Contents

1. Putting our customers' views at the heart of our WRMP

Over the last two years we have fully reviewed how we approach customer engagement to ensure that our customers' priorities are placed at the heart of our business plans. This cultural shift comes from our executive team's view that the customer voice should drive all the key decisions we make, now and in the future.

Part of this new approach involved looking back at the 2014 price review (PR14) feedback and noting the challenge levelled against water companies that we were too reliant on willingness to pay (WTP) surveys, particularly when using the outputs as an input into investment modelling approaches, such as Cost Benefit Analysis (CBA). Ofwat's PR19 customer engagement policy statement[1]also included the guideline that companies should draw evidence from a wider range of customer data sources (internal and external) to supplement their stated preference survey results.

Therefore, an important part of our PR19 customer engagement programme and beyond focuses on reviewing, comparing and contrasting (or 'triangulating') customer evidence from a wide range of sources. We have looked at triangulation in a number of ways and developed an approach that we believe truly puts customers at the heart of our plans:

1. Covered in section 2: we developed a robust customer priority index, by region, focusing on our water resources management plan (WRMP) supply- and demand- side options. This index is to be used to fully reflect customers' preferences within our Multi Criteria Analysis (MCA) investment tool which has driven our investment plans – this includes the use of Willingness to Pay (WTP) as a triangulated data source;
2. Covered in sections 3 to 8 of this report: we reviewed all the customer insight data, internal and external, relevant to our WRMP plans to understand to interpret what customers have said using a 'common sense' judgement approach and highlight areas where customer views differ. This process has been central to helping us ensure that customers' priorities and preferences are at the heart of our WRMP plans and will help over time to:
    - inform strategic policy decisions;
    - develop targeted, tailored propositions, which can then be communicated effectively to different customer groups; and
    - sense check our customer priority index.
3. Covered in section 9: we have also developed a robust and proportionate evidence base for customers' WTP for service improvements. Whilst not used as a direct input for our WRMP the triangulated values are used within our investment optimise tool to undertake Cost Benefit Analysis of investment options and as part of the process of setting Outcome Delivery Incentives rates.

1.1 Using a wide range of evidence to understand our customers' views

Our customers' views are collated from the wide range of engagement activities we have carried out in preparation to support our PR19 business plan submission and beyond. It is important to note the following:

- unless otherwise stated, all our customer engagement covers both our supply regions (South Staffs and Cambridge) to allow a robust analysis of the insights;

[1] 'Ofwat's customer engagement policy statement and expectations for PR19', Ofwat, May 2016.

- the vast majority of our engagement activity was independently carried out by our preferred agency partners and robustly challenged by our independent customer Panel (CCG);
- both waves of our WTP research and our triangulation approach and PR19 data triangulation study have been independently peer reviewed at the start and end of the projects; and
- studies marked with an asterisk (*) in the first column contain robust samples of hard-to-reach customers. This covers both customers who are experiencing financial and/or other hardships (i.e. vulnerable customers) and future customers, who are not bill payers (the majority of them are aged between 18 and 25).

Please refer to the relevant reports supplied with our WRMP plan for full details.

Table 1: overview of customer engagement workstreams.

Engagement work stream	Headline methodology used to engage with customers	Insights collected	Supporting appendix reference
Foundation research to establish customers' priorities*	Qualitative study of four facilitated focus groups covering 39 customers (covering household recruited by life stage and key demographic splits and small and medium size business customers). Supported with 12 in-depth interviews with hard to reach household and large business customers.	May – Jun 2017	A9
	Quantitative survey of 166 household customers from an on-line survey run from our website (random, non-representative sample, analysis weighted to regional demographics.)	Dec 2018 – Jan 2018	A10
WRMP and long-term plan customer engagement to gain customer views on service levels and where we should invest to meet demand for water*	Stage 1: Qualitative study over two facilitated reconvened workshop events with 30 customers (covering household and non-household by key demographic splits.) 11 large corporate customers and key industry stakeholders attending round-table discussion events. Stage 2: 207 domestic customers reached through an on-line survey to quantify stage 1 findings (covering all key demographic splits and weighted to regional demographics.)	July – Aug 2017	A11 (and supporting documents)
Metering uptake study to understand customer reasons for not switching to a water meter	Quantitative telephone study with 101 household customers across the region with an unmeasured water supply. Customers carefully screened to have an unmeasured water supply and a rateable value (RV) of more than £250.	July 2017	A12
Willingness to Pay Studies to understand	Wave 1: three facilitated, reconvened focus groups with 23 customers to co-create a quantitative survey completed by 560 household	Aug - Nov 2017	A13 (and supporting documents)

customer priorities and preferences for service charges and investments across a range of 17 attributes*	customers and 130 business customers (covering all key demographic splits and weighted to regional demographics.) Study included a MaxDiff choice exercise to establish customer preferences for service improvements (without bill impact shown) followed by a Discrete Choice Exercise (DCE).		
	Wave 2: Quantitative survey completed by 206 household customers and 57 business customers business customers (covering all key demographic splits and weighted to regional demographics.) Study included two Discrete Choice Exercises (DCE) and a package effect exercise to allow scaling factors to be determined.	Feb – Apr 2018	A14 (and supporting documents)
Engagement to understand how different groups of customers respond to propositions around water efficiency and other retail services	Stage 1: on-line and telephone interviews with 290 household customers to understand the different views of customers based on their views and attitudes to water and the wider world (Covering all key demographic splits and weighted to regional demographics.) Stage 2: two facilitated focus groups attended by 18 customers to explore in depth the differing views of the 5 segments identified in stage 1. Stage 3: on-line and telephone interviews with 150 household customers to understand responses to selected propositions, including social tariff contribution levels (covering all key demographic splits and weighted to regional demographics.) Additional follow up quantitative survey of 258 household customers from an on-line survey run from our website to test reaction to service propositions (random, non-representative sample.)	Nov 2017 to Mar 2018 Jan – Apr 2018	A16 (and supporting documents) Insights provided where relevant
Customer journey engagement to understand the ideal experience for customers, including reporting a leak and having a meter installed*	Stage 1: Qualitative study with a facilitated 4hr workshop events with 32 customers (covering household and non-household by key demographic splits.) Stage 2: Quantitative phone survey with 316 household customers to validate stage 1 findings around response times, communication preferences at each step of the journeys covered (covering all key demographic splits and weighted to regional demographics.)	Feb – Mar 2018	A17 (and supporting documents)
Customer forums to understand	Half day forum with 12 customers in the new connections market covering developers, self-lay	Nov 2017	A18

views of our service and discussions around how to build more water efficient homes	providers, NAV and other key stakeholders. Discussions focused on the new charging mechanism. Full day forum with 14 customers in the new connections market covering developers, self-lay providers, NAV, business retailers and other key industry stakeholders. Discussions focused on the customers service and water efficient homes.	Jul 2018	A18.1
Young Innovators' Panel to engage direct with non-bill payers	Full-day workshop sessions and preparing ideas in response to a real business challenge: "changing the way their generations thinks about water". 19 sixth form students drawn from 13 schools across the region taking part.	Jul – Oct 2018	A21
Engagement to understand if customers support our proposed customer promises and outcome delivery incentives plans for 2020-2025* - including our cost adjustment claim for our Water Treatment works in the South Staffs region	Stage 1: Qualitative study with facilitated all-day workshop event with 26 customers (covering household and non-household by key demographic splits.) Stage 2: Quantitative survey with 224 household customers and 24 business customers (covering all key demographic splits and weighted to regional demographics.) The quantitative study included customers being exposed to an in the moment bill impact when improving or decreasing level of service for 11 of our performance commitments. On-line sliders activity sensitivity tested with 19 household customers (random, non-weighted sample.) Attended Cambridge Live event so Executive team members and PR19 team could talk to customers (99 in total) about our 5 proposed outcome measures. Tokens used so customers could vote on their preferences (random, non-weighted sample.)	Feb – Apr 2018 June 2018 May 2018	A22 (and supporting documents)
Testing customer acceptability of our business plan and associated bills for 2020-2025*	Stage 1: Qualitative study of four, facilitated focus groups with 31 customers (covering household and non-household by key demographic split.) Stage 2: Quantitative survey with 375 household customers and 78 business customers (covering all key demographic splits and weighted to regional demographics.)	May – Jul 2018	A23 (and supporting documents)
WaterSmart platform used to understand how customer	Participant group of 15,500 of metered household customers in the Cambridge region randomly selected to use the WaterSmart platform:	Dec 2017 – Nov 2018	Insights provided where relevant

engagement, customer satisfaction, and water efficiency can be influenced by providing customers with access to more detailed information about their water usage and advice on how to use water more wisely	• 2,500 customers with 6x meter reads per year; • 13,000 customers with 2x meter reads per year; • welcome letter sent at the start of the trial; • followed by 5 cycles of a water report sent by **email only;** • access to Customer Portal to view water consumption history and comparisons and access to water saving messages / advice; and • leak and threshold use alerts. 3,500 metered household customers in the Cambridge region not using the WaterSmart platform randomly selected to act as a control group. Satisfaction feedback survey among 3,072 WaterSmart users and 306 customers in the control group.	May 2018	
Customer service tracker to establish customer perceptions of our service performance	Quantitative telephone study covering 100 household and 49 business customers (household quotas based on age and SEG, in-line with demographics data for regions. Non-household quotas based on business size and industry sector, in-line with market profile.)	Apr 2017 – Mar 2018	A24
	Quantitative survey of 296 household customers completing a short on-line satisfaction survey run from our website (random, non-weighted sample.)	Feb – Apr 2017	Insights provided where relevant
Daily customer contact data	Analysis of relevant customer contact data collected via customer call centre, engineer/field teams and other contact points such as Community Hub and social media.	2017/18 going back 3 years	Insights provided where relevant
Consumer Council for Water (CCWater) reports	'Water Restrictions' report. 'Water Matters' annual survey report. 'Water Saving' report. 'Water, water everywhere? Delivering a resilient water system' report.	2012 2017 2017 2017	Insights provided where relevant
PR19 data triangulation study	Developing a robust customer priority index with respect to water resources management plan (WRMP) supply and demand supply options. Report draws on CCWater and ICF -	Apr – Jun 2018	A25 (and supporting documents)

	Defining and applying 'triangulation' in the water sector		
PR19 data sharing with Severn Trent and Anglian Water	Sharing of PR19 WTP and WRMP study insights.	2017 – 2018	Insights provided where relevant

Please note that the supporting appendices referenced in the right hand column of the table above refer to appendices to the full business plan we submitted to Ofwat on 3rd September 2018. Should you wish to view any of these please contact us via the following email address:

Wrmp.consultation@south-staffs-water.co.uk

2. Developing a robust customer priority index, by region

2.1 Overview of approach

In February 2018 we commissioned independent, expert support from one of our research agency partners, Accent and PJM Economics, to review all our customer engagement activity related to our WRMP to develop a more robust customer priority index, by region.

Importantly, the outputs of this project are used in our MCA investment tool that drives the selection of preferred supply- and demand- side options in our WRMP. This has ensured that our customers' priorities play a key role in shaping our investment plans.

Working closely with our partners we developed a robust approach building upon CCWater's and ICF's framework for triangulation[2], which sets out a suggested triangulation framework for PR19 and beyond.

The work undertaken was split into two areas, which are detailed in Sections 2 and 9. Please see appendices A25 series, comprising the technical report (A25), analysis workbook (A25.1) and supporting academic peer reviews (A25.2 of the methodology and A25.3 final report). These outline in detail the work activity undertaken for each of these six steps we developed to arrive at our customer priorities index.

The approach was also extensively reviewed throughout by our independent Customer Panel and their views on our approach can be found in their report submitted to Ofwat on the 3rd September. The academic expert also peer reviewed the methodology and final report.

Section 2.2 details a summary of our six step 'SMARTS' triangulation approach.

2.2 WRMP summary of 6 steps, key findings and conclusions

2.2.1 Screen

Our approach works on the principle that a data sources is suitable for triangulation if it contain relevant information that can provide us with a measure of priority for at least two service measures, such as leakage and metering. For our WRMP priorities, we identified a number of our studies containing customer evidence suitable for triangulation to develop the priority index. These are:

- qualitative and quantitative 'core WRMP priorities' research;
- quantitative 'willingness to pay' (WTP) research; and
- wider quantitative 'customer priorities' research study.

It is also important to note that we worked extensively to gain the views of vulnerable and future bill paying customers in both our core WRMP and WTP studies.

A number of data sources used in our wider triangulation work were excluded from this stage of the customer engagement evidence review. These are detailed in the full technical report. However, we have used them in Sections 3 to 8 as part of our wider review of customers' priorities and preferences.

[2] 'Defining and applying "triangulation" in the water sector', ICF for the Consumer Council for Water, 2017.

2.2.2 Map

We then converted the evidence from each suitable data source into a form that is comparable to our 'core WRMP' measures. This step is necessarily source-specific and requires assumptions in some cases to enable the comparison.

For example, in order to convert WTP core research output to a comparable measure for the WRMP options the first step involved taking the mean WTP values from the relevant Discrete Choice Exercise (DCE) research for the common service measures (i.e. Leakage, Water metering and Smart metering) for 'S0 to S2' service level improvement and divided by the bill impact per customer for moving from S0 to S2. It is appropriate to scale by cost at this stage to support our triangulation of the WRMP customer engagement as the data within our MCA is not monetised. The approach focuses in on those benefits that are hard to monetise, such as resilience, environment and deliverability. A more qualitative view is taken, supported by an individual maturity matrix for each criteria to ensure consistency in approach. Whilst it is possible to monetise customer preference through WtP, in the WRMP engagement we were purely looking to understand customer preference. There is no traditional CBA being undertaken within the MCA as there are no monetised benefits, as per industry guidance. Therefore using a MCA approach is appropriate for the scale of the problem we were looking to appraise.

This translated WTP into a benefit-cost ratio which is a standard economic measure of customer priority. We then rescaled the resulting values so that their sum equalled 100. This priority index was therefore based on the assumption that the WRMP options were equivalent to the S0 to S2 improvement for the corresponding service measure.

These important assumptions for each measure are detailed in the full technical report.

2.2.3 Assess

To robustly assess the measures used in our WRMP triangulation approach, we considered each data source in detail against the two areas below. The details of the review of each data source are detailed in the full technical report.

- theoretical robustness:
    - are definitions of the candidate and target measure the same?;
    - are contextual conditions (e.g. type of questions asked) the same between candidate and target measures?; and
    - if no to either of these, what issues do the differences give rise to?
- statistical robustness:
    - how large is the sample?
    - how representative is the sample – a review of any biases, timing of the study, make up of sample?
    - how wide are the confidence intervals within the data?
    - have the results been derived using best practice techniques?

2.2.4 Rate

We then assigned an overall Red/Amber/Green (RAG) rating for each source for WRMP measures, against the above criteria detailed in the previous section. These ratings are based on our best judgment in light of the balance of evidence across all data sources being evaluated.

These judgements are detailed in the full technical report and it is important to note that these ratings are intended to be meaningful in a comparative, rather than an absolute sense. The table below summarises the rating of the data sources we used, which included both waves of our WTP studies.

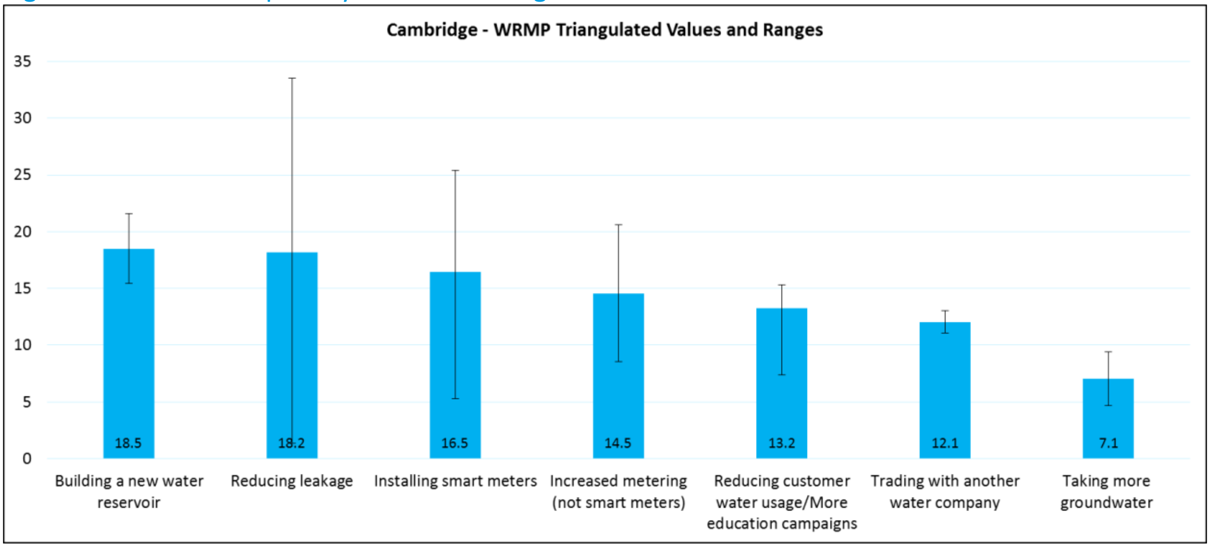
Table 2: Data sources used in our WRMP triangulation approach.

Overall RAG rating	Weight	Data source classification on overall validity
Green	100%	
Green / Amber	50%	WRMP qualitative workshops WRMP quantitative on-line survey WTP quantitative on-line survey – waves 1 and 2 WTP max diff priority trade off exercise in wave 1
Amber	25%	Customer priorities quantitative study
Amber / Red	10%	
Red	0%	

2.2.5 Triangulate

This important step involved applying weights to each of the data sources based on their overall RAG rating and combining the measures to derive a robust WRMP priorities scale. Figure 2 shows our final WRMP priority values, which have been re-scaled to sum to 100, and their associated ranges.

Figure 2: Final WRMP priority values and ranges – scaled to 100.



