Thames Water

Final Water Resources Management Plan 2019

Technical Appendices

Appendix O: Water efficiency

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Water efficiency

A. Introduction

O.1 We are currently delivering the UK's largest water efficiency programme in AMP6, and are leading the way in delivering this through innovation, technology and scale of customer engagement. A number of our initiatives were recognised with national sustainability and customer engagement awards. We are committed to encourage our customers to 'Be water smart'; provide customers with the advice, tools and on-ground delivery solutions to save water, as well as promote what we are doing as a business to help ensure a more sustainable demand for water.

O.2 Our wider water efficiency programme is constantly evolving, and this approach to enable flexible testing and learning will continue throughout our AMP7 programme. Several successful AMP6 initiatives were developed in addition to the original water efficiency programme outlined in the PR14 plan. These initiatives were piloted and implemented following research results and opportunities to maximise the delivery of other activities. Several of these new initiatives are being proposed as core elements of the AMP7 plan.

O.3 Our proposed AMP7 programme builds upon the successful AMP6 initiatives, plus takes on board recommendations and results obtained from regulators, non-government organisations (NGOs) and customers to help shape our programme. Our plan also aligns to the Water Efficiency Strategy for the UK[1]* produced by Waterwise, delivering several core actions from this document. We are aiming to enhance our best practice approach with our AMP7 plan through the following attributes;

- The scale of delivery of smarter home visits (SHVs) and smarter business visits (SBVs)
- Incorporating large-scale wastage fixes (leaky-loos) as a core demand reduction
- Maximising the integration of water efficiency with smart metering
- Innovative approaches to customer engagement and behaviour change marketing
- Large-scale use of non-financial incentives to reward water efficient practices
- Ambitious approach to year-round water efficiency awareness communications

O.4 Our proposed AMP7 programme forms an integral part of delivering demand reductions to achieve Per Capita Consumption (PCC) targets. Water saving assumptions previously set by Ofwat are being replaced with measured savings. Using actual measured water savings versus assumed will increase the accuracy and confidence levels of future water efficiency reporting. Our analysis of measured demand reductions through AMP6 has shown that the legacy assumed savings methodology used flow rate and volume figures that were higher than actual

[1] Water Efficiency Strategy for the UK: Waterwise 2017

practice. This means that, whilst our proposed AMP7 water efficiency targets use values similar to the current AMP6 programmes, they will in fact deliver significantly greater actual water savings.

O.5 Our current and proposed water efficiency programme and subsequent water savings are reliant on the continuation of large-scale progressive and bulk metering programmes.

B. AMP 6 programme

O.6 We are delivering the largest and most diverse water efficiency programme in the sector. We are on-track to achieve our 34.1 Ml/d target for AMP6 (2015-2020). Our AMP6 programme was developed using AMP5 water efficiency projects and campaigns, internal and external research initiatives, and feedback from stakeholders and customers. Section B provides an overview of our AMP6 programme and details the ways we are constantly looking to improve our activities.

Water efficiency activities

Smarter home visits

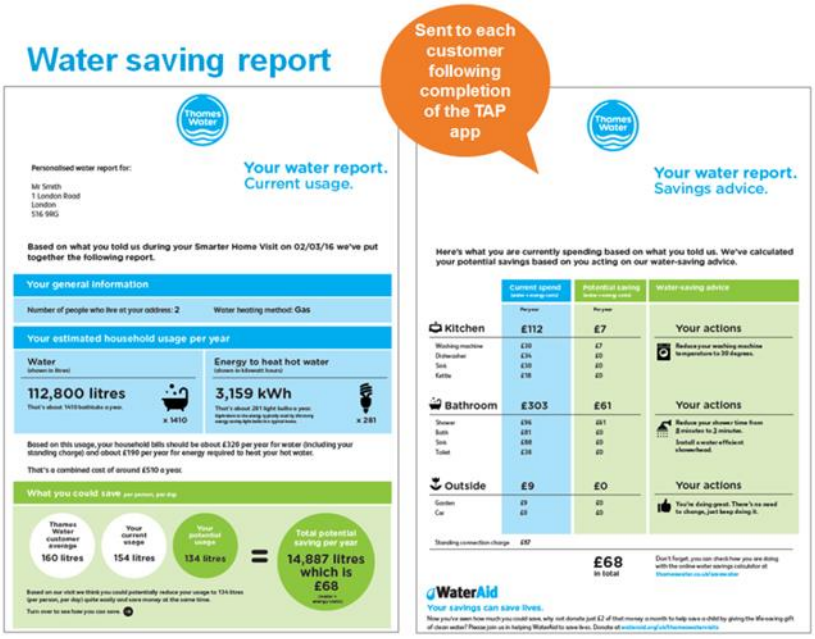
O.7 We are leading the way in water efficiency home visit programmes by offering customers tailored water and energy saving advice, in parallel with the installation of water saving devices and wastage fixes (leaky loos and taps). Our award winning SHV programme is the single largest water efficiency initiative in the UK. Since its commencement in 2015, we have carried out over 185,000 free SHVs and installed over 600,000 water savings devices, delivering a customer satisfaction of 4.74 out of 5, one of the highest in the business (Table O-1).

Table O-1: SHVs delivered since the programme commencement in 2015

	2015-16	2016-17	2017-18	2018-19	2019-2020
SHVs delivered	30,950	61,895	69,463	70,000 (target)	70,000 (target)

O.8 In partnership with the Energy Saving Trust, we developed the industries' most innovative and engaging education tools to help customers quantify their potential water, energy and money savings. Our in-home advisers use this app during every SHV to produce a tailored water savings report for every customer (Figure O-1).

Figure O-1: Water saving report example



O.9 Our SHV is offered to all customers receiving a smart water meter, increasing their water use awareness and maximising their potential water, energy and money savings. SHV's are also offered to our customers with an existing meter and our unmeasured customers.

O.10 We delivered over 60,000 SHVs in 2016/17, 70,000 in 2017/18, and are sustaining this increased rate through 2018/19 (Figure O-2). During these visits we also fix leaking toilets, plus we link our SHV programme to other Thames Water initiatives, such as 'bin it don't block it' and Priority Services. Through this, we have helped customers and, on average, £2,760 savings per household per year has been identified for eligible families who were referred for benefits entitlement checks.

Figure O-2: Example of the number and geographical spread of SHVs in south London

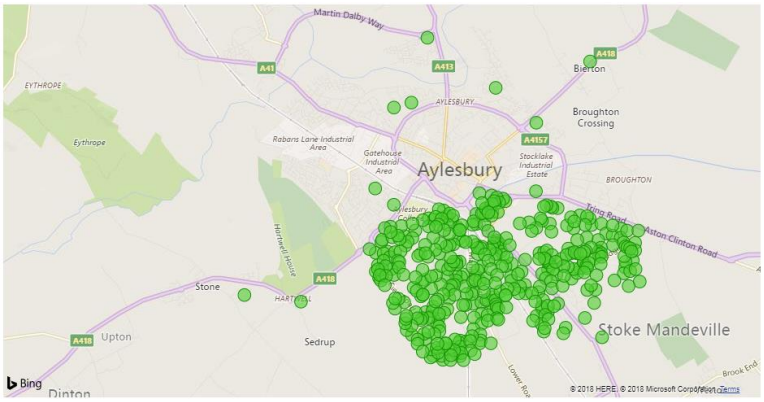
Dry Weather Event Response, Summer 2018

O.11 In response to the high profile, hot, dry weather event in Summer 2018, the water efficiency delivery team mobilised a response unit, building on our current Water Efficiency Programme. Following unprecedented demand in the Thames Water area, our Smarter Home Visit, Wastage and Smarter Business Visit teams delivered water efficiency installations and on-site customer engagement to homes and businesses. Over the unprecedented two months of record hot and dry weather, between 15-30 water efficiency staff provided a rapid demand reduction response and delivered sustained water savings for customers.

O.12 An example of our water efficiency response unit work is the case in Aylesbury, which was a key area experiencing record levels of demand during the hot weather. Our water efficiency teams were mobilised there within a few days and delivered over 1,200 free Smarter Home Visits, 170 Smarter Business Visits, and 250 Wastage fixes, which saved around 0.35 Ml/d. Our SBV team were able to help several non-household sites save, on average, over 20,000 litres per property per day, by fixing leaking toilets and installing urinal controls and simple water saving devices (Figure O-3 and Figure O-4).

Figure O-3: Our Smarter Business Visit team in Aylesbury during summer 2018

Figure O-4: SHVs carried out in Aylesbury during the dry event



Wastage fixes

O.13 Following a collaborative UK water sector research project, and a parallel Thames Water initiative, our focus on internal leakage (wastage) has increased. We estimate that 5% of households have a constant leaking toilet. Leaky loos are one of the most common causes of high water use, but often go unnoticed or are just left leaking. Our smart meter data and research shows that leaky loos can lose between 100 and 2,500 litres per day, often more than doubling a metered water bill. Following a successful trial in 2015/16, since October 2016 we have offered all customers free leaky loo repairs when we identify a leak during an SHV. In 2016/17, we delivered over 5,000 free wastage fixes to our customers.

Smarter business visits

O.14 Since non-household market competition opened in April 2017, we are no longer a retailer to business customers. However, as a wholesaler, we still supply these businesses in our supply area with water, and they make up a significant proportion of our demand. To ensure the security of our supply, it is crucial we still carry out water saving activities with both household and non-household customers.

