The water calculator and fittings-based approach for new dwellings are used to ascertain the required additional measures to achieve the 'Minimum Standard'. The water calculator makes assumptions around household occupancy, and the fittings-based approach sets maximum flow rates for fittings and fixtures at the standard and optional levels. Methods of achieving compliance include aerated taps and showerheads, and dual flush toilets. Achieving a higher water efficiency standard, for example 90 l/p/d, in effect may require the use of water re-use, for example rainwater harvesting or greywater re-use systems. Both rainwater harvesting and greywater recycling are covered by (AD-G), Appendix A, with the water calculator accounting for l/p/d reduction using non-potable sources.

17. Approved Document H provides guidance on how to meet the Building Regulations in relation to drainage and waste disposal. Including foul and surface water drainage, pipe sizes, protection of pipes, manholes and inspection chambers.

18. Building Regulation approval checks are carried out by building control during and post build ensuring that the construction is compliant with the regulations, which ensures the building is safe to be used and lived in; this includes preconstruction inspections, checking that water efficient fixtures and fittings have been installed to a property as per the development plan. A development plan sets out a local authority's policies and proposals for land use in their area. Enforcement of Part G2 lies with Building Control bodies, such as the Local Authority Building Control Body (LABCB).

[10] Housing: optional technical standards - GOV.UK

[11] Water stressed areas – 2021 classification - GOV.UK (www.gov.uk)

Section 3: Plan to strengthen Water Efficiency in the Building Regulations 2010 and approved documents

19. In 2023, the former Government published the Environmental Improvement Plan (EIP)[12]. The plan sets out how we will manage the increase in water demand, through the setting of a legally binding target under the Environment Act 2021, to reduce the use of public water supply in England per head of the population by 20% by 2038. Half of the water demand target will need to be delivered through reducing demand for water. The long-term target to reduce water demand seeks to set a course for more sustainable water consumption. To achieve the statutory water demand target, we plan to reduce household water use to 122 l/p/d by 31 March 2038. This is part of the trajectory to achieving 110 l/p/d household water use by 2050, outlined by the National Framework[13] (strategic planning and development guidance) as central to meeting the supply and demand balance by 2050. The Government recommitted to the statutory target, outlined in the EIP, in Summer 2024[14].

20. Water demand reduction is central to achieving the government's economic growth mission. Areas across England are unable to accommodate certain new non-household connections (Hartismere, Cambridge, areas in the Southeast) due to water scarcity. This has impacted stakeholders who are unable to increase their water usage or request new supplies of water for non-domestic purposes, preventing new and expanding businesses. As such, local economic growth has been negatively impacted, which has received considerable media coverage in recent months. Reducing the water impact of new household developments at the point of delivery supports the security of supply needed for economic growth.

21. The National Adaptation Plan (NAP3[15]) highlights a number of climate risks that need to be mitigated in the water sector. This includes risk H10 (Risks to water quality and household water supplies) and I8 (Risks to public water supplies from reduced water availability). Reducing water demand through amending the Building Regulations is an important measure to mitigate the risk posed by water scarcity due to inefficient water practices.

22. The growing population of England requires new housing that enables people to use water in a sustainable way. At present it is estimated that the average person in England uses 137 l/p/d[16]. However, research commissioned by Waterwise with a local authority, using smart water metering data, observed higher water consumption in some new build homes compared with their design standard. They highlight there is a range in consumption, spanning from 113 l/p/d to 195 l/p/d, which signifies a wide

[12] Environmental Improvement Plan 2023 - GOV.UK
[13] National_Framework_for_water_resources_summary.pdf
[14] Steve Reed speech on the Water (Special Measures) Bill - GOV.UK
[15] Third National Adaptation Programme (NAP3) - GOV.UK
[16] How much water do you use? - CCW

spectrum of adherence to the regulations[17]. This could be due to householder behaviours, with a few outliers significantly impacting the average consumption. It could also be that developers are not installing water efficient devices in line with local plan policies. We will explore this in greater detail later in the consultation.

23. In addition to this the Environment Agency has a published list of areas that it has designated as seriously water stressed. This list has evolved since it was first published, and designated areas of serious water stress now include much of England (*see* ***Figure 1: map showing results of serious water stress classification***[18]**).** In these areas this evidence can be used, alongside other evidence, by Local Planning Authorities to establish a clear local need to set out Local Plan policies requiring new homes to meet the optional technical standard in the Building Regulations. Through encouraging greater water efficiency Local Authorities can support the protection of the environment and create resilience to climate change.

24. A tightening of the standard to a higher water efficiency requirement could result in greater water efficiency savings in new build housing, as well as reduce the pressure on water demand. Changes intended to reduce household consumption through the Building Regulations could also lead to reductions in non-household use, through the installation of improved fittings associated with domestic features of a commercial building.

25. To reach the proposals under consideration we have conducted engagement with key stakeholders, reviewed existing literature including the 2024 Future Homes Hub (FHH) 'Water Ready: A report to inform HM Government's roadmap for water efficient new homes'[19], the Water Research Centre (WRC) report on Building Regulations compliance and subsequent reviews and amendments to the Building Regulations (2015). We have also commissioned bespoke modelling and research on water efficiency standards and reuse through WSP, published December 2024[20], to inform the options, costs and benefits for the review.

