

Research methodologies and outputs

Relevant to the development of the
WRMP

1 Qualitative research: Customer priorities

#3 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To update our understanding of what service attributes Bristol Water customers prioritise and why To feed in customer views to the first draft of the business plan To start to understand how different customer segments views may differ To better understand customer attitudes to leakage
Drivers	Regulatory: involving customers early, ensuring research is proportionate
Service attributes	All (scoping study)
Timescale	Mar 2017
# customers	27
Methodology	<p>3 x 90 minute focus groups</p> <p>Group 1: Customers on a social tariff (7 customers)</p> <p>Group 2: Customers who experienced disruption (10 customers)</p> <p>Group 3: Control group (10 customers)</p> <p>Customers were initially asked an open question “What is a water company for?” to hear their opinions before being presented with different kinds of service attributes. Following this open session, customers were asked to rank their top ten out of 24 of Bristol Water’s service attributes (these attributes were based on those included in the Annual Survey (8)). They were then asked to share the reasons behind their choices and whether their choices changed during their discussions with other participants. Finally, customers discussed what communication and engagement channels with Bristol Water are preferred.</p>
Outputs	<p>Customers cared about affordability of water bills, and having a water supply that is safe to drink, and that looks and tastes good. Customers who had recently experienced disruption also prioritised reliability of supply. There was little consensus around other issues. Conserving water was mentioned by many participants as being important, but there were mixed opinions around metering, and little consistency in prioritising environmental issues and water efficiency. There were few conversations relating to leakage, or to droughts and water restrictions.</p> <p>Customers believed that Bristol Water had a responsibility to keep customers informed, but held mixed views regarding what they felt it was important to be informed about. Some expressed a preference for digital communication while others were more reliant on post and telephone.</p>

2 Online customer panel survey (quarterly)

#7 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To generate robust customer insights on a regular basis, allowing tracking of changes over time To contribute to the triangulation of evidence on a range of topics
Drivers	<p>Business case: an online panel can be a very cost-effective approach to ongoing engagement</p> <p>Regulatory: use of ongoing customer research</p>
Service attributes	<ol style="list-style-type: none"> 1. April 2016: Customer priorities and satisfaction with service 2. June 2016: Roadworks 3. December 2016: Customer priorities and satisfaction with service 4. March 2017: Use of Bristol Water's lakes and opinions concerning drought and related messaging 5. July 2017: Outcomes and performance commitments
Timescale	Quarterly
# customers	Panel of 2000 customers.
Methodology	Around 2000 customers are signed up to be part of Bristol Water's online panel. Completion of a short survey (usually around 10-15 questions) qualifies them to participate in a cash prize draw.
Outputs	<ol style="list-style-type: none"> 1. April 2016: Panel members prioritised reliability, water quality, and leakage. They considered meeting the water needs of a growing population, improving the environment, and improving water efficiency as key goals for Bristol Water. Panel members identified use of mobile apps and social media for improving customer service. 2. June 2016: 69% of panel members said that they would not prefer an increase in their bill in exchange for re-opening roads sooner. 3. December 2016: Customer views were generally in line with the April panel, also addressing leakage was deemed a little less important. 4. March 2017: 66% of customers visit Bristol Water's lakes at least once a year. Most felt that they should only promote more usage where there is a minimal impact on wildlife. The "drought warning" image was preferred by customers regarding drought messaging and they expressed a preference for TV, radio, and letters for communication regarding drought. 5. July 2017: Panel members generally agreed with the proposed outcomes, although requested "operationally resilient" should be communicated in clearer language. Most members agreed with including commitment to the community as a performance commitment. There wasn't consensus over how to measure the service provided to vulnerable customers.

3 Annual survey (customer priorities and perceptions)

#8 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To understand customer priorities and their perceptions of Bristol Water as a company
Drivers	Business case: provides evidence to tailor BW services and communications Regulatory: use of ongoing customer research
Service attributes	All
Timescale	Yearly – usually between December and March
# customers	1000
Methodology	Phone or online survey with standard questions relating to customer prioritisation of service attribute and perceptions of service and value for money.
Outputs	<p>Customers prioritised reliability, water quality, and affordability. They had high satisfaction for the first two of these service attributes, but low satisfaction with regards to affordable bills. 86% of respondents rated the service received from Bristol Water as either excellent, very good or good. The main reasons for dissatisfaction included poor water quality, expensive bills and poor quality of work carried out. 78% rated the value for money from Bristol Water as either good or very good. 82% rated Bristol Water's reputation as a service provider as either very good or good. 69% think that Bristol Water compares very or quite well with other utility providers.</p>