O.15 After a small pilot, we are increasing our water efficiency efforts with small to medium-sized businesses. As part of our smarter business visits (SBVs) we are fixing internal leaks (wastage), converting toilets to dual-flush and installing urinal controls (Figure O-5). In 2017/18 we carried out over 520 SBVs, and are increasing this to over 4,000 SBVs per year for 2018/19.

Figure O-5: SBV leaflet

Local authority and housing associations

O.16 We are working with local authorities, housing associations and other types of housing organisations to promote water efficiency advice to their residents. We provide around 3,000 of our water efficiency devices annually for free to be included in home visits programmes. We also provide access to our specialist 'TAP app' water and energy saving calculator and app and provide content for resident communications. We have carried out a trial project delivering over 2,000 'water and energy save visits' to London and Quadrant housing association residents in

London by specialist consultants Zap Carbon. During these unique visits the advisors provide bespoke advice to customers on how they could reduce their water and energy use and bills. The advisors' detailed assessments provide bespoke water and energy saving tips for every customer which is reinforced by an ongoing support programme of tailored advice. We are expanding our water efficiency work with housing providers, enabling up to 7,800 in-home visits in 2018/19. We also work with local authorities and housing associations to offer our SHVs in parallel with them for their residents, using joint branding and their existing relationship with their residents to increase uptake of visits to over 30% of all residents.

O.17 Save Water South East (SWSE) have run two stakeholder events for local authorities and housing associations during 2017 building relationships between the south east water companies and housing providers in the region. Our involvement with SWSE continues with the development of shared communication resources for increasing water resource and efficacy awareness.

Schools

O.18 Our water efficiency schools programme is one of the UK's largest schools education programmes for water efficiency, running across 40 schools each year. Each school that participates in the programme receives a number of practical and educational benefits, including a free water audit, up to £500 of free retrofit plumbing equipment and a multi-visit programme of interactive workshops. Over 5,000 students take part in our schools programme during every year

O.19 Since 2011 we've successfully developed a programme, in partnership with environmental charity group 'Action for the River Kennet' (ARK), raising awareness of the value of water for both wildlife and people. We've continued to develop our partnership winning the 2012 UK water efficiency award for best community-led Initiative and now deliver our SHVs to homes supplied with water sourced from the River Kennet, and deliver joint awareness campaigns to local residents. ARK supports the water saving campaign, by offering free Water Matters activities and projects for schools and community groups in Reading, Newbury and Marlborough areas.

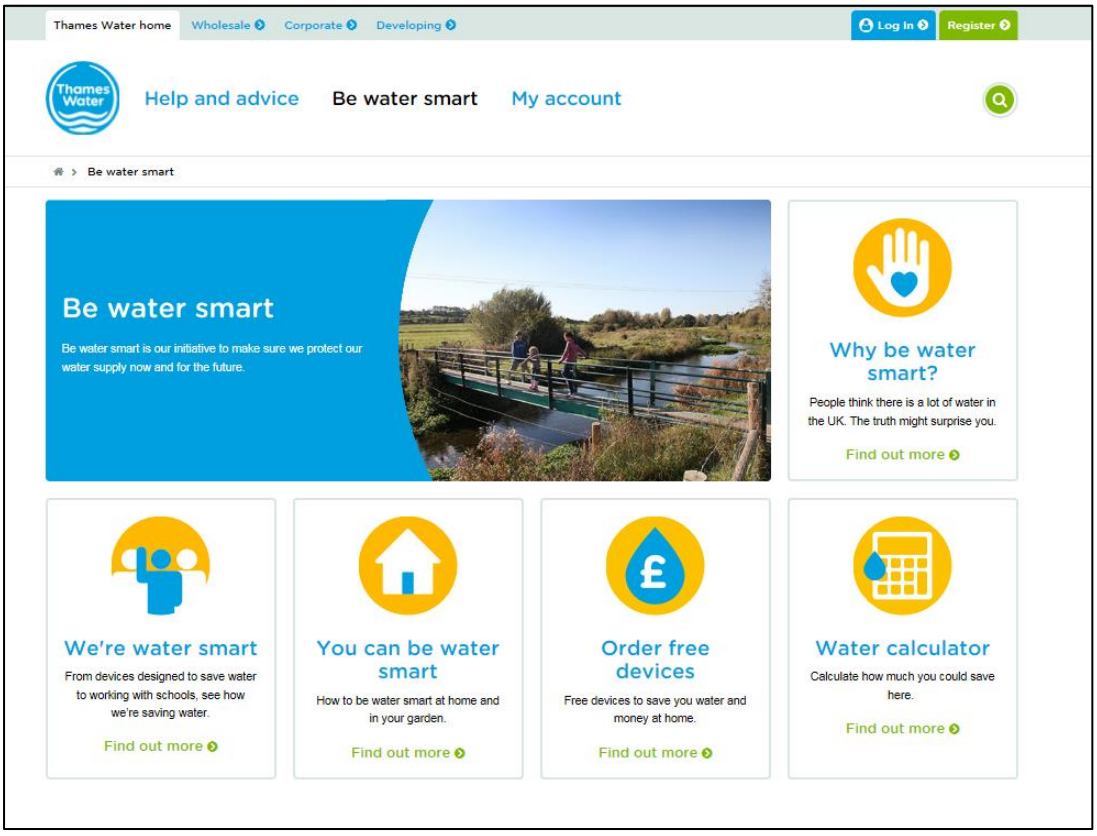
Communications and long-term behaviour change

'Be water smart' hub

O.20 We have updated and improved the information on our website, making it easier to find advice on how to 'Be water smart' and save water by accessing our online tools and resources (Figure O-6):

- Why be water smart?
- We are water smart – what we are doing to help reduce water use
- You can be water smart – how customers can save water, energy and money on their bills
- Free water saving devices – we offer all of our household customers free water saving devices, which can be ordered online, over the phone and by post.
- Water and energy calculator – our free online calculator helps households identify their household water consumption, links this to water and energy costs and identifies the best water saving devices and behaviours they could change to save water, energy and money.

Figure O-6: Be Water Smart web page and Water Savings Calculator



Campaigns and communications

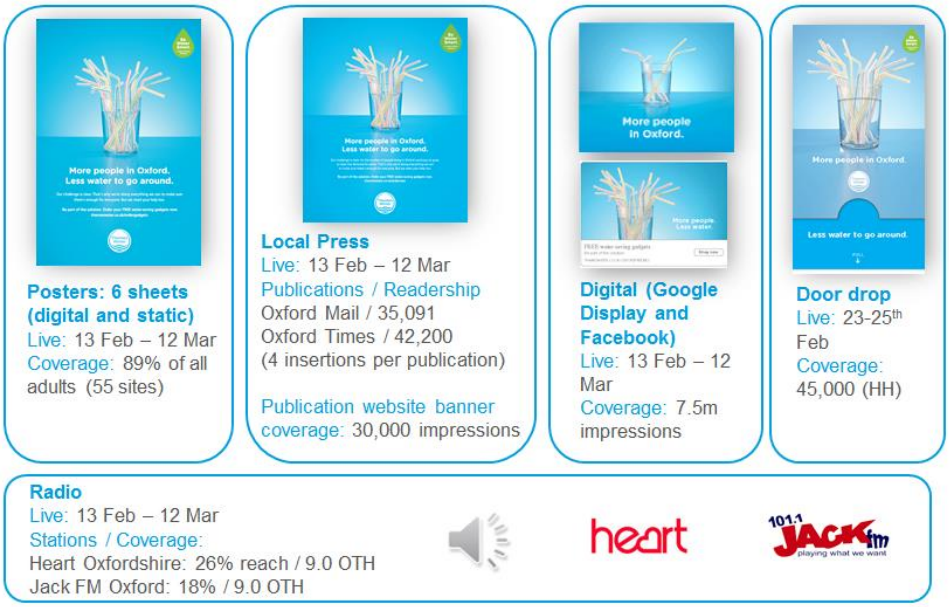
O.21 Our water efficiency communications aims to raise awareness of why we all need to save water and to help drive uptake of our water efficiency programs and tools.

O.22 The key findings from CCWater's recent report[2] '*Helping customers see the bigger picture'* fits very closely with what we are currently doing on communication and behaviour change. CCWater suggest that "a better understanding of the 'bigger picture' can make people more receptive and responsive to messages about 'How?' to save water. We have recently carried out some innovative communication to customers in Oxford to give a baseline understanding of the water resource issues we face, and help customers to be more open to discussions about being water smart. We also conducted a range of large-scale multi-channel communication campaigns during Summer 2018, capturing customer behaviours insight after the campaigns. These area-based communications were done in parallel with on-ground water efficiency programmes, helping homes and businesses reduce their demand.

Oxford campaign – Spring 2017

O.23 Setting the scene about water resources and explaining that there is the same amount of water but a growing demand (glass with straws image). We trialled our 'Be Water Smart' water efficiency education campaign in Oxford to inform our ongoing communication initiative and behaviour change strategy. Our campaign (Figure O-7), based around the message 'more people, less water to go around' included local advertising channels including posters, press, digital advertising, radio, plus targeted door drops. The pre and post-campaign market research showed some really positive results to the campaign and helped to raise awareness of the water issues faced. We will use the results to help feed into future campaigns.