<u>Review of Building Regulations (Parts G and H, and Regulation 36 to the Building Regulations 2010)</u>

26. To ensure due consideration is given to the review of the water efficiency standards within the Building Regulations we intend to conduct a phased approach to the review of Parts G and H of the Building Regulations and Approved Documents G and H. **This consultation will focus on and consider Phase 1**. Whilst Phases 2 and 3 will happen independently. The details of which are set out below:

Phase 1: Strengthening the Water Efficiency Standard

[17] Building Regulations Water Efficiency Review – Database WW (waterwise.org.uk)
[18] Water stressed areas – 2021 classification - GOV.UK (www.gov.uk)
[19] Water ready A report to inform HM Government-s roadmap to water efficient new homes.pdf (cdn-website.com)
[20] WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107

- To consult on a reduction of the maximum value from 125 l/p/d (or 110 l/p/d where this optional requirement applies) to 105l/p/d and 100 l/p/d respectively.
- To consult on a revision of the Water Calculator approach, and Fittings-based approach.
- To update AD-G which contains out of date information. These could pose a risk to building standards and affect safety and should be updated to ensure that they reflect current industry practice and adapt to future challenges. *A draft amended AD-G will accompany this consultation at Annex A.*

Phase 2: Technical review

- Approved Document H (AD-H) contains out of date information. These could pose a risk to building standards and impact safety and should be updated to ensure that they reflect current industry practice.

Phase 3: Water scarcity and re-use

- Consider Greywater Reuse (GWR) and Rainwater Harvesting (RWH) capability,
- Review GW treatment systems and RW drainage systems at property scale, to ascertain economic or environmental advantages or disadvantages,
- Explore dual pipe water supply, to enable GWR and RWH, considering impact on design, economics, environment, and safety.

Wider actions:

27. We recognise that amendments to the legislation can only go so far towards improving water efficiency in new developments, which is why DEFRA is undertaking a holistic review of water efficiency and demand, as set out in the EIP 'Roadmap to Water Efficiency', in order to reduce the deficit of water needed by 2050, to meet the water demand target as set out in the EIP. It is also anticipated that behaviour change campaigns must take place alongside regulatory change, in order to tackle both personal water consumption and a buildings water performance. Ofwat is developing a new £100 million Water Efficiency Fund[21]. The fund is being set up to stimulate a measurable reduction in water demand across England and Wales, for both residential and business customers. We are supporting innovation through this, as well as through Ofwat's £200 million Innovation Fund, which includes projects on the 'National Leakage Research Test Centre' and using artificial intelligence and drones to find leaks.
28. Subject to the outcome of this consultation and Parliamentary approval, the Government proposes to amend the Building Regulations 2010 in 2026. It is proposed that the changes will be followed by a 6-month transitional period. These transitional arrangements are intended to allow industry sufficient time to adapt whilst also driving forward progress to meet the water demand target. A consultation stage De Minimis Assessment is also being made available, to help inform your consideration. Drafts of guidance material on the water efficiency standard will take the form of amendments to the relevant existing AD-G and are included in Annex A.

[21] Ofwat accelerates action on water efficiency with new £100 million fund - Ofwat

Section 4: Summary of proposed options for change

Amend the legislation as set out in the EIP, to:

a. Amend the ‘mandatory water efficiency standard’, from 125 l/p/d to 105 l/p/d.
b. Amend the ‘optional technical water efficiency standard’, from 110 l/p/d, where there is a clear local need such as in areas of serious water stress, to 100 l/p/d.
c. Revise the water calculator, and, or fittings-based approach.

Amendments to guidance:

d. MHCLG and the BSR have responsibility for the Approved Documents and proposed amendments can be found in the draft (AD-G), published alongside this consultation, which can be found at Annex A. These documents provide consultees with the additional detail that will assist in the answering of the questions in the consultation document. The draft (AD-G) includes updates to references and standards, to that ensure it reflects current industry practice.

Section 4.1: Water Efficiency Standard 105 l/p/d and Optional Technical Standard 100 l/p/d

Summary of proposed changes:

a. Amend the 'mandatory water efficiency standard', from 125 l/p/d to 105 l/p/d.
b. Amend the 'optional technical water efficiency standard', from 110 l/p/d where there is a clear local need such as in areas of serious water stress, to 100 l/p/d.

Background:

29. This proposal is in line with the EIP 2023 roadmap to water efficiency, action 7: to review Building Regulations 2010, and consider mandating a new minimum water efficiency standard for new homes in England of 105 l/p/d and 100 l/p/d where there is a clear local need, such as in areas of serious water stress. Currently the legislation, Part G of the Building Regulations 2010, sets the standard for water efficiency l/p/d in new homes at 125 l/p/d, and an optional technical standard of 110 l/p/d in areas where there is a 'clear local need'[22]. The standard is achieved either using the water calculator or the fittings-based approach. As set out on page 8, the water calculator and fittings-based approach for new dwellings are used to ascertain the required additional measures to achieve the 'Minimum Standard'. The water calculator makes assumptions around household occupancy, and the fittings-based approach sets maximum flow rates for fittings and fixtures at the standard and optional levels.

30. The legislation currently requires developers and local authorities to plan new housing developments, to use a minimum of 125 l/p/d, and 110 l/p/d in areas of serious water stress. Research commissioned by Waterwise with a local authority, demonstrated that some new developments are not reliably built to, or perform to, the current mandatory standard[23]. They highlight there is a range in consumption, spanning from 113 l/p/d to 195 l/p/d, which signifies a wide spectrum of adherence to the regulations. This could be due to householder behaviours, with a few outliers significantly impacting the average consumption. If new developments continue on this trajectory, the demand for water will create an additional burden on an already stretched water system, especially in areas of water scarcity. An example of this is shown in the Sussex North Water Supply Zone[24] where Natural England have advised that development proposals within the zone area that would lead to an increase in water demand will need to demonstrate evidence of 'water neutrality', this is as a result of concerns raised that groundwater abstraction within the zone area may be harming biodiversity within internationally designated conservation sites. Crawley Borough Council have since declared a housing emergency as a result of a number of factors including water neutrality[25], despite taking steps to retrofit social housing with water efficient devices to enable the building of more homes.