Our customer priorities index shows that ‘building a new reservoir’ and ‘reducing leakage’ are the highest priority among customers with little between the two options. However, the associated data source ranges for the ‘reducing leakage’ and ‘smart metering’ options are much more significant than for ‘building a new reservoir’. We have therefore taken care to sensitivity test the results to note the differences this makes to the priority index. This output is detailed in section 2.2.6 and the full technical report.

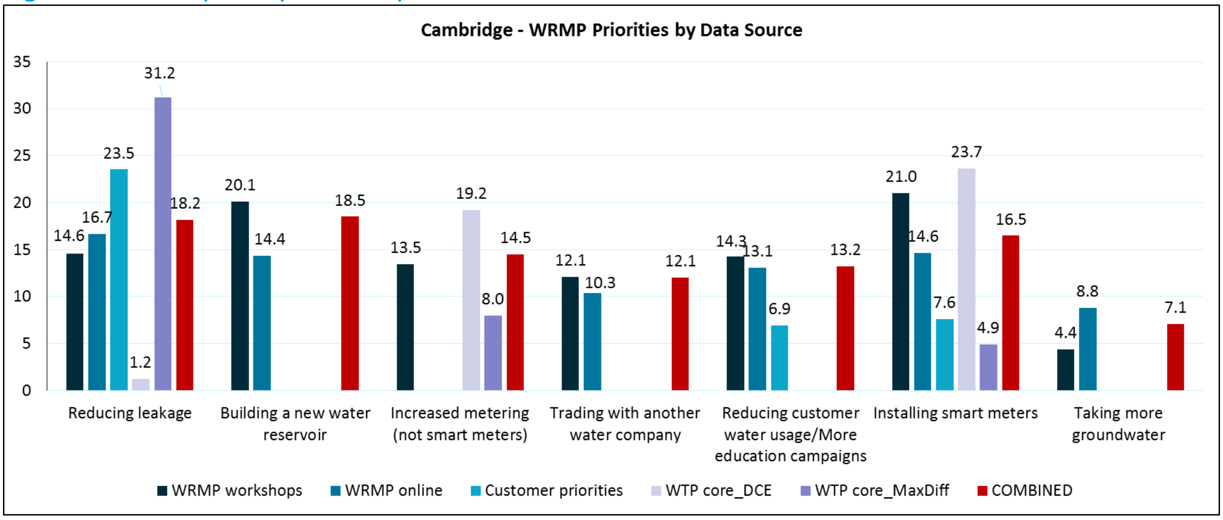
Then followed the other demand side options, which customers’ preferred throughout our core WRMP engagement. They felt we should be going further with our current activities before looking at new supply side options. A robust review of customers' views on the demand side options (such as education campaigns) and detailed in sections 3 to 8 of this report.

In terms of supply side options we found the following in our core WRMP research:

- customers told us that 'building a new reservoir' was seen as a long term solution that offered great future proofing and also offered the opportunity for social and environmental benefits and so received a high level of support in both the workshop and the on-line survey. However, there were some customers who felt the high costs associated, where it would be located and who would be paying for it given the long build period were concerns. Despite this this option attracted no against votes at the WRMP workshop and one of the lowest number of against votes in the on-line survey:
    - in the WMRP workshop customers were split on the concept of a shared reservoir. Some said it made sense to team up and share the costs, but others felt that there was a risk to being overly reliant on another water company;
- 'water trading' received a polarising response at the WRMP workshop on-line survey. It was viewed by some customers as providing a decent volume of water, without being prohibitively expensive or detrimental to the environment. Some liked the idea of working with other water companies finding it an efficient way to work. However, others didn't like the idea of being reliant on another company, especially if they might run into water supply issues themselves – they wanted us to stay self-sufficient. A minority felt that this option wasn't solving the fundamental problems with ensuring a long-term water supply for customers; and
- 'taking more groundwater' was found to be by far the least desired option in both the WRMP workshop and on-line survey. This was driven mainly by customers' views that taking more water could damage the environment, although they were not informed that any additional abstraction would have to be within agreed limits with regulators. The high cost of developing new sources, against the amount of water delivered also made it an unpopular choice. It is important to note that customers in the WRMP workshop were more concerned about taking water from 'new underground water sources' they considered 're-activating existing sites' as an acceptable and positive option as they were already in existence.

Figure 3 details the final WRMP priority values by data source. The final priority indices (red bar labelled 'COMBINED') reflects customers' preferences for each of the WRMP options.

Figure 3: WRMP priority values by data source – not scaled to 100



WRMP priority values by data source – not scaled to 100

There are a number of key points to note:

- except for 'reducing leakage' and 'taking more groundwater' the WRMP workshops generated higher values than the WRMP on-line survey values. The main driver of this difference is likely to be that at the workshops customers were exposed to more information and debate on the issues and this resulted in a more informed view when considering the available demand- and supply- side options to overcome the challenges we face;
- WRMP research (workshops and on-line surveys) generated lower values for 'reducing leakage' in comparison to the WTP max diff and wider customer priorities data sources. This difference is felt to mainly be down to the additional information provided to customers in the WRMP engagement around the actual costs and challenges we face when reducing leakage. Whilst customers' still told us that we needed to go further to reduce leakage at the workshops, we found that the more they became informed about the economics and the amount of water saved being less as you spend more that there was often less appetite to stretch our investment to reduce leakage. The lower value for the WTP discrete choice exercise (DCE) data source is likely driven most by the mapping process using cost data. The cost to reduce leakage is significantly higher than to increase metering which translates into a lower triangulated score. This could be argued that it acts as a proxy to giving customers the same information as in the WRMP exercise around leakage; and
- for 'increased metering', the WRMP workshops generated lower values in comparison to our WTP surveys. Our conclusion here is that this is mainly driven by the mapping process using cost data. Also, that as we gave customers more information about the cost and the amount of water 'increased metering' would actually save, that their preference to invest more in this area lessened. However, we found that in Wave 2 WTP survey (Apr 2018) that customer valuations for metering increased significantly since Wave 1 (Oct 2017). We believe the reason behind this shift was mainly driven by the fact that the energy suppliers have been heavily promoting smart metering to customers. If we had repeated our core WRMP survey in 2018 we may have found a similar uplift in customers' views around metering. This needs monitoring over time.

2.2.6 Sensitivity testing

Finally, we sensitivity tested our main combined WMRP priority values by considering alternative sets of weights for the RAG ratings as well as alternative overall RAG ratings for the different data sources. Four sensitivity cases were considered and the details of these are laid out in table 3 and in full in the full technical report – appendix A25.

The tests revealed that, overall, our triangulated WRMP priority indices for all the core service measures showed limited variation across the sensitivity tests. There were no cases where the differences were larger than 20% across the different sensitivity tests.

Table 1: Comparison of CAM WRMP triangulated values

Data source	MAIN	CASE 1	CASE 2A	CASE 2B	CASE 3
Building a new water reservoir	18.5	18.6	19.3	17.7	19.0
Reducing leakage	18.2	18.4	18.3	18.1	21.1
Installing smart meters	16.5	16.1	16.6	16.4	14.3
Increased metering (not smart meters)	14.5	14.7	14.5	14.5	14.7

Reducing customer water usage/More education campaigns	13.2	12.9	12.9	13.6	11.4
Trading with another water company	12.1	12.1	12.2	11.9	12.4
Taking more groundwater	7.1	7.1	6.2	7.9	7.3

Note: MAIN refers to the WRMP main triangulated values in; CASE 1 refers to the WRMP triangulated values derived for Sensitivity Case 1: Alternative sets of RAG weights; CASE 2A refers to the WRMP triangulated values derived for Sensitivity Case 2: Down-weighting WRMP workshops; CASE 2B refers to the WRMP triangulated values derived for Sensitivity Case 2: Up-weighting WRMP workshops and CASE 3 refers to the WRMP triangulated values derived for Sensitivity Case 3: Up-weighting Customer priorities and Down-weighting all else.

Table 3 shows that `building a new reservoir' is the highest priority for 3 of the cases, just ahead of 'reducing leakage'. This becomes the highest option in the cases where the WRMP workshop and the customer priorities are up-weighted. The higher figure of 21.2 in Case 3 highlights customers' emotive view towards leakage as a spontaneous priority. 'Taking more groundwater' is the least desired option for customers across all the sensitivity cases.

There were also a few shifts in the triangulated values for the other options across the various sensitivity cases. The main ones are in Case 3, which gives more weight to the uninformed customer priority research. However, given that to engage effectively to gain considered customer responses for our demand- and supply- side options was done through our core WRMP research, we would not want to rely on figures that down-weight these data sources against those from our uniformed priorities customer engagement.

2.2.7 Key conclusions

Whatever sensitivity scenario being considered it is clear that customers, with the exception of 'building a new water reservoir', prefer demand side options to supply side ones. However, there was recognition that there would need to be a blend of both demand and supply side options to meet the challenges we face.

Whilst there is an obvious preference towards building a new reservoir for the reasons outlined earlier, this is in part driven by the engagement activity approach - in that this option provides a large volume of water to hit a cost/volume target we set them. Extensive follow up engagement for this option would be required with customers and stakeholders in the future, if and when this option is required by us to meet customer demand in the future.

Based on the sensitivity testing the 'Main' values shown above are the preferred values to use within our MCA as part of the process of setting investment levels for our supply- and demand- side options. It provides the most well rounded, balanced view of our customers' priorities across all our relevant engagement work to support our WRMP.

The engagement carried out by our neighbours Anglian Water also shows that their customers generally prioritise demand options over new water resource options, preferring interventions that avoid perceived wastage (leakage reduction and recycle/reuse sewage), promote efficiency (provide water saving devices) and make use of existing resources and infrastructure (store water underground/aquifer storage and recovery and extend existing reservoirs).

2.2.8 Further details of our core WRMP engagement approach and findings

The tables below shows the voting outcomes from our WRMP workshops and results from our follow up on-line survey among household and business customers that were used as the core measure in our triangulation approach.

The participants recruited for the WRMP workshops covered a broadly representative mix of demographics (age, gender, socio-economic group, life stage, ethnicity and metered/unmetered). At both events there were the following tables, each with an independent facilitator from our partners Community Research:

- two tables of domestic customers – including vulnerable customers;
- one table of SME owners / managers; and
- one table of future customers (i.e. non bill-payers).

In the first deliberative day long workshops we explored with customers their:

- uninformed and informed priorities of the services we provide;
- levels of tolerance around temporary use ban levels of service;
- attitudes to metering and compulsory metering;
- views on current leakage levels and expected future leakage levels;
- attitudes towards water efficiency, including water recycling in homes;
- views on the environmental impact of our activities; and
- attitudes towards short term versus long term investment options;

At the reconvened workshop we explored the following areas with the customers:

- attitudes to balancing water supply sources to meet a supply - demand side challenge; and
- informed reactions to proposed solutions regarding supply options (e.g. water trading) and demand management solutions (e.g. increased metering, water use behavioural change and leakage reduction).

Customer were exposed to comparative costs for us to invest in a number of supply- and demand-side options through stimulus material, so that they could make their votes for their preferred/least preferred options.

Table 4 shows the results of the customer workshop voting showing that smart metering and a new reservoir where the most popular options. Please see our supporting WRMP research report in appendix A11 for the full write-up of the project.

Table 4: WRMP workshop results.

Option	Overall score	Votes allocated	Least preferred	Voting balance
Smart metering	1	42	3	39
New surface water/combined reservoir	1	34	0	34
Leakage 1*	1	4	0	4
Increased metering**	1	2	4	-2
Reducing customer water usage	2	13	1	12
Trading water	2.75	9	1.5	7.5
Abstracting groundwater	5	2	15	-13

Sources: WRMP and Long-Term Resilience Customer Engagement Insight Full Report (Oct 2017). Note: CAM: *Could only choose Leakage 1 OR Leakage 2 **Could only choose Increased metering OR Smart metering.

Workshop results: Overall score = a qualitative measure based on all feedback (1 = very positive, 2 = positive, 3 = neutral / polarising, 4 = negative, 5 = very negative); Votes allocated = the number of overall votes an option received (participants had six votes each to spread out as they saw fit); Least preferred = the number of people who chose this as the option they liked least (participants could vote for one option only).

Following individual voting in groups, customers then saw the more detailed options (showing actual volume and cost figures based on our draft scenario plans at that time, July 2017) with asset management options added to the options. They were given a volume and cost target and asked to co-develop a plan. Customers were informed that for every £1m they went over their budget that it would add £1 to all customers' bills.

This approach revealed that:

- customers tended to stay loyal to their initial views of the different options when putting their plans together;
- for the majority of customers, the bill impact was not significant of going over-budget, and there was a strong sense that it was more important to go for the 'right' plan, rather than the cheapest;
- even though customers acknowledged the demand management options did not provide significant volume, most felt that it was important to include them for moral reasons:
  - even if this meant going over budget or 'target' volume; and
  - some deliberately added them when they realised they were under budget in their plans.

In the WRMP on-line survey among household customers, we explored the same topics as the WRMP workshops. Customers were asked for their views around metering, leakage levels, temporary use bans and water efficiency. They were then exposed to the relative cost to invest in each supply- and demand- side options through stimulus material so that they could make their votes for their preferred/least preferred options. Table 5 shows that leakage was the most popular option, with building a reservoir ranked second alongside smart metering.

Table 5: WRMP on-line survey results.

Option	Mean score	Proportion for	Most preferred	Least preferred	Most-Least
Reducing leakage	0.48	54%	29%	5%	24%
Smart metering	0.34	51%	27%	20%	7%
Building a new reservoir	0.34	52%	19%	16%	3%
Customer education	0.28	48%	11%	17%	-6%
Trading with another water company	-0.02	29%	7%	16%	-9%
Abstracting groundwater	-0.30	26%	8%	25%	-17%

On-line survey results: [Participants were asked to what extent they were for or against each option from +2 = 'strongly for'; -2 = 'strongly against' and 0= neutral midpoint]; Mean score = an average figure considering all responses to the above question, Proportion for = the proportion of people scoring the option 1 or 2 in the above question, Most preferred = the proportion of people choosing this as the option they liked best overall, Least preferred = the proportion of people choosing this as the option they liked least overall. Leakage 1: Reducing leakage above and beyond the current targets and Leakage 2: Significantly reducing leaks above and beyond current targets by using new approaches. We consider only Leakage 1 for our analysis. Note that the values for New surface water/combined reservoir in the CAM workshop results are average values of New surface water reservoir and New combined reservoir values. Similarly, the values for Trading water in the CAM workshop results are average values of Trading1 and Trading2 values.

Figure 4: Example of top trump card used in our WRMP workshop.

3. Customers' views on leakage

The following section supports the reasons why 'reducing leakage' is the most important demand side option for us to invest in to ensure our plan reflects our customers' needs.

3.1 Customers' views on current leakage levels

The message on leakage is very clear from all audiences (customers and stakeholders). They want us to do more, going beyond our current targets. Reducing leakage levels features prominently as a key priority in our foundation and WRMP research with customers and carries through all our WTP and performance commitment engagement.

Leakage is now truly seen by customers as a hygiene factor, alongside water quality and reality of supply and customer service. All this consistent feedback makes the argument to reduce leakage levels even stronger from a customer viewpoint.

At the WRMP workshop, only 28% of customers agreed that we were doing enough to reduce leakage. After being presented with our current performance on leakage and the pressures we face with the growing demand for water, 79% of customers agreed that they want us to do more to reduce leakage.

But when we revisited customers' priorities at the end of the day, leakage had received slightly more top three priority votes, but had fallen two places down the list behind ensuring people save more water and protecting the environment.

At both the first and reconvened workshop many audiences found the level of leakage to be "shocking", particularly in the context of paying for water they never get to use.

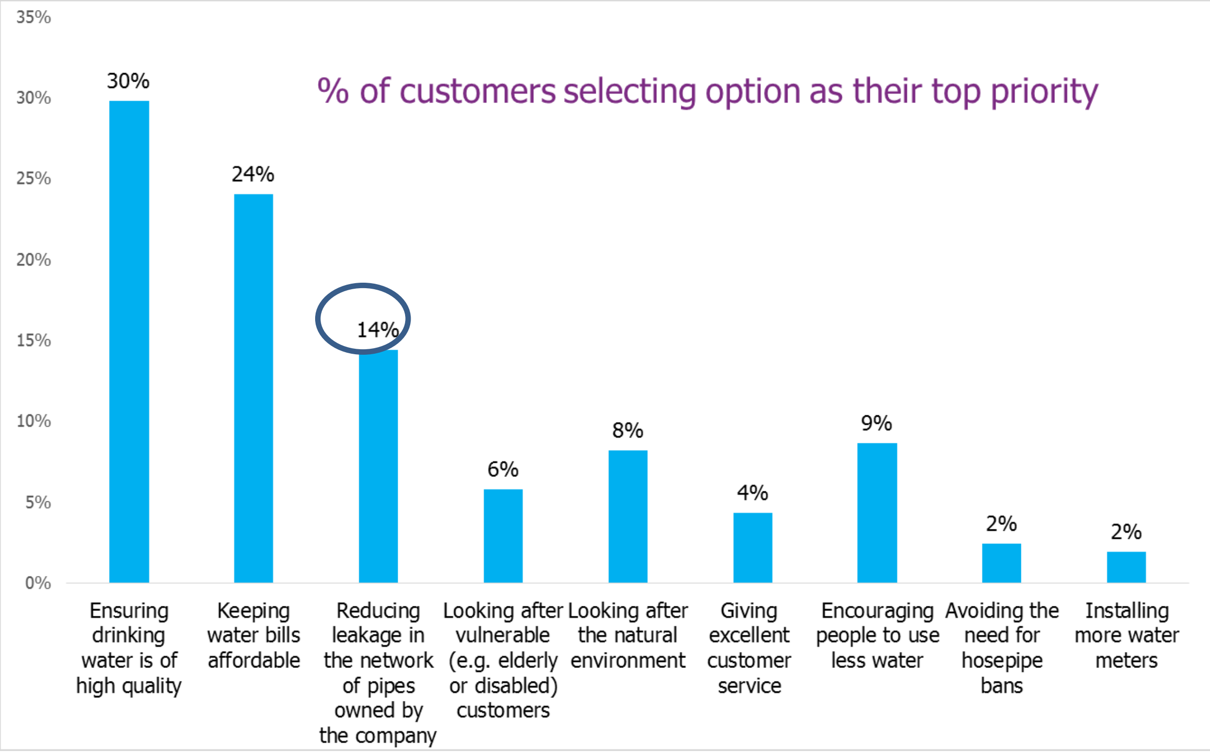
Some were also annoyed that we continue to make a profit for shareholders while this level of leakage continues. There was also feedback from some customers at the workshop that they should not have to pay extra for us to bring leakage levels down.