Figure O-7: Oxford campaign publicity

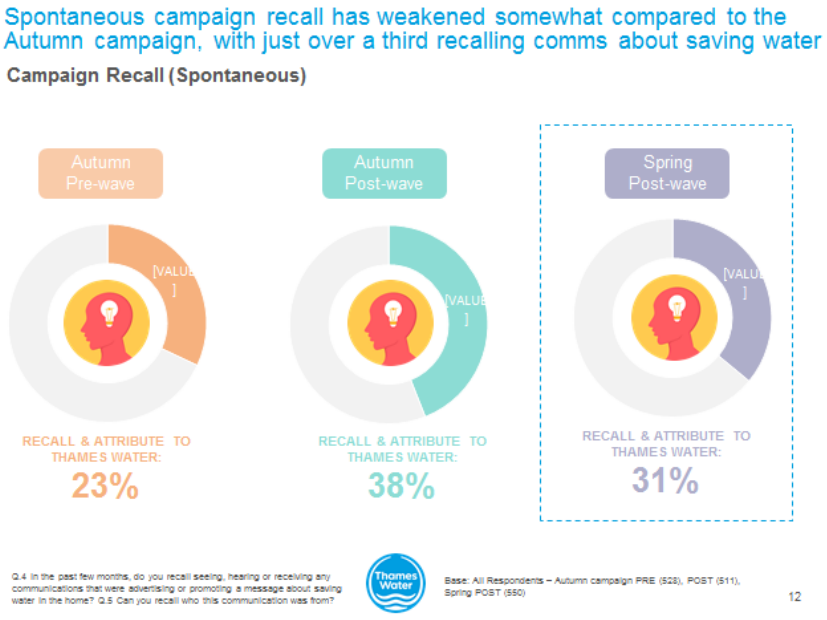


[2] CCWater: Saving Water: Helping customers see the bigger picture (Oct 2017) [https://www.ccwater.org.uk/research/saving-water-helping-customers-see-the-bigger-picture/]

O.24 Results from the market research (Figure O-8) suggest key findings include:

- Increased exposure could reinforcing the message
- Continuing with a mixed media strategy for future campaigns
- Environmental concerns, rather than monetary ones, are more likely to be cited as a reason to save water. However, highlighting the saving households could make, plus the addition of environmental messaging in future campaigns, will provide the 'new news' that can keep the campaign fresh, while resonating with those who have price and/or environmental concerns
- Six out of ten claim the campaign has improved their opinion of Thames Water – increasing to two thirds of those aware of the campaign
- Recall was increased to 31-38% compared to a 23% recall before the campaign, showing a positive impact

Figure O-8: Campaign recall statistics



Oxford campaign – Autumn 2017

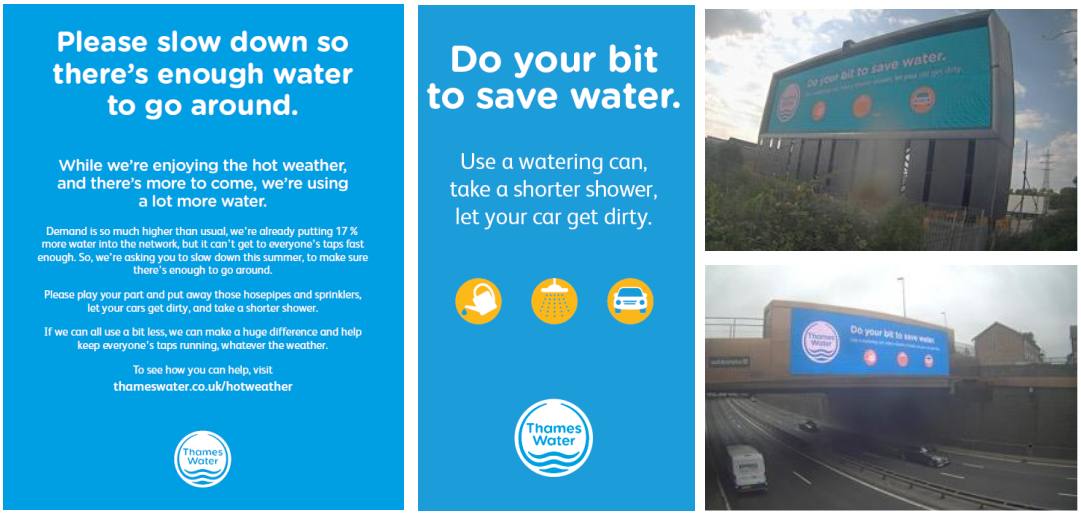
O.25 Building on from the campaign setting up the water and increasing demand image (Glass with straws), we have developed the campaign further to show 'There's no substitute for water', to help customers really value water (Figure O-9).

Figure O-9: 'There's no substitute for water' communication

Hot dry weather response – Summer 2018

O.26 In response to the record-breaking hot, dry weather experienced from June to August 2018, we conducted large-scale multi-channel communication campaigns (Figure O-10). Our communications aimed to raise awareness of the water resource situation and provide helpful advice on the benefits of saving water at home and at work. These area-based communications were done in parallel with on-ground water efficiency programmes, helping homes and businesses reduce their demand.

Figure O-10: Example of area based communications in the hot, dry weather response

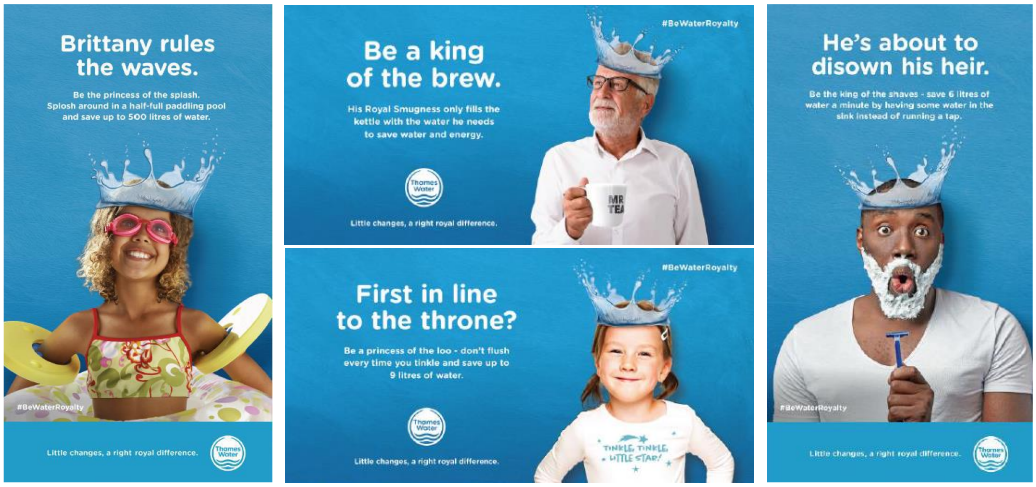


Summer Campaign – August / September 2018

O.27 The customer engagement on efficient water use is being continued with a new 'Water Royalty' campaign, being run through Aug-Sept 2018 which will cover the entire supply area (Figure O-11). Through creative marketing, our aim is to get customers to start thinking about how much water they use now, as we need to ensure there is enough water to go around for all of our customers in the future. Our Water Royalty campaign will run over several weeks, across

multiple channels - public signage, social media, print, online and radio. We will be monitoring public awareness, feedback and water demand.