[22] ADG_ONLINEx.pdf (publishing.service.gov.uk)
[23] Building Regulations Water Efficiency Review – Database WW (waterwise.org.uk)
[24] Water Neutrality - West Sussex County Council
[25] Council to declare a housing emergency? | Crawley GOV

31. In addition, in 2019 the former Government ran a public consultation on 'reducing personal water use'[26] , it highlighted that the majority of respondents thought the current minimum standard of 125 l/p/d and the optional requirement of 110 l/p/d should be changed on the basis that they should be more stringent to ensure action. Respondents called for a more ambitious standard of 110 l/p/d, and an optional standard of 100 l/p/d. This was supported by both the Home Builders Federation (HBF) and the Consumer Council for Water (CCW). There were also concerns that a change in Building Regulations would be ineffective, this was due to the fact that personal water consumption of homeowners is dependent on habits and whether retrofits are retained according to preference/desire on moving into a property, which may remove water efficient devices. We anticipate that tightening the water efficiency standard will help to address non-compliance with the regulation, however, we will additionally encourage water companies to work with developers and local authorities early in the planning stage to ensure correct fixtures and fittings are installed and amend accompanying guidance for local authorities.

32. The Future Homes Hub published a report in April 2024 that set out that amending the water efficiency standard to 105 l/p/d and 100 l/p/d, in areas of serious water stress, is achievable in 2025[27].

Proposed changes:

33. Taking these factors into consideration we believe that changes are required to Part G of the Building Regulations 2010, to strengthen the existing water efficiency standard and approaches to achieving this through the water calculator and fittings-based approach. The Building Regulations 2010 could be amended to mandate a new minimum water efficiency standard for new homes in England of 105 l/p/d and 100 l/p/d where there is a clear local need, such as in areas of serious water stress.

Impact of change:

34. The proposed amendment to the Building Regulations 2010 would create little additional burden to existing processes, however it could increase the weight on developers to incorporate water efficient devices into their planning and design through more stringent measures. This could also add pressure on manufacturers to cater to the increased demand for water efficient products, potentially delaying the delivery of homes, if the supply chain isn't robust enough. However, the legislation will not be prescriptive in determining the exact fittings and fixtures that developers should use. Developers will retain flexibility to choose water efficient fittings according to their design and budget, while also creating space for technology innovation, to increase water efficient fixtures and fittings in the market. Some bespoke fittings can be expensive which could result in increased new development costs, though this cost would be minor in comparison to overall building costs.

35. There are areas of England (Cambridge and North Sussex) where housing developments are being held up due to water shortages. This policy could help to enable more housing to be built in these areas, by increasing water efficiency across the country. This will help to alleviate some of the pressure in areas where

[26] https://www.gov.uk/government/consultations/water-conservation-measures-to-reduce-personal-water-use

[27] Water ready A report to inform HM Government-s roadmap to water efficient new homes.pdf (cdn-website.com)

development is being blocked but will need to be accompanied by additional action in these areas, for example retrofitting existing properties with water efficient devices, recycling water for non-potable demand, exploring water credit schemes, and increasing resource.

36. Questions – listed in full at page 23.

Q10.Do you agree that the ‘mandatory water efficiency standard’, should be amended from 125 l/p/d to 105 l/p/d? Y/N

a. If you answered no to the previous question, please provide additional information to explain your answer.

Q11.Do you agree that the ‘optional technical water efficiency standard’, should be amended from 110 l/p/d, where there is a clear local need such as in areas of serious water stress, to 100 l/p/d? Y/N

b. If you answered no to the previous question, please provide additional information to explain your answer.

Section 4.2: Water calculator vs fittings-based approach

Summary of proposed changes:

c. Revise the water calculator, and fittings-based approach.
d. Future changes to statutory guidance, consider timeline for direction of change and introduction of the Mandatory Water Efficiency Label (MWEL).

Background:

37. The water calculator and fittings-based approach for new dwellings are used in (AD-G) to ascertain the required additional water efficiency measures to achieve the 'Proposed Standard'. The water calculator makes assumptions around household occupancy, and the fittings-based approach sets maximum flow rates for fittings and fixtures at the standard and optional levels. Methods of achieving compliance include aerated taps and showerheads, and dual flush toilets. However there has been low uptake of the fittings-based approach since its introduction in 2015.

38. The water calculator is an effective and credible calculation, with a mechanism to make reactive changes, it also supports product standards to ensure functionality and enables product testing standards to validate manufacturers claims. It is also well liked by the construction sector, and it is argued that the approach benefits from being able to influence consumer behaviour, as well as to factor in more ways to reduce water usage than the fittings-based approach, such as reuse systems[28]. The calculator also provides for instances where not all fixtures are provided by the developer, allowing the developer to make recommendations to the buyer of water efficient fixtures and fittings, to build to the water efficiency standard.

39. However, feedback from initial stakeholder engagement suggests the calculator is generally considered outdated, being unrepresentative of actual household water consumption and complicated to use; suggesting it needs updating. Recent research by water companies using smart water metering data has observed higher water consumption in new build homes compared with their design standard, most often developed with the water calculator approach. The fittings-based approach specifies the higher optional standard without using assumptions on usage or per person consumption. Other problems associated with the calculator method include: the cherry picking of products (where developers opt for low-cost products that meet the efficiency rating); which reduces customer satisfaction. As a result, water efficient items are often removed and replaced by homeowners, due to poor device performance, offsetting the per person consumption balance. There are also issues associated with the current algorithms in the calculator.

40. Both the water calculator and the water fittings methodologies require updating in order to incorporate changes in consumer lifestyles and technology that has developed since the introduction of the regulations. Consideration also needs to be

[28] WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107

given to external water use within the calculator methodology, which currently is set to 5 l/p/d. This represents an average estimated external water use across householders and does not reflect the realisation of actual external water use, which is often much greater. An improved assessment of external water use is required.

41. Alongside this we will feed into ongoing reviews of planning practice guidance to ensure understanding of the benefits of the water efficiency standard in the Building Regulations among local planning authorities, local building control and registered building control approvers. This could provide clarity on what Building Regulations can deliver through water efficiency and what else is required of planning authorities, in order to influence innovative efficiency solutions for example water reuse systems. The guidance could support water efficiency measures through effective procedures that deliver water efficiency measures.