In the WRMP on-line survey among household customers, 52% assigned 'reducing leakage in the network of pipes owned by the company' as one of their top three priorities.

In addition, 14% said it was the top priority from the list shown to them – see figure 5. This makes leakage the top rated demand side option that attracts the most votes, although water quality and affordable bills remain the key priorities for more customers. The propensity to prioritise leakage is noticeably higher among older age groups.

The concept of the sustainable economic level of leakage (SELL) calculation (the balance between the costs to reduce leakage versus the value of the water leaking away) was not easily understood by customers at the WRMP workshop. Even when the cost and wider implications were explained in detail, customers still tended to push back on these arguments. For many, the moral obligation to reduce leakage outweighs the economic factors. There was also a perception among some customers that small leaks will become big ones, therefore creating a false economy.

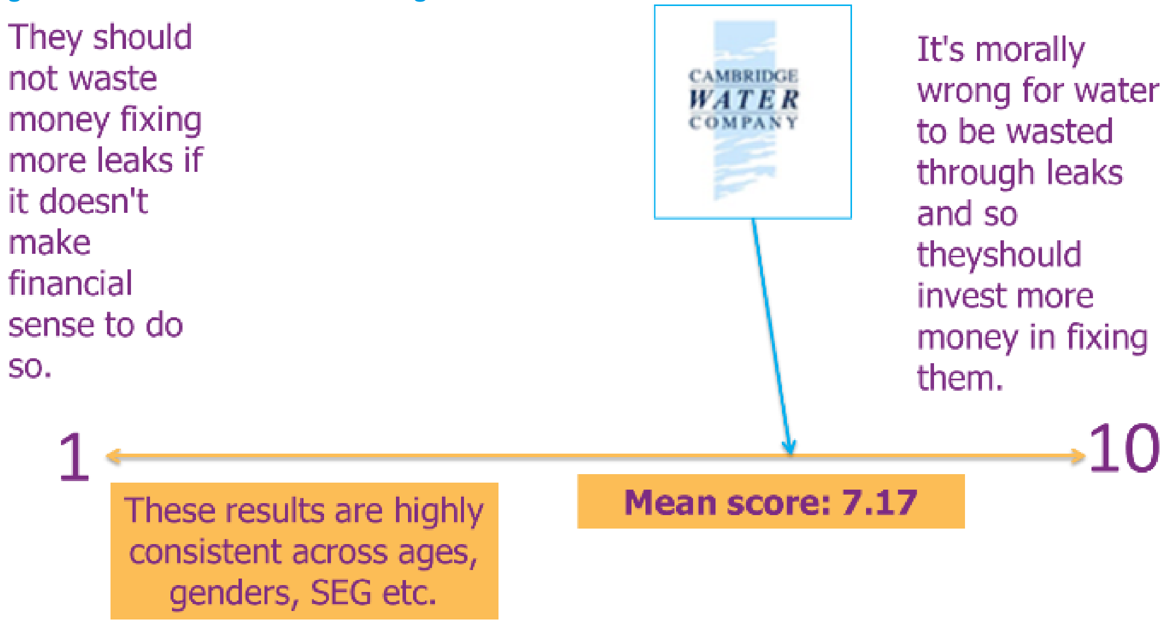
Figure 5: Customers top priorities in the WRMP on-line survey.



Base: 207 household customers, WRMP on-line survey.

Household customers' views in the WRMP on-line survey responses mirrored the feedback at the workshop – 49% scored eight or more (out of ten) when asked to place themselves on the scale below. Only 9% gave a rating of one to four (thereby coming down as more in favour of the economic argument). See figure 6 for the mean score given by customers.

Figure 6: Customers' views on leakage.



Base: 207 household customers, WRMP on-line survey.

There was limited variation between responses of those who were told the current level of leakage within the on-line survey (50%) and those who were not (50%) showing that customers do not need to know the current performance level to view the need to reduce leakage as important.

At the WRMP workshop it was also viewed as unfair that those with a meter might notice leaks and then have to pay for repairs. This can therefore act as a disincentive for customers to have water meters. Company adoption of supply pipes was considered to be one solution to overcome this and customers at the WRMP workshop said they would be willing to pay for this, but they did not say how much.

The stakeholders and larger business audience at our WRMP roundtable event voiced similar views to the household and SME business customers, but also pointed to the wider societal and environmental costs of not reducing leakage. We found in our foundation priority research that the small number of larger business customers also expressed a more negative view of our leakage levels and placed reducing leakage as being the top priority for them. Their comments focused on seeing the current level of leakage as unsustainable and the sign of inefficiently run business.

3.2 Customers' views on improving leakage levels

Away from the WRMP study, our wider engagement with customers showed that reducing leakage regularly emerged as a high priority for customers when considering a rounded view of all the other investment options we could make. However, it is important to highlight that customers' often emotive views do not always translate in to wanting to pay for the investments required to make huge reductions in leakage levels:

- our qualitative customer priorities research in May 2017 showed that leakage was often mentioned unprompted, by household and business customers, as a key area to tackle, mainly from those with experience of leakages in the street or home. On prompting with information, customers saw prevention of leakage as a high priority in light of future demands on supply. There was real frustration that water in the system is lost before it gets homes and businesses. In our follow up quantitative priorities survey speed of leak response time and reducing leakage were rated by household customers in the top 6 of all areas as priority areas to focus on. Reducing leakage also attracted the highest number of responses (16%) as the number one area to focus on, when household customers selected from just a list of areas relating to 'planning for the future';
- in our wave 1 WTP qualitative study (Oct 2017) leakage was put in the top priority bucket for investment among both household groups (future bill payers and higher socio-economic) when asked to consider 17 attributes;
- in the following Wave 1 WTP quantitative study we asked customers to consider service level improvements for 17 different attributes, with no bill impact shown, by asking them to choose the option they considered to be the highest priority and lowest priority (MaxDiff exercise). This showed that, when scaled to a priority ranking of 100, household customers gave 'reducing leakage' a mid-ranked priority rating of 4.6 - water not safe to drink scored 36.3;
- when household customers were then shown blocks of 6 environmental attributes with the bill impact to achieve different service levels 'increased metering' attracted a WTP valuation £6.39 making it the highest rated environmental attribute (note that this value is generated directly from the discrete choice exercise and not normalised by the number of properties). Business customers gave 'reducing leakage' a relatively low WTP valuation, though compared with other attributes, suggesting their calls to reduce leakage significantly wane when faced with a potential bill increase. This indicates that business customers are more

likely thinking of the business case to reduce leakage that was noted in the WRMP workshop among SME owners;

- by contacting a large number of household customers in our study, we found significant differences in the level of willingness to pay for 'reducing leakage'. These are:
  - more affluent customers, where we observed in qualitative research that they tended to value environmental issues more highly;
  - those living in urban locations, linked to where there are higher densities of pipes;
  - those who have a water meter at their property, our qualitative observations show this is linked to greater awareness of the need to conserve water and that a leak on their property can lead to a higher bill; and
  - those customers answering in a public context, our qualitative observations show that among some customers there is a recognised need for everyone to play their part to reduce leakage due to potential water scarcity issues; and
- in our follow up WTP sensitivity testing (Apr 2018) 'reducing leakage' attracted a WTP valuation of £3.14 to reach the significant level of service improvement. Like Wave 1 this made it the highest rated environmental attribute. However, it is worth noting that the fall in the valuation between wave 1 and wave 2 is thought to mainly be driven by showing customers a lower, more realistic level of service improvement in Wave 2 and not because of a shift in customer sentiment towards leakage.

Looking at the wider impact of leakage on the overall customer experience, customers have told us that our speed of response to fix visible leaks needs to improve. The key insights are:

- in our annual customer service tracker survey results (April 2018) highlighted that of the seven service attributes customers were asked to comment on, the second lowest scoring was 'How quickly water leaks are repaired in the public highway/footpath'. Here, only 57% of household and business customers agreed that we do this well, scoring us 3.70 out of 5.0 on average. There was no obvious variation in the satisfaction score when we looked as whether household customers had said they had actually experienced a leak in their local area, but business customers were more likely to be dissatisfied if they had experienced a leak against those who had not (50% vs 38%). Our performance on speed of leak response has not changed significantly since 2017, highlighting a need to improve customer agreement in this area
- drawing on another data point from an on-line survey run on our website between February and April 2017, household customers rated their satisfaction with this measure at 3.82;
- in relation to the service failures most recently experienced by customers in the last 12 months, 26% among household customers were related to reporting a leak. This is more than any other issue with their water supply and we see this trend reflected in our daily customer contacts also that are related to operational areas;
- running a regression analysis on our 2017/18 customer tracker satisfaction data highlights that 'satisfaction with speed of leak repairs' has a noticeable impact on a customer's overall satisfaction with our service. There are a wide number of factors at play when customers give an overall satisfaction score, but this finding highlights the importance of fixing visible leaks quickly
- our customers expect us to fix leaks quickly:
  - in our customer tracker survey, 51% of customers thought that work to fix a smaller leak should start within 24 hours from the time it was reported. This figure was 71% in our in-depth engagement with customers around improving the experience of reporting a leak; and
  - for a mains burst the expectation among 75% of customers was that we would be on-site to start work to repair it within 4 hours, with over 90% wanting to see action within 24hrs.

- just over 40% of customers say they have experienced a leak in the public highway within the last 12 months. We are however, not seeing this translate through at the same rate to customer contacts of reporting leakage. The need to tackle visible leaks more quickly is further backed up by the following insights:
    - in our quantitative customer journey survey only 40% of customers said they would report a leak near their property and only 25% would report a large one they saw in their wider neighbourhood; and
    - our customer journey workshop revealed that the mains reasons for this was that customers often assumed that we already knew about the leak, or that someone else has reported it. Some also mentioned that they did not know how to go about reporting a leak with, due to not knowing which water company to contact, or that it was not quick and easy to do so. A small number cited that they have tried before and felt they have been ignored as the leak was not fixed, or they never found out if it was fixed;
- when tested, we found that 46% of customers responded positively to the idea of using a digital service channel (e.g. app) to take a photo and send it to us with instant geo-location so that our engineers could get their quickly and know in advance what they were dealing with. They told us that whatever service we introduce that is has to be simple and easy to use.

Throughout all our engagement with customers around our performance commitments, 'reducing leakage' and 'speed of fixing visible leaks' have often been singled out as areas where customers want us to go further, but views again from some dampened slightly as they became more informed:

- in our all-day workshop in to our proposed customer promises for 2020-2025, customers felt it was really important to tackle leakage, but it did not emerge strongly area where many customers wanted us to be the top performer in the industry once customers were exposed to all the areas we were responsible for. When discussing our proposed leakage measure, customers asked us to make sure there is better clarity on where responsibility for leakage lay between them and the company and on how the level of leakage are calculated to provide transparency;
- we also quantitatively tested customers' reaction to how far they wanted us to go in our proposed performance commitments for 'reducing leakage' and 'improving visible leak repair time'. Customers were exposed to 11 areas and were given sliders to improve or decrease the level of service whilst seeing the dynamic impact to their bill. The commitments around leakage received the highest levels of support from customers to improve our performance, even though the bill impact they were exposed to as they moved the sliders was one of the higher ones when compared to the other areas:
    - when started from a higher service/bill level, 23% of customers stayed at this point and 54% increased the level of service. The figures for 'visible leaks' were 40% and 37% respectively; and
    - when started from current service levels, 70% of customers increased the level of service for 'reducing leakage' and 60% for 'visible leaks' (caveat that a small sample base so figures are indicative only); and
    - this stronger view toward improving leakage compared with the qualitative workshop follows a similar pattern to our WRMP workshop where the more customers become informed the less emphasis they put on going further to improve leakage performance;
- in our initial qualitative business plan acceptability testing many customers said that we needed to focus on leakage to make our business credible, particularly SME business owners, although many of these had experienced issues around leakage before so may have heightened their views towards prioritising this area.

We have also asked our business retailer customers if they would be interested in a proactive leak alerts service. Of those aware of this type of service, some saw it as a fairly standard offer and some as a differentiating one that would benefit their end users.

3.3 Customers' views on leakage as a demand management approach compared with other options

At the reconvened WRMP (4 table groups) and stakeholder round table (2 table groups) customers were given more detail on the following two leakage options:

- option 1 was to just do more of our current approach to reduce leakage. This was seen as a 'no brainer', with many customers thinking that this should be done anyway. They almost viewed it as a basic 'hygiene' factor; and
- option 2 outlined us going way beyond our current leakage targets by also investing in new technologies and approaches. Customers thought this was a bit more drastic, which led to more polarised opinions. Some thought that it was important to do everything possible to cut leakage, but others started questioning whether the expense and potential negative effects (digging up more roads/land) would be worth it.

Attendees were then given six votes to allocate across the ten different demand- and supply-side options outlined to them in detail and one vote for the option they liked the least:

- option 1 received four votes in favour and no votes against; and
- option 2 received 13 votes in favour and two votes against.

When attendees were asked to hit a volume and cost target choosing from the ten demand- and supply-side options:

- three of the six groups chose option 1; and
- three of the groups selected option 2 as part of their plans (note that customers had to select one option or the other, they could not choose both).

In the WRMP on-line survey, household customers were shown six demand- and supply-side options and were asked for each whether they were for or against us doing the option. There was only one leakage option shown (option 2). In response, 54% of customers were 'for' reducing leakage and 29% selected it as their most preferred option – the highest figure of all the options presented.

The main reasons for choosing increased leakage reduction were that:

- less clean water would be wasted;
- it was relatively inexpensive to implement; and
- it had a positive environmental impact of reducing demand for water.

A small number of customers recognised that cost efficiencies would be lost if more leaks were fixed as you have to work harder to find them and that the volume of water saved was small compared with some of the other options.

Anglian Water's customer engagement also indicates that both household and non-household customers have strong preferences for leakage reduction over new resource options, such as desalination or water transfers from other regions.

3.4 Key conclusions on leakage

The evidence all points to the need to reduce our leakage levels well beyond current levels. Customers think this is morally the right thing to do, although we found that the more informed they get about the costs and operational challenges associated with reducing leakage by significant levels the more balanced their judgement became.

Our triangulated WTP value among household and business customers to reduce leakage by 1ml/d is £216,977 (per year).

As well as responding to customer preferences to reduce leakage, improving our performance should also have an effect in terms of improved satisfaction to leak response times, which should then feed in to a more positive overall customer experience.

It is clear that many customers want us to offer an easier way for them to contact us to report a leak. A digital offering seen as attractive, but customers were quick to point out that we need to provide customers a wide range of channels to communicate through as some do not use digital services. There are also opportunities to raise awareness of the need for customers to quickly report leaks through other channels, such as brand livery on our vehicle fleet.

Reducing leakage should also not be seen in isolation. Customers were quick to point out that not reducing leakage will undermine the effectiveness of other activities, such as encouraging them to use less water. Given the priority customers place on leakage, there is a need to communicate clearly with them to outline our efforts and investment plans to reduce the amount of water lost to leakage.

Based on this evidence we have also developed a performance commitment for 2020-2025 around the speed of fixing visible leaks so that we can be open with customers about how we are performing in this important area. These will be communicated on-going though our customer dashboard on our company website.

4. Customers' views on metering

The following section supports the reasons why 'smart metering' is ahead of 'increased metering' as an important demand side option for us to invest in to ensure our plan reflects our customers' needs, but why neither is as much as a priority as leakage.

4.1 Customers' views on water meters as a charging mechanism

Increasing the level of metering was not a prominent spontaneous priority among customers or stakeholders at our WRMP workshops. This view remained the same for the majority by the end of the first WRMP customer workshop.

In addition, 68% were also in agreement that metering is the fairest way to charge people for their water usage (but it should be noted that the number of customers on a measured supply was 50% at the workshop, under-indexing compared with the regional rate of 70%). The vast majority of all audiences considered that metering is the most ethical charging method, because:

- it is fairer to pay for what you use; and
- it may help people to think about and reduce their water use.

The WRMP on-line survey shows that 88% of customers agreed that metering is the fairest way to charge (note that the figure is weighted to regional demographics and regional metering rate). But there is a significant difference in agreement levels between customers who currently have a water meter compared with those that do not (94% versus 73%). This higher figure among those with a water meter we found to be driven through considerations around fairness and that they had to keep a closer eye on their own consumption due to being charged for the units they used and that if they had a leak on their supply pipe they would be paying for this water.

This mainly positive view towards metering is also reflected in customers' views in our WRMP on-line survey, where 83% of measured customers agreed that having a water meter made them more aware of the water they use and 85% said that it made them use water more carefully.

An analysis of our data, using 2017/18 charging levels, shows that 88% of household customers who freely chose to switch to a meter over the last 27 years, have a lower bill compared to their equivalent bill based on the properties' rateable value. This fact should be promoted to our customers to help address any negative perceptions that a meter leads to a bill increase.

There was however a much lower support (33%) for proactively shifting customers towards having a meter among a group of unmeasured customers who live in properties across the region with a rateable value of more than £250 and who do not currently have a meter. This difference between this figure and other studies is due to the very targeted sample of customers.