Figure O-11: Example of our 'Water Royalty' campaign

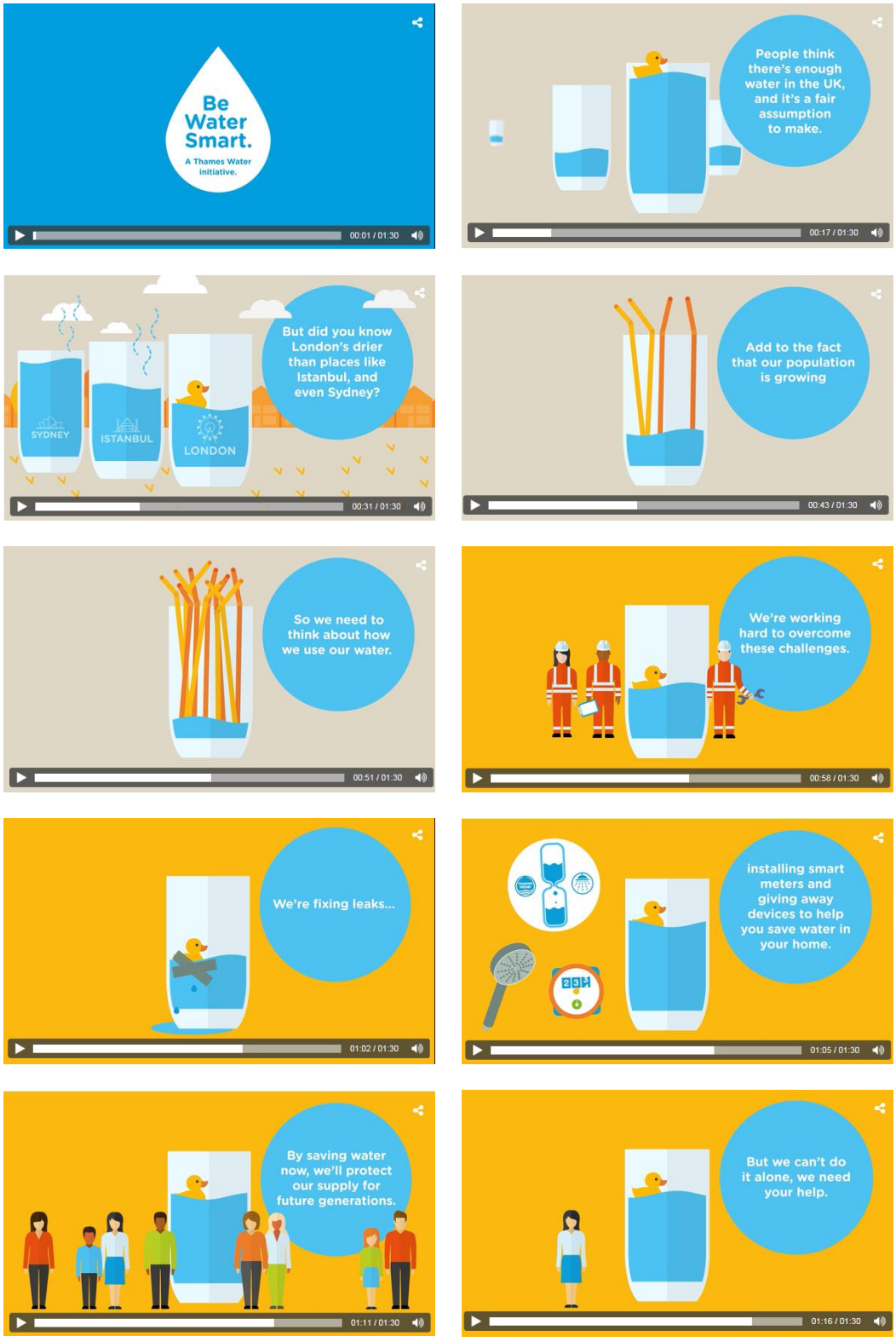


Why be water smart animation

O.28 We have produced a simple animation to help explain the complex issues around supply/demand deficit and to help our customers understand the wider issues around water resources and why it is important for us all to be water smart. This creative is being used online, on social media and within stakeholder presentations (Figure O-12).

(https://www.thameswater.co.uk/Be-water-smart/Why-be-water-smart)

Figure O-12: Screen shots from the be water smart animation



Building successful partnerships

O.30 We work with a wide range of organisations and groups to deliver successful water efficiency partnerships. These include, but not limited to:

- Waterwise
- Environment Agency
- SWSE – a group of the six south east water companies, the Environment Agency and Waterwise
- Local authorities and housing associations
- Environmental groups and charities (such as ARK, Groundwork, London Sustainability Exchange, Thames21, Rivers Trusts)

Insight and networking

O.31 We are involved in a number of forums:

- Water Efficiency Leadership Group
- Water Efficiency in Building Network (WATEF)
- WaterUK Water Efficiency Network
- Waterwise – annual conference
- National Water Efficiency Strategy Steering Group

O.32 We have developed and improved our current demand reduction initiatives, using pilots, projects and research programmes that began in AMP5 (2010-2015). In parallel with our own evaluation, we have evolved our large-scale retrofitting programmes using evidence from other water company initiatives, the Waterwise Evidence Base and independent research and evaluation investment. We share good practices and lessons learnt with all other water companies through the Water Efficiency Network quarterly meetings, UKWIR and regular water industry forms and conferences.

O.33 We are active members of the UK Water Efficiency Network; on steering groups UKWIR projects and the development of a UK Water Efficiency Strategy and the SWSE Partnership.

Research and innovation

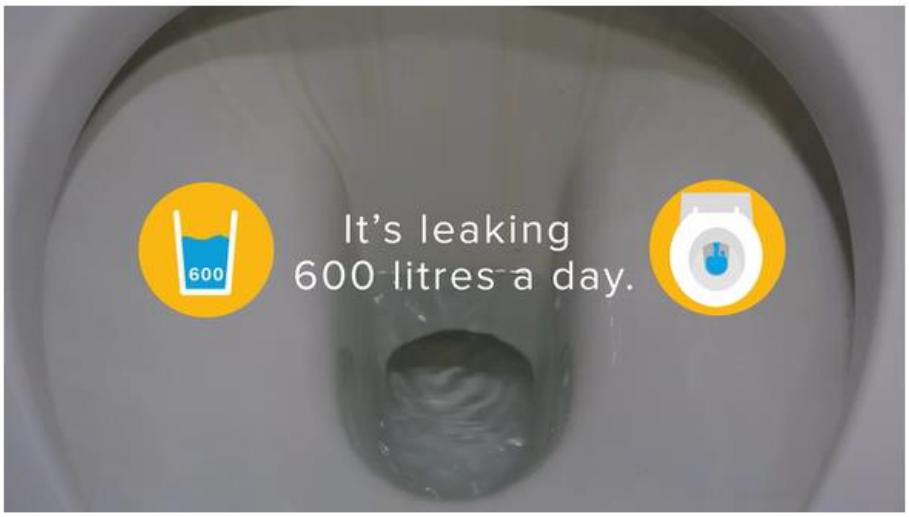
O.34 Innovation and research is key to our water efficiency programme to help us achieve a success. We have invested into making sure this helps to constantly improve our programme and achieve the greatest water savings and financial benefit to our customers.

O.35 Examples of some of our recent research and innovation includes:

- **Water use and faith research:** We worked with University College London and London Sustainability Exchange on an industry leading and award winning multi-faith research project in faith and cultural water use. The project researched attitudes to water and water efficiency in five London faith communities. We are developing this research further with a second study in 2017 looking into water reduction campaigns with Muslim community groups.

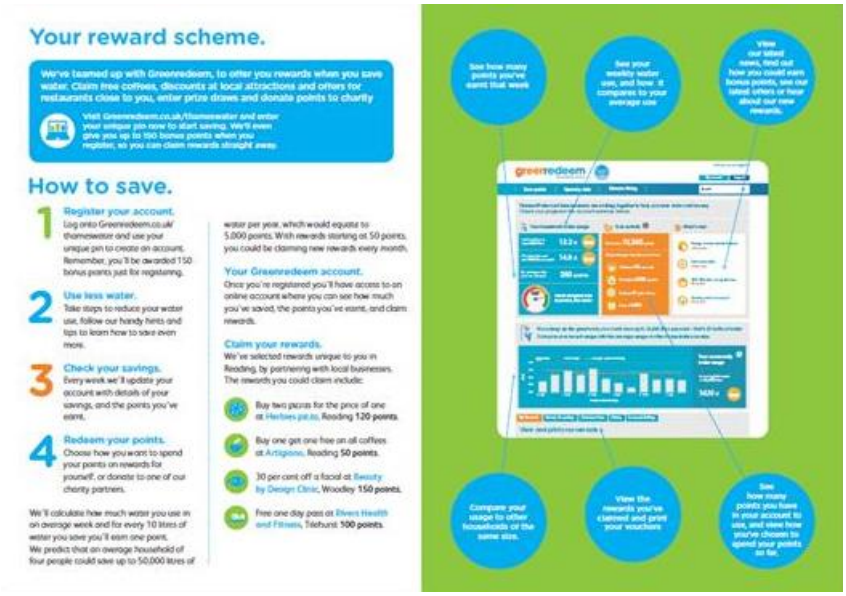
- **Leaky loos:** We estimate that 5% of households have a constant leaking toilet, so have increased the focus on piloting new ways of identifying, measuring and fixing wastage across our household customer base. This has included offering free wastage fixes within our SHV and SBV programmes, trial separate wastage campaigns, and pilot free wastage fixes within standard leak detection and fixes operations. To increase the public's awareness of wastage losses and the importance of preventing this unnecessary water loss, we have a dedicated page on our website to give customers more information and a video about how to spot a leaky loo (https://www.thameswater.co.uk/Be-water-smart/You-can-be-water-smart/Leaky-loos) (Figure O-13).

Figure O-13: Our video on leaky loos



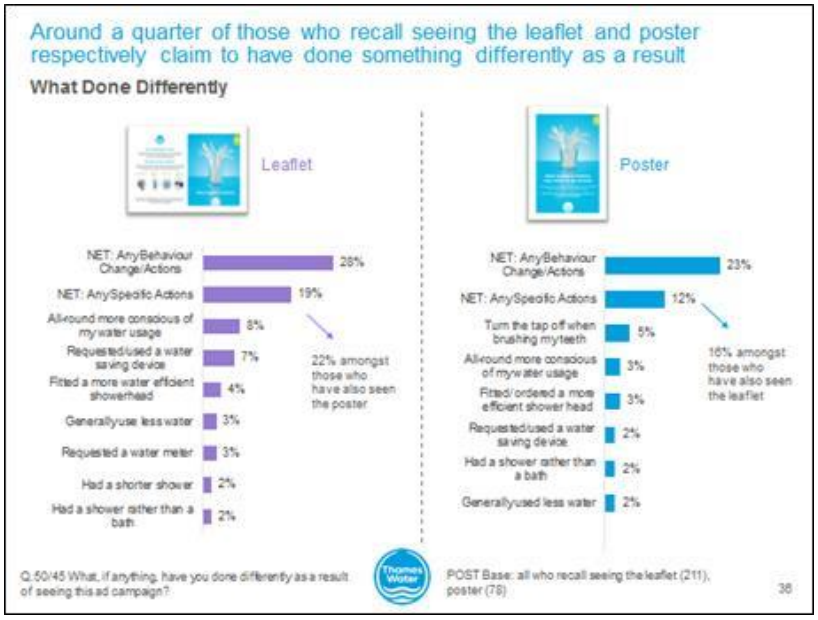
- **Incentives scheme:** The Reading Incentive scheme is a pilot to assess the effectiveness of awarding customers with non-financial rewards for reducing their water consumption. The scheme has been developed in partnership with Greenredeem – recycling reward specialists with more than five years' experience in the incentives space. Customers are rewarded with points every time they save water and engage with the web platform and they can use these points on rewards vouchers, entry into prize draws and more (Figure O-14). The trial involves offering this scheme to up to 3,000 homes which form the smart-metered fixed area network in Reading. Initial results suggest that customers are saving up to 2% of household water through this scheme. We have now launched the Greenredeem incentives initiative to all of our smart metered households in London, and will monitor customer engagement and demand reductions throughout AMP6, with a view to expand the role of incentives in AMP7.