42. In addition to this we have received a number of calls from industry to restructure water efficiency in the Building Regulations 2010, removing both the measurement of (l/p/d), for both the standard and optional technical standard. Instead, to link the Building Regulations water efficiency standard to the as planned introduction of the Mandatory Water Efficiency Label (MWEL) in 2026. This would include the removal of the Water Calculator and the fittings-based approach from (AD-G). We will consider any alignment with the MWEL once it has been introduced, as part of any future evaluation and monitoring to establish its success.

Proposed approach:

43. We consider that the calculator requires updating in order to improve its effectiveness, and the fittings-based approach requires updates to reflect current fittings and fixtures on the market, that meet the revised water efficiency standards. Both methods should be retained as tools for compliance with Part G of the Building Regulations.

Revisions to the water calculator

44. Revise and amend the water calculator detailed in Annex A, (AD-G), to reflect the revised water efficiency standard, for example, the water efficiency standard of 105 l/p/d and the optional standard of 100 l/p/d. This would require the following actions:

- Minimum flow rates and user acceptability: The calculator allows flow rates and volumes to be entered at unlimited ‘accuracy’ (unlimited decimal places). This presents the potential danger of flow rates and volumes being driven up to and beyond the limit of acceptable usability and function to meet targets. Re-specifying minimum flow rates will improve the assessment of usability and the function of fittings.
- Taps: Tap flow rates range from over 12 to 1.7 litres/minute. Water use for taps varies by a factor of seven as a result of this variation. A review to examine the precise flow rates and removing the ‘reward saving’ should be conducted. A more sophisticated approach should be considered, as used in the Australian BASIX calculator BASIX Water Review – Stage 1[29], looks at the functional use of water and assumes a fixed usage for cooking and drinking.

[29] BASIX Water Review – Stage 1

- Showerheads: The calculator should be amended to take into consideration the relationship between shower flow rate and shower time. A more simplistic approach of a fixed time and/or full flowrate may be justifiable.
- Rainwater and Greywater: Further research into the system management rainwater and greywater systems is required. Communal systems can introduce issues regarding management, billing, potential health risk (real or perceived) and public acceptability.
- Dual purpose technologies: The reduction in mains hot water as a result of an electrically heated shower has not been taken into consideration within the sizing, specification and benefit assumed for electric showers, solar hot water heating and heat pump technologies. Research will be required to amend the algorithm to account for this factor.
- Trade off anomaly: The Water Calculator uses average values where a range of fittings are installed, essentially assuming equal use of all fittings. This enables potential loopholes. It could in theory allow a product with low flow eco-settings (with un-usable low flow rates) and one high flow setting (that was most likely to be used). It is proposed that the 'worst' fitting specifications are used rather than an average of all the fittings to avoid these issues.
- Water pressure: Delivered pressure to homes varies considerably across the UK from 1 bar to 14 bar in some high areas. Studies on the impact of water efficiency measures have found the impact of differences in local water pressure can be greater due to water efficient appliances. It is conceivable that the current methodology could result in unacceptable flow rates if ultra-low fittings are connected to a low direct pressure or gravity fed home. An adjustment factor should be determined, which Building Control can apply where this is the case.
- Durability and leak avoidance: Dual Flush toilets have a propensity to leak. The review should consider if the calculator should include an assumption to account for average leakage. The BASIX method assumes 10 litres toilet valve leakage per day per person.
- Delayed action inlet valves: uptake of these devices could be usefully encouraged by their inclusion in the water calculator. This would require an additional water usage unless a delayed inlet valve cistern was specified. An alternative approach would be to require actual flush volumes to be used in the water calculator rather than nominal flush volumes. For this to be a robust solution a testing standard for WCs would need to be adopted to allow for the inclusion of additional water lost in the flush through premature filling of the cistern.
- Boiler Water Wastage: Water is wasted as a combi boiler performs its purge and firing cycle and then warms the heat exchanger. This should be considered.

Updates to the fittings-based approach

45. The fittings-based approach ensures that water efficient products are installed and reduces the uncertainty around household occupancy impacting demand for water. It is a simple approach, which is less reliant on household occupancy, and avoids implying a house will perform at a set standard; instead, it defines the maximum water consumption of a device. However, similar to the calculator it does not take account of reuse systems or external water usage, for example, garden watering.

46. The fittings approach is outlined in the below diagram, where the water consumption of fittings installed into a building must not exceed the values in Table 2.1 125 l/p/d, or Table 2.2 110 l/p/d of Part G2.

47. Table 2.2 shown below requires updating in line with any revised water efficiency standard, to reflect the new maximum consumption rates for each fitting. The suggested updates are included in the draft AD-G which accompanies this consultation. *See Annex A.*

Table 2.1 **Maximum fittings consumption**

Water fitting	Maximum consumption
WC	6/4 litres dual flush or 4.5 litres single flush
Shower	10 l/min
Bath	185 litres
Basin taps	6 l/min
Sink taps	8 l/min
Dishwasher	1.25 l/place setting
Washing machine	8.17 l/kilogram

Table 2.2 **Maximum fittings consumption optional requirement level**

Water fitting	Maximum consumption
WC	4/2.6 litres dual flush
Shower	8 l/min
Bath	170 litres
Basin taps	5 l/min
Sink taps	6 l/min
Dishwasher	1.25 l/place setting
Washing machine	8.17 l/kilogram

Future forecasting:

48. We would also like to forecast future intention for change, in order to meet the water demand target on an ongoing basis and to enable developers, water companies, planning authorities and wider industry to plan for upcoming change. As such we understand there is appetite to consider alignment of the Building Regulations with a MWEL.