4 Stated preference research part 1

#11 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To provide up to date valuation data for a range of service attributes using the industry preferred method
Drivers	Regulatory: providing adequate and proportionate valuation data
Service attributes	<ul style="list-style-type: none"> Unplanned supply interruption 3-6h, 6-12h, 12-24h, >24h Planned supply interruption 3-6h, 6-12h, 12-24h, >24h Taste & odour not ideal (few days) Discoloured water (few hours) Occasional low pressure (3-6h per time) Hosepipe ban (May-Sep) Restriction on essential use of water (2 months) Works causing road disruption in Bristol area (any duration)
Timescale	Mar – Aug 2017
# customers	<ul style="list-style-type: none"> 1,016 x HH online interviews 100 x HH in-home interviews with less engaged / vulnerable customers 300 x non-household (NHH) CATI interviews
Methodology	The survey questionnaire was designed around two interlinked exercises: (1) a 'MaxDiff' exercise focussed on which types of service issue would have the most, and least, impact on respondents if they were to be affected by them; and (2) a 'Package' exercise focussed on high level trade-offs between service improvements or deteriorations and changes in the level of the bill.
Outputs	<p>Respondents were not willing, on average, to accept any service deteriorations in exchange for bill reductions. In fact, in the context of a decreasing bill, in real terms, respondents would be unwilling to accept any deterioration in service, and would rather see any amount of service improvement than no service improvement. Once the bill change is in the positive range, however, respondents become cost sensitive.</p> <p>With respect to improvement packages, we found that households were willing to pay up to a total of £20.96 per year, on average, for an intermediate improvement package including both water and wastewater service improvements. This represents a decrease in WTP in comparison to the findings for PR14 where the corresponding WTP figure was £31 per household per year for water service improvements alone.</p>

Household and non-household WTP for package improvements (£/year)

Variable	Household	Non-household
SQ to +1	£20.96	£151.64
	(£17.65 ; £24.24) ⁽¹⁾	(£124.49 ; £178.73)
+1 to +2	£12.16	£68.50
	(£9.52 ; £14.78)	(£14.78 ; £122.14)

Unit WTP values, by customer type

Service measure	Unit	Willingness to pay (£/unit)			
		Household		Non-Household	
		Central	Range	Central	Range
Water					
Unplanned supply interruption (3-6h)	case/prop	£136	(£115; £158)	£1,565	(£1,285; £1,845)
Unplanned supply interruption (6-12h)	case/prop	£287	(£242; £332)	£1,941	(£1,594; £2,288)
Unplanned supply interruption (12-24h)	case/prop	£293	(£247; £339)	£2,661	(£2,185; £3,137)
Unplanned supply interruption (>24h)	case/prop	£332	(£280; £384)	£3,464	(£2,844; £4,083)
Planned supply interruption (3-6h)	case/prop	£91	(£77; £105)	£706	(£580; £832)
Planned supply interruption (6-12h)	case/prop	£121	(£102; £140)	£1,007	(£827; £1,187)
Planned supply interruption (12-24h)	case/prop	£175	(£147; £202)	£1,138	(£934; £1,341)
Planned supply interruption (>24h)	case/prop	£154	(£129; £178)	£1,342	(£1,102; £1,582)
Taste & odour not ideal (few days)	case/prop	£147	(£124; £171)	£804	(£660; £948)
Discoloured water (few hours)	case/prop	£60	(£51; £70)	£353	(£290; £416)
Occasional low pressure (3-6h per time)	case/prop	£80	(£67; £93)	£338	(£278; £398)
Hosepipe ban (May-Sep)	case/prop	£38	(£32; £44)	£211	(£173; £249)
Restriction on essential use of water (2 months)	case/prop	£594	(£500; £687)	£4,361	(£3,580; £5,140)
Works causing road disruption in Bristol area (any duration)	case/prop	£67	(£56; £77)	£735	(£604; £867)