Figure O-14: Greenredeem leaflet to customers as part of the incentives trial



- **SHVs:** Offering customers water advice and installation of water saving devices and wastage fixes (leaky loos and taps) has not been done to such a scale before in the UK. This is the biggest water efficiency programme in the UK to date, and the scale of the face to face engagement with our customers is huge. We have carried out over 185,000 SHVs to date (2015 – October 2018) and customer satisfaction from these visits is evidence of its success and positive impact on our customers. To ensure that we can engage better with our customers, we developed an in-home app with the Energy Saving Trust for our SHV advisors to use and improve engagement with our customers
- **SBVs:** this is an innovative approach to delivering water savings in our wholesale area, and is achieving some big water savings. It is a key activity going forwards to ensure security of supply for wholesale water providers through the following the introduction of the business retail market. We will look to complement our water savings focus on business sites with an incentive offer to non-household retailers, encouraging them to deliver and report water efficiency practices.
- **Communication and behaviour change:** we are constantly challenging the way we communicate to our customers, and carrying out trials of different methods of communication. This has included using social media, Facebook advertising, town-wide campaigns and messaging. Feedback from our market research is then used to feed into future campaigns (Figure O-15).

Figure O-15: Example of market research from our campaigns



Our awards

O.36 Our efforts to improve the quality and increase the quantity of our water efficiency delivery were rewarded in 2016 with four national awards. Our SHV programme won:

- the Water Industry Achievement Award for Water Resource Management Initiative of the Year
- the UK Water Efficiency Award for Built Environment
- the UK Customer Experience Award for Utilities and Team Customer at the Heart categories.
- Green Apple Environment Awards
- and were also shortlisted in the Sustainability Leaders Awards and the Utility Week Awards.

O.37 Our bathroom refurbishment research and large-scale rollout in our company office buildings won the Institution of Civil Engineers – Sustainable Water Management Award.

C. Our future direction for water efficiency

O.38 Innovation, together with our ambitious targets, ensures that water efficiency is a core business activity in AMP7. Our plan will continue to build on the success and scale of our AMP6 water efficiency programme, whilst striving for new and innovative ways of delivering demand reductions through water device/building performance improvements, partnership programmes, customer engagement and behaviour change. Section C outlines the information used to develop our future Water Efficiency Programme.

O.39 Water efficiency is a core component of the sustainable management of water resources. Water efficiency has received strong support from our customers as a priority[3] only second to leakage reduction. The UK Government has also set out its aspiration to achieve a reduction in water use and support for measures to promote the efficient use of water[4].

O.40 We agree with our stakeholders, customers and Government that water efficiency is critical to the sustainable management of water resources. Consequently, our water efficiency programme includes an enhanced programme, baseline programme and intensive area based communications campaign.

O.41 Our proposed AMP7 programme forms an integral part of delivering demand reductions to achieve Per Capita Consumption (PCC) targets.

O.42 For our final Water Resources Management Plan 2019 (final WRMP19), we have considered 56 different options to promote the efficient use of water. These options are presented and screened in the Thames Water Demand Management Options Screening Report[5] to be compartmentalised into Feasible Options (options that are over and above the baseline to make up our enhanced programme), Baseline Options and Rejected Options.

O.43 The options taken to optimisation in the Integrated Demand Management (IDM) model to form our enhanced programme are the feasible options.

O.44 The options that have not been taken to optimisation still form part of our business water efficiency programme are the Baseline Options. These are options that will continue to run as part of the baseline programme in 2020 and beyond and have been identified by 'Rejected*; in Appendix Q: Scheme Rejection Register.

O.45 The options that have been rejected in final WRMP19 form part of our rejection register and can be found in Appendix Q: Scheme Rejection Register.

O.46 In addition to our enhanced and baseline water efficiency programme, we will also be adding a new element; this will be large-scale water efficiency communications.

O.47 We will continue to test new water efficiency options and explore additional options throughout AMP7, improving the effectiveness of customer engagement and delivery initiatives and working to increase measurable demand reductions.

[3] P30: Thames Water Customer Preference Summary (August 2017).
[4] Water For Life, Defra, December 2011
[5] Thames Water, 2017, 'Demand Management Options Screening Report, March 2017

O.48 Our overall water efficiency programme will consist of three elements which are described below in more detail:

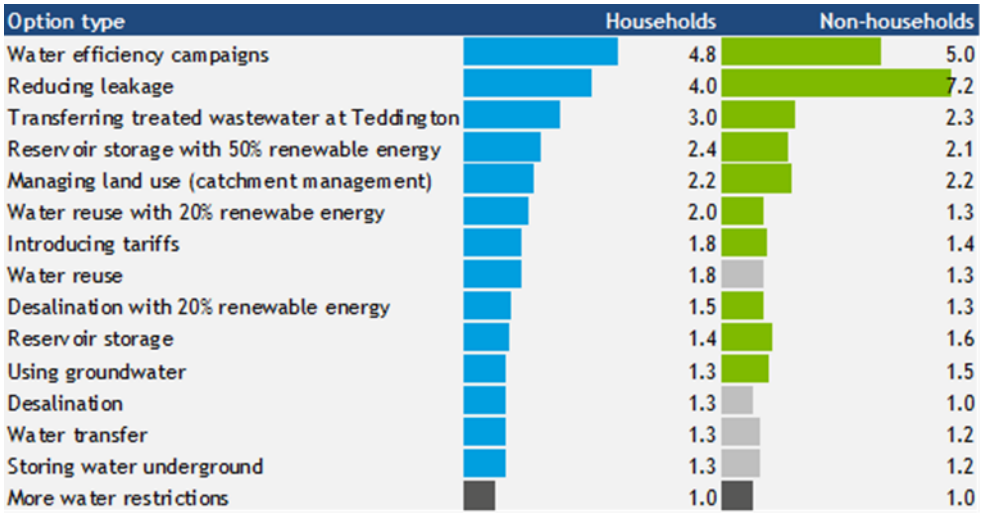
1) Water Efficiency enhanced programme (feasible options in the IDM)
2) Water Efficiency baseline programme
3) Intensive area based communications

Listening to our customers

O.49 Our customers want us to improve water efficiency as a priority in AMP7. We have listened to our customers and carried out research on which demand reduction options customers would like us to focus on. From this survey based research[6] carried out in 2017, using a representative sample of our customers in London and the Thames Valley, the top priority and preference for household customers is water efficiency.

O.50 Water efficiency and leakage reduction are consistent as the top two preferences across household and non-household customers concerning demand management, and this stems from the views that it is important not to waste water and to make the most of the water available. This provides a strong case for our focus on water efficiency and for a large scale water efficiency programme for AMP7.

Figure O-16: Our customer preference summary (August 2017)



[6] Source: Thames Water Customer Preferences Research Programme. *Water Resources Stage 2 Study: Water Resource Planning Options*. Final Report (August 2017) Eftec & ICS consulting.

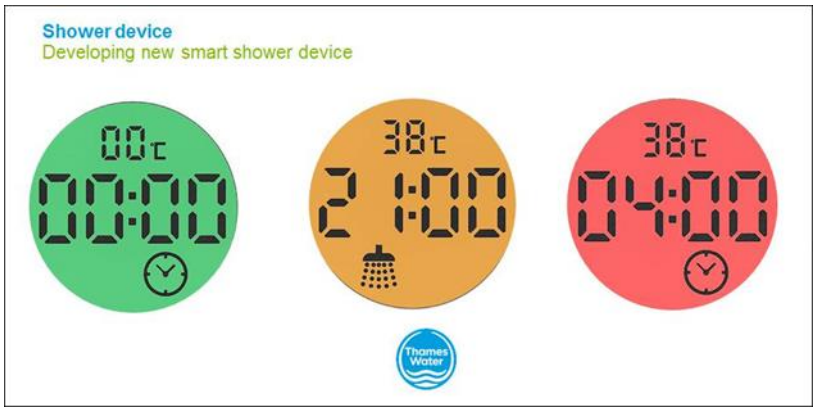
Innovation and leading the way

O.51 As seen in our AMP6 programme, we are leading the way in water efficiency in a number of ways, including:

- The scale of our SHVs
- Communications and behaviour methods and targeting
- Our incentives scheme
- Wastage fixes
- SBVs
- Partnership working
- Developing new products to improve water efficiency
- Developing new Apps and tools for our in-home advisors to use to engage our customers
- Developing new online tools for customers such as our new Water Calculator
- Improving what we offer and including other water saving activities (such as our AMP6 incorporating fixing wastage during an SHV)

O.52 We have been working with manufacturers to develop a new in-line shower device to show how much water people use in the shower in real time (Figure O-17). This is currently under development but we will continue to look for new innovative devices to improve and build on our current programme.