49. Future revisions of the Building Regulations could consider opportunities to align with a MWEL, the regulations underpinning which are due to be introduced to parliament in 2026. Consideration would need to be given as to how water reuse would fit within its scope, as well as how the water calculator and fittings-based approach would work alongside any changes.

Impact of change:

50. The proposed amendments to the Building Regulations 2010 and Approved Documents would result in a number of impacts for developers, local planning authorities and water companies. Updates to the calculator would go some way toward improving its approach, however it would not remove some of the larger ongoing issues associated with the water calculator method, including the higher water consumption in new build homes compared with their design standard and the mixing and matching of products which can result in low flow rates, this risks distorting a user's perception of device effectiveness. In addition to this it is speculated that water efficient items are often removed and replaced by homeowners, offsetting the l/p/d balance; and there are also issues associated with the current algorithms in the calculator. This could result in a cherry pick approach for the products that suit developers the most, as opposed to those which deliver the largest water efficiency savings. The tool does however give house builders flexibility, reduces water demand and eases pressure on supply chains as it provides more product choice.

51. Water companies have advised that the water sector is trying to move away from the water calculator approach and that any continuation of the approach for new development is likely to be scrutinised, challenged in future water resource management plans, and not supported by water company programmes. However, the Future Homes Hub report recommends that although a move to a fittings-based approach should be driven, the water calculator should be retained as a conformance tool for performance levels beyond the fittings baseline, using new simple lower risk and more cost-effective fittings solutions[30]. It is argued however that neither the water calculator nor fittings-based approach were designed to calculate actual water consumption of a dwelling. Further to this, other factors have an impact on a building's performance, including householder behaviour.

52. Driving the fittings-based approach as the primary tool may ensure that only water efficient products are installed and could reduce the uncertainty around household occupancy impact on demand for water. The Future Homes Hub report published in April 2024 advises that if 105 l/p/d was required in the Building Regulations and the fittings-based approach was adopted over the water calculator, the regulation would deliver a 16% reduction compared to the current standard. While a 20% reduction could be achieved through amending the regulations to 100 l/p/d water efficiency standard[31]. The report sets out a number of recommendations required in order to achieve this. In addition to this water companies demonstrate favour toward the fittings-based approach, as some water companies provide a developer incentive for using a fittings-based approach, which is supported by the Home Builders Federation. The January 2024 developer incentive documents demonstrate that most water companies now offer incentives for water efficiency below that required by Building Regulations[32]. However, there is no standard approach to incentivisation by water companies, especially in areas such as efficiency and reuse. As a result, Ofwat have published a Common Framework for Environmental incentives which sets out that incentives for water efficiency must go beyond the required water efficiency level for a given area, as set out in the Building Regulations[33]. Achieving a balance between innovative water efficiency and not penalising new households through impractical or inaesthetic fittings and fixtures, by comparison to existing households and non-households is key.

53. Making a change now to align the Building Regulations to a MWEL, which is not due to be introduced until 2026, could be too sudden and large a change to the existing system, creating negative impacts for existing plans and developments. Until a MWEL has been introduced and evaluated, we are unable to conduct analysis of what alignment could look like.

54. To manage some of these risks, we propose that making a change to align the Building Regulations to the MWEL should be considered in a standalone review once the label has been introduced and has been subject to evaluation, in order to capture any unforeseen impacts. Consideration could be given in 2027-2030, when the MWEL will be active, which could lay the groundwork for any change, and give time for review of any teething issues. This would give water companies, local authorities, developers,

[30] Water ready A report to inform HM Government-s roadmap to water efficient new homes.pdf (cdn-website.com)
[31] Water ready A report to inform HM Government-s roadmap to water efficient new homes.pdf (cdn-website.com)
[32] WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107
[33] Environmental-Incentives-Common-Framework-–-English-New-Connection-Rules-–-effective-April-2025.pdf

and manufacturers time to prepare and adapt to the upcoming change, thus also increasing the likelihood that the change effects a positive impact of greater water efficiency in developments. Following the conclusion of this consultation we intend to publish a timeline to forecast the direction of change. Initial engagement with key stakeholders has demonstrated support for this approach, in the longer term, once the label is up and running.

55. **Questions** – listed in full at page 23.

Q12. Do you agree with the suggested updates to the water calculator? Y/N

a. If you answered no to the previous question, please provide additional information to explain your answer.

Q13. Do you agree with the suggested updates to the fittings-based approach as set out in Annex A the Approved Document? Y/N

b. If you answered no to the previous question, please provide additional information to explain your answer. Select all that apply.

Section 4.3: Approved Document G

56. Proposed changes: The proposed changes to AD-G are attached at annex A. In summary, the normalisation factor is used to bring the consumption calculated by the Water Efficiency Calculator for new dwellings, in line with typical UK average water consumption. In 2010 the typical UK water consumption was between 166 -150 l/p/d, yet this is now as low as 126 l/p/d[34]. We propose to remove the normalisation factor from the calculated use with typical fittings into line with current UK consumption.

57. The normalisation factor has been derived by looking at what consumption the calculator is indicating, using typical UK fittings, and comparing that with typical UK water consumption (when published this was 150 l/p/d). The normalisation factor then adjusts the calculated use; to bring the calculated consumption of fittings in line with typical UK consumption, this delivers a closer alignment between predicted average and actual average usage. The calculator cannot be used to calculate actual consumer use, due to the impact of user behaviour.

Table 2.2 Maximum water consumption of fittings when optional requirement applies

Water fitting	Maximum consumption
WC	4/2.6 litres dual flush
Shower	6 litres/min
Bath	165 litres
Basin taps	5 litres/min
Sink taps	6 litres/min
Dishwasher	1.25 litres/place setting
Washing machine	8.17 litres/kilogram

58. We propose reducing the maximum water consumption for showers and baths, to the values in Table 2.2, to achieve the 105/100 l/p/d performance standard.