The main reason given as to why these customers do not have a meter was the worry that their bill would go up (52% said this when prompted, while 22% said this unprompted), even though only 8% of customers said they had actually taken the time to use an on-line calculator to check if this was perception was true. These insights show that customers are drawing their views from a number of sources, including relying on 'a gut feeling'.

Table 6: Customer support for metering across our engagement.

Data source	Support for metering	Measured customers	Non-measured customers	All customers
WRMP workshop: 30 household and SME business informed customers	Agreement that meters are fairest way to charge people for the water they use	Sample base too low	Sample base too low	68%
WRMP on-line survey: 207 less informed household customers		94%	73%	88%
Metering research: 101 unmeasured household customers across region	Agreement that water companies should do everything they can to encourage customers to install water meters	Not covered in study	33%	NA

At the WRMP workshop, knowledge of the potential positive impact of metering on water consumption and leak detection slightly increased support for this as a priority.

Away from the WRMP study, which shows a high level of support for metering as a demand side option, our wider engagement with customers showed that increasing metering did not always emerge as a high priority for customers when considering a rounded view of all the other investment options we could make:

- our qualitative customer priorities research in 2017 showed only a handful of metering evangelists who spontaneously mentioned the significant cost savings and principle of fairness: ‘pay for what you use’;
- in our wave 1 WTP study (Oct 2017) we asked customers to consider service level improvements for 17 different attributes, with no bill impact shown, by asking them to choose the option they considered to be the highest priority and lowest priority (max-diff exercise). This showed that, when scaled to a priority ranking of 100, household customers gave water metering a relatively low priority rating of 1.2, compared to the second highest rated attribute of ‘reducing lead pipes’, which scored 9.6 – ‘water not safe to drink’ scored 36.3;
- when household customers were then shown blocks of 6 environmental attributes with the bill impact to achieve different service levels ‘increased metering’ attracted a WTP valuation of £1.35 to reach the significant level of service improvement, compared to £6.39 for leakage the highest rated environmental attribute (note that these values are generated directly from the discrete choice exercise and not normalised by the number of properties).

Business customers gave 'increased metering' a relatively low WTP valuation, likely driven by the already high metering rates among this set of customers;

- by contacting a large number of customers in our study, we found higher WTP valuations among household customers in higher socio economic groups. Our qualitative insights suggest this is more likely due to them having a greater awareness of the benefits metering can bring, alongside having a higher disposable income to afford a higher bill to improve service levels;
- in our follow up WTP sensitivity testing (Apr 2018) 'increased metering' attracted a WTP valuation of £2.35 to reach the significant level of service improvement, making it the second highest rated environmental attribute behind leakage (£3.14). The main reason behind this shift is thought to be mainly driven by the fact that the energy suppliers have been heavily promoting 'smart metering' to customers between the two waves of our WTP studies;
- our research into customers views around different service proposition, shows that there is one group of customers who are mainly against the principal of having a meter as they have a very low level of interest in their water usage and 'big picture' reasons of why water needs to be conserved. These customers make up 24% of the Cambridge customer base;
- metering was not actively called for as a performance commitment in our engagement work when customers were shown our customer promises for 2020 – 2025 and asked if there were any areas missing. This again highlights that metering is not generally thought of as a key area for investment by customers in an uninformed setting; and
- unlike 'reducing leakage' and 'educating customers to use more water efficiently', our investment plans around increased metering was not called out by some customers as 'not going far enough' in the initial qualitative stage of our business plan acceptability testing.

Whilst metering is not often top of mind for many customers, the insights below highlight that there is a real need to better promote the benefits of metering to customers to educate them about the benefits and overcome any concerns they might have about switching to a measured supply:

- this has been particularly highlighted through our on-going engagement with vulnerable customers which revealed that going from an unmeasured to measured supply as part of home move can cause unwanted distress, particularly for those with physical disabilities and mental impairments;
- some WRMP workshop participants were not aware that they could choose to have a meter installed and then revert to unmeasured billing within the first 24 months; and
- this is further quantified by the fact that 60% customers are aware that we offer a free meter, but only 22% that we offer a switch back trial period for the meter (insights taken from CCWater's 2017 'Water Matters' household survey). We have also seen awareness drop since the 2016 survey results, which highlights are need to further improve our pro-active communications to customers around the benefits of being on a meter.

Our engagement with customers has revealed that some groups of customers are more likely to pro-actively take up a meter than others, mainly driven by their wider views around environmental concerns and also how conscious they are about the amount of water they use. For example, among one group of customers 32% are for the principal of water meters, compared to only 78% in another. These insights can be used over time to better understand our customers and communicate with them with messages that are relevant to them, through the channel of their choice.

In our in-depth customer journey workshop we found that customers wanted more choice on when they could book a field engineer to fit a water meter if they wanted one for their home. Morning and evening slots weekday outside of 9am - 5pm are now expected by around 45% of customers, particularly those with busy working and family lives. Over 60% also gave us a clear message that they wanted to be able to book a time slot for the booking within at least a 2hr window and 70% said that the whole process of requesting a meter to installation should take less than 1 month. There was also strong demand for an APP among 40% of customers to track the meter installation progress and send pictures to us to help identify the best location for a meter in advance and make the engineers visit quicker and easier.

We have also picked up through our engagement with developers and other customers in the new connections market that some companies are looking for us to provide more clarity around our water metering strategy and to sign post innovations in metering technology that can benefit their organisation. We plan to engage on-going with customers around this topic through our dedicated forums and wider discussions with customers.

4.2 Customers' views on compulsory water metering

Support for making water meters compulsory was 50% at the WRMP workshop. It was 38% among unmeasured customers, and 80% among measured customers in the on-line survey. The overall agreement in the on-line survey of 68% most likely reflects the true regional customer view. There were a number of reasons identified for the lack of support among mainly unmeasured customers in the on-line survey and at the workshop, including:

- the principle that people should be 'able to choose' whether a meter was best for their home;
- the need to protect vulnerable customers from potential bill increases – towards those struggling to pay their bills and those with genuine health reasons, who may need to use more water;
- that a meter would have an unfair impact on the bills of larger families (a view expressed mainly by larger families); and
- that many at the workshop suspected that a 'compulsory' programme was more likely to be for the company's benefit (that is, to make a profit), rather than being the best solution for customers.

Agreement was even lower (14%) among the group of customers contacted in Cambridge on an unmeasured supply with a property rateable value of £250 or more. This highlights the strong resistance from customers to this approach, even though the evidence suggests many of them would likely be better off financially from having a meter installed. It highlights the 'fear factor' of switching to a meter that needs to be overcome.

Table 7: Customer support for compulsory metering across our engagement.

Data source	Support for compulsory metering	Measured customers	Non-measured customers	All customers
WRMP workshop: 30 informed household and SME business customers	Agreement that that water meters should be compulsory for everyone	Sample base too low	Sample base too low	50%
WRMP on-line survey: 205 less informed household customers		80%	38%	68%

Metering Research: 101 unmeasured household customers across region		Not covered in study	14%	Not covered in study

The only noticeable difference in the on-line survey on customers' views of metering was that those aged 30-44 were more supportive of metering and compulsory metering as an approach than other age groups. We can conclude that this view may be driven by the fact that this generation has grown up in a time when energy and to a lesser extent, water metering, is more the norm.

When looking at the feedback from customers from our neighbouring Anglian Water region the response from customers followed a similar pattern, in that there was a much higher level of support for compulsory metering among households already on a meter.

4.3 Customers' views on smart metering

Customers at the WRMP workshop (also noticed as a spontaneous response in the customer preference foundation research) expressed a noticeable level of interest in having a smart meter in their home to help them view and manage their water usage. It is important to note that when customers talked about smart meters, they were referring to an easily accessible device 'inside' their home that gives them a real-time readout of their consumption. We picked up early on in our engagement to be clear on this point when asking customers for their views in this service. Future bill payers were more positive about smart metering, with many wanting this delivered through an APP or other digital approach.

Among the group of unmeasured customers contacted by phone in the Cambridge area in our metering uptake study, only 32% said they would be more likely to switch to a measured supply if a smart meter was provided as the solution. This highlights that this service does not receive overwhelming among all customer groups and being offered a smart metering does not overcome the fear of having a standard meter.

Away from our WRMP, our wider engagement with customers around smart metering showed that they gave a higher level of priority to this option over increased metering in a qualitative setting, but this was not reflected as strongly in our quantitative studies when customers considered a more rounded view of all the other investment options we could make:

- our qualitative customer priorities engagement highlighted a consistent, spontaneous requests across all customer groups for smart meter technology with real-time usage information. Customers wanted innovation in this area and specifically the:
    - ability to link their usage to their bill to help them change their behaviour towards using water; and
    - to have a solution that removes the need from them to read their meters - also mentioned spontaneously by some customers at our WRMP workshop;
- in our priorities quantitative study less than 3% rated smart technology in their top 3 areas of priority, compared with over 41% for water quality and 7% for leakage;
- in our wave 1 WTP study (Oct 2017) the priority max-diff exercise showed that, when scaled to a priority ranking of 100, household customers gave 'giving more control of water usage through more meter readings' a priority rating of 0.6 (out of 100), the lowest ranked of all 17 attributes. This could in part be driven by the fact that some energy smart meters are pitched by suppliers, as being 'free' as part of a service offering as well as lack of understanding about the benefits of seeing their water usage real-time;

- when household customers were shown blocks of 6 environmental attributes with the bill impact to achieve different service levels 'giving more control of water usage through more meter readings' attracted a WTP customer value of £1.95 to reach the significant level of service improvement. This is greater than the WTP for 'increased metering', but far less than the £6.39 value received for 'reducing leakage';
- however, of all the areas covered in our WTP study, smart metering has one of the highest proportion of customers indicating they are willing to pay more for service improvements, rather than saying they are OK with the current level of service;
- like 'increased metering', 'smart metering' was not actively called for as a performance commitment that was missing in our engagement work when customers were shown our customer promises for 2020 – 2025; and
- in our customer proposition engagement, around two thirds of household customers found the following proposition to be very or fairly appealing (enhanced meter readings: giving you more accurate bills and alerting you to any leaks in your home via an in-home display. You would not need to read your water meter.) This equates to around 28% of customers taking up an offer of this kind if we launched this service. We plan to conduct more insight into this type of service before finalising our future strategy;
- in a follow up proposition testing survey run on our website, the service that attracted the highest number of votes, when scaled to 100, was having an 'in-home device' to monitor water usage and where water is being used in the home. This scored 18.7, compared to a text message service to provide water efficiency updates, which scored 6.3. However, it is important to note that our engagement has highlighted that it is often the communications channel that has a bigger influence on how customers rated the appeal of the potential new services we tested their reaction too. The reason for the low score in this case was not because they did not want water efficiency advice, the majority just did not want it sent via a text message; and
- the early data from our WaterSmart trial has shown that providing customers with more meter readings is not having a noticeable impact on the amount of water their household is saving. We are monitoring this over time, but the evidence to date show that providing customers with targeted water saving tips and having access to information to compare their household consumption with similar households is having a great impact on reducing their water usage. We will monitor this closely over time to see what impact providing increased meter readings has on customers' water usage.

In our engagement with business retailers we asked about their views on how we could better support them around meeting:

- there was a universal call for better positioning of meters to make them easy and safe to read them; and
- some had concerns about implementing 'smart meters' and would customers accept the cost to roll these out.

Customers' views on metering as a demand management approach compared with other options

At the reconvened WRMP workshop (4 table groups) and stakeholder round table (2 table groups) attendees were given six votes to allocate across the ten different demand- and supply-side options outlined to them in detail, and one vote for the option they liked the least:

- increased metering as an option only received two votes in favour but four against; and
- smart metering as an option received 42 votes in favour and only three against.

When attendees were then asked to work in groups to select their preferred combination of options chosen from the ten demand and supply options to meet a volume and cost target (customers were shown a bill impact if they went over their cost target):

- none of the six groups chose increased levels of metering; and
- five of the six groups selected the smart metering option as part of their plans (note that customers had to select one option or the other; they could not choose both).

These findings do not mean that increased metering is not popular with customers, as the smart metering option was pitched in the context of increased metering. Customers felt it made logical sense to give them real time information to help them reduce their water consumption. But a minority actively opposed this option because they were:

- sceptical that they would make any long-term difference to customers' water consumption;
- not confident in the technology (cost and accuracy); and/or
- concerned that they were being used to generate more money for the water company.

In the on-line survey, household customers were shown six demand- and supply-side options. For each one, they were asked if they were for or against us adopting the option. In response, 51% of customers were 'for' smart meters and 27% selected it as their most preferred option – the second highest figure of all the options presented (note that only smart metering was shown as a metering option). The main reasons centred on it being a relatively 'easy to do' option that it helped people to monitor their water consumption easily. But it was also the option with the second highest number of customers (20%) saying it was their least preferred option of those shown in the survey, with the same reasons as detailed above coming out. This shows a degree of polarisation on using smart meters as a demand management option.

4.4 Key conclusions on metering

Feedback, particularly from measured customers, supports the need for us to increase the number of measured properties across the region over time. The review of customer evidence on metering is summarised below:

- customers' did not give a view at the WRMP workshop of what they considered the metering penetration rate should be, but the consensus was that metering is seen as the 'fairest approach' by the majority of customers for charging for water, but that any policies should not disadvantage customers in vulnerable circumstances. Most unmeasured customers are against compulsory metering, 'having the choice' is important;
- our final triangulated WTP figures used in our Cost Benefit Analysis show that customers are willing to pay £10 per property (per year) to have a meter installed and only £2 for giving the customer a continuous meter reading to their home (i.e. an in-home device). The evidence suggests that we need to find cost effective ways to make any new meters installed 'smart' to maximise the benefits and provide an improved service;
- customers want more effective communication around the benefits of having a meter, both at an individual and wider societal level, to help them make the right choice;
- customers want us to improve the time it takes to get a meter installed and give them more choice over booking engineer visits. There is strong demand for using technology to help them through the journey to improve the experience and to make sure communication is effective through each stage of the process. It is vital to note though that customers were also clear on telling us that we need to provide a wide range of ways to communicate with them as not everyone can or wants to use the latest technology, such as an APP;

- the opportunity to revert to an unmeasured charge within the first two years of opting for a meter remains a vital policy to offer. Also, offering a guarantee that the customer will not pay more than their rateable value during this period would also give customers reassurance. This should be supported by targeted communication of any savings made during this period as a way to help overcome the main barrier that customers highlighted, the prospect of higher bills. This is particularly important to ensure vulnerable customers to not experience unwanted distress, particularly when moving home; and
- the evidence shows that a noticeable number of customers view smart metering as a potentially useful service to help them manage their water consumption more effectively. The indicative feedback across all engagement with customers is that this is being driven by the activity of the energy suppliers who are increasing promotion and use of electricity and gas meter devices in households. A pilot trail, including gaining customer feedback, of how best to approach a water smart metering roll out is required to ensure it delivers a solution that gives customers more control of their water usage – something they have called for throughout all our engagement with them.
- there is a need to engage regularly with developers and business retailers around any new metering technology to help them realise the benefits and communicate these to their end users.

5. Customers' views on water efficiency

The following section supports the reasons why this area, although it still attracts customer support, is seen as the least important demand side option for us to invest in to ensure our plan reflects our customers' needs.

5.1 Customers' views on their water usage

After being informed about the challenges we face and the background to how much water we use, most WRMP workshop participants (83%) admitted to not being as careful with their water usage as they could be. The figure for the WRMP on-line survey was lower at 55%, showing that there is a potential difference in response among household customers who are less informed about the range of support we could offer and the 'bigger picture' need to save water. There were some variations noted among different types of customers, with the following more likely to agree they could do more to save water:

- Under 45s;
- Men;
- Those in the higher socio-economic groups; and
- Those living in households with three or more people.

The WRMP on-line survey results also support the view that having a water meter is more likely to make customers think about reducing their water usage – 65% of unmeasured say they 'could do more' versus 51% for measured customers.

Research by CCWater, 'Water Saving: helping customers to see the big picture' (October 2017) highlighted that reducing water consumption is not an established social norm, unlike energy saving and recycling.

In our metering research among customers in the region on an unmeasured supply (with a property rateable value of £250 or more) recorded the lowest percentage agreement (although it was a wider household and not a personal view) to this statement, indicating a potential reason for their resistance to taking up a water meter. The majority already feel they are doing enough.

A survey of over 3,070 of our metered customers using the WaterSmart service showed that 63% say they could do more to reduce their water usage. This highlights that giving customers a wide range of support and advice to help save water is more effective in getting them to careful consider their use of water in their home and causes them to think more about how efficiently they use water in their home.

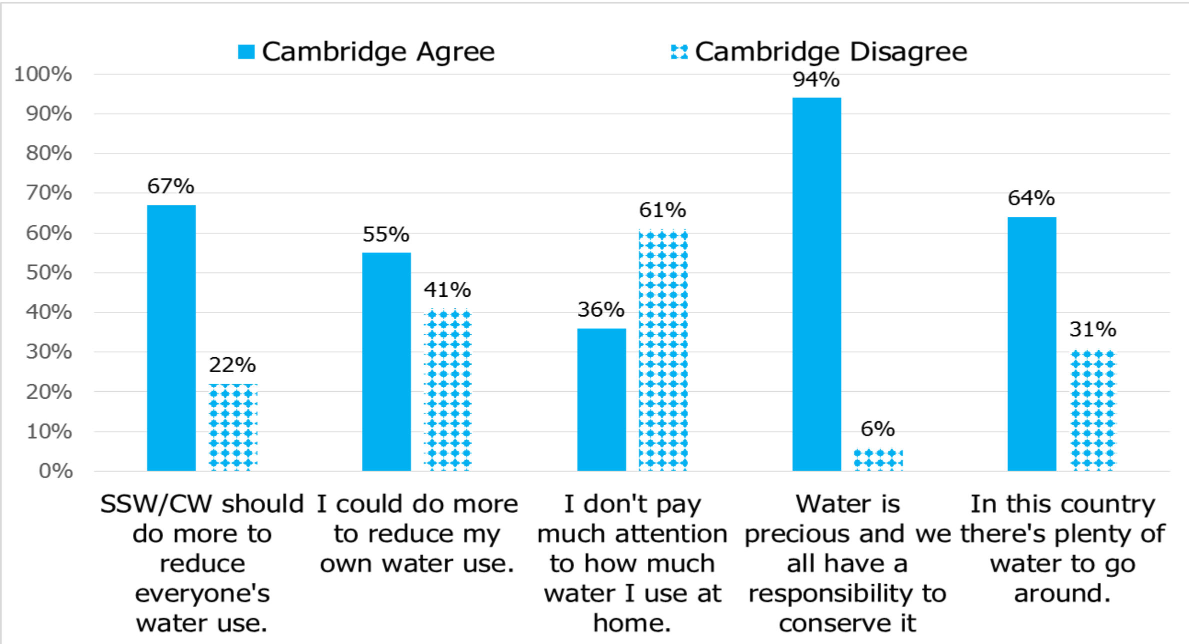
Table 8: Customer views on water consumption across our engagement.