Figure O-17: Example of our new smart shower device information



O.53 We aim to continue our innovation throughout AMP7 and initially we will start by building on the evidence and trials carried out in AMP6. However, there will be other innovations that will be trialled throughout AMP7 that are not yet known about; water efficiency is a key area of our business that needs to have the flexibility to change with behaviour trends and new technology. Our baseline water efficiency will, therefore, have some flexibility in funding new research or technology to ensure that we can continue to be innovative in our approach.

Worldwide review of water efficiency best practice

O.54 We supported Waterwise in carrying out a worldwide review of water efficiency[7], and are following the best practice guidance including:

- Partnership and joint working, including NGOs, academics, energy companies, local authorities, housing associations and delivery partners
- Increasing the proportion of metered customers
- Multi-sector, national customer motivation and behaviour change campaigns
- Rebates for water efficient devices and appliances for both household (toilets, washing machines etc.) and non-household customers (industrial equipment as well as domestic appliances)
- Incorporating monitoring, analysis and evaluation into projects at inception
- Adding water to energy efficiency delivery mechanisms and developing new joint delivery mechanisms
- Strong water efficiency brand, either incorporated with the company or independent
- Use of social media, blogs, newsletters and webpages with real life examples to increase motivation and encourage behaviour change
- Incentives schemes to motivate change in water use
- Intensive and innovative communication, marketing and campaigning
- Utilisation of smart meter data to engage customers with their water use
- Water efficiency labelling of products

O.55 We have reviewed Waterwise's evidence base and policy documents and our progress against these[8], and our programme links well with this best practice. A few additional opportunities exist for us to explore further through trials in AMP7 and beyond, including:

- Increase partnerships and affiliate marketing
- Working with energy providers
- Improving and promoting the water saving label on devices
- SHVs for selected vulnerable customers

Water efficiency enhanced programme

O.56 Section 8: Appraisal of demand options outlined the five categories of Water Efficiency feasible option that were optimised in IDM to form our water efficiency enhanced programme; SHVs, SBVs, Wastage Fix ('Leaky Loos'), Housing Association Fix and Incentives. It also outlined a sixth option that was included in the preferred plan, Intensive Area Based Media Campaigns.

IDM

O.57 IDM is the optimisation modelling process we use to develop cost efficient demand management programmes. The IDM model optimises the demand management options by

[7] Thames Water, Water efficiency – Exploring best practice, September 2016.
[8] Waterwise evidence base http://www.waterwise.org.uk/pages/evidence-base.html

appraising each option individually and assessing the costs and benefits of options that can be promoted in combination. It also involves looking at the optimised combination of demand management options for each DMA and assessing the deliverability constraints.

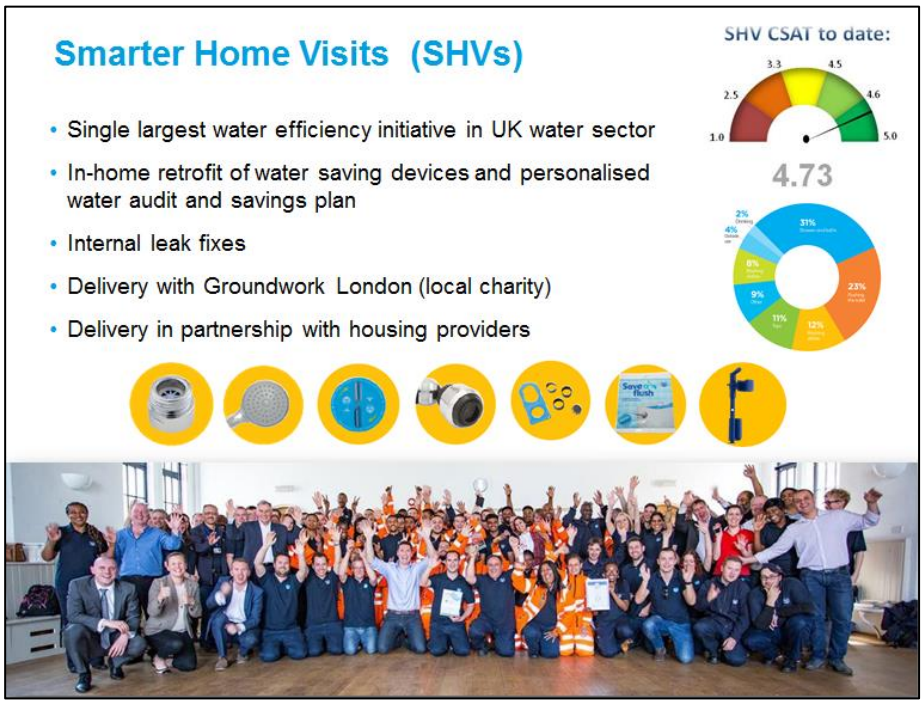
O.58 An overview of the feasible options is provided below.

Smarter home visit

O.59 Smarter Home Visits are the most intensive and face-to face communication we have with our customers about water use. We have built on the success of our AMP6 SHV programme, and have made these targets ambitious in delivery and will continue to evolve this programme to ensure it continues to be innovative and engage our customers in the most effective way. We will continue to look for innovative products and delivery mechanisms to continually improve our Smarter Home Visit programme in AMP7 (Figure O-18).

O.60 Our SHV initiative is, to date, the single largest water efficiency programme in the UK water sector. Our SHVs comprise free in-home visits by qualified staff to install water saving devices and provide personalised water savings advice to households. We offer SHVs to both measured and unmeasured customers, with a focus that complements our rollout of smart water meters.

Figure O-18: Smarter Home Visits overview



O.61 This programme includes large-scale communication and engagement across our entire customer base about the efficient use of water and multiple water and energy savings opportunities.

O.62 The programme has continually evolved to increase the water savings achieved, as well as incorporating additional benefits to the customer such as free internal leak fixes and Priority Services offers to assist vulnerable customers.

Smarter business visit

O.63 Thames Water is leading the way in delivering an innovative programme of Smarter Business Visits to our Non-household supply customers. We have shown that this is a key area for us to continue into AMP7. For security of supply within the Thames Water catchment it is essential that, as a wholesaler, we continue to provide initiatives that deliver water savings for all customers including non-households. Our SBV programme has been developed to replace the 'Commercial audits and fixes'. The SBV initiative is similar to a SHV in that a qualified representative attends the business to assess where they can make improvements to their discretionary water usage by installing water saving devices or fixing leaking toilets.

O.64 Following the successful delivery of over 520 SBVs in 2017/18, our SBV programme is expanding up to 4,000 in 2018/19, achieving water savings up to 5Ml/d. In AMP7 this will be a core demand reduction option, and will be the first time this is on a large scale in WRMP options.

O.65 For those non-household properties interested, the following actions are included:

- fitting of water saving devices (showerhead, showersave, showertimer, tap inserts, kitchen swivel, save-a-flush and EcoBetas)
- identify leaking toilets and carry out a free one-off fix
- fit free urinal controls where practical

Wastage fix (i.e. leaky loos)

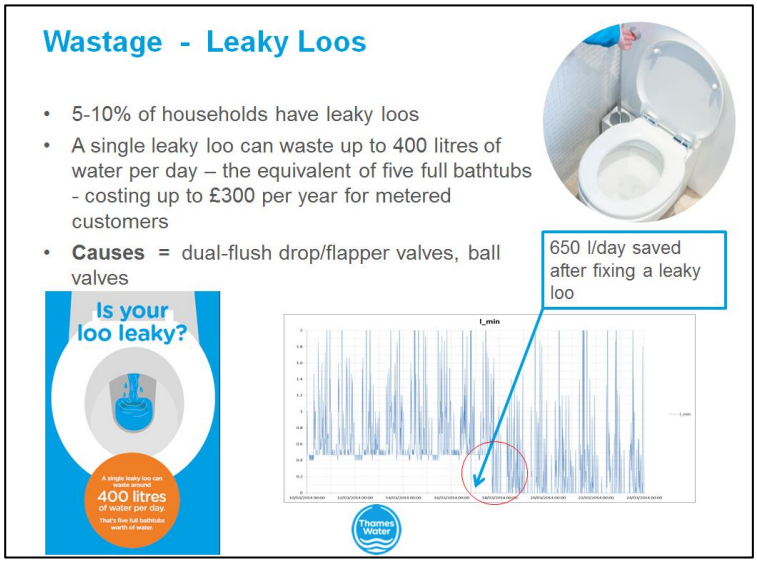
O.66 This is a new water efficiency option for inclusion in the final WRMP19. It includes free internal leak fixes (i.e. leaky loos and leaking taps) for households receiving SHVs and other field based customer engagement opportunities.