5 Stated preference research part 2

#12 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To provide up to date valuation data for a range of service attributes using the industry preferred method 		
Drivers	Regulatory: providing adequate and proportionate valuation data		
Service attributes	<ul style="list-style-type: none"> Reduce leakage (from 84 to 76 litres / property / day) Education on how to save water Issue water saving devices to customers Water transfers from neighbouring companies Increase use of current water resources Develop new water resources Implement universal metering 		
Timescale	Mar – Aug 2017		
# customers	<ul style="list-style-type: none"> 573 with household customers, (50 face to face) 300 with non-household customers. 		
Methodology	<p>The survey was a standard stated preference choice exercise, designed around the core idea that the utility of a water resources management plan, to a customer, can be decomposed into three factors:</p> <ul style="list-style-type: none"> the impact on the frequency of TUBs/NEUBs, the impact on the customer's bill, and the external costs/benefits of the supply-demand measures included within the plan. <p>Respondents were asked to make a sequence of choices between options each representing a potential water resources plan. The options were accordingly characterised by the combination of supply-demand measures included and the impact on the level of service and on the customer's bill.</p>		
Outputs	Variable	Households [£/HH/year]	Non- Households [£/NHH/year]
	<i>Reduce leakage (from 84 to 76 litres / property / day)</i>	£9.60	£39.85
	<i>Education on how to save water</i>	£9.59	£17.84
	<i>Issue water saving devices to customers</i>	£9.00	£19.29
	<i>Water transfers from neighbouring companies</i>	-£2.28	£9.82
	<i>Increase use of current water resources</i>	-£3.77	£12.92
	<i>Develop new water resources</i>	-£4.71	£7.88
	<i>Implement universal metering</i>	-£8.90	-£3.97

6 Customer experience of attributes review

#13 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To draw together existing evidence about the priorities customers place on service attributes from ongoing customer data
Drivers	<p>Regulatory: ensuring that day-to-day customer contact is used to inform research priorities, and engagement is considered as an on-going process, integrated throughout business activities.</p> <p>Dashboard can also pull out data on particular customer segments e.g. vulnerable customers</p> <p>Business case: making the business more responsive to customer needs and priorities</p>
Service attributes	All
Timescale	Ongoing
# customers	>2400
Methodology	Collecting and comparing data gathered from customers on a regular basis – for example through inbound calls, complaints, SIM survey, replica survey, feedback cards, social media in terms of views on service attributes
Outputs	<p>Overall, customers have a positive opinion of Bristol Water. General satisfaction from customers contacted for the monthly replica survey is steady around 88-90%. In 2016/17, 78.9% of customers rated Bristol Water as providing good value for money which is a positive increase from 78% in 2015/16. 92.9% of customers surveyed considered that it was easy to contact us by phone – this has remained fairly consistent over the previous years. 81.7% of customers rated our reputation as good which is an improvement on the score of 80% in 2015/16.</p> <p>After service issues, other key drivers for complaints are due to pressure (10.4%), leaks (9.5%) and issues with water quality (9%). Calls regarding no water made up almost a quarter of all unwanted calls. Low pressure was the third most common unwanted contact but when combined with ‘very poor pressure’, it makes up 14% of all unwanted calls. Calls about discoloured water make up nearly 3% of all inbound calls and 7% of the unwanted category.</p>

7 Benefits transfer desk review

#14 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To translate comparable evidence about costs/benefits related to service attributes from other sectors/contexts
Drivers	Regulatory: triangulation of valuation findings
Service attributes	<p>Hosepipe ban, Short & long interruptions to supply Drought restrictions Low pressure Water quality – discolouration, taste and odour Leakage Low river flows Water meters Traffic disruption</p>
Timescale	PR14 data
# customers	N/A
Methodology	<p>The Benefits Transfer method involves “transferring” to the current context, any available valuation evidence from comparable studies that were completed in another location, at another time, or in another context. This study compares the results of Bristol Water’s PR14 stated preference studies (Stage 1 and Stage 2) with the results from a range of alternative sources, including other companies’ PR14 stated preference studies. This allows Bristol Water to benchmark the results emerging from its other Stated Preference and Revealed Preference research, to assess their robustness. All values are adjusted for inflation and are reported in 2017 prices</p>
Outputs	<p>Hosepipe ban, NEUBs, short interruptions to supply, drought restrictions, wide range of industry estimates, BW PR14 values in middle of range. Long interruptions to supply, leakage: wide range of industry estimates with BW PR14 values towards the top end of the range. Low pressure: Most industry values focus on persistent low pressure, but BW valued occasional low pressure, hence BW value at the low end of the range, consistent with other study looking at low pressure. Discolouration: wide range of estimates with Bristol Water’s valuation estimates towards the middle of the range Taste and odour: BW PR14 values at the low end of industry range - but some very high industry valuations. Low river flows: BW PR14 valuations higher than industry values Water meters and traffic disruption: No comparable data</p>