Data source	Views on water consumption	Measured customers	Non-measured customers	All customers
WRMP workshop: 30 informed household and SME business customers	Agreement that I could do more to reduce my own water use	Sample base too low	Sample base too low	83%
WRMP on-line survey: 207		51%	65%	55%

Data source	Views on water consumption	Measured customers	Non-measured customers	All customers
uninformed household customers				
Metering Research: 101 unmeasured household customers (uninformed) across Cambridge	Agreement that my household could do more to reduce our water usage	Not covered in study	32%	Not covered in study
WaterSmart: 3,072 users		63%	Not covered in study	Not covered in study

As shown in figure 6, the vast majority of customers (94%) in our WRMP on-line survey say they think water is a precious resource, but more than 60% also perceive there is enough water to go round for everyone. These views not only back up the workshop findings that there is limited awareness of current or future pressure on water supplies but also highlights that, for many customers, their admitted behaviour can go against their view that water is precious and should be conserved.

Figure 7: Customers' perceptions around water consumption.



Figures exclude don't know or neither/nor responses. Base: 207 household customers.

Drawing from CCWater's 'Water Saving' report findings, it reinforces the view that customers' actual attitudes and behaviour to water are complex and varied, and do not always align with claimed views. While our customers were not part of the 93 who attended focus groups, the key learning is that they also need to see the wider context as to why they should save water rather than being limited to messages focused on their individual water use behaviour.

Since our core WRMP engagement we have learnt though our wider research that there is one group of customers who do not see water as a precious resource, due to their lower level of engagement with the 'big picture' need to conserve water. They were also the one group of customers who did not have a strong view that companies should do more to help change their behaviour to help protect the environment.

In our current WaterSmart trial, a survey run in May 2017 among users of the service highlighted that 93% of metered customers thought there should be a shared responsibility between the water company and the customer to help save water, a similar figure to those customers in the control group. Only 5% said the water company should take all the responsibility.

5.2 Customers' views on how we can help them save water

At the WRMP workshop there was limited awareness of our current activities to reduce customers' water consumption. We also found in our wider engagement with customers around their attitudes and behaviours towards water (March 2018) that only 25% of customers agreed with the statement 'I would like to use less water but have no idea where to start'.

When outlined at the WRMP workshop, passive water efficiency activities (such as providing water saving devices to fit and forget) were viewed as more likely to be effective by customers at getting them to change their behaviour.

When informed of this topic at the WRMP workshop, both household and SME business owners all recognised the need for a culture change around water use. In the final voting, 76% agreed that we should be doing more to help them save water. This figure was 67% in the on-line survey among household customers who were less well informed compared with those at the workshop. There were also some variations noted among different types of customers:

- measured customers were noticeably more likely to agree, driven by the view that this would offer them more benefits, such as bill savings, by reducing their water consumption;
- those in the highest socio-economic groups were also significantly more likely to agree; and
- men were more likely to agree.

At our WRMP workshop, after being informed about the leakage levels in our pipe network, customers were also keen to point out that it made their individual efforts to save water seem paltry in comparison. This then creates a further barrier to changing their behaviour and flags the need for us to outline the investments we are making to reduce leakage.

However, some stakeholders (such as local councils and NGOs) see this work to change customers' behaviours and save water as symbolically important, even if it delivers little in terms of actual volumes saved.

There is a noticeable level of dissatisfaction with our current efforts in this area. In our latest customer service tracker survey (April 2018) our lowest scoring brand attribute statement over the last 12 months was 'they help me save water'. This has been the case since 2016 when we started tracking customers' perceptions. Only 51% of household customers agreed that we do this well, and overall we are scored 3.36 out of 5.0 on average. This highlights a need to improve customer agreement in this area.

At the WRMP workshop there were calls for greater education and support when helping customers to save water, which they stressed should be proactively disseminated and not just through our website. However, in discussions, some customers did admit that they might not always pay attention to any messages sent. Also, that the low cost of water in the context of their overall household bills may mean bad habits are hard to change.

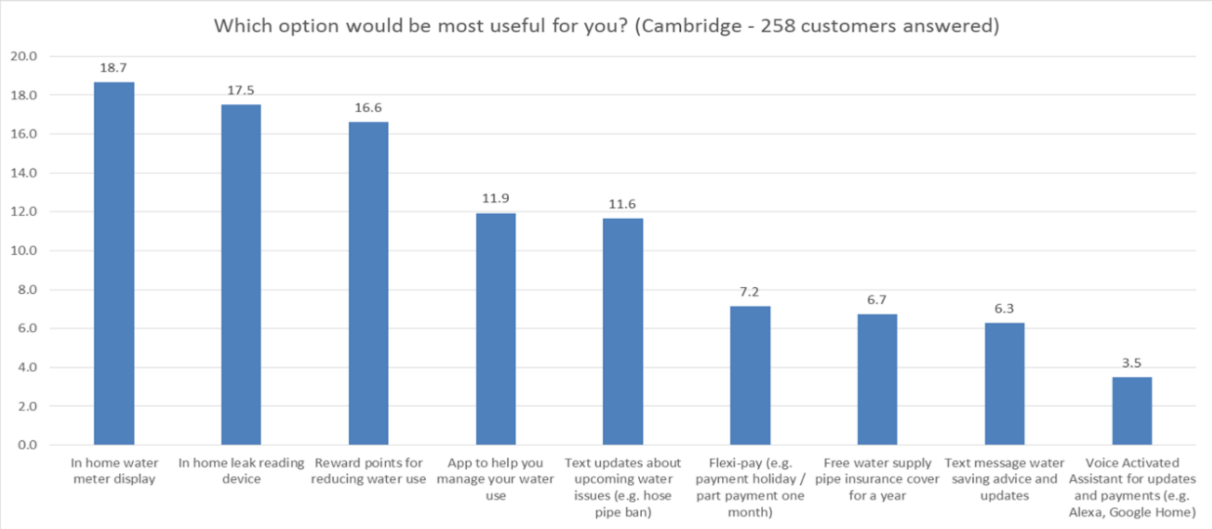
This strong view that we need to be pro-active around educating customers has subsequently been reflected throughout all our wider engagement over the last 12 months. There have been calls from customers of all ages for us to do more, particularly to engage with schools to deliver the message, on the reasons why and then how to use water efficiently, to the younger generation. Our newly formed 'Young Innovators Panel' in our South Staffs region are working on a business task over the summer of 2018 to outline what they would do to 'change the way their generation thinks about how it uses water'. Their business ideas will be pitched to our executive board and members of our independent customer panel in October 2018.

However, despite strong calls to educate customers on how to help them manage their water usage there was a more mixed picture when customers were presented with the potential impact of this activity on their water bill:

- we tested customers' reaction to how far customers wanted us to go in our proposed performance commitments for 'educating school pupils'. Customers were exposed to 11 areas and were given sliders to improve or decrease the level of service whilst seeing the dynamic impact to their bill:
    - when started from a higher level of service/bill level for this performance commitment over 29% of customers stayed at this point, with 33% increasing the level of activity to the maximum amount; but
    - when started from current service levels, 32% of customers increased the level of activity, although this was among a small sample of customers (caveat that small sample base so figures are indicative only);
    - However, both tests indicated that, overall, most customers wanted us to do more in this area;
- in our Wave 2 WTP study (April 2018) 'educating school pupils' received one of the lower valuations of £0.25 among household customers. For comparison, supporting customers in difficult circumstances attracted a valuation of £1.49. Business customers gave education activity a mid-ranked valuation compared to other areas and in the qualitative group this was found to be an area that business customers focused on as one that made sense for a water company to be focusing on in terms of community support.

When we tested a range of service proposition with household customers during 2018 we saw a clear trend towards the ones that gave them more control over their water usage - see figure 8. An in-home meter display being the most popular overall.

Figure 8: Ratings of different service options



Source: 258 household customers, on-line survey – Jan to Apr 2018

This question asked customers to rank their top 3 most useful options. A "usefulness score" was calculated by multiplying the 1st most useful option by 3, the 2nd most useful option by 2 and the 3rd most useful option by 1. The usefulness scores add up to 100.

Our other retail led engagement where we tested views on service propositions with specific groups of customers based on their attitudes and behaviours, showed that the 'use of reward' points to encourage them to save water as the most preferred option overall. This was particularly evident among the group of customers who said they spent more time shopping around for the best deal for their household bills. An on-line service that gave them the ability to manage their water usage and bills was also very popular among all customer groups.

Our WaterSmart trial (November 2017 onwards) where we are providing customers with more regular and useful information about their water usage and recommendations on how to save water, has shown some promising early signs:

- 66% of customers recalled receiving a water report (which is sent to them on a regular basis depending on how often their meter is being read) – the Water Report e-mails are receiving an above average open rate of 55%;
- 37% of customers reported visiting the WaterSmart Portal, which is one of the highest sign up rates of any company using WaterSmart:
  - The average portal visit time is 3mins; and
  - 40% of customers are using mobile to access the service.
- less than 1.5% of customers are opting out of the service to date;
- customers are not contacting us with complaints about the service. 136 e-mails have been received between launch and July 2018, with 80% of these being neutral in tone;
- feedback from a survey run in July among 3,072 users showed that:
  - a third of customers reported that they have 'reduced their water use' due to the WaterSmart service. We will analyse at the end of the trial period if this view translates through to their actual consumption falling;
  - 75% of customers want the service to continue – "*Please don't stop - it's a brilliant service - really useful - I have been very impressed!*"; and
  - 84% of the comments left about the service were positive; and
  - the 25% response rate to the survey is markedly higher than the 2% average response rate to other e-mail surveys we have sent to customers.

- features that were most valued in customers' water reports are:
    - comparisons of usage to other homes (65%);
    - historical water use (62%); and
    - how many litres per day they are using and where (61%).
- customers using the WaterSmart portal most liked viewing:
    - historical water use (81%);
    - charts estimating where water is used (67%); and
    - how many litres per day they were using and where (61%).
- common areas where customers wanted the service to improve:
    - 11% wanted more frequent meter reads and data; and
    - customers also wanted to know how this service related to their water bills.
- among the control group we received 306 responses to a survey.These customers said they wanted more support from us to help them save water:
    - 27% said they would like CW to offer support through messages / tips to help them save water and free devices; and
    - 25% wanted more frequent meter readings through in-home devices.

Table 9 shows the differences between satisfaction levels between WaterSmart service users and those metered customers in the control group. Apart from satisfaction with our overall service we offer as a company, we are seeing that WaterSmart users are noticeably more satisfied, particularly for ease of communication and taking steps to help them use water more efficiently.

Table 9: Differences in customer perceptions between WaterSmart users and control group.

% agreement that CW	WaterSmart users	Control group	Uplift
Makes it easy to communicate with you	64%	48%	**16%**
Makes it easy to take steps to use water efficiently	64%	50%	**14%**
Makes it easy to save money on your water bill	54%	43%	**11%**
Offers you value for money	62%	54%	**8%**
Makes it easy to understand your water use	74%	67%	**7%**
Is a company you trust	70%	65%	**5%**
Offers a good overall service	81%	81%	**0%**

Source: survey of 3,072 WaterSmart users and 306 metered customers not using the service.

For the end of the trial in November 2018we will be undertaking a more in-depth analysis of the impact that the WaterSmart service has had, including a review of how much water customers are saving and linking this to their satisfaction levels. The results so far suggest that this is an effective way to increase customer engagement with their water services.

5.3 Customers' views on water efficiency measures as a demand management approach compared with other options

At the WRMP reconvened customer workshop and stakeholder round table, attendees were given six votes to allocate across the ten different demand- and supply-side options outlined to them in detail and one vote for the option they liked the least. Reducing customer water usage as an option received 13 votes in favour and only one vote against, putting it as mid-ranked in terms of popularity.

However, only one out of six groups chose it when asked to hit a volume and cost target in their plan. Some customers were less convinced in this approach's efficiency in terms of delivering any noticeable savings and thought that the investment could be better spent elsewhere. Customers mainly viewed smart metering as the best demand-side option for their plans, but felt the two areas were interlinked and should be done in conjunction with one another.

In the WRMP on-line survey, household customers were shown six demand- and supply-side options and for each one were asked if they were for or against us doing the option. In response, 48% of customers said they were in favour of us helping them to reduce their water usage, but only 11% selected it as their most preferred option. The main reasons when it was chosen centred on the positive impact of sharing knowledge or advice with customers to help them make changes and because it is a relatively simple and cheap option to do.

5.4 Key conclusions on water efficiency

Overall the customer feedback points to the fact that our recent approach of trying to influence customers to change their behaviour is falling short in places in terms of effectiveness, and that we need to do more work to help raise their overall 'water consciousness' and provide more support and advice to help them take control of their water usage. It is also clear that any activity needs to be carried out on a regular, proactive basis covering as many channels as possible to reach customers of all generations in a co-ordinated way. This includes the use of:

- website;
- digital services, such as WaterSmart service and APPS;
- email;
- hard copy; and
- wider on-the-ground community and schools engagement programmes. Our water efficiency engagement programme with primary schools in the region during 2018 is already being positively received, but we recognise the need the need over time to be expand this to cover secondary schools and also give momentum beyond the school environment to take the pupils learnings back into the home so that parents and other family members can hear the key messages around water efficiency.

There were a significant number of customers who attended our WRMP workshop who had no idea of the big picture challenges around water. This highlights that a dual messaging approach (big picture versus personal) should be used to assess its impact in helping customers to reduce their usage. There also needs to be a clear story told between water efficiency and metering to give customers clarity on how all the benefits link together to benefit them and the wider community they live in.

We currently offer customers support to help them save water, such as free devices like shower heads, Hippo cistern bags and leaky loo strips. Table 10 shows the number sent out to customers and the combined estimated saving in Megalitres per day, using industry standard assumptions about the percentage of households who actually use or fit the devices. Overtime we are starting to see a drop off as these fit-and-forget devices are taken up by over time by households who want to take advantage of them. However, we know we need to look at new ways to encourage customers to save water to meet our longer term challenges.

Table 10: Review of the impact of our free devices given out to customers.

Year	Number of devices given to customers	ML/day saving
2015/16	7,279	0.17
2016/17	4,115	0.08
2017/18	2,691	0.04

There are encouraging early signs from our WaterSmart trial which highlight that engaging with customers using digital platforms to help give them control of their water usage must be continued as part of the wider strategy. We have seen above average levels of engagement when compared to our other digital communication channels, with 37% of those on the trial signing up to the WaterSmart portal and interacting with surveys we are sending them. This figure is significantly higher than our typical survey completion rates.

It will however be important to use the WaterSmart trial insights when it finishes in November 2017 to understand how much water can be saved using this approach over time and to better understand if providing more frequent meter readings to customers actually delivers a step change in engagement with water and whether this ultimately delivers noticeable change in their behaviour to use less water. From the customer feedback it is clear that to make the service more attractive and useful then they would like to see information about how much they are paying alongside all their water consumption usage.

Developer customers also pointed to the opportunity that we should provide them with information to put into their welcome packs to help customers save water in their new homes. There is also the opportunity identified in our engagement with customers around the experience they receive when moving home into our within our area to provide water efficiency messaging advice and support as part of this new start in their lives.

Our research to better understand how our customers' views and attitudes differ towards water have highlighted that we need to go further to reach the group of customers, accounting for almost a quarter of our customer base, who are more dis-engaged from us. By pro-actively communicating with them in a way they can relate to we can aim to build a more effective relationship with them over time.

We plan to continue to engage with customers on-going to help shape the development of any service propositions in more depth to deliver services that give them more control of their water services. Customers told us in our engagement around performance commitment that they expected us to measure the effectiveness of our education outreach activity alongside the number of pupils we reach.

6. Customers' views on levels of service

Throughout all our customer feedback there is no strong evidence of any support to improve the level of service offered to household customers for temporary use bans (TUBs – previously known as hosepipe bans) at 1 in 40 years and business customers for non-essential use bans (NEUBs) at 1 in 80 years. Customers thought the frequency to be so low that it barely registered with them as something to be concerned about. However, it is important to note the context that the majority of customers could not remember experiencing a hose pipe ban.

The need to avoid hosepipe bans was not specifically mentioned at all in our foundation priorities research as a key priority area that customers wanted us to focus on, although ensuring a reliable supply and that there is enough water for all customers in the future in the face of climate change and increasing population were high on the list.

There were two consistent key messages from the vast majority of household customers:

- avoiding the need for such bans was not a priority either at the start or at the end of the WRMP workshop voting following a detailed discussion on the topic; and
- it was also assigned the joint lowest number of mentions (2%) for being the top priority of all the statements shown in the WRMP on-line survey.