59. As part of this review of AD-G, Standards and guidance that are referenced in Appendix C of AD-G were updated. 41 references were updated to the current relevant standards. 5 standards referenced were retained and not updated as the relevant guidance in the existing standard (those reference in AD-G 2015) was more suitable for the application in AD-G than the newer standard. Further information on the changes made to Appendix C can be found in Annex B.

Questions- a full summary can be found at page 23.

Q14. Do you agree that the Approved Document, which can be found at Annex A, reflects the current industry practice for the revised water efficiency standard as detailed in The Building Regulations 2010, Schedule 1, Part G2, Para 36? Y/N

a. If you answered no to the previous question, please provide additional information to explain your answer.

[34] How much water do average households use? | Wessex Water - FAQ Hub

Section 4.4: Questions summary

Using and sharing your information

How we use your personal data is set out in the consultation and call for evidence exercise privacy notice which can be found here: https://www.gov.uk/government/publications/defras-consultations-and-call-for-evidence-exercises-privacy-notice

Other Information

This consultation is being conducted in line with the Cabinet Office "Consultation Principles" and be found at: Microsoft Word - Consultation Principles (1).docx (publishing.service.gov.uk)

About the respondent

1. What is your name?

2. What is your email address?

3. Would you like your response to be confidential? Y/N
   a. If you answered Yes to this question, please give your reason(s).

4. Are you responding as or on behalf of (select all that apply):
   - Member of the public (domestic or business consumer)
   - Builder or developer
   - Building Control Approved Inspector or registered Building Control Approver
   - Competent Persons Scheme Operator
   - Designer or Engineer or surveyor
   - Architect
   - Water sector
   - Energy sector
   - Installer or specialist sub-contractor
   - Local authority
   - Housing Association
   - Manufacturer or Supply chain
   - National representative or trade body
   - Professional body or institution
   - Property Management
   - Research or Academic organisation
   - Other

5. If you are responding as a member of the public or a building professional, what region are you responding from?

6. If you are responding as a member of the public, are you a:

7. If you are responding on behalf of a business or organisation, what is the name of your business or organisation?

8. If you are responding on behalf of a business or organisation, where is your business or organisation based or registered?

9. When you respond it would be useful if you can confirm whether you are replying as an individual or submitting an official response on behalf of an organisation and include:
   - your position (if applicable),
   - the name of organisation (if applicable)

Consultation questions

10. Do you agree that the 'mandatory water efficiency standard', should be amended from 125 l/p/d to 105 l/p/d? Y/N
    a. If you answered no to the previous question, please provide additional information to explain your answer. Select all that apply.

11. Do you agree that the 'optional technical water efficiency standard', should be amended from 110 l/p/d, where there is a clear local need such as in areas of serious water stress, to 100 l/p/d? Y/N
    a. If you answered no to the previous question, please provide additional information to explain your answer. Select all that apply.

12. Do you agree with the suggested updates to the water calculator? Y/N
    a. If you answered no to the previous question, please provide additional information to explain your answer. Select all that apply.

13. Do you agree with the suggested updates to the fittings-based approach as set out in Annex A the Approved Document? Y/N
    a. If you answered no to the previous question, please provide additional information to explain your answer. Select all that apply.

14. Do you agree that the Approved Document, which can be found at Annex A, reflects the current industry practice for the revised water efficiency standard as detailed in The Building Regulations 2010, Schedule 1, Part G2, Para 36? Y/N

    a. If you answered no to the previous question, please provide additional information to explain your answer. Select all that apply.

15. If you are a devolved administration, please advise of any potential impact on Wales, Scotland or Northern Ireland by the proposals outlined in this consultation. If possible, please provide evidence to support your comments.

16. Please provide any feedback you have on the potential impact of the proposals outlined in this consultation document on persons who have a protected characteristic. If possible, please explain your answer.

Wider questions

These questions sit outside the options for consideration in the consultation above. The answers will inform broader policy thinking in this area, including any areas for future review.

17. Do you think that there are issues with compliance to the water efficiency standard(s) within the Building Regulations 2010?
    a. Yes
    b. No
    c. Please provide additional information to explain your answer.

18. Do you agree that the 5 l/p/d external water use, should be removed? Y/N?
    a. Please provide information to explain your answer.

19. Do you agree that local planning authorities and local building control and registered building control approvers have effective procedures to deliver water efficiency measures through the Building Regulations?
    a. Yes
    b. No
    c. Please provide additional information to explain your answer.

20. Do you agree with the approach set out in this consultation to review alignment of the Mandatory Water Efficiency Label (MWEL) with the Building Regulations 2010 and (AD-G) through guidance, post introduction and review of the MWEL?
    a. Yes
    b. No
    c. Please provide additional information to explain your answer.

21. If there was an opportunity to remove l/p/d from the Building Regulations 2010 and replace the metric, what metric would you suggest as an alternative? Please explain your answer.

Section 5: Call for Evidence

Water Efficiency Standard 100 l/p/d and Optional Technical Standard 90 l/p/d or lower

60. In addition to our currently proposed reform package the Government is considering further phases of amendments to the Building Regulations Part G.

61. This call for evidence seeks views and evidence that will inform these future phases. Specifically:
    - Amending the mandatory water efficiency standard from 125 l/p/d to 100 or 95 l/p/d.
    - As well as the 'optional technical water efficiency standard', from 110 l/p/d, where there is a clear local need such as in areas of serious water stress, to 90 or 85, or 80 l/p/d.

Background:

62. These options propose setting a more stringent mandatory water efficiency standard of either 100 or 95 l/p/d, and a more stringent optional technical standard, in areas of serious water stress, of 90, 85 or 80 l/p/d.