8 Resilience costs study

#15 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To develop robust, triangulated evidence about the costs of service attributes commonly used in valuation studies to represent resilience using an alternative to the stated preference approach
Drivers	<p>Resilience is a priority for Bristol Water and Ofwat, as decisions about acceptable levels of resilience can significantly affected expenditure and therefore pricing</p> <p>Regulatory: innovative methods and triangulation are encouraged by Ofwat</p>
Service attributes	Resilience
Timescale	Mar-Aug 2017
# customers	300 NHH
Methodology	<p>Quantitative macroeconomic analysis of costs of disruption caused by service attributes associated with resilience (e.g. economic impact of a business having no water for 1 day is £x)</p> <p>Qualitative interviews with representatives of key industries/businesses to test assumptions about economic impacts of impacts and refine model.</p>
Outputs	<p>Daily Loss in GVA due to drought (millions)</p> <p>Level S2 drought 0.9m (1 month) 1.6m (3 months) 2.2m (6 months)</p> <p>Level S3 drought 1.5m (1 month) 2.5m (3 months) 3.3m (6 months)</p> <p>Level S4 drought 14.2m (1 month) 17.6m (3 months) 19.6m (6 months)</p> <p>Many respondents perceived that the drought and associated restrictions at any level of duration and severity would not affect their business. However, in terms of mitigation efforts, for a level 2 drought, most respondents would invest in water saving measures or maintenance. For a level 2 drought, these remain popular measures, but there is a marked increase in the number of respondents saying they would tell staff to work from home, which comes into line with using stored water and reducing certain core activities without decreasing output.</p> <p>The sectors that appear to be most severely affected by drought are human health and social work activities; accommodation and food service activities; food products, beverages and tobacco; and education.</p>

9 Deliberative resilience research

#19 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To explore how customers and stakeholders value resilience attributes when considered in the context of real life scenarios To develop evidence about the risk profiles of customers in relation to investment
Drivers	Regulatory: this was an area identified at PR14 where evidence was not strong enough to justify the BW position, innovation in practice, triangulation
Service attributes	Resilience relating to drought avoidance and water resource options
Timescale	June 2017
# customers	111 HH
Methodology	<p>3 day-long events with 37 customers per event.</p> <p>Simplified valuation survey applied pre- and post-event with participants responding individually on keypads.</p> <p>Discovery session to aid customer understanding of their water supply.</p> <p>Resilience scenarios to support discussion of the impact of potential events such as droughts and mains bursts on customers, businesses, and the environment.</p> <p>Top Trumps budgeting exercise to investigate customers' views on the trade-offs between short and long-term water resource options.</p>
Outputs	<p>Quantitative findings:</p> <p>Leakage (1% reduction) 6.86 (pre) 8.94 (post)</p> <p>Water efficiency (improvement by one) 7.70 (pre) 7.46 (post)</p> <p>Increased metering (1% increase) 0.25 (pre) 0.04 (post)</p> <p>Protection of environment (improvement by one) 15.10 (pre) 14.87 (post)</p> <p>Qualitative findings:</p> <p>Customers were unwilling to pay more to reduce the impact of events such as droughts as many felt the current level of risk was acceptable. There was a clear preference for Bristol Water to focus on reducing demand (i.e. through leakage reduction, water efficiency measures etc) and getting the most out of the current system before committing to the development of new water sources. Leakage was a top priority throughout, as was water efficiency, although there was disagreement Bristol Water's role in educating customers. Metering was a divisive issue, with some fearing bills would be unfairly high for large families, and health needs.</p> <p>Most customers expressed support for the environment and wanted Bristol Water to mitigate negative activities, but were not always willing to pay more for this.</p>

10 Online attributes scenario game

#20 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To create a tool that can be used on an ongoing basis to better understand customer's risk preferences and how they value resilience To generate quantitative data on customers' preferences for resilience
Drivers	<p>Regulatory: Ofwat is encouraging innovative and ongoing customer engagement. Resilience is also a key area of focus for both Ofwat and Bristol Water. This tool would also enable triangulation as outcomes from deliberative research on resilience and quantitative studies would feed into the design of the game.</p> <p>Business: A flexible tool can be updated and has a long life. It can be used on an ongoing basis, or for particular research campaigns.</p>
Service attributes	<p>Unplanned interruptions (3-6 hours and 12-24 hours), Hosepipe ban Discoloured tap water Traffic disruption Leaky pipes Water meters in more homes Helping customers use less water Protecting the environment</p>
Timescale	June / July 2017
# customers	300 HH
Methodology	<p>Online "slider" tool – presenting a more graphical, user-friendly method of stated preference research. The slider elicits data from respondents by asking them to select their desired service level for a set of service attributes using "sliders" on a computer or tablet screen. As customers select higher/lower service levels, the bill shown in the tool rises/falls to illustrate the trade-offs between service quality and price. The slider allows respondents to customise their bill to their liking.</p>
Outputs	<p>See table on next page for valuation results. Additional findings: Metered customers tend to want more metering in more homes; Older customers were less concerned with environmental quality; Respondents with higher social grade wanted to lessen the chance of a long interruptions in supply and wanted less leakage on a system level; The more adults in the household, the more customers wanted to shift traffic disruptions to nights and weekends. The more children in the household, the more customers wanted to lessen the chance of long interruptions and discoloured water, and reduce the overall leakage on the system.</p>