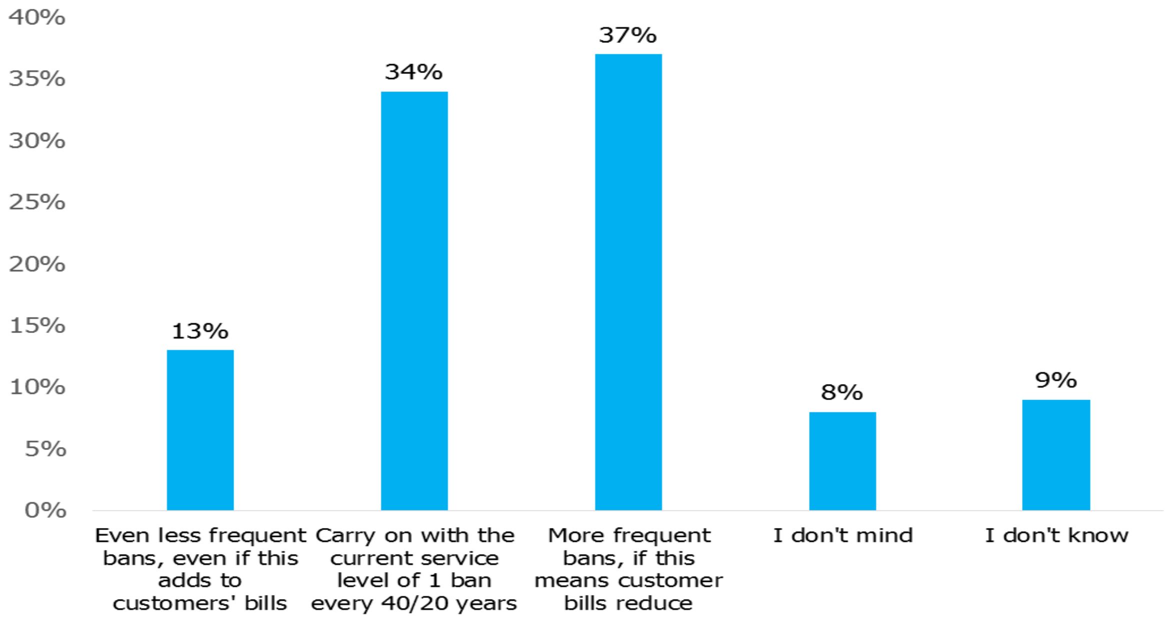
At the WRMP workshop, 41% of customers voted to support more frequent bans:

- many customers perceived there have been more recent hosepipe bans than is the case in reality (1991/92);
- lack of knowledge and concern about bans was widespread, partly because of a lack of experience – for example, how long they last, what they cover;
- current service levels were seen as very easy to cope with, with most customers saying they would be happy with more frequent bans;
- an on-line survey run by CCWater in May 2012 among more than 2,000 household water customers in England and Wales during the last hosepipe ban in certain regions (note that these were not our customers) showed that 88% said it was 'acceptable' or 'very acceptable' for a water company to ask them to reduce their consumption during a drought. This does show a level of consistency in customer responses; and
- more severe restrictions were only seen as reasonable in exceptional circumstances (severe drought) by a handful of customers, but again, customers had no recent experience to draw on.

However, customer expressed concern about the need to protect vulnerable customers and small water reliant businesses during these periods if they do occur.

In the WRMP on-line survey only 13% of customers indicated that they would want an improved level of service from 1 in 40 years, while 37% said they would accept a more frequent ban in exchange for a lower bill. See figure 9.

Figure 9: Customer response to what they would like to see happen with regard to hosepipe bans.



Base: 207 household customers.

SME business customers (x7) discussed the following issues around bans:

- some were more concerned about the impacts of NEUBs, but many were unclear what constitutes ‘essential’ and wanted more information on this to help understand the impact on their operations;
- businesses said they might be willing to consider bespoke arrangements to reduce water use on request, if there was potential to reduce their ongoing water costs. Similarly, questions were asked about the possibility of arrangements parallel to the solar FIT for customers that have greywater systems installed to save water; and
- the larger business users at the WRMP roundtable considered that ‘cost levers’ could also be effective in terms of managing bans.

Away from our WRMP engagement, we have ensured that we have researched customers’ views of levels of service around restrictions:

- in our wave 1 WTP study (Oct 2017) we asked customers to consider service level improvements for 17 different attributes, with no bill impact shown, by asking them to choose the option they considered to be the highest priority and lowest priority (max-diff exercise). When scaled to a priority ranking of 100, household customers gave ‘avoiding severe drought restrictions’ and ‘temporary use bans’ ratings of 1.5 and 1.4 respectively. For reference ‘unexpected temporary loss of supply’, which scored 6.1 - water not safe to drink scored 36.3. The scores for business customers were higher at 4.3 and 4.2 due to the fact that business customers expressed a more balanced view of where they wanted service levels to be improved. However, the ranking sees these attributes towards the bottom of the priority list;
- following this exercise, customers were shown blocks of 6 reliability of supply attributes with the bill impact to achieve different service levels. ‘Avoiding severe drought restrictions’ and ‘temporary use bans’ both attracted a WTP (household) customer valuation of £1.94 to reach the significant level of service improvement. However, these valuations were less than that of £3.69 for ‘flooding from a burst pipe’, the highest rated supply attribute. In the up-

front qualitative groups customers commented that as they had not experienced hose pipe bans that it was not top of mind as they happen so infrequently. This is likely playing a role in lowering the WTP valuation as many customers are not willing to pay extra to remove the risk of these types of once in a lifetime events from occurring. We did not show customers the levels of service offered by other companies as they said in the up-front qualitative groups that this information would not be useful in helping them to make their decision due to the variation in rainfall levels throughout the country and he different challenges each region faced;

- we also found significant differences in the level of willingness to pay for both these attributes, with:
    - customers in lower socio-economic groups giving higher valuations than more affluent customers. A common theme seen across the majority of supply attributes. The thought of not having water thought the tap really came through as the priority in all our focus groups with customers from this background; and
    - females giving higher valuations, due to having more concerns about water scarcity issues and the impact on their lives;
- a similar picture of lower WTP valuations was observed among business customers with these two attributes attracting lower valuations than most other supply attributes;
- in our follow up WTP sensitivity testing (Apr 2018) the valuation for 'temporary use bans' dropped significantly to £0.21 among household customers when lower levels of service were shown to customers. This might reflect the impact of offering customers the option of 'Never occurring' for having a supply restriction in Wave 1. Again the same pattern was observed among business customers;
- whilst we have not tested customers' reactions to severe restriction (i.e. the use of rota cuts and standpipes) through quantitative surveys, all of our qualitative insights from groups where it has been discussed has pointed to customers finding these types of scenarios unacceptable:
    - in our WTP focus groups we asked customers to put the 17 attributes into 3 buckets, so they could select which ones were most important to them for us to invest in. Avoiding a drought situation where customers would have to use a stand pipe for their water was placed in the top priority bucket for customers in all 3 focus groups, which covered both household and business customers; and
    - when tested with customers we received strong support for the common performance commitment around avoiding restrictions during a "1 in 200" year drought.

Our findings also mirror those of our neighbours Anglian Water whose recent engagement found that:

- customers have a stronger preferences to avoid rota cuts and the risk of having no tap water (reflected in the customer values for different types of restriction). However, if restrictions should be necessary then rota cuts are preferable to having no tap water;
- households have preferences for avoiding deterioration in the current levels of service for hosepipe bans, non-essential use bans and rota cuts, but these are weak in comparison to standpipes; and
- business customers have strong preferences for both improving and avoiding deterioration in the current level of service of risk of both rota cuts and no tap water, but would be happy to see a reduction in the level of service of hosepipe bans (which affect households rather than non-households) before any further restrictions.

In addition, CCWater's 'Water, water everywhere?' (December 2017) report highlights that their research across the industry shows that customers generally accept that occasionally it is necessary to impose temporary water use restrictions, but that they would find the withdrawal of their water service as unacceptable.

6.1 Key conclusions on levels of service

The WRMP customer feedback supports a view that we should maintain the current level of service at 1 in 20 years for TUBs for household customers. The key findings from our WTP studies indicate that customers were willing to pay more in the Wave 1 WTP study for the highest service improvement level, which was ‘never occurs’. In Wave 2, when given a service level of this occurring of once in every 30 years, the WTP value is significantly lower. Customers are responding in Wave 1 to removing the risk completely of a ban occurring.

Based on the evidence, a reduction in service could be considered but, as many customers cannot recall experiencing the most recent temporary ban, there is no sure way to know how this would impact on their overall satisfaction levels if they were to experience one. Maintaining the current service levels is recommended.

There was no evidence from the group of business customers (caveat that there were only ten across the groups) that the 1 in 50-year service level commitment should be changed. The WTP study also backed this up with business customers giving temporary bans a relatively low valuation. However, there was a clear call for businesses to receive more detailed information about what water usage is restricted during a NEUB, if the need ever arises.

In terms of severe restrictions, all the qualitative evidence from customers and other industry studies is that having to draw water from stand pipes in the street (or any other severe restrictions of the supply) is not a scenario that customers are willing to accept. It is therefore important that our plans provide the required level of resilience to ensure that severe supply restrictions never occur, now and in the future.

7. Customers’ views in relation to the environment

At the start of the WRMP workshop, when asked to vote for their top three priorities, looking after the natural environment was ranked at number four on the list. By the end of the day, after receiving information about the impact of our activities on the environment and the wider context around population growth and the impact of climate change on water supply, this area remained at number four on the list of priorities, but it had received slightly fewer ‘top three’ votes – leakage become more important to a greater number of customers and encouraging people to use less water leapfrogged to rank above it.

However, at the WRMP workshop, many customers were found to be quite disconnected from the natural environment. It was also noticed in our WTP qualitative groups, that it took significantly more effort to work with customers to refine the wording of the attributes and suitable visual stimulus material to clearly explain to them our environmental activities and their impacts.

Our qualitative customer priorities research in May 2017 revealed that water quality and reliability of supply attributes still dominate ahead of environmental concerns among many customers. However, there was a strong sense that climate change could have a significant impact on water supply in the future and customers expect the company to look into the long-term implications. This result was reflected again in the uninformed quantitative priorities survey where the environmental attributes tested all received less than 5% of responses for being the top rated area we need to focus on.

In the WRMP workshop, many customers had limited knowledge of the link between a water company’s activities and the impact this can have on the natural environment, and some had a low level of awareness of the impact that climate change has on water supply. Through the interactive quizzes we also observed that a number of customers also underestimated the projected rate of population growth in the region.

In the WRMP on-line survey, 30% of uninformed customers placed ‘looking after the environment’ as a top three priority, but only 8% went on to pick it as the top priority from the list provided. Across all our and wider research gathered to date there is evidence that there are a growing number of customers who are concerned about water consumption in relation to the environment, although the CCWater’s ‘Water Saving’ report notes this is not always based on a truly informed appreciation of the reasons why we need to do this.

Before examining the detailed options in the first WRMP workshop, there was little discussion of environmental considerations. But in the reconvened workshop when customers were provided with further information on ten demand- and supply-side options, environmental considerations did come top of mind when they were discussing which to put in their plans to hit a volume and cost target (note the caveat that because of the constraints of ensuring the engagement activity was effective we could not supply them with the full range of our options and only limited information could be provided on each). There were two key points gained from listening to customers discussing the options:

- when considering the overall shape of their plans, most groups told us that any negative environmental impact produced by an option selected was balanced with options that contained a positive environmental impact; and
- abstracting more groundwater (which was shown as having a negative environmental impact) did not feature in any of the six customer and stakeholder plans and also received 15 least preferred option votes, significantly more than any other option. There were some

serious concerns raised about the long-term negative environmental impact, but these were mainly directed at drilling new boreholes and not re-activating mothballed ones.

This view was reflected in the WRMP on-line survey where only 8% of customers said ’abstracting more groundwater’ was their preferred option of the seven demand- and supply-side ones shown to them. In addition, 25% said it was their least preferred option, again with the often emotive comments focused on the range of negative environmental impacts associated with taking more groundwater.

At the round table event, stakeholders’ environmental considerations were far more at the forefront of attendees’ minds from the outset:

- many of this audience had a clear understanding of the balance that needs to be reached between ensuring sufficient supply and protecting the environment;
- developers and councils were keen to see incentives to encourage high standards of sustainability in new developments; and
- the farming representative wanted to see close collaboration between managing abstractions, catchment management and protecting wildlife.

Away from our WRMP engagement, we have ensured that we have researched customers’ views around environmental issues:

- in our wave 1 WTP study (Oct 2017) we asked customers to consider service level improvements for 17 different attributes, with no bill impact shown, by asking them to choose the option they considered to be the highest priority and lowest priority (max-diff exercise). We noticed that in this survey, where customers were more informed about our activities, that environmental attributes received higher ratings than in our priorities research. When scaled to a priority ranking of 100, household customers gave ‘protecting wildlife and habitats’ and ‘protecting rivers and streams’ ratings of 5.1 and 6.0 respectively. For reference the second highest rated attribute of ‘reducing lead pipes’, which scored 9.6 - water not safe to drink scored 36.3. The scores for business customers were similar but slightly lower in the overall ranking;
- following this exercise, customers were shown blocks of 6 environmental attributes with the bill impact to achieve different service levels. The study showed that ‘protecting wildlife and habitats’ attracted a WTP (household) customer value of £0.71 to reach the significant level of service improvement and ‘protecting rivers and streams’ a valuation of £0.80. However, these valuations are small when compared to the value of £6.39 for ‘reducing leakage’, the highest rated environmental attribute;
- we also found significant differences in the level of willingness to pay for more ‘protecting rivers and streams’. Household customers in higher socio economic groups gave a notable higher WTP valuation, linked to having a greater level of environmental awareness and a greater disposable income;
- in our follow up WTP sensitivity testing (Apr 2018) ‘protecting rivers and streams’ attracted a WTP valuation of £1.34 making it the second highest rated environmental attribute behind leakage (£3.14);
- we believe the most likely cause for this increase is due to our sensitivity testing where we changed the attribute description to be about catchment management to more closely reflect our future plans and changed the service level descriptions to focus on reducing the level of run-off instead of improving an area of rivers we actively manage. When comparing industry research studies and reviewing behavioural economics we find evidence that customers are more willing to pay to avoid damaging the environment, than for more improvements;

- however, the WTP valuation dropped even lower to £0.19 in Wave 2 for 'protecting wildlife and habitats' even when we added additional information that told customers the amount of land we actively protect against the total amount that is designated as environmentally sensitive. This highlights that whilst customers may attach a higher priority to protecting the environment, many do not want to pay lots for this through increases in their water bill;
- among business customer, we found that 'protecting wildlife and habitats' received much lower valuations than those for 'protecting rivers and streams' in Wave 1 and when using the revised attribute definition and level in Wave 2. In the qualitative groups some business customers did make a clearer link between a water company's responsibilities to protect the water sources it takes water from, versus wider environmental habitat improvements. These were viewed more as water companies needing to be their part of a wider co-ordinated effort to protect sensitive environmental areas.
- 'renewable energy' attracted WTP valuations almost as high as leakage among household customers and the highest of all environmental attributes tested among business customers. This could be linked to the fact that businesses have CSR policies and so more awareness of this area; and
- although sample bases are not robust, there was a noticeably higher WTP given by future bill payers (under 25) for 'protecting wildlife and habitats'. We have observed throughout all our engagement and research drawn from wider reports that many future customers place a higher level of emphasis on a company's environmental credentials, both from a customer viewpoint and when selecting which companies they want to work for.

Since our WRMP engagement completed in September 2017, our wider engagement with customers around environmental issues has shown a noticeable shift in the level of emphasis being placed in this area. We feel this is in part being driven by the impact of programmes such as Blue Planet and the increased media coverage around environmental issues in raising people's awareness of the need for change.

Throughout all our engagement with customers around our performance commitments, the environmental ones were singled out as areas where customers wanted us to stretch ourselves to do more:

- in our all-day workshop around our promises doe 2020 - 2025, customers felt it was important to have a strong set of environmental credentials and challenged us to measure both the amount of activity and the impact of the outcomes;
- we also tested customers' reaction to how far they wanted us to go in our proposed performance commitments for 'protecting habitats' and 'protecting rivers and streams'. Customers were exposed to 11 areas and were given sliders to improve or decrease the level of service whilst seeing the dynamic impact to their bill:
    - when started from a higher level of service/bill level 75% of customers stayed at this point or increased the level of activity for both these areas; and
    - when started from current service levels, 80% of customers increased the level of activity for 'protecting rivers and streams', but only 20% for 'protecting habitats' (caveat that small sample base so figures are indicative only);
- in our initial qualitative business plan acceptability testing the vast majority of customers told us they would prefer to pay an extra £2 on their bill to stretch our service performance in four areas. Using more renewable energy was the area there wanted us to go further in, although the size of the jump in performance was noted as the reason for this. Overall, strong environmental credentials were seen as vital to have as a key part of our overall business plan;
- from attending the Cambridge Live event in July 2018 we were able to talk with 99 customers about our customers promises and asked them to vote on which ones were most

important to them for us to invest in between 2020 and 2025. We found that our environmental outcomes attracted the most votes (35%) often because of the spontaneous call to reduce leakage. However, customer education, water recycling and efficiency also received a lot of mentions, but this was partly driven by the unusual dry, hot weather period raising the need to save water to the top of customers' minds.

“This token voting approach is great, a simple way for us to have our say. Educating school kids is so important so that's a stand out area for me.” – Cambridge Water customer

Finance Director Tim Orange discussing our customer promises with a customer.

We have also found through our engagement that there are groups of customers who value environmental issues more highly than others and believe the water is a precious resource to be conserved. Overtime we can use these insights to help tailor our communications to relate more closely to our customers' differing views to achieve greater engagement.

In our 2018 customer service tracking survey, 100 household customers were asked to rate various aspects of our brand on a scale of 1 to 5 to rate how much they agreed or disagreed with them. Being ‘environmentally focused’ was rated at 3.83 on average, with 33% of customers disagreeing with this statement (a 1 percentage point improvement from the 2017 figure). There has, however, been a significant fall since 2016, indicating that we are currently not improving in-line with customers' increasing expectations around environmental performance. With our top-rated brand perception ‘they are a reliable company’ rated at 4.27 on average, it highlights the need to better promote our environmental commitments, performance and achievements to customers. There was a similar picture found among business customers.