O.67 Leaking toilets are one of the biggest concerns for us going into AMP7. New dual flush toilets with drop valves are now much more common, and are beginning to present a huge issue in terms of water wastage inside the home. Our Wastage option in AMP7 will look at delivering large scale water savings from fixing toilets as part of our Water Efficiency core programme (Figure O-19).

O.68 The scale of the Wastage fixes programme is very ambitious and we will work alongside the core teams within Thames Water to deliver this alongside our Customer Side Leakage and Smart Metering Programmes.

O.69 We are also working with bathroom manufacturers, WRAS and Waterwise to help promote these issues and try to drive change in toilet design to engineer out this issue. This will be ongoing innovative work that will take us into AMP7 and beyond to tackle this issue.

Figure O-19: Example of a Leaky Loo Fix



Operational Event Emergency Response

O.70 This is a very new area for us to look at developing further in AMP7. Summer 2018 was the first time we used our Water Efficiency Programme to deliver demand reduction for the Dry Weather Event in specific hot spot areas. This involved our Smarter Home Visits, Smarter Business Visit and Wastage teams. This was hugely successful and showed an innovative approach to delivering water efficiency in the Thames Water region. We will look at making this something that can be used in emergency situations to improve both customer experience and reduce the impact of increased demand at peak times in hot spot areas.

Housing association fix

O.71 This is a new water efficiency option for inclusion in final WRMP19. It includes embedding water efficiency device installation and partner training, within existing Local Authorities and Housing Association stock improvement or energy efficiency delivery programmes. Following a successful pilot phase in 2017/18, and an increase up 7,800 in-home visits each year in AMP6, we intend continue this co-delivery initiative into AMP7.

Incentives schemes

O.72 Building upon our successful testing of incentives to encourage water efficient behaviours, we will be continuing our partnership with Greenredeem to expand our incentives scheme to household customers in London. This programme will offer non-financial incentives in the form of shopping vouchers/discounts, prize draws and charity donations to increase awareness and motivation to reduce water use. The programme will be an industry leading effort involving partnerships with leading retailers, the use of innovative apps and website content, whilst maximising the benefits offered through smart metering data.

Water efficiency baseline options

O.73 The Water Efficiency Baseline Programme refers to the established programme of activity that we undertake to promote the efficient use of water and ensure we deliver our statutory duty to promote water efficiency and develop and maintain an efficient and economical system of water supply. The Baseline Programme is a forecast of what would happen if we did not take any new supply or demand actions and did not implement any changes to company policy or existing operations. The initiatives in our baseline programme also positively impact our customers and brand and can be used as a platform to promote water efficiency and maximise water savings.

O.74 The Thames Water Demand Management Options Screening Report identified 56 different options to promote the efficient use of water. Of these, 19 options were screened for inclusion in our baseline water efficiency programme. These options are identified by a 'Rejected*' label and summarised in Appendix Q: Scheme Rejection Register.

O.75 Our Baseline Programme will continue to evolve and will be flexible in its approach to be able to change with new innovative ideas and communication to our customers. However, at the current time, it is expected our baseline activities will include the following activities in some form:

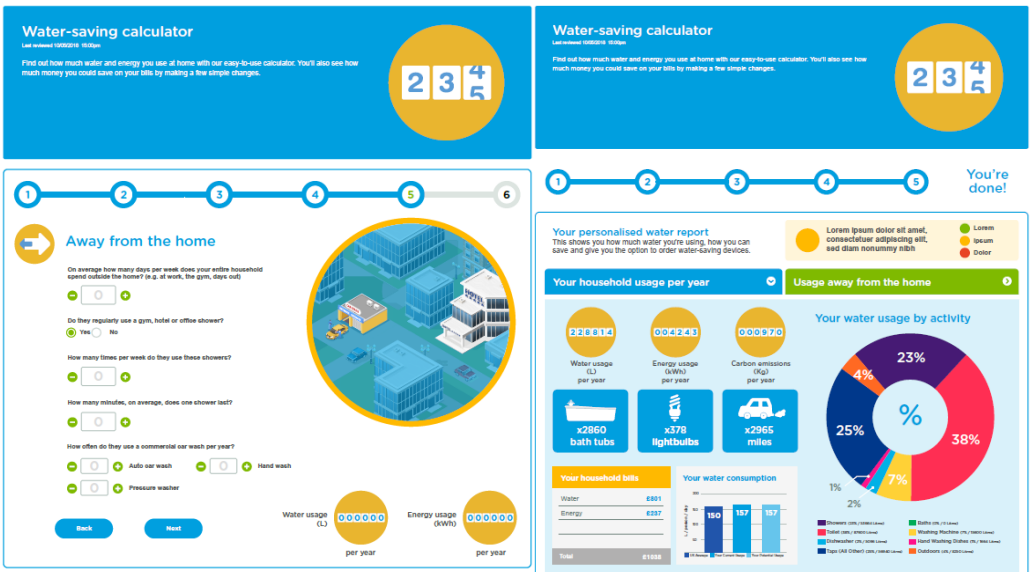
- Free water saving devices or promotions – this gives us opportunities to also look into innovative products and solutions for our customers.
- Schools engagement programmes – this is key to educating our future generations to value water and take good behaviours home to their families.
- Targeted water efficiency communication – we want to be able to communicate with our customers in ways that suit them and evolve with technology and media.
- Research and innovation will also be a large part of our baseline water efficiency, as this will be key to helping us develop and maximise the success of our water efficiency programme.
- Online water and energy calculator – we want to continue to build on our existing water and energy calculator and provide customers with household specific advice.

O.76 We are developing a new Water Saving Calculator (Figure O-20). This innovative calculator will inform our customers not only about the amount of water they use in the home, but will also identify domestic water use elsewhere (e.g. at the gym or office) to show the true impact of their water use and energy from hot water use.

O.77 The calculator will link directly with our water saving device freebie ordering area on our website and give specific recommendations of products based on the answers from the calculator. It will also provide tailor made advice on behaviour change.

O.78 Each completed journey will get a specific report and has the ability to alter behaviour by showing potential water & energy savings per household.

Figure O-20: Water Saving Calculator



Intensive area based communications

O.79 The Thames Water, Demand Management Options Screening Report identified intensive area based communications campaigns on the feasible options list for final WRMP19. This included both large-scale baseline awareness raising and intensive marketing campaigns targeting specific locations throughout our supply area. Such full-time awareness raising and campaign work would help increase the public understanding of water resources, water efficiency and assist the take-up of specific water saving propositions.

Long term behaviour change

O.80 As part of our baseline water efficiency, we want to build on the success of our smaller communications trials in AMP6 and follow CCWater's advice[9] to promote the wider issues about water efficiency and water resources to our customers.

O.81 To achieve this, a large scale long term behaviour change and awareness programme is needed to drive a better understanding about the issues we face and increase the take up of water savings propositions. This programme will involve innovative and multi-channel engagement campaigns with trusted partners. To support this increasing focus on year-round awareness and engagement, we are working with Waterwise to increase our understanding of international water company spend on customer communications. We will continue to test the levels of demand reductions achieved through marketing and education initiatives.

O.82 Our customer engagement and subsequent water savings are closely linked and reliant on the continuation of large-scale progressive and bulk metering programmes.

[9] CCWater: Saving Water: Helping customers see the bigger picture (Oct 2017) [https://www.ccwater.org.uk/research/saving-water-helping-customers-see-the-bigger-picture/]

Customer engagement methods

O.83 We will increase our focus on core customer engagement and build on our innovative trials in AMP6 to improve customer engagement on water efficiency. Methods include;

- Social media promotion
- Direct mailing
  - Innovative mailings specific to households
  - Leaflet distribution
  - Billing information
- Internet and website promotion – focused around our 'Be Water Smart' hub
- Area specific media and billboard promotion
- Schools and educational resources
- Partnership working
- New digital platforms and where possible link to our smart meter data to communicate to customers

D. Measuring and predicting water saving

O.84 In AMP5 Ofwat set annual water efficiency targets and provided guidance[10] for assumed water savings. In AMP6, Ofwat has stepped back from managing water company water saving targets and giving guidance, and instead wants companies to manage this in an appropriate way and report savings as a measured saving or reduction in per capita consumption.

O.85 Measured savings are challenging to obtain for all water efficiency activities, so to ensure that we have consistent reporting and evidence we have continued our robust reporting mechanisms to show the scale of our water efficiency activities. This has included using some assumed savings (as per previous guidance) for certain elements of our programmed, such as behaviour change and communications. We have also moved towards measured savings for our SHVs, using the largest dataset of smart meter data post visit.

O.86 We will continue to improve the amount and quality of data and evidence through the remainder of AMP6. Our water savings values for AMP7 and beyond are based on analysis of our AMP6 water efficiency programme and are the best datasets at this time.

O.87 Our future programme may appear conservative when compared to the AMP6 savings, but due to the new measured saving approach and the greater amount and accuracy of water saving evidence we will build over the course of AMP6, we are ensuring our estimates of potential water efficiency deliverables are realistic, but still show an increase in real world water savings. If our future programme was based on the legacy assumed savings methodology, the numbers would be inflated by a factor of >1.5.

[10] Ofwat, Annual return reporting requirements and definitions (2012)

Water saving values and uptake rates

O.88 Using water meter readings and on-site flow rate/volume measurements, we have developed a water savings value for each water efficiency intervention. These savings figures, along with the most up to date customer take-up rates for each programme, have been used in the IDM model (Table O-2).

Table O-2: Water saving values and uptake rates

Programme	% uptake	Water saving (l/d)
SHVs – newly metered (PMP) properties	33	37
SHVs - existing metered properties	23	11
SHVs - unmeasured properties	20	25
SHVs - bulk metered properties	20	15
SHVs – replacement metered properties	33	15
SBVs – non household properties	13	1,316*
Wastage Fix – leaky loos	5	212
Housing Association Fix – LAHA properties	20	18

**average*

Uptake rates

O.89 For a SHV, the higher uptake by newly metered properties is because newly metered customers are offered a SHV as part of the meter installation. Customers are more likely to take up a SHV offer when they have the convenience of a meter installation and SHV in the one appointment. The uptake value is based on data collected for all SHVs between January 2016 and July 2017.

O.90 Throughout AMP6, SBVs have been taken up at a rate of 13% across non-household properties based on data collected from January 2016 to January 2017. We have been targeting twelve specific cohorts of business within their area of supply, meaning this assumption cannot be entered into IDM and applied to all non-household properties. Instead, the model assumes 13% of businesses within each cohort within each DMA receive a SBV. Working with NHH Retailers and enhancing the water savings benefits, we will continue improving the SBV engagement and uptake rates.

O.91 For a Housing Association Fix, the uptake rate has been based on access rates to housing association properties between January 2016 and July 2017.

O.92 For a Wastage Fix, the percentage uptake is based on the assumption that 1 in 20 properties across Thames Water's supply area has a 'leaky loo'. This is based on the results of investigations during the installation of a new meter, the findings during SHVs between January 2016 to July 2017 and the evidence obtained from the Fixed Network Trial.

Water Savings – measured

SHV on newly metered (or smart metered) households

O.93 The benefit obtained by conducting a SHV on a newly metered property is 37 litres per household per day. This represents a further 6% saving in addition to the 17% saving achieved by installing a smart meter (Section 8: Appraisal of demand options).

O.94 This figure is based on the water savings seen from our progressive meter programme customers who have received a SHV in AMP6. The analysis was carried out on 112,428 properties that received a SHV between September 2016 and November 2017.

O.95 We have used data since September 2016 to coincide with our new water efficiency saving devices which are more effective than those used prior to this date and therefore more likely to give an indication of future water savings. The five months prior to September 2016 (from April 2016 when we conducted our first smart metered SHV) has not been used as this early sample is not considered representative of the programme.

SHV on existing metered households

O.96 The benefit obtained by conducting a SHV on an existing metered property is 11 litres per household per day.

O.97 This figure is based on the analysis carried out by our innovation team which used data since 2015 for households that received a SHV and had an existing meter. The savings achieved by existing metered households is significantly lower than that of a newly metered household as there were a high proportion of optants in the existing metered sample. This means these customers opted to have a meter and therefore tended to use less water originally.

SHV on unmeasured households

O.98 The benefit obtained by conducting a SHV on an unmeasured property is 25 litres per household per day.

O.99 This figure is based on analysis in comparison with DWUS data to determine water savings of unmeasured households having Smarter Home Visits. Since unmeasured customers have been proven to use more water and therefore have the potential to achieve more savings, the final figure of 25 litres per property per day is considered the more conservative position.

Bulk metered (smart metered) properties - dwellings

O.100 Conducting a Smarter Home Visit on a dwelling in a bulk metered property is a new demand management option for the final WRMP19. This involves targeting dwellings within small blocks of flats and large blocks of flats for a Smarter Home Visit.

O.101 The benefit obtained by conducting an SHV on a dwelling in a bulk metered property is 15 litres per household per day.

O.102 Since this is a new option, this saving is based on expert judgement that the benefit will be close to that expected for an existing metered SHV. The additional 4 litres per property per day has been added due to the ability for Thames Water to use the bulk smart meter data to identify additional wastage savings on shared assets of a block of flats.

O.103 Although these dwellings are considered unmeasured customers, on account that the bulk meter has been installed for CSL detection purposes and each customer remains on an unmeasured bill tariff, the savings assumed for this option have been based on the savings for an existing metered SHV to be conservative.

Replacement metered (smart metered) properties

O.104 Conducting a Smarter Home Visit on a property with a dumb meter replaced by a smart meter is a new demand management option for the final WRMP19.

O.105 The benefit obtained by conducting an SHV on a replacement metered property is 15 litres per household per day.

O.106 Since this is a new option, this saving is based on expert judgement that the benefit will be close to that expected for an existing metered SHV. The additional 4 litres per property per day has been added due to the ability for the customer to benefit from new smart data and associated longer term water efficiency engagement.

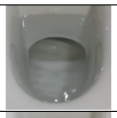
Wastage studies and research

O.107 To quantify the water savings of leaky loo fixes, we have used a number of different studies, and this includes:

- Collaborative Fund Leaky Loo research (Ricardo) – A joint water company research study on leaking toilets by Artesia who concluded that on average 5% of all toilets were leaking and the average measured saving of 215 litres/day from fixing a leaking toilet[11]
- Our own fixed network trial leaky loo study – suggested that the average toilet wasted around 400 litres/day but that the saving from fixing a leaking toilet was around 212 litres per day
- Leaky loo videos and measurement of water has been carried out by us and our plumbers to produce a methodology of wastage fixes (Table O-3). This will be used to gather further evidence and provide a large dataset of leaky loos for us to analyse and compare to the above studies and average savings

[11] Ricardo. Leaky Loos Phase II. Water Industry Collaborative Fund Project (2015)

Table O-3: Water saving values for leaking toilets

	Type	Litres per day	L/min	FIX?	Comments	Videos/Image
Toilets	Very Small	<200	0.14 l/min	No	Anything under 200 l/day should not be fixed but tell customer to keep an eye out if gets worse.	
	Small	200	0.14 l/min	Yes	Just very minimal trickle/ripple **NOTE: if an intermittent toilet leak ALWAYS classify as a small leak.**	
	Medium	400	0.28 l/min	Yes	Similar to small but slightly more ripple on the water in the pan	
	Large	600	0.42 l/min	Yes	Significant rippling in the pan	
	Extra Large (Gusher)	8,000	5.56 l/min	Yes	Not a very common issue and as if it is a tap running / toilet flushing constantly.	

- Tap wastage – all tap wastage fixes are measured by our plumbers using flow cups to determine the actual water wasted per day and how much each fix saves

O.108 The wastage savings applied under the water efficiency intervention are predominantly due to the repair of 'leaky loos'. This saving was proven in the Collaborative Fund Research study (REF) and our own fixed network trial which found 12% of toilets to be severely leaking, 67% moderate and 21% minimal. On average, this equated to a saving of 400 l/day per repair. Factoring in the properties where there were no obvious savings, this equated to an average of 212 l/day saved per 'leaky loo' repair which is the average saving applied in the IDM model.

Assumed savings and behaviour change

O.109 There are still a number of water efficiency activities that are difficult for us to measure with actual water savings so these will still be against assumed or calculated savings. These assumed savings are applied to our baseline programme activities (Section 3) and includes:

- Schools engagement – we will continue to base the savings on the UKWIR savings for behaviour change
- Other behaviour changing products (such as our top trumps cards)
- Number of people who have completed our water and energy online calculator

O.110 The behaviour change activities are delivered, recorded, and the following evidence base is used to estimate savings:

- UKWIR report: Quantification of the savings, costs and benefits of water efficiency (03/WR/25/1)
- Environment Agency's water efficiency Evidence Base – Review and Enhancement, Report number EPBLW 12032/5, 2012
- Artesia Consulting's work evaluating water savings for various water companies in AMP5.

Water efficiency benefits decay

O.111 The life of water efficiency devices supplied by a SHV, SBV or Housing Association Fix has been assumed to be seven years. This deviates significantly from the assumption made in our Water Resources Management Plan 2014 (WRMP14) whereby it was assumed that water efficiency devices had a half-life of seven years based on the Waterwise evidence for large scale water efficiency in homes. This change has been made in response to a greater dataset available for our final WRMP19 which has shown that water efficiency devices require replacement much sooner than originally anticipated. Therefore, to ensure an accurate representation of water efficiency benefits, the life of water efficiency devices has been reduced to a total of seven years for our final WRMP19.

O.112 The life of water efficiency behavioural change has also been reduced in comparison with WRMP14. That is, in WRMP14, it was assumed there was a half-life of 10 years for behavioural changes in response to water efficiency. This has been revised to a total life of seven years. This means that the repeat frequency for SHVs, Housing Association fixes and wastage fixes has been assumed to be seven years for the final WRMP19.

E. Our preferred programme and future enhancement

O.113 Section 11: Preferred programme details the water efficiency component of the Preferred Programme. Together with the baseline programme detailed in Section 6: Baseline Supply Demand Position, this forms our water efficiency programme.

Innovation

O.114 To further enhance customer usage reductions, specifically in AMP7 and driven by PCC targets, we will investigate further water efficiency activity in the form of innovation. This innovation is based our work with other water companies through the Water Efficiency Network, our role within the UK Water Efficiency Strategy Steering and Leadership Groups, and our efforts during the 2017/18 ‘heatwave’. Potential areas of demand reduction innovation to be considered could include: non-potable supply options, alternative water supply options for large irrigation users, innovative engagement through partner digital platforms, and working closely with Defra on water labelling.