63. There are examples around the UK where developments have been blocked in areas of water scarcity due to a lack of water to meet population demands. Reducing water demand, through the tightening of Building Regulations, is an opportunity to create the environmental headroom required to enable new development to be built at pace whilst protecting the environment. An example of this is in Cambridge where there is a significant risk of deterioration of waterbodies including a number of chalk streams due to abstraction needs for growth until new water supplies are delivered, which is expected by 2032. To manage this risk, the Local Planning Authority is working with developers to secure more stringent water efficiency standards than the optional minimum for new developments. About 85% of the world's chalk streams are in the UK, including a number in Cambridge which support a wide range of diverse wildlife[35]. Additionally, Sussex North Local Planning Authority are under increasing pressure to achieve water neutrality and are seeking to secure local plan policies to meet this aim.

64. In order to enable new developments in areas of water scarcity key stakeholders have advised that new housing needs to be built to a more stringent water efficiency standard than set out in current regulation. The Future Homes Hub report [36] published in April 2024 sets out that amending the water efficiency standard to 100 l/p/d and 90 l/p/d, in areas of serious water stress, is achievable in 2030 and that in order to reach a more stringent water efficiency standard, for example 85 l/p/d or 80 l/p/d, elements of water reuse need to be utilised. Water reuse is incorporated through greywater reuse (GWR) or rainwater harvesting (RWH) systems and provide an alternative water source which can be used for purposes that do not require wholesome water, such as toilet flushing and irrigation, thus reducing reliance on potable water supplies and reducing l/p/d[37].

[35] Addressing water scarcity in Greater Cambridge: update on government measures - GOV.UK (www.gov.uk)
[36] Water ready A report to inform HM Government-s roadmap to water efficient new homes.pdf (cdn-website.com)
[37] WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107

65. Modelling for domestic properties highlighted a daily saving of 375 megalitres in 2050 if every new home built from 2026 includes RWH or GWR. The savings will unlock available water supplies for 1.9 million homes[38]. There are existing examples of reuse systems in housing in the UK. Southbank Place Development in London has a rainwater management system that utilises basement level attenuation tanks to facilitate toilet flushing and cooling air conditioning units, the entire system is able to harvest up to 15 million litres of water per year[39]. However, several of the buildings within the development have since been switched off due to a dual pipe cross connection contamination, despite QR codes on pipes that give guidance to plumbers. While Holland Green, Kensington, consists of three new apartment buildings, comprising 62 apartments. The grey water reuse system provides total treatment capacity of 3.65 million litres per year providing a higher yield than meets as a result the excess greywater is used to supply a nearby museum[40]. Benefits of a reuse system include reduced demand on infrastructure, reduced carbon emissions, and flood protection can increase the benefits substantially over a 20-year system lifetime[41].

66. Further to this, there are examples where blackwater (sewage) recycling has been enabled for external water use. Thames Water was the official water utility provider for the 2012 Olympic and Paralympic Games. Together with the Olympic Development Authority, Thames Water constructed and managed a water recycling plant at the Olympic Park, known as the Old Ford Water Recycling Plant (OFWRP). This plant supplied recycled 'blackwater' (sewage) as a non-potable supply to certain venues reducing potable supply by up to 17%, to be used for irrigating lawns and gardens, for flushing toilets, and for topping up rainwater harvesting systems. This system was aimed, in part, at helping the London 2012 games to meet key sustainability objectives[42].

67. In Australia, the Rouse Hill recycled water scheme was initiated by Sydney Water to reduce potable water usage in a neighbourhood of approximately 12,000 properties by recycling treated wastewater for toilet flushing and outdoor use. Following the successful commissioning of the scheme, after some challenges with cross connections and plumbing errors, the recycled water replaced 20-35% of potable water use for residents, dependant on the season (Rooy and Engelbrecht 2003[43]). However, in comparison to other countries that have been utilising water reuse systems for many years, the UK has progress to make in technological advances as well as enabling behavioural change to public attitudes.

68. Water reuse systems are also inhibited due to current legislation. The Water Industry Act 1991 states that water for all domestic or food production purposes must be wholesome. The Water Supply (Water Quality) Regulations 2016 for public water supplies sets out the relevant wholesomeness standards. There are some existing dual pipe supply systems in England, which are supplied by private water supplies. An

38 Water Reuse Association | Water Reuse Ready A report to inform HM Government's roadmap for mandatory water reuse in the UK

39 Southbank-Place-CS.pdf (sdslimited.com)

40 London – Holland Green – A Truly Green Solution |An Aquality Project - Aquality (aqua-lity.co.uk)

41 Ricardo (2020) Independent review of the costs and benefits of rainwater harvesting and grey water recycling options in the UK, ED13617100, Final Report, Issue number 1.

42 Public perceptions of recycled water: a survey of visitors to the London 2012 Olympic Park | Water Reuse | IWA Publishing

43 WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107

example is at Eddington in Cambridge, where the sustainable drainage network captures surface water for use in the non-potable network. Using rainwater can reduce the need for water treated to drinking water standards from 144 to 80 l/p/d[44]. Water reuse systems typically lower drinking water consumption from 144 to 80 l/p/d. This is supported by Waterwise who conducted a study in 2020 to better understand public perceptions of rainwater harvesting and greywater recycling for grey water use[45]. Most respondents claimed to be familiar with systems that harvest rainwater or shower water to flush toilets in the home, with 86-87% people feeling positive about these systems, though with a preference for rainwater harvesting due to the perception that rainwater is relatively "clean", compared to greywater which is viewed as "contaminated". Work is underway to investigate, review and amend legislation in order to enable technological innovation through water reuse.

69. A report from WSP sets out that achieving a tighter standard of water efficiency of 80 l/p/d, would require a combination approach of upgraded fittings, with specified greywater and rainwater recycling options, alongside behaviour change and systematic improvements that should include strategies such as public awareness campaigns/education, leak detection and repair, non-household efficiency and pricing policies, as well as innovative tariffs[46].