7.1 Key conclusions on the environment

There is a clear need for us to provide customers with more context of the ‘big picture’ impact of climate change and population growth on water supply and the impacts our activities can have on the environment. This way customers can understand why we investing their money in schemes to protect and enhance the natural environment.

Despite an obvious shift in many customers' views towards prioritising environmental performance more highly, our studies show that many customers are not willing to pay significant amounts to protect habitats and rivers (compared to areas like leakage, reliability of supply and water quality). Renewable energy attracts a higher willingness to pay value, with the qualitative groups showing that some customers can better relate this area to environmental impacts. Renewables was also particularly popular among business customers.

However, our recent engagement around our performance commitments for 2020-2025 shows that customers want us to go further to protect the natural environment and that our business plans needs to reflect this. This need is evidenced by our falling environmental perception scores.

Customers also want us to evidence the impact that our activities to protect and improve the natural environment are having on their community. It is not enough simply to measure the amount of land we protect, for example.

There is also evidence to suggest that customers are against the concept of drilling new boreholes on environmental impact grounds as a supply-side option, but are in favour of bringing existing underground water sources back on-line. Further research is needed moving forward to validate this lack of support for new sources fully, given the fact that the stimulus material shown to customers did not inform that these options would only proceed where abstraction levels would be within an agreed sustainable threshold.

8. Customers' views on water recycling

The WRMP workshop event did not include any information given to customers around water recycling, but it did come up spontaneously in conversation and was a very popular concept.

When informed, many household customers were "surprised" that 30% of water used in an average home is flushed away and some raised spontaneously that this water need not be drinking water. This sparked debate around water recycling, with some customers also expressing an awareness of greywater systems being used in other countries.

At the stakeholder round table event water recycling was discussed in more detail. Developers and local authority stakeholders raised practical barriers to wider sustainable design in new build developments, including:

- the need for incentives for developers; and
- the fact that while customers may like the idea, they are not willing to pay enough of a premium for a more water efficient homes.

It was suggested that even if these systems are not currently being fitted, new developments should be created with the ability to retrofit greywater systems at a later stage. This however, would need to be built into Building Regulations at a national level to be fully successful.

In addition to the feedback from the WRMP, across all our wider engagement customers and other stakeholders have consistently raised this area spontaneously in both our workshop events with household and business customers as an area of focus. This also came through our forums with customers in the new connections market, particularly from developers at our WRMP roundtables in July 2017 and developer forum in November 2017.

In response, we undertook further engagement to build a more complete picture of the best approach forward to use water recycling as an effective demand management system. This included:

- based on the feedback from developers in 2017 we launched an incentive mechanism in April 2018 to encourage developers to build more water efficient homes. Feedback on this new approach was sought at our recent Forum event in July and the feedback from developers and other stakeholders was mainly positive. However, more needs to be done to raise awareness and work with other water companies to improve the scheme further over time to help drive change. Customers were receptive to a working group to meet regularly to help work collaboratively with us to help them move forward in encouraging water efficiency. There were also calls to increase the level of incentive as customer demand for building water efficient homes is still felt to be low. Given the lack of push from the consumer, most developers are only building to Part G building regulations, rather than going above and beyond mandatory requirements. When customers were shown a video on our flagship water efficiency scheme at Cambridge North West they felt that it was in principle a good idea because it is an entire site so it is easier to maintain and implement e.g. a lake on site to pump water from – it is not always as easy as this on a site by site basis;
- we have also tested household and business customers' appetite to pay more for greywater solutions in our Wave 1 WTP study. Because grey water system is a new concept and not directly in the same category as general service improvements, customers' potential willingness to pay for such a system was tested separately using contingency valuation. This exercise produce the following value ranges using the 'Turnbull non-parametric method':
    - Household: £2.93 - £4.21;
    - Business: £3.79 - £5.41; and

  - This produces a total investment pot of £605,610 to run a potential service offering to customers wanting to install a full greywater system at their home. However, a hypothesis that needs to be investigated is that ultimately that customers would likely be against funding a scheme that only a minority of customers would benefit from;
- we followed the WTP study up by testing the response among household customers to a retrofit greywater harvesting system at their home in our propositions research. This highlighted that circa 60% of customers would consider taking up this service and was also found to be more appealing to those customers with a more environmentally focused outlook;
- however, the level of take up fell to less than 20% when a £5,000 price point was introduced to customers. When converting this 'likelihood to take up' figure to a likely take up rate this equates to less than 5% of properties even considering this solution as an option. This would need further engagement as customers raised many issues around this type of scheme:
  - concerns that the potential high cost of maintaining the system would mean that it would fall into disuse;
  - that the cost of installation would never be paid off in bill savings; and
  - who would undertake the work to guarantee the quality of the installation.
- in our all-day workshop, water recycling attracted the highest number of votes for being a performance commitment where we should be in the 'top 5' of all water companies for performance, but there were a few concerns that it relied on us being able to influence developers behaviour and hit our targets;
- we tested customers' reaction to our proposed performance commitment for working with developers to build a set number of water efficient homes. Customers were exposed to 11 areas and were given sliders to improve or decrease the level of service, whilst seeing the dynamic impact to their bill. This showed a mixed reaction, particularly in the context shown to them that building more water efficient homes leads to a small reduction in their bill:
  - When started at 600 new homes being built with greywater systems 27% of customers stayed at that level, with 48% moving up to the top level of 800 homes. 24% wanted us to work with developers to build less than 600 water efficient new homes, potentially over concerns that the actual price of the new house might be higher because of the extra work required to build it as water efficient; but
  - When started from a position of 0 homes, only 34% of customer moved their slider to increase the number of new water efficient homes built. Although, all those who improved the service level went to the highest point. Those improving the level of service may have also been noticing that their bill went down as they improved the service level, showing that a bill saving might be the driver over a genuine desire for the company to go further in this area (caveat that small sample base so figures are indicative only);
- in our quantitative priorities survey 6% of customers selected greywater harvesting in their top 3 priorities, the highest rated of the all environmental statements tested. This is likely to be related to the fact that customers can more easily relate this area directly to the water company compared to say protecting wildlife habitats. This was also evidenced in our WRMP workshop where customers struggled to make the link between our activities and the environmental impact.

8.1 Key conclusions on water recycling

The feedback from the WRMP and other projects highlights that there is an appetite for water recycling, particularly when customers are informed about the challenges we face in terms of meeting future demand for water.

However, whilst customers' view it as a priority, there are affordability issues that came through in the engagement. This includes the low level of likely take up of a retrofit scheme at an individual property level and the long-term concerns over whether customers would keep up the maintenance of a greywater system.

These findings points to the need to focus our efforts in the short-term on working with developers to build water efficient homes that deliver recycled water at a scheme level. This option provides the customer with a dual supply of water and removes the need for them to worry about paying for the on-going upkeep a water harvesting system at an individual property level. We are committed to regular engagement with developers with developers and other stakeholders to move the industry forward and build more water efficient homes.

Household customers also expressed an interest for more advice and support to help them to install simpler rainwater harvesting system, such as water butts.

There has been a positive start to our WaterSmart trial when providing customers with water saving recommendations in their homes and gardens. The effectiveness of these water savings recommendations will be monitored over time to help guide our approach to how best to support customers to use water more wisely.

9. WTP summary of 6 steps, key findings and conclusions

9.1 Overview of approach

Whilst we have used our WTP data as part of triangulation process to drive our MCA analysis for WRMP supply- and demand- side options, as detailed in section 2, we have also outlined here our approach for developing a robust and proportionate evidence base on customers' WTP for different areas of investment.

We are using these 'triangulated' WTP figures to set our Outcome Delivery Incentives for 2020-2025 as well as an input into our wider CBA modelling to help put customers' priorities at the heart of our PR19 business plan. However, they provide useful context for considering all the evidence for our WRMP plans.

The same 6 step SMARTS developed in partnership with Accent and PJM Economics was used. This approach is detailed in full in the supporting technical report, but a summary is provided below of the approach and key findings.

9.1.1 Screen

We identified a number of our studies containing customer evidence suitable for WTP triangulation. These are:

- the core data comes from the WTP research which includes results from the discrete choice experiments in both Wave 1 and Wave 2;
- MaxDiff priorities exercise from Wave 1 WTP study;
- WRMP research (on-line and workshops);
- customer Priorities research;
- customer Contacts/complaints;
- customer Satisfaction;
- performance Commitments (PC) Slider research; and
- external WTP evidence (PR14, PR19, academic and grey literature).

9.1.2 Map

We then converted the evidence from each suitable data source into a form that is comparable to our 'core WTP' measures. This step is necessarily source-specific and requires assumptions in some cases to enable the comparison. These important assumptions are detailed in the full technical report for this project.

9.1.3 Assess

To robustly assess the measures used in our WTP triangulation approach, we considered each data source in detail against two areas, as per the approach outlined for our WRMP triangulation above - i.e. theoretical and statistical robustness.

9.1.4 Rate

We assigned an overall Red/Amber/Green (RAG) rating for each source, against the above criteria. These ratings are based on our best judgment in light of the balance of evidence across all data sources being evaluated.

These judgements are detailed in the full technical report and it is important to note that these ratings are intended to be meaningful in a comparative, rather than an absolute sense. Table 11 summarises the rating of the data sources we used.

Table 11: Review of the impact of our free devices given out to customers.

Overall RAG rating	Weight	Data source classification on overall validity
Green	100%	WTP Wave 1 DCE study WTP Wave 2 DCE study: All segments except CAM NHH*
Green / Amber	50%	Performance Commitments (PC) Slider research
Amber	25%	WRMP qualitative workshop WRMP quantitative on-line survey Customer priorities quantitative study Customer contacts Customer satisfaction data – regression analysis External WTP PR19 studies South Staffs and Cambridge Water (SSC) PR14 study
Amber / Red	10%	External WTP PR14 studies
Red	0%	

* Wave 2 CAM NHH excluded due to small sample base sizes.

Triangulate

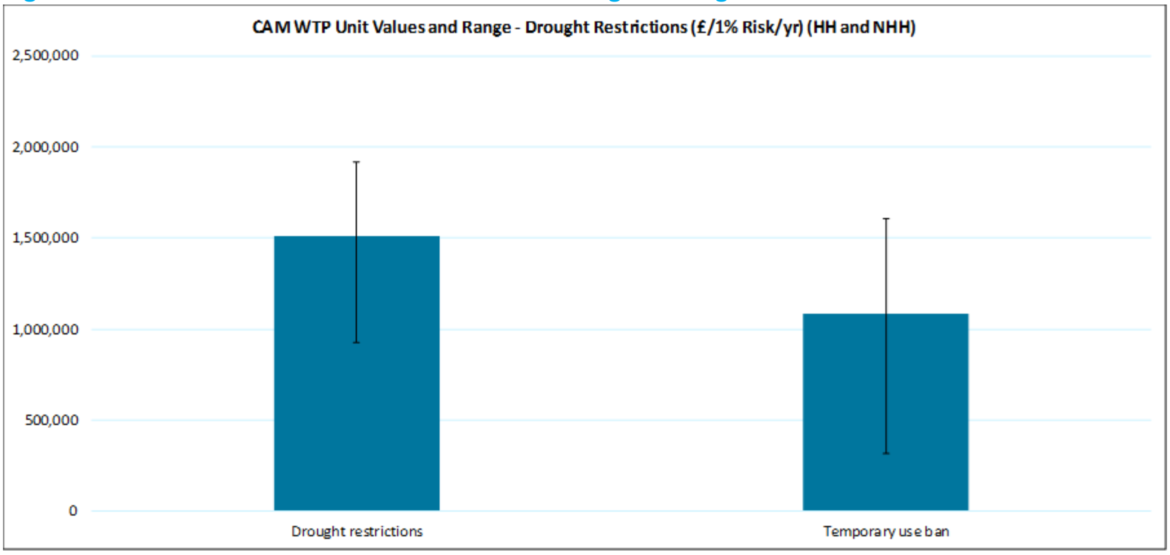
This step involved from applying weights to each of the data sources based on their overall RAG ratings and combining the measures to derive central values and associated ranges for the core WTP service measures.

In this section we have focused mainly on the areas that most closely relate to our WRMP plans and split them so they are expressed in comparable units, such as per percentage change in the risk of an event occurring.

Figure 10 shows our final WTP triangulated values for ‘drought restrictions’ and ‘temporary use bans’. The range is significant when looking across all the data source that we have triangulated due to the non-household (NHH) business values in Wave 2.

We find that valuations are higher for avoiding severe draught restrictions, compared to temporary use bans, which reflects the customer feedback across our engagement with customers.

Figure 10: CAM combined WTP unit values and range - drought restrictions.



Note: No WTP data available on Drought restrictions from the CAM PR14 study and the Wave 2 WTP study.

Figure 11 below shows our final WTP triangulated values for 'leakage'. The range is significant when looking across all the data source that we have triangulated due to the NHH values in Wave 2.

Figure 11: CAM combined WTP unit values and range – leakage.

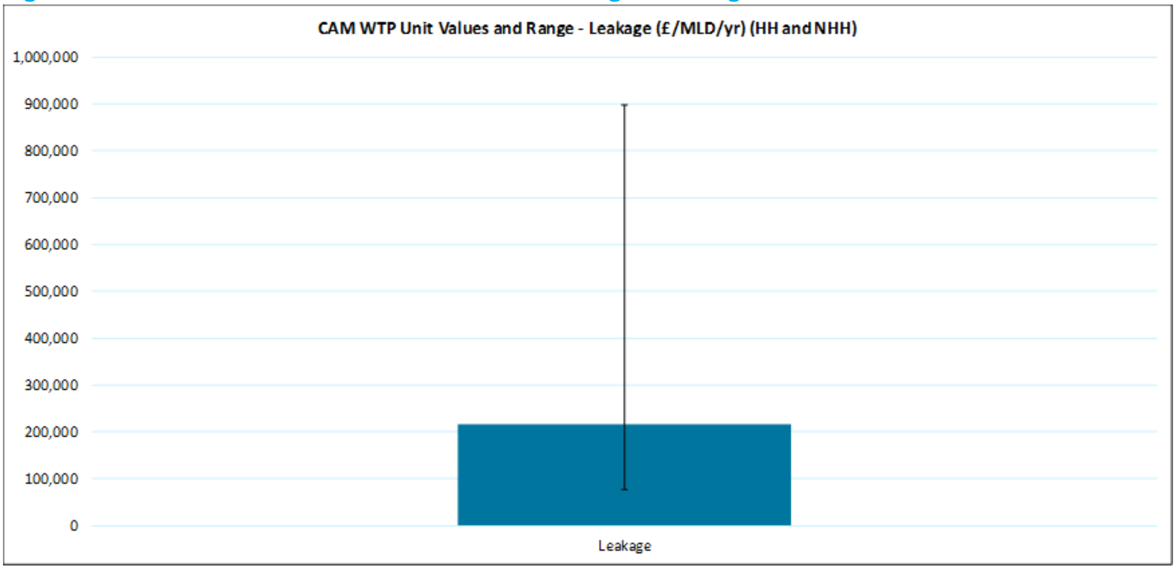
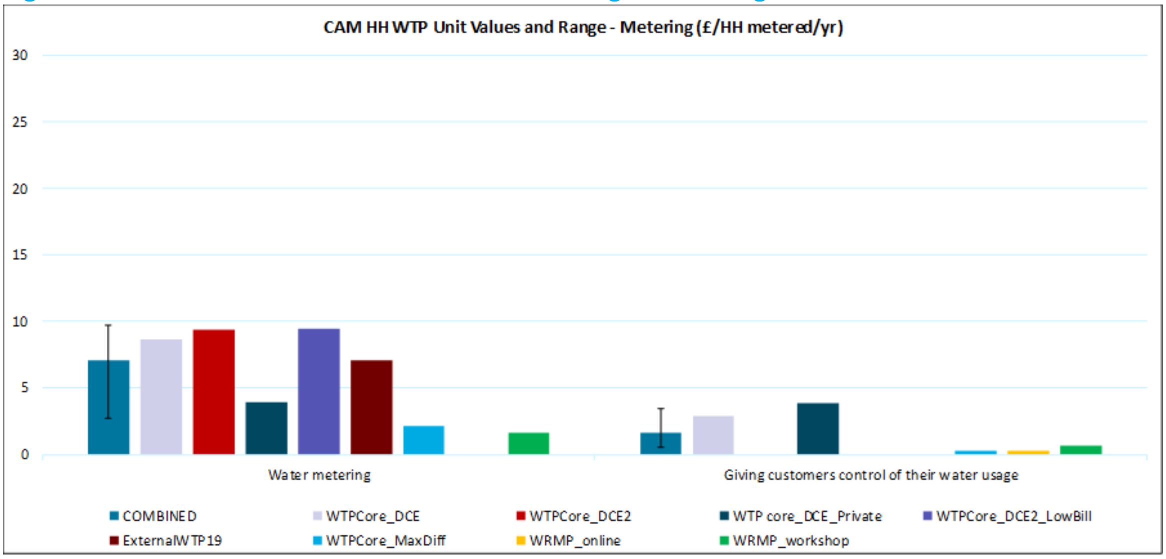


Figure 12 shows our final WTP triangulated values for 'water metering' and 'giving customers' control of their water usage through more meter readings', which have been re-scaled to sum to 100. The final WTP values are the bar labelled 'COMBINED' and are for household customers only. The ranges are shown.

We conclude that the final triangulated figure is more reflective of the overall view towards increased metering among Cambridge customers as a demand management approach. A similar picture is seen in the values from different data sources for the option of giving customers more control over their water usage. Note that this option was not included in wave 2 of our WTP research.

We find that valuations are higher for 'increased metering', which in part points towards customers becoming conditioned to seeing this offering as an expected 'free service' for their gas/electivity supply and that many remain disconnected to water and do not consider the benefit of more regular meter reads as a way to help them reduce their consumption. Education of the benefits is key.