WTP Estimates

Attribute	Simplified WTP	Probit WTP	Unit
No water for 3-6 hours w/ no warning	15.19	17.25	1% change in probability
No water for 12-24 hours w/no warning	20.79	19.59	1% change in probability
Hosepipe ban	1.65	1.78	1% change in probability
Discoloured tap water	1.85	2.01	1% change in probability
Traffic disruption	1.55	1.58	Move from “current levels” to “lower”
Leaky pipes	11.67	12.14	Per 10Ml/day reduction
Water meters in more homes	3.04	3.34	Per +100K customers metered
Helping customers use less water	1.89	1.97	Move from “current levels” to “lower”
Protecting the environment	2.64	2.54	Move from “current levels” to “lower”

11 Qualitative customer research: Performance commitments

#24 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To understand customer views on performance commitments To understand customer views on how outcome delivery incentives should be applied to these performance commitments
Drivers	<p>Regulatory – to demonstrate customer input into determining performance commitments</p> <p>Business case: making the business more responsive to customer needs and priorities</p>
Service attributes	All 24 performance commitments were discussed
Timescale	September 2017
# customers	29HH
Methodology	<p>3, half day sessions with household customers which included: Introduction to the idea of measuring performance, Bristol Water’s performance commitments, and Bristol Water’s performance in relation to other water companies.</p> <p>A ranking exercise and discussion on Bristol Water’s performance commitments, and customer views on the best options for measurement. Discussion on preferences for financial / reputational incentives for the PCs, and the detail of the financial incentives (i.e. in period and out of period).</p>
Outputs	<p>Customer prioritised performance commitments relating to affordability and vulnerable customers and the environment, and had clear views on how these should be measured (% in water poverty and perception of value for money, and biodiversity index and energy efficiency). They also prioritised leakage and per capita consumption.</p> <p>Customers preferred financial incentives over reputational, with the exception of biodiversity, drought risk, raw water quality, and water quality. Most customers expressed a preference for a penalty and reward system because of its mutual benefit to customers and Bristol Water. They believe that making the company more attractive to investors is important in order to improve infrastructure, while ensuring that if customers receive a bad service, they will at least receive a discounted bill. However, they recommend the following for penalty-only: customer service, DMex, water quality, value for money.</p> <p>Customers preferred in-period adjustments for Bristol Water’s statutory duties (i.e. water quality compliance) and customer service and end-of-period for performance commitments associated with longer timescales, such as environmental concerns.</p>

12 Revealed preference research

#26 in the Customer Engagement Framework

Objectives	<ul style="list-style-type: none"> To understand and place a value on choices customers make when their water supply is interrupted To understand and place a value on choices customers make if they are unhappy with the taste / appearance / hardness of their water
Drivers	Regulatory – Ofwat is keen for companies to conduct revealed preference research
Service attributes	Supply interruptions, taste and appearance, hardness
Timescale	July – September 2017
# customers	528 HH 262 NHH
Methodology	4 focus groups in areas that had recently experienced supply disruption 12 face-to-face interviews 750 phone interviews
Outputs	<p>The severity of the impact caused by a water supply interruption on households and businesses depends on the length of duration, what day of the week it takes place and at what time it starts and finishes. Customers were frustrated at not knowing how long the situation would last as it made planning difficult.</p> <p>For households, alternative arrangements focused on kitchen and bathroom activities and involved going to friends or neighbours, buying bottled water, and choosing to stay / eat out.</p> <p>NHH customers involved in catering were most impacted and had to use high volumes of bottled water, hygiene products, and petrol. Some had to close for the day. The vast majority of household and non-household customers were also able to reveal the implications of the actions they undertook to mitigate the supply that ended up costing them money.</p> <p>NHH customers were more likely to contact BW than HH customers who tended to get their information from neighbours. Most were happy with BW's handling of the incident.</p> <p>Average cost of supply disruption for household customers: Unweighted = £12.26, Weighted = £12.31 <i>Note – there were regional differences in costs, please see report for details.</i></p> <p>Average cost of supply disruption for non household customers: Base = £9.57, Unweighted = £10.77, Weighted = £5.74</p>