70. In 2018, Ofwat commissioned a study through Artesia, to model long term scenarios for water efficiency through technology and innovation, the results predicted 49 l/p/d could be achieved by 2065, however this would require significant change in consumer behaviour, investment in and uptake of technology[47]. There are also examples in other European countries where low levels of reuse have been achieved, such as 77 l/p/d in Malta, which is a consequence of extensive investment in alternative water sourcing: 32% desalinated water, 11% rainwater harvesting and 8% treated water[48]. However, achieving improved water efficiency through fittings in homes could have a knock-on effect on the operation of drains, which could affect developers and water companies, if new infrastructure is needed to accommodate lower flow to the sewage network[49].

71. Some water companies have offered innovative tariffs and discounts on infrastructure connection charges for new developments that go beyond the Building Regulations requirement of 125 l/p/d[50]. Ofwat have published a Common Framework for Environmental incentives which sets out that incentives for water efficiency must go beyond the required water efficiency level for a given area, as set out in the Building Regulations[51].

[44] Addressing water scarcity in Greater Cambridge: update on government measures - GOV.UK (www.gov.uk)
[45] RWH_GWR-Public-Perceptions-Study-FINAL.pdf (waterwise.org.uk)
[46] WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107
[47] Artesia Ofwat long term water demand reductions final version 2018-04-26
[48] https://gca.org//this-is-how-malta-is-building-resilience-through-effective -water-management/)
[49] WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107
[50] WSP Water Efficiency Standards & Reuse Modelling and Evidence Assessment - WT1107
[51] Environmental-Incentives-Common-Framework-–-English-New-Connection-Rules-–-effective-April-2025.pdf

Section 5.1: Call for Evidence Questions summary

QA. To what extent do you agree or disagree that government should pursue wider reform of the water efficiency standards in Part G of the Building Regulations?

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Don't know

QB. Do you think that the 'mandatory water efficiency standard', should be amended to an even tighter standard, from 125 l/p/d to 100 or 95 l/p/d?
Please specify which you think is achievable. Select all that apply. Please provide additional evidence to explain your answer.

QC. Do you think that the 'optional technical water efficiency standard', should be amended to an even tighter standard, from 110 l/p/d, where there is a clear local need such as in areas of serious water stress, to 90 or 85, or 80 l/p/d?
Please specify which you think is achievable. Select all that apply. Please provide additional evidence to explain your answer

QD. Do you consider that reuse systems should be required through the Building Regulations 2010?

a. Yes
b. No
c. If you answered yes, please indicate which form of reuse system:
    i. Rainwater harvesting systems
    ii. Grey water harvesting systems
    iii. Black water harvesting system
d. Please provide additional information to explain your answer.

QE. If you answered yes to '*Do you consider that reuse systems should be required through the Building Regulations 2010?'*, what systems or enablers in your opinion are required:

e. Please provide information to explain your answer.

QF. Please provide links to any relevant evidence that you have used to inform your views for this consultation. If there's anything else, you'd like us to know or consider please add it here.

We're particularly interested in information around:

- Any risks and mitigations of contaminated potable water supplies associated within a development that relies on reuse systems of cross connection, backflow, microbial growth on plumbing and therefore risk of contaminated potable water supplies.
- Any risks and mitigations that industry is not yet ready to safely install and monitor reuse systems to run effectively and safely.
- Any associated costs to householders for maintenance of reuse systems, as well as higher operating costs and energy costs.
- Evidence that increased uptake of water reuse systems would require upskilling and training requirements for plumbing, electrics and groundwork.
- A further review of (AD-G).
- A review of Approved Document H.
- Customer expectations and enjoyment of water in the home.

Consultee Feedback on the Online Survey

Thank you for taking your time to participate in this online survey. It would be appreciated, if you can provide us with an insight into how you view the tool and the area(s) you feel is in need of improvement, by completing our feedback questionnaire.

QG. Overall, how satisfied are you with our online consultation tool?

Please give us any comments you have on the tool, including suggestions on how we could improve it.

a. Very satisfied
b. Satisfied
c. Neither satisfied nor dissatisfied
d. Dissatisfied
e. Very dissatisfied
f. Don't know

Section 6: Equality impacts and impacts on business

Do you have any comments about the proposals in this stakeholder engagement in relation to impacts on people on the basis of any of the following protected characteristics under the Equality Act 2010: age; disability; pregnancy and maternity; race; religion or belief; sex; sexual orientation; gender reassignment; marriage or civil partnership? How might such impacts be mitigated? (max. 500 words)

Section 7: Contact details and how to respond

We strongly encourage responses via an online survey on Citizen Space, an online consultation tool. Consultations receive a high level of interest across many sectors and using the online tool assists our analysis of responses, enabling more efficient and effective consideration of issues. However, responses can be sent by email or post. In your response please state:

- your name
- your email address
- your organisation (if applicable)
- whether you would like your response to be confidential (if yes, please state your reasons)
- what country you live in (England, Wales, Scotland, Northern Ireland).

Enquiries and responses by post or email should be directed:

- by email to Consultation-PartG-WaterEfficiencyStandards@defra.gov.uk including if you need a hard copy of the consultation,
- in writing to the Water efficiency & Demand Ground Floor Fry, 2 Marsham Street, London, SW1P 4DF.

This consultation is being conducted in line with the Cabinet Office 'Consultation Principles'. If you have any comments or complaints about the consultation process, please address them by email to: consultation.coordinator@defra.gov.uk or by post to the Consultation Coordinator (as above).

Confidentiality and data protection information

A summary of responses to this consultation will be published on the government website but will not include personal names, addresses or other contact details. An annex to the consultation summary will list all organisations that responded. Defra may also publish some or all of the content of your response to this consultation.

There may be occasions when Defra will share the information you provide in response to the consultation, including any personal data with external analysts. This is for the purposes of consultation response analysis and provision of a report of the summary of responses only. Please find our latest privacy notice on Citizen Space for further details.

Water efficiency is a policy area where decision making is devolved to the devolved nations (Scottish Parliament, Welsh Government and Northern Ireland Assembly).