Figure 12: CAM combined WTP unit values and range - metering

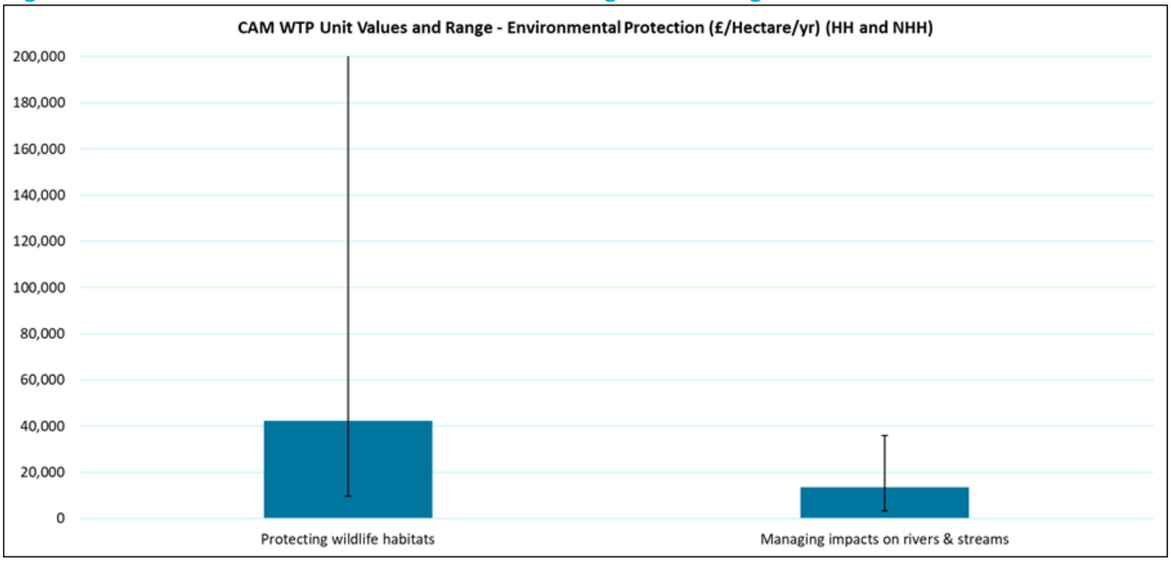


Note: Wave 1 WTP Private values and Wave 2 WTP values resulting from the lower bill Stated Preference exercise are used as sensitivity checks so that they contribute to the range of values, but not to the central case i.e. Combined value. Smart metering was not included in the Wave 2 WTP study.

Figure 13 shows our final WTP triangulated values for 'protecting wildlife habitats' and 'managing the impacts on rivers and streams'. The range is significant when looking across all the data source that we have triangulated due to the NHH values in Wave 2.

We find that valuations are higher for protecting habitats, compared to protecting rivers, which in part points towards household customers not being able to make the link between our activities and the impact on rivers, as observed in our WRMP workshop.

Figure 13: SSW combined WTP unit values and range - metering



Note: range curtailed to aid legibility: upper bound for 'Protecting wildlife habitats'=£731,912

9.1.5 Sensitivity testing

Finally, we sensitivity tested our main combined WTP values results by considering alternative sets of weights for the RAG ratings. The full details of this test is laid out in the full technical report.

This review highlighted that the triangulated WTP estimates for all the core service measures were fairly robust to alternative weights assigned to the various data sources. None of the core measures were found to have a value more than 20% different in the sensitivity case than in the main combined case. This difference is considered to be fairly low in the context of WTP measurement.

In both wave 1 and wave 2 over 90% of customers said they were satisfied with current service levels. The only the notable exception of dissatisfaction is that of water hardness among both HH and NHH customers, reflecting the feedback in our customer service tracker

Table 12 provides the full details of our normalised WTP figures (per year) among Cambridge customers, which have been subject to our triangulation approach. We can see that despite the high levels of satisfaction with current service levels, customers were able to judge which service improvements offered them value for money.

It is important to note that we have not used the values in isolation as they are result of the cost of the improvement versus the value placed on it be customers which determines if the investment it cost beneficial. We have used these values alongside a range of other inputs in our investment optimiser tool to determine the most appropriate PR19 investment programme.

Table 12: Comparison of SSW WTP triangulated values

Attributes	Unit	Combined Unit value: HH	Combined Unit value: NHH	Combined Unit value: MAIN	Combined Unit value: CASE 1
Water not safe to drink	Property affected	£1,029	£1,516	£2,545	£2,811
Flooding from a burst pipe	Property affected	£491	£2,107	£2,598	£2,446
Taste and smell of water	Property affected	£247	£1,182	£1,429	£1,709
Discoloured water	Property affected	£339	£699	£1,038	£1,077
Unexpected temporary loss of water supply	Property affected	£183	£444	£626	£752
Low water pressure	Property affected	£60	£85	£145	£161
Water hardness	Property affected	£115	£4	£118	£101
Lead pipes	Property affected	£16	£36	£52	£56
Temporary use ban	1% change in risk	£183,864	£899,514	£1,083,378	£960,622
Drought restrictions	1% change in risk	£357,268	£1,154,335	£1,511,603	£1,452,948

Leakage	ML/D	£91,862	£125,115	£216,977	£275,952
Water metering	Household	£7	Not covered	£7	£6
Giving customers control of their water usage	Household	£2		£2	£1
Protecting wildlife habitats	Hectare	£11,870	£30,364	£42,233	£48,221
Managing impacts on rivers & streams	Hectare	£2,131	£11,472	£13,604	£13,187
Traffic disruption	Roadworks incident	£336	£1,923	£2,259	£2,300

Note: Combined Unit value: MAIN refers to the WTP triangulated values from wave 1 and wave 2. CASE 1 refers to the WTP triangulated values sensitivity tested using an alternative sets of weights. Drought restrictions, smart metering and traffic disruption were not included in the Wave 2 study.

9.1.6 Further background to WTP wave 1 and wave 2

In October 2017 Impact Utilities completed a robust customer valuation research study for us among both household and non-household customers. This is known as Wave 1. Please refer to the main report and associated peer review for full details and findings from this study.

In order to support our 2019 price review by better understanding some of the surprising valuations generated in Wave 1, a 'follow-up' study was conducted by Impact Utilities in 2018.

This research, known as WTP `Wave 2' was carried out to further explore results for specific attributes and refine the scope of attributes included. Similar to the previous WTP study (i.e. WTP `Wave 1' conducted in 2017), the WTP Wave 2 research among household and business customers involved large scale quantitative surveys assessing Willingness-to-Pay (WTP) via Stated Preference (SP) choice experiments.

In Wave 2, the levels of service improvements displayed to respondents were amended to reflect a more realistic level, and new attributes relating to retail/community included. In addition, around one third of respondents completed the SP exercise in the context of a lower bill. Please refer to the main report and associated peer review for full details and findings of this study.

We have detailed the following steps below which were used to derive the final output of the WTP core DCE exercise and highlight the robust approach we have taken:

- per customer WTP data from the survey is in the form £X per customer;
- there are three service levels, the starting point S0, the 'some improvement' level S1 and the 'significant improvement 'level S2. The WTP values provided by our surveys are cumulative, so to get from S0 to S2 PJM added together the two WTP values. (i.e. if customers are willing to pay £X to get to S1, and then a further £Y to get to S2, then to go from S0 to S2 they would be willing to pay £X+£Y). The final approach ignores the 'some' improvement level;
- the service level improvements shown to respondents in Wave 2 were different to those shown in Wave 1. In order to combine the Wave 2 and Wave 1 values in a meaningful manner, PJM have taken the Wave 2 (S2) service level to be the correct range for the combined case and have used either the intermediate level or the best level from Wave 1 to be consistent with this assumption. For example, for discoloured water, the unit values in Wave 1 were recalculated based on service level improvements from base to the Wave 1 intermediate level

(S1). However, for metering, PJM calculated the unit values based on service level improvements from base to the Wave 1 best level (S2);
- WTP per customer is converted into a total WTP for all customers in that group by multiplying by the number of customers in the group. There are four groups – SST HH, SST NHH, CAM HH and CAM NHH;
- the total WTP for all customers in the group ('the pot') is divided by the range of service improvement asked in the question for that group. For example, if S0 to S2 is 5,000 properties, we divide the total pot WTP by 5,000 to get a 'per property affected' value;
- public values are taken for each group. Note that we use the Wave 1 WTP 'Private' value and the WTP values resulting from the lower bill Wave 2 DCE exercise as sensitivity checks in the triangulation so that they contribute to the range of values but not to the central estimate;
- all the external WTP data from PR14 and PR19 have been averaged before applying the weighting so that the impact of any outliers is minimised. Any external studies where the measure cannot be mapped to our WTP data has already been exclude during the screening process;
- the household and business WTP are added together for each region. Note that due to small sample bases we only use the Wave 2 WTP 'CAM NHH' value as a sensitivity check in the triangulation so that they contribute to the range of values but not to the central estimate;
- the regional WTP totals are weighted by the size of each region (using property counts) to get to a final, weighted, combined WTP;
- the 'Combined SSC' WTP triangulated values are calculated as a weighted average of the South Staffs and Cambridge area results; and
- the above steps are repeated to generate the low and high confidence intervals, so we end up with a low, mean and high value for each measure, for each region and combined. Note that for sensitivity testing we define the low and high values such that the low value is calculated as the minimum WTP value plus 20% of the difference between the minimum value and the central case value, and the high value is calculated as the maximum value minus 20% of the difference between the central case value and the maximum value. The justification for redefining the confidence intervals in this manner is to avoid having extreme range of values for the combined WTP.

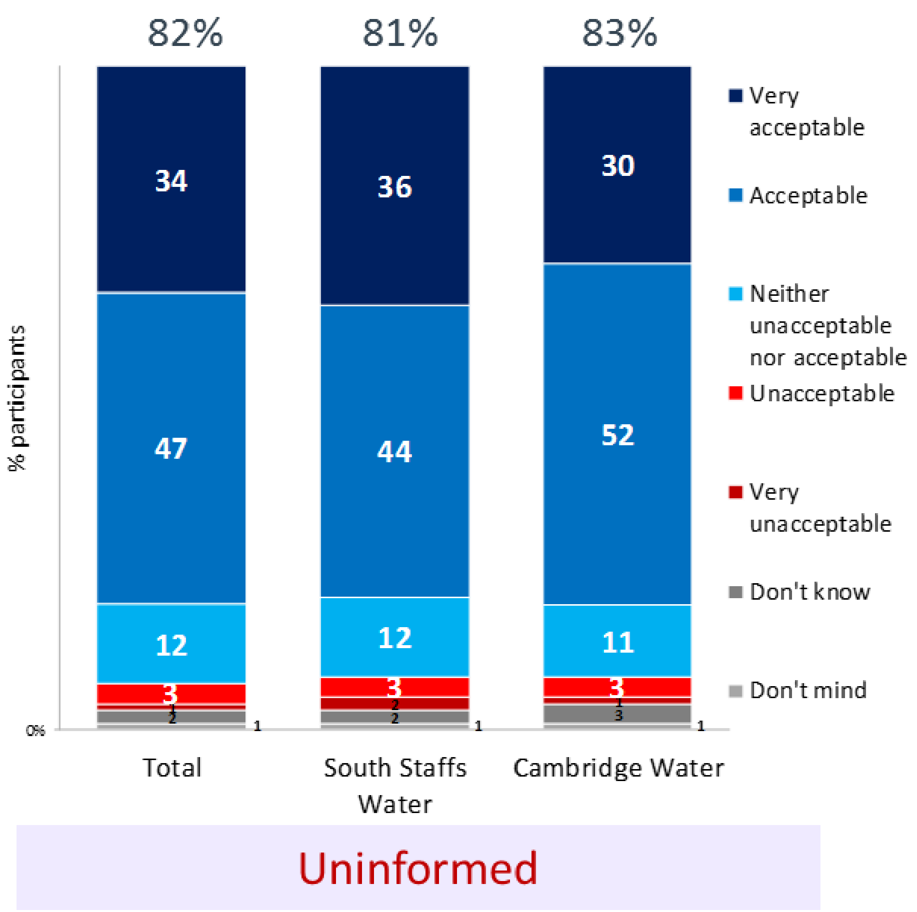
Importantly, this approach of generating sets of triangulated WTP values for the central, high and low confidence intervals allowed a more robust evaluation of the potential schemes within our Investment Optimiser tool. Specifically to allow us to understand which schemes fall in or out of the preferred scenario when different customer valuations are used.

10. Business plan acceptability

In our PR19 business plan acceptability research in July 2018 we received strong support from our customers for our plans – see figure 13:

- when shown the bill profile (excluding inflation and the impact of ODIs) and a short summary of the improvements we are planning to make, 83% of household customers in the Cambridge region found our plan and bill levels acceptable. This is what we call the 'uninformed' figure. The figure was 77% among business customers. Overall, only 4% of all customers found our plan to be unacceptable; and
- after being shown the full details of our plans, customer promises and performance commitments, this figure dropped to 77% among household customers but rose to 82% for business customers. This included showing customers the bill profile including the impact of inflation and the maximum impact of our ODI incentives. This is what we call the 'informed' figure. The feedback shows that there some household customers who did not believe that we could deliver improved service with no increases in their bill and so found the plan to be less acceptable. A small minority found our leakage target to be short of their expectations. However, the overall number of customers who found the plan unacceptable fell to just under 3%, with 18% saying they found it neither acceptable or unacceptable.

Figure 13: uninformed household acceptability figures for our PR19 business plan.

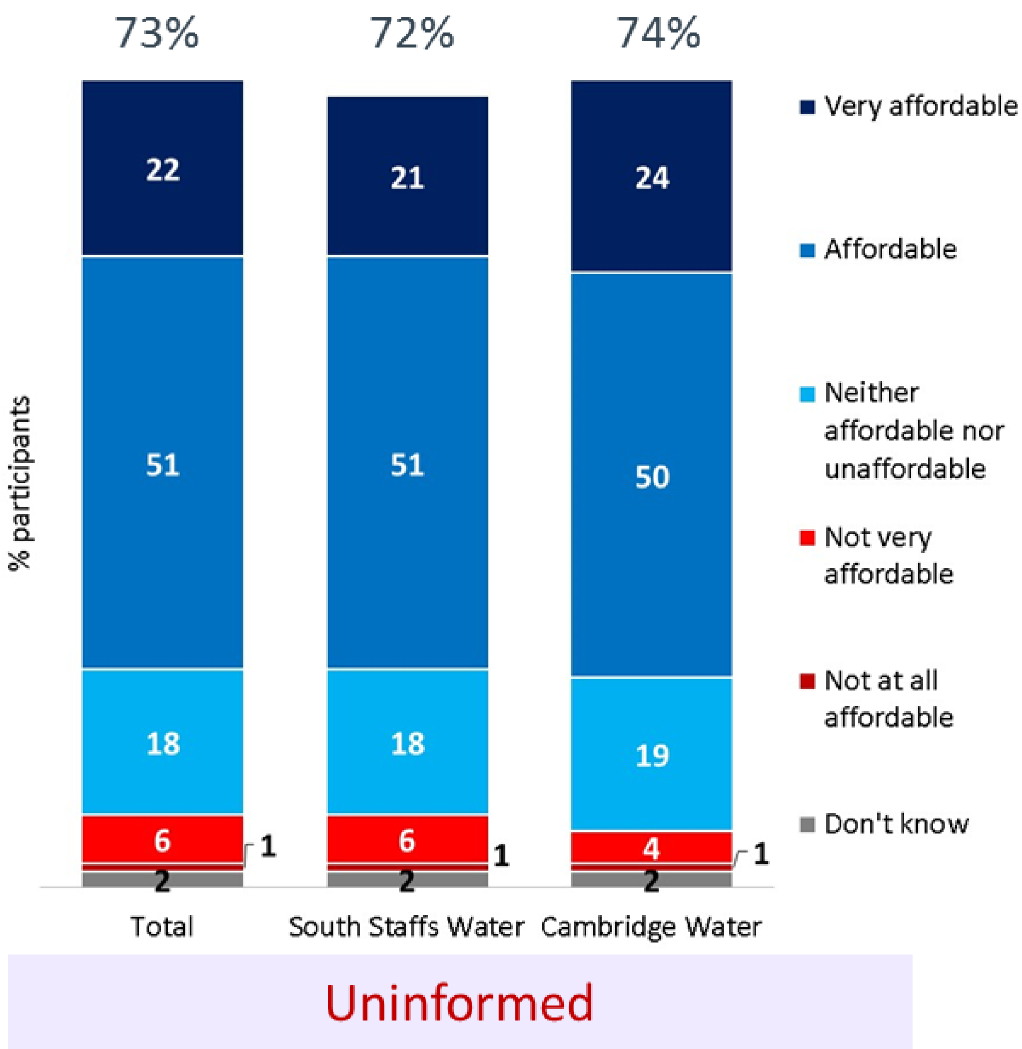


Source: PR19 Acceptability testing, July 2017.
Base: 375 household customers.

When we asked uninformed customers about the affordability of our bills for the period 2020-2025, figure 14 shows that:

- 74% of household customers in the Cambridge region found our bill levels affordable, with the figure 72% among business customers. Overall, less than 5% found the bill impact unaffordable. There were no groups of customers who said they found the proposed bill more unaffordable than others; and
- after being shown the full details of our plans, customer promises and performance commitments, the affordability score rose to 76% among household customers but feel slightly to 71% for business customers. The number of customers who found the plan unaffordable remained the same (5%) with 18% of household customers saying they found it neither affordable nor unaffordable.

Figure 14: uninformed household affordability figures for our PR19 business plan.



Source: PR19 Acceptability testing, July 2017.
Base: 375 household customers.

When we tested the acceptability of our proposed performance commitments we found a high level of comprehension of the definitions and nearly two thirds of all participants found all of the proposed targets sufficiently stretching. See appendix A6 for